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ENVIRONMENTAL PERFORMANCE REVIEWS

MOROCCO

Synopsis



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Preface

The EPR of Morocco began in February 2012 with a preparatory mission. During this mission, the structure of the review report was discussed and the time schedule established. A review mission took place on 7-14 November 2012. The review team included experts from France, Portugal and Switzerland, together with experts from the ECE Secretariat and experts provided by ECA and UNEP.

The draft EPR report was submitted to Morocco for comment and to the ECE Expert Group on Environmental Performance Reviews for consideration in July 2013. During its meeting on 11 and 12 September 2013, held in Rabat, Morocco, the Expert Group discussed the report in detail with representatives of the Government of Morocco, focusing in particular on the conclusions and recommendations made by the international experts.

The EPR recommendations, with suggested amendments from the Expert Group, were then submitted for peer review to the nineteenth session of the ECE Committee on Environmental Policy on 24 October 2013. A delegation from Morocco participated in the peer review. The Committee adopted the recommendations as set out in this report.

The Committee on Environmental Policy and the ECE review team would like to thank the Government of Morocco and its experts who worked with the international experts and contributed their knowledge and assistance. ECE wishes the Government of Morocco further success in carrying out the tasks involved in meeting its environmental objectives, including the implementation of the recommendations in this review.

ECE would also like to express its appreciation to France, Portugal, Switzerland, ECA and UNEP for having delegated their experts for the review, and the UNDP for its support of the EPR Programme and this review.

Executive summary

The Environmental Performance Review (EPR) of Morocco began in 2012. It analyses the progress made by the country from 2003 on environmental protection, and proposes recommendations on how Morocco can improve its environmental management and address recurrent environmental challenges.

Morocco was the fifth-largest economy in Africa in 2010 as measured by Gross Domestic Product (GDP). It is considered to have the most competitive economy in North Africa according to the World Economic Forum's 2012–2013 Global Competitiveness Index. This is a result of ongoing regulatory reform to improve the country's business environment, which has been the Government's consistent policy goal since 2005. This development was realized through a convergence of socio-economic issues and the adoption of sectoral strategies that provide better visibility and allow a gradual integration of the environmental component.

The economy is weighted towards services, which share in 2011 was 55.1 per cent of GDP, while industry's share was 29.9 per cent and agriculture produced 15.1 per cent. Agriculture, however, plays a bigger role in the country's economic development than its share of GDP would imply. This is because, first, it employs 44 per cent of the country's workforce and, second, any fluctuations in cereal production, e.g. due to drought, have a direct impact on the economic growth of the country in general.

Morocco has 75 per cent of the world's phosphate reserves. It is the world's biggest phosphate exporter (with 28 per cent of the global market) and third-biggest producer. The price fluctuations of phosphates on the international market can greatly influence Morocco's economy. Fortunately, the country's dependence on phosphate exports has shrunk in recent years as exports of manufactured and agricultural products, combined with the growth in tourism, have increased. On the import side, Morocco is dependent on imported fuel and the country's food import requirement can rise substantially in drought years.

Inflation has remained very moderate with an average annual rate of just below 2 per cent in recent years. Such a level of inflation can be partially explained by sizeable government subsidies designed to shield domestic prices of some foodstuffs and energy products from price hikes in international commodity markets. The unemployment rate has been relatively stable at around 9 per cent in recent years.

Policy framework for environmental protection and sustainable development

Since 2003 Morocco has been putting in place foundations for enhancing its environmental policy, which until then was very general and addressed primarily water management issues. Three important environmental laws were approved in 2003, namely laws on the protection and conservation of the environment, combating air pollution and environmental impact assessment. Despite progress made, the environmental legal framework remains underdeveloped and still inconsistent.

To accelerate progress on preventing pollution and restoring environmental conditions, the Government has established a number of national programmes. Among them, the National Municipal Solid Waste Management, the Programme National Programme of Sanitation and Wastewater Treatment, the National Programme for Collection and Disposal of Plastic Bags, the National Programme of Environmental Upgrading of Rural Schools, and the National Programme for Prevention of and Fight against Industrial Pollution.

The adoption of the National Charter for Environment and Sustainable Development, at the seventh session of the National Council for the Environment in 2011 has allowed Morocco to redouble its efforts to protect the environment and sustainable development. In fact, the operationalization of this charter is achieved by the enactment of the framework law on environment and sustainable development through the development of a national strategy on environment and sustainable development with all the economic, social and environmental aspects.

The Constitution adopted in 2011 also helped to give a new impetus to the process of the establishment of sustainable development. Structured around the universally recognized principles and enhanced by international

experience, this constitution serves as a reference. It stipulates the sustainable development as a right of every citizen.

Compliance and enforcement mechanisms

The environmental legal framework poses problems of implementation. Some laws are outdated; others lack secondary legislation to become effective and enforceable. Furthermore, the governing environmental laws do not provide explicit powers of inspection and enforcement to the main environmental authorities.

While there are environmental inspectors in Morocco, no system of compliance monitoring is in place. Resources dedicated to compliance are very modest. As a result, there is no programme of inspections, not even in highly industrialized regions such as Grand Casablanca. Site visits are mostly ad-hoc and driven by requests or complaints. A limited number of inspections were made, some following the environmental impact assessment procedures or as a result of the projects benefitting from funds related to industrial depollution.

Self-monitoring is just beginning to be implemented. Very few industries, apart from the cement industry and a few large enterprises, are implement it. They perform their monitoring activities as a matter of internal corporate policy. There is, therefore, hardly any quantitative information that would permit understanding of the procedural and substantive impact of existing laws.

Due to a lack of compliance control, environmental authorities prioritize regulatory culture largely based on negotiations, consensus-building and voluntary approaches. Even if the impact of these approaches has proved to be positive, a qualitative analysis concluded that tools and resources of the Moroccan system of ensuring environmental compliance have limited opportunities to produce concrete results.

The current approach to compliance fails to address environmental challenges, which can gradually become economic and development challenges. The Government thus needs to reconsider its approach of establishing an incentive framework for higher environmental performance.

Monitoring, information and education

The system for monitoring, collecting and managing environmental information is in the process of development. However, the lack of a coherent legislative framework for environmental monitoring and assessment hinders this process, insofar that as the institutional arrangements, in particular regarding the sharing of information, remain below expectations .

The Constitution provides Moroccan citizens with the right of access to environmental information retained by the public administration. Currently environmental information is available at the Department of Environment.

Morocco carries out a multitude of activities promoting environmental education and education for sustainable development. Environmental education is integrated in the primary, secondary and high school curricula in the form of specific programmes. Universities offer graduate degrees on the environment and sustainable development.

Economic instruments and expenditures for environmental protection

The main instrument used in Morocco to create financial incentives for enterprises to shift to less polluting modes of industrial production are subsidies in the form of grants. Such grants are mainly provided under the umbrella of the industrial clean-up programmes.

Fines and sanctions for non-compliance with environmental standards (notably for air, water and waste), even if stipulated in the legislation, are not applied in general, and neither are emissions charges. This is a major missing incentive for promoting more environmentally friendly consumption and production patterns. Furthermore, there are no plans to introduce taxes on emissions of air pollutants. On the other hand, the regulations for the establishment of various taxes, even those that have been partially established by the legislation are slow to be implemented: e.g., fees for discharges, flows, direct and indirect deposits into surface or ground water.

The tariffs for various communal services are all regulated by the State. Their present setting does not ensure the recovery of operating costs, hence all services are subsidized to all users regardless of their financial status.

Similarly to communal services, petroleum products are subsidized to bring their price down. While this approach may shield the poor from price hikes in international commodity markets, it basically creates a system of environmentally harmful subsidies because it encourages overconsumption by keeping prices significantly low, and which can lead to a bias in industrial investments towards technologies based on intensive use of fuel oils.

Implementation of international agreements and commitments

Morocco has acceded to a number of global and regional multilateral environmental agreements (MEAs) and is actively developing its international environmental cooperation. To meet the requirements of the ratified MEAs, foreign assistance is being sought to design and assist in the execution of various programmes and action plans for strengthening implementation and compliance.

For the majority of MEAs, the national legal framework is not yet sufficiently developed to be in conformity with the norms, standards and concepts required by these agreements. Furthermore, where the legislation is in place, its implementation and enforcement is lacking.

Air protection

Air protection activities lack a comprehensive strategic vision. Therefore, despite a number of significant positive changes such as the introduction of cleaner fuels or halving SO₂ emissions by the country's only refinery, air quality, in particular in urban areas, remains a challenge.

Air emission data do not seem to be processed to serve as a basis for decision-making with regard to protecting the population against air pollution. So far, emission inventories have been validated for a few regions and it is expected that at the end of 2014 emission inventories will be available for the whole country.

The legislation in support of air protection lacks the implementing regulations, which are long overdue. In particular, the absence of sectoral emission limit values which are based on best available techniques is a drawback. In addition, no regulations are in place which would require warning the population about pollution peaks.

The authorities try to improve air quality through promoting a voluntary approach by industry and the handicrafts sector to applying emission limit values. While there is some initial success, sustainable results can only be achieved when there is a system in place that does not put anybody at a competitive disadvantage, which is not the case at the moment. A stricter command-and-control approach should be introduced, at least gradually, if air quality is to improve.

Water management

Morocco has limited availability of water resources and faces substantial challenges in this regard. The water volume that may be technically and economically exploitable reaches 80 per cent of current available resources. This level reveals the current national constraints on water issues and the challenges that are ahead regarding the urgency of an integrated water management approach.

Most of the problems in water management are connected with wasteful use of freshwater resources and discharges of untreated wastewaters. The public water supply systems and irrigation in Morocco are ineffective and water losses reach on average 35 per cent. The absence of regulations on limit values of wastewater discharges from certain industries values prevents the practical application of "user pays" and "polluter pays" principles.

Waste management

The economic costs of environmental degradation in Morocco are linked to the poor performance of the solid waste management system. A large proportion of waste is still disposed of in illegal dumpsites, often in or along streams or riverbeds and in areas where water resources are vulnerable, which causes soil and water pollution. Methane and other gas pollutants from illegal dumpsites, together with incineration of waste in kilns and bathhouses, are the major sources of air pollution.

The legislation adopted lays a foundation for consistent and sustainable waste management. Its implementation, unfortunately, is lagging behind. This is due to, among other things, the lack of expertise in waste management on many levels, including in the monitoring of landfills, the rehabilitation of landfills, and the control function at the local level over private enterprises in waste collection, clean-up and disposal. In addition, in a number of areas the necessary specific technical requirements and references are not present in the legislation to make it enforceable.

In addition, Morocco has not yet created a waste monitoring system. Studies to assess the impact of waste on the environment should be conducted to help establishing objective parameters and targets which are necessary to minimize the impact through the definition and implementation of corrective policy measures.

Biodiversity and protected areas

Despite the fact that Morocco has 68 key biodiversity areas forming part of the wider Mediterranean Basin biodiversity hotspot, of which two have been identified as being Irreplaceable Key Biodiversity Areas, various aspects of the biodiversity of Morocco remain uncertain. This situation is due to several knowledge gaps such as gaps relating to specific species or groups, genetic resources, and ecosystems or sites.

Streamlining existing data is a problem, because criteria used nationally do not necessarily correspond across assessments, or with criteria used on an international scale. To this end, taxonomists would be in high demand in Morocco, not only because of the gaps in knowledge on biodiversity issues, but also because some existing data may need to be re-examined.

Revisions of the protected area system have only recently been undertaken and the monitoring of effectiveness and progress has not yet been widely undertaken. It also appears that, in many cases, human resources within protected areas are too limited to be able to adequately manage protected area resources on the ground, while, with respect to some protected areas, assignment of protection has been little more than a paper exercise.

Illegal forest exploitation and illegal hunting are not primarily a consequence of lack of awareness, but are more fundamentally driven by poverty and by a lack of adequate socioeconomic alternatives. Therefore conservation initiatives in Morocco which fail to consider the short- and long-term socioeconomic dimension appear to be limited.

While there is progress in extending the network of protected areas and in building a suite of management and regulatory plans, policies and laws, there is also substantial evidence to suggest that practice falls short of set targets and objectives, with problems of enforcement and implementation. There is a lack of integrated management across different sectoral areas as a major limiting factor for effective biodiversity conservation, with disjointed initiatives and, in some cases, the setting of conflicting objectives by different authorities, with evidence also of competing agendas.

Health and environment

Morocco is undergoing an epidemiological transition characterized by a progressive decline in infectious diseases and an increase in chronic and non-communicable diseases. To this end, the Government is examining with growing interest the impacts of environmental degradation on public health. In particular, the Government sees poor housing, poor drinking water and poor solid waste management as causes for public health concerns.

The current legislative framework does not yet include the link between health and environment. However, the framework law on the National Charter for Environment and Sustainable Development sets a good foundation

for the implementation of cross-cutting actions needed to efficiently handle the health and environment interface.

An environmental health information system is still not in place. Furthermore, indicators on the basis of which an analysis will be carried out to establish better links between environmental degradation and health problems have not yet been identified.

Industry and environment

While industry is undergoing economic development, there is no evidence that this is a sustainable development at no increasing cost for the environment. There are no data available on the pollution level generated by industry. In addition, environmental self-monitoring by industry is only carried out on a voluntary basis.

The legal environmental requirements pertaining to industry do not correspond with the existing state of development (Dahir of 1914 on the regulation of unsanitary, inconvenient or dangerous industrial plants), are incomplete (laws on air, water and waste) or non-existent (legislation on major hazard prevention). Emission limit values and discharge limit values are still lacking, although the Government is in negotiation with the most polluting industries to set emission and discharge limit values to ensure that industrial facilities operate with acceptable impact on the environment. It is also unclear how industry can be incentivized to decrease water or energy consumption. In addition, the control of compliance is very limited.

With the existing legal and compliance enforcement gaps, limitation of pollution generated by industry depends mainly on the availability of funding under industrial clean-up programmes or on initiatives of industrial associations in convincing their member industries to adopt good environmental management practices. While these activities bear fruit and are recommended as additional measures, Morocco may not be able to address its environmental challenges in the longer term without introducing a relevant industry control regime based on coherent regulations.

Energy and environment

As a developing country, Morocco has a growing demand for energy. Energy consumption has been steadily increasing in every sector of the economy since 2003. The demand for energy is met mostly by fossil fuels, all of which are imported. This makes the country highly vulnerable to fossil fuel markets.

Growing energy production from fossil fuels, despite the use of better quality fuels, increases the pressure that the energy sector exerts on the environment. This cannot be checked quantitatively, however, as, similarly to other sectors, data on environmental pressures from the energy sector are very scarce.

At the same time, Morocco has great potential for generating energy from alternative –‘green’ – energy sources, in particular solar and wind but also hydro energy. Therefore, the Government wants with its energy strategy and programmes to increase the share of green energy to more than 42 per cent of installed capacity for electricity generation by 2020. Achieving this goal will depend on incentives, not available at the moment, being offered to private investors to attract them to financing green energy projects.

There is also great potential in Morocco for improving energy efficiency. This can be enhanced by more than 15 per cent and, in some sectors, such as building, reach as much as nearly 30 per cent. The National Programme for Energy Efficiency specifies a number of concrete measures to be applied in each of the three targeted sectors: building, industry and transport. Realization of the Programme’s measures may, however, be delayed due to the absence of implementing regulations necessary for enforcing the law on energy efficiency.

Agriculture and environment

Agricultural activities currently exert high pressure on soil, water and biodiversity. This is mainly due to the uncontrolled use of and pollution from phosphates and nitrates and, in the case of water, also due to wasteful irrigation networks.

Water scarcity and loss of soil fertility impact highly on agricultural productivity. Productivity levels are decreasing in Morocco as technological progress is low and cannot offset the impact of climate change.

To address the environmental pressures (among others) in the agricultural sector, Morocco adopted an agricultural strategy – Green Morocco Plan – in 2008. The first fruits of implementation of the strategy are visible in growing areas of localized irrigation methods replacing conventional irrigation by gravity. Furthermore, the Government established a Fund for Agricultural Development which provides farmers with subsidies intended to encourage water savings and soil protection. The Government also holds awareness-raising campaigns to improve agricultural productivity, water conservation and the rationalization of the use of fertilizers by farmers.

CONCLUSIONS AND RECOMMENDATIONS

Chapter 1: Policymaking framework for environmental protection and sustainable development

During the process of institutional change in the past, the status of the national environmental authority has changed from a ministry to that of a State secretariat and then to that of a ministerial department, among a few others, in a multifaceted Ministry of Energy, Mines, Water and Environment. Thus, the promotion of environmental protection and sound environmental management is located within a ministry with very different and sometimes competing interests. At the same time, the highest authorities in the country have solidly prioritized environmental protection and sustainable development. As a result, the Department of Environment's competences are expanding.

Performing some of its functions, e.g. ensuring environmental protection or promoting sustainable development in various sectors, requires an appropriate status, one that grants broader capability for initiating and facilitating interministerial and intersectoral cooperation. The current status of the national environmental authority seems to be too low for this. The low status of the environmental authority also weakens the enforcement of environmental legislation. Due to the frequent institutional changes, the representation of the national environmental authority in the regions has been weakened in terms of both status and capacity. As a result, it does not have full representation in all regions of Morocco, and often its presence is too weak for effective implementation of its mandate. In terms of status, its regional offices are not ranked as regional directorates but, rather, as hierarchically lower regional services. Even worse, it appears that the Department's regional services do not yet have a recognised formal legal status.

Recommendation 1.1:

To enable the national environmental authority to ensure environmental protection and promote sustainable development, the Government should:

- (a) Consider restoring the status of the national environmental authority to that of a ministry;*
- (b) Ensure the active participation of the national environmental authority in the new institutional structures on sustainable development to be created at the national level;*
- (c) Raise and formalize the status and strengthen the capacity of the national environmental authority's regional offices;*
- (d) Promote better coordination among and greater effectiveness of the work of the High Commission for Water, Forestry and Desertification Control and the national councils (i.e. the National Council for the Environment, the High Council for Water and Climate, and the National Forest Council).*

Although the number of projects managed by the Department of Environment has increased, long-term improvements in environmental management and protection require sound development of a policy framework that can establish continuity and predictability of national environmental policy for both domestic and international audiences. At the time of the review, two strategic policy documents relating to the environment that were adopted were no longer in use: the 1995 National Environmental Strategy and the related National Environmental Action Plan (PANE). The strategy of the Department of Environment, although an important policy document, cannot replace a coherent and comprehensive national environmental strategy. Thus, a discontinuity existed at the time of the review. The possibility of policy discontinuities and unpredictability in a core policy area, such as that of environmental policy, is clearly not facilitating more effective long-term environmental management or protection.

Recommendation 1.2:

The Government should

- (a) Further promote the development of a National Strategy on Environment and National Strategy on Sustainable Development, and their submission to the Government for adoption;*
- (b) Ensure adequate financing for the implementation of these national strategies and establish clear reporting mechanisms and reporting obligations for the implementation of their objectives.*

The country has not yet introduced strategic environmental assessment (SEA) in its national legislation. The fact that there are explicit references to SEA in the new draft law on the environment and sustainable development is positive.

Recommendation 1.3:

The Government should adopt the necessary legislation for the introduction of strategic environmental assessment.

Law No. 31-06 on the Development, Protection, Enhancement and Preservation of the Coastline was adopted by the parliament. Similarly with all other laws that were not published before the inauguration of the new Government, it was resubmitted for interministerial consultation, and, hence, it is not in force.

Recommendation 1.4:

The Government should finalize the Law on the Development, Protection, Enhancement and Preservation of the Coastline and, once it has been adopted by the parliament, ensure its implementation through the integrated management of coastal zones.

Chapter 2: Compliance and enforcement mechanisms

The available information does not make it possible to assess the level of environmental compliance in Morocco in quantitative terms. However, a qualitative analysis leads to the conclusion that, with current strategies, instruments and resources, the Moroccan system of environmental compliance assurance has limited chances to deliver bold results. While some of the basic regulatory requirements related to pollution from industrial installations have been in place for a century and the legal basis for environmental management has been in constant positive evolution, compliance monitoring and enforcement has been a very marginal preoccupation of Moroccan authorities. This is explained in part by the regulatory culture being largely based on negotiations, consensus-building and voluntary approaches. Other factors might have been the need to put in place a modern regulatory system, a task that attracted most of the administrative resources over recent years. At the same time, there are strong signals that the current approach to compliance fails to address environmental challenges that are gradually becoming economic and development challenges. The Government thus needs to rethink its approach to establishing an incentive framework for higher environmental performance.

A great part of the compliance assurance problems are rooted in the fact that the Moroccan environmental legislation remains partly obsolete, with significant gaps and largely unenforceable. Enforceability is of particular concern. Multiple secondary acts that further explain the legislation are lacking. Their development, in some cases, takes decades, during which the law remains just a piece of wishful thinking. The laws on water and on air are eloquent examples in this regard. Many of the legal requirements do not approach, by far, the strictness and ambition of good international practice. There is hardly any quantitative information that would permit understanding of the procedural and substantive impact of existing laws.

Recommendation 2.1:

The Government should align national regulatory requirements for large installations, emission limit values for air and water, and environmental liability regimes with good international practices by:

- (a) Making a detailed assessment of remaining secondary legislation that must be developed and closing the gaps identified;*
- (b) Aligning procedural requirements of environmental laws with good international practice;*
- (c) Adopting and systematically using better regulation principles, such as simplicity, enforceability, feasibility and participatory development;*
- (d) Introducing and monitoring indicators of environmental compliance.*

Stronger focus needs to be put on EIA and permitting, i.e. the translation of general legal requirements into requirements for specific projects or installations. While EIA procedures have been legally binding since 2008, their application remains unsystematic. Particularly sporadic is the use of public hearings. The delegation of the EIA function to the subnational level helped to increase the number of projects undergoing environmental scrutiny, although capacity problems at the subnational level still need to be addressed. The scope of EIA is insufficient, with projects that are likely to have significant impacts escaping the EIA procedure. As concerns

permits, these exist only for some media. Integrated permitting of large installations is not applied at all. While some sector-specific requirements are under development, they mostly concern large and medium-sized installations and are less adapted to small and medium-sized enterprises.

Recommendation 2.2:

The Ministry of Energy, Mines, Water and Environment should improve the current EIA procedures and adopt modern permitting practices, in order to effectively enforce the existing EIA procedures, and in particular their public participation element. In particular, the Ministry should:

- (a) Review the list of projects subject to EIA and adjust the respective annex to Law 12-03;*
- (b) Systematically review actual EIA practices at the subnational level and provide quality control, quality assurance and capacity development, where needed;*
- (c) Review the classification of industrial installations, possibly using the European Union's relevant legislation as a benchmark;*
- (d) Introduce environmental permits for emissions of pollutants and waste generation to ensure compliance, with integrated environmental permitting when enterprises need a permit for more than one medium.*

While there are environmental inspectors in Morocco, it cannot be said that there is any system of compliance monitoring. Site visits are mostly ad hoc and their number does not compare, by far, to the size of the regulated community. Inspection planning (to the extent it exists at all) is not based on risk analysis. Resources dedicated to the compliance monitoring function are very limited and, in the majority of cases, this function suffers from being sacrificed because of competing tasks carried out by the respective officials. As concerns the regulated community, self-monitoring is just beginning to get under way and is hardly used by industry apart from the front-running cement industry and a few large enterprises, mostly with foreign capital.

Recommendation 2.3:

The Ministry of Energy, Mines, Water and Environment should give higher priority to compliance monitoring by:

- (a) Delegating adequate powers and resources to the corps of environmental inspectors, which should be strengthened, particularly at the subnational level;*
- (b) Making a comparative analysis of national and international environmental legislation, with a view to improving the effectiveness of relevant national legislation in addressing cases of non-compliance;*
- (c) Agreeing on an enforcement strategy that is guided by the principle of proportionality, with responses to non-compliance applied in accordance with the enforcement pyramid;*
- (d) Establishing a system of planned, risk-based verification of compliance with at least annual inspection of installations posing high risks;*
- (e) Making self-monitoring and self-reporting standardized requirements clear and unambiguous, and phasing them in in all sectors.*

Several compliance promotion tools are currently used by the Government. In some cases, they bear fruit, e.g. the cement sector's environmental performance was substantially improved based on dialogue with government authorities. There are important corporate initiatives and supporting institutions, such as the Moroccan Clean Production Centre. Nevertheless, compliance promotion is not sufficient as scope and existing activities are rather scattered. The effectiveness of some voluntary tools raises questions. There are no tools that would involve the public putting pressure on industry to perform better, while reputational sanctions may be quite effective due to the country's culture.

Recommendation 2.4:

The Government should continue to facilitate voluntary measures by private sector actors while, in parallel, enabling indirect environmental regulation and enforcement by non-governmental actors, such as insurers, banks and the general public. To this end, the Government should:

- (a) Further develop sector-specific guidelines in support of environmental compliance and provide capacity-building;*

- (b) *Establish a web-based platform that would bring together all promotional and awareness-raising compliance materials;*
- (c) *Strengthen its partnership with the Moroccan Clean Production Centre and help it to extend its activities to small and medium-sized enterprises;*
- (d) *Periodically analyse the results of voluntary agreements in order to increase their effectiveness and terminate those that have not achieved their goals;*
- (e) *Promote voluntary disclosure of environmental management practices by enterprises and establish an environmental performance rating of industries based on the information disclosed.*

Chapter 3: Environmental monitoring, information and education

Air and bathing water are the two media that are being regularly monitored in Morocco. Water measurements in non-bathing surface waters and in groundwaters have been made sporadically. A robust legislative framework for monitoring and a comprehensive assessment of environmental media (air, water, soil and biodiversity) are lacking. There are a number of policy tools developed by UNECE (such as guidelines on air, water, biodiversity and soil contamination monitoring) and other international organizations and institutions that could be used by Morocco in its work on developing the environmental monitoring and assessment system.

The current structure in the Department of Environment is not appropriate to establishing and implementing a comprehensive environmental monitoring system. Efforts are being made to develop a shared environmental information system in Morocco. At the same time, there is no concrete policy document that outlines the necessary activities for efficient elaboration and subsequent implementation of such an information system.

Recommendation 3.1:

The Ministry of Energy, Mines, Water and Environment, in cooperation with other relevant public authorities, including regional environmental bodies, should draft legislation on environmental monitoring, assessment and reporting on all environmental media (air, water, soil and biodiversity), waste, noise and vibration, and radioactivity, to support national and international reporting obligations. The legislation should address data quality, classification issues and monitoring. It should also designate a technical institution to address, among other things, the development and coordination of all environmental monitoring activities at the national level, as well as overseeing such activities at the regional level.

The development of an integrated information system for environmental data (ISED) has been ongoing since 2010. It generally follows the shared environmental information system (SEIS) principles. The information is structured following the DPSIR (driving forces-pressures-state-impacts-responses) approach. At the same time, there is no concrete policy document that outlines the necessary activities for efficient elaboration and subsequent implementation of an ISED. For instance, an adequate data validation system or mechanism, as a prerequisite for ensuring the accuracy and comparability of data, is lacking.

Recommendation 3.2:

The Ministry of Energy, Mines, Water and Environment, in cooperation with other relevant public authorities, including regional environmental bodies, and other stakeholders, should continue working towards the establishment of an integrated environmental information system that should provide relevant comprehensive, accurate and publicly accessible information on the state of the environment. Future steps should include:

- (a) *Establishment of standards to regulate methodologies and procedures in the collection of, access to and protection and uniformity of environmental data and information in the related institutions and the country as a whole;*
- (b) *Preparation of appropriate secondary legislation on different environmental areas related to data acquisition and sharing between the Ministry and other stakeholders;*
- (c) *Identification of a core set of environmental indicators to support decision-making;*
- (d) *Creation of a nationwide multi-media (i.e. covering releases to air, water and land) pollutant release and transfer register (PRTR), which should constitute publicly accessible online inventories of pollution from point and diffuse sources.*

Morocco is on a good path towards ensuring the availability of and access to environmental information. The environmental information centre of the Department of Environment is open to the public and makes electronic copies of environment-related articles available on its website for public use.

The website of the Department of Environment is expected to gradually evolve into a user-friendly portal, since most of the national programmes and activities related to the environment have their own websites. One challenge is to ensure timely updating of the website, as well as to maintain it technically. Furthermore, an effective legislative framework on public access to environmental information has not yet been completed by Morocco.

Recommendation 3.3:

In order to implement provisions of the Constitution related to access to environmental information, the Ministry of Energy, Mines, Water and Environment should speed up the drafting of the law on public access to environmental information and promote its adoption by the parliament.

Morocco carries out a multitude of activities promoting environmental education (EE) and education for sustainable development (ESD). EE is integrated into the primary, secondary and high school curricula in the form of specific programmes. Education and training courses of study related to the environment and sustainable development are provided by several universities. Some universities offer a master's degree on environment and sustainable development.

The Department of Environment conducts an annual training programme to develop the capacity of civil servants in the area of environmental project management. Some 100 people are trained annually. There is, however, no comprehensive strategy and related action plan on ESD.

Recommendation 3.4:

The Ministry of National Education, the Ministry of Higher Education, Scientific Research and Executive Training, and the Ministry of Habous and Islamic Affairs, in cooperation with the Ministry of Energy, Mines, Water and Environment, the High Council for Education and other relevant public authorities, media representatives, NGOs and other stakeholders, should coordinate the development of a national strategy for environmental education and education for sustainable development.

Chapter 4: Economic instruments and expenditures for environmental protection

Morocco has made some progress as regards the use of economic instruments designed to create incentives for more environmentally friendly behaviours by households, businesses and other entities. A major lack is air pollution charges and effluent charges for major pollutants. The legal framework for water pollution charges (effluent charges) has been established, but the implementation regulations remain to be finalized. General ELVs will be published by the end of 2013 and ELVs for about 30 industrial activities are currently under negotiation with relevant industries. Moreover, the legislation does not cover the discharges of used water into the sea, which accounts for the large bulk of wastewater discharges. There are no plans to introduce taxes on emissions of air pollutants. Fines and sanctions for non-compliance with environmental standards (notably air, water and waste) are stipulated in the legislation but, in general, they are not applied.

The main instrument used in Morocco to create financial incentives for enterprises to shift to less polluting modes of industrial production are subsidies (grants), mainly under the umbrella of the Fund for Industrial Depollution and, more recently, the "Voluntary mechanism for the depollution of industrial water".

Recommendation 4.1:

The Government should:

- (a) Take the necessary measures for the effective implementation of pollution charges for the discharge of wastewater into surface water;*
- (b) Develop the necessary secondary legislation for the application of monetary fines, at an adequate level, for non-compliance with environmental standards established in the corresponding legislation;*
- (c) Evaluate the impact of environmental regulations concerning industrial air pollution and the potential role that could be played by a tax on emissions of major pollutants.*

Municipalities have been assigned the legal responsibility for the provision of communal services (waste, water supply and sewerage, and electricity supply) but the operational responsibility has been predominantly transferred (based on delegation contracts) to autonomous public utilities, private companies, or ONEP (in the case of water services) and ONE (electricity).

Tariffs for these various services are all regulated by the State. There is notably no independent national regulator for water services and the electricity market. Tariff setting in many urban and rural communes does not ensure the recovery of operating costs, which makes operators dependent on state subsidies. This, in turn, endangers the financial sustainability of these services. In the water sector, moreover, the block tariff system for domestic water uses leads to a massive subsidy for the well-off households given the level of the lowest block tariff, which does not allow recovery of even the wholesale price of water.

Agriculture is a key sector of the Moroccan economy. The Green Morocco Plan launched by the Government aims at strengthening the role of the sector by shifting to higher-value-added products and less water-intensive crops. This, in turn, will require mobilizing important financial resources for the necessary investments including in the irrigation systems. These investments make it even more important to ensure that tariffs for irrigation water are at a level that allows the recovery of operating costs (including maintenance and renewal investments) to ensure the financial sustainability of the irrigation networks, which is not the case in many perimeters.

Recommendation 4.2:

The Government should:

- (a) *Establish an independent national regulator for water sector services (drinking water, sewerage, irrigation), as well as for the electricity markets;*
- (b) *Implement a (gradual) tariff reform designed to improve cost recovery and ensure the financial sustainability of the water sector services operators;*
- (c) *Introduce a system of targeted social assistance for low-income households that cannot afford the reformed tariff structures, in order to ensure that they have adequate access to water supply, sewerage and electricity.*

The Moroccan Compensation Fund has for a long time been operating a subsidy scheme for a range of petroleum products (motor fuels, fuel oils and butane gas) as well as some foodstuffs (sugar, flour). As regards petroleum products, this is basically a system of environmentally harmful subsidies because it encourages overconsumption by keeping prices significantly below the cost recovery level and leads to a bias in industrial investments towards technologies based on intensive use of fuel oils. As regards private households, moreover, the main beneficiaries of the subsidies are those in the upper income groups rather than the poor. In addition, in a context of limited State budget resources overall, the funds used for subsidizing petroleum and food products are drawing resources away from important sectors such as health, education and basic infrastructure. The magnitude of the subsidies is considerable, which has serious implications for the planning and sustainability of government finances.

Recommendation 4.3:

The Government should:

- (a) *Reform the subsidy scheme operated by the Compensation Fund to ensure – via direct income transfers – the effective targeting of financial support to low-income households;*
- (b) *Develop a strategy for the phasing out of fuel subsidies.*

The current legal framework for dealing with environmental impacts in the quarrying sector is insufficient.

There is, moreover, no obligation for the operator to deposit a financial guarantee that will be reimbursed once the rehabilitation of the corresponding area has been completed as agreed.

Recommendation 4.4:

The Government should draft the necessary legislation (law and application regulations) for ensuring proper environmental impact assessment before the start of quarrying operations, as well as adequate rehabilitation measures (based on the deposit of a financial guarantee) at the end of the operations.

Financing the manifold environmental programmes and projects in a context of tight budget constraints has been a major challenge for the Moroccan Government, despite having access to significant foreign financial funds (loans and grants). It is, however, deplorable that the National Environment Fund, which was legally established based on the 2003 Law on Environmental Protection, has not yet become operational due to the lack of adequate secondary legislation concerning issues such as management, project selection, eligibility criteria and funding details.

Recommendation 4.5:

The Government should:

- (a) *Make the necessary arrangements for the National Environment Fund to become fully operational soon;*
- (b) *Endow the Fund with adequate resources to be able to effectively contribute to the urgently needed progress on environmental protection matters.*

Chapter 5: Implementation of international agreements and commitments

Morocco has acceded to a number of global and regional environmental agreements and is actively developing its international environmental cooperation. To meet the requirements of the ratified agreements, various programmes and action plans have been developed and foreign assistance has been sought to support formulation and implementation of these programmes and action plans. National environmental legislation is often not yet in conformity with international norms and concepts, and often neither implemented nor enforced.

Overall, Morocco is fulfilling its reporting obligations under the multilateral environmental agreements (MEAs). However, with regard to some conventions, the country failed to meet the deadlines or to submit some regular reports. For example, the biennial reports on legislative, regulatory and administrative measures taken to enforce the CITES for 2007–2008 and 2009–2010 were not submitted. Morocco did not meet the deadline for submission of the annual report on its CITES-relevant trade for 2011. It has failed to submit its initial national report under the Stockholm Convention.

Recommendation 5.1:

The Government should improve its reporting under the multilateral environmental agreements to which Morocco is a party, or in accordance with Morocco's obligations thereunder, where necessary.

Morocco has been a party to the Cartagena Protocol on Biosafety to the Convention on Biological Diversity since 2011. However, the country has not yet determined which entity in the Moroccan Government would take the lead in implementing the Cartagena Protocol. In addition, there is no approved legislation in Morocco regarding the introduction, use and marketing of GMO materials. Joining the ECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters and its Protocol on Pollutant Release and Transfer Registers would allow the country to obtain know-how and experience on access to information and on implementation of pollutant release and transfer registers (PRTRs).

Recommendation 5.2:

The Government should:

- (a) *Accelerate the establishment of a legal framework on biosafety;*
- (b) *Consider accession to the ECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters and its Protocol on Pollutant Release and Transfer Registers.*

The country is already building synergies with biodiversity-related agreements. The experience would bring benefits if it were applied to other environmental agreements, especially due to the fact that Morocco has ratified more than 100 MEAs.

Recommendation 5.3:

The Government should continue building synergies in its efforts to implement the various multilateral environmental agreements to which it is a party.

Chapter 6: Air protection

There is a lack of a comprehensive strategic vision for protecting air quality in Morocco, and separate actions are initiated by different ministries and other actors without a common national direction, an integrated view, and the prioritization and harmonization of actions. A strategic vision and programmatic framework would be of key importance when developing sectoral air protection policies. The planned air protection programme is urgently needed if the country wants to protect its population and the environment from the adverse effects of air pollution. Such a national programme is necessary for the environmental authorities to coordinate the information flows and actions with the other ministries and departments involved, e.g., the Ministry of Industry, the Ministry of Equipment and Transport; the Ministry of Handicrafts; the Ministry of Energy, Mines, Water and Environment; and the Ministry of Health.

Recommendation 6.1:

The Ministry of Energy, Mines, Water and Environment, in cooperation with relevant stakeholders and taking stock of measures already implemented, should:

- (a) Finalize the national programme on air protection covering all sectors with air pollution impacts by identifying priorities, designing prevention and abatement measures with time frames, and estimating the related budget;*
- (b) When ready, submit the programme to the Government for approval and promote its adoption by the parliament.*

The 2003 Law No. 13-03 on Combating Air Pollution contains all the necessary provisions to set up a system for the efficient management of air quality. However, most of the implementing regulations are long overdue and those that have been adopted provide an insufficient basis for taking action. Furthermore, the 2009 Decree No. 2-09-286 setting standards for air quality and the procedures for air monitoring is not complemented by regulations for using the information gathered in decision-making, for instance to warn the population about and protect it from pollution peaks and to regulate road traffic.

Similarly, the 2010 Decree No. 2-09-631 setting limit values for clearance, emission or discharge of pollutants into the air from stationary sources of pollution and the procedures for air monitoring, has to be applied to industrial plants. There are currently two voluntary initiatives to limit air emissions, based on international recommendations. No specific order for sectoral values has been adopted so far, although these have largely already been developed by the relevant public authorities. There are also no obligations on industry to self-monitor their emissions or to report them.

While the current voluntary approach through partnership with industry and the handicrafts sector may have shown some initial success, its limitations will be felt when partners taking voluntary actions and incurring additional expense begin to feel the inequity of their situation as others continue to pollute. A stricter command-and-control approach must inevitably be introduced, at least gradually. Therefore, it will be necessary that the Department of Environment be prepared to progressively implement control actions (chapters 2 and 10). In any case, when ELVs for various branches of industry are adopted, the Department of Environment has to ensure that proper monitoring and reporting of pollutants is done by industry. Furthermore, establishing technology-based emission limits should be considered for new or renovated sources. Industrial pollution hotspots identified through the emission inventories would be a priority for self-monitoring and self-reporting.

Recommendation 6.2:

The Ministry of Energy, Mines, Water and Environment, in cooperation with the relevant ministries and departments, should:

- (a) Speed up the elaboration of the implementing regulations called for in the Law on Combating Air Pollution and its implementing decrees, and promote their adoption, in order to make the Law operational;*
- (b) Finalize decrees on sectoral air emission limit values and ensure that self-monitoring and self-reporting are mandatory for the most polluting industrial facilities.*

The traditional pottery sector is an area of major concern, given the heavy emission of harmful pollutants into the air from pottery kilns in heavily populated areas. The Ministry of Handicrafts and the Department of Environment have combined their efforts to offer acceptable technical and financial solutions to the craftsmen to shift pottery kilns from wood to gas. For financial, technical and social reasons, local solutions, with equipment designed in Morocco, would be an interesting option to work on.

Recommendation 6.3:

The Ministry of Handicrafts and the Ministry of Energy, Mines, Water and Environment, with the support of the Mohammed VI Foundation for Environmental Protection and relevant stakeholders, should continue to work out technical solutions and incentives to shift traditional pottery kilns from wood to gas fuel.

Chapter 7: Water management

A range of legal, political and institutional processes exist through which stakeholders articulate their interests and decision-makers are held accountable in water resources management in Morocco. However, the effectiveness of all consulting bodies and the role of the High Council for Water and Climate has been doubtful since no meetings have been reported in recent years. Coordination, between different ministries and between subnational authorities, is therefore not accomplished. In addition, the same weak role of public participation occurs at WBA level, hindering stakeholders' involvement in supporting and auditing WBA.

The Department of Water is the national water authority responsible for the coordination of integrated water management. However, "water" needs to be viewed in the light of the definition of "water basin", which encompasses groundwater and surface waters – inland, estuarine and coastal waters, not just "freshwaters". Therefore, the consolidation of WBAs will contribute to reducing institutional fragmentation and better performance concerning resources regulation in the management of all water bodies, namely in water allocation permits, inspection and enforcement. Besides, the contribution of the WBAs to vertical coordination of the multiple scales at which water is used and managed will be reinforced. In water services, a regulator with strengthened capacity is needed for performance assessment and increased transparency and accountability, which would ultimately lead to increased sector efficiency.

Recommendation 7.1:

The Government should reinforce integrated water resources management at the institutional level, by:

- (a) Stimulating action by the High Council for Water and Climate to fulfil its strategic advisory role, with the involvement of water stakeholders;*
- (b) Extending the jurisdiction of water basin agencies to transitional and coastal waters in order to improve integrated water management;*
- (c) Creating an independent body for water services regulation, covering both drinking water and wastewater, with jurisdiction over public and private companies;*
- (d) Improving cooperation among the responsible actors.*

Because water policy increasingly relies on shared responsibilities, a clear vision is required to achieve momentum towards sustainable water management. The Ministry of Energy, Mines, Water and Environment has adopted the National Water Strategy, which aims at providing this vision of water resources management and achieving the National Water Plan, the legal document reporting the water policy.

River basin integrated management master plans (RBMPs) are important tools for planning and necessary in order to better manage the development of water resources.

The development of the master plans for a period of 20 years was entrusted, according to the Law on Water, to the WBAs, with coordination and cooperation with different stakeholders in the water sector. The consistency of the master plan documents focuses on the general framework and climate characteristics, natural and socioeconomic characteristics of the study area, the assessment of water resources both quantitatively and qualitatively and the water demand, the state of development and utilization of water resources, water demand by sector, and the definition of the different actions of integrating water resources in the river basin management plan and how to implement the plan.

An ecosystem-based approach and the establishment of climate change adaptation measures are additional features that should be included in the integrated river basin management master plans. Although current integrated river basin management master plans are a very good step, they are not always as comprehensive as they should be and require updating and revision. Further on, in order to address communication and information gaps, a common information resource centre should exist among WBAs and the central administration. Such a system will favour public participation, capacity-building and shared assessment of the situation. It could also be used as a decision-making support system that would deliver homogenous and transparent rules for licensing.

An excellent level of science and technology on water-related issues is available at Morocco universities and research centres (as international data banks confirm). If involved in planning and management activities, this capacity would support solutions to complex water problems, where knowledge is decisive.

Recommendation 7.2:

The Ministry of Energy, Mines, Water and Environment should reinforce integrated water resource management at the policy and legal levels by:

- (a) Revising the Law on Water accordingly;*
- (b) Submitting the National Water Plan and the river basin integrated management master plans (RBMPs) to the High Council for Water and Climate for consultation prior to their submission to the Government for adoption;*
- (c) Promoting a national water information system, as a part of the national environmental information system, which could be interoperable among all water basin agencies, would contain the geo-referenced inland water and maritime domains and a database of all water uses, and could produce an annual monitoring report on the implementation of the National Water Strategy and RBMPs.*

Climate change is an ultimate challenge for water resources management in Morocco but also a driver for resilient water supply systems. The water, food and energy nexus is increasing under scenarios of climate variability and urgently requires the adoption of *no-regret* measures. The most rational measures belong to a demand management approach that would comprise the residential, industrial, agriculture and energy sectors. Among the demand-side actions, it is possible to highlight the minimization of water losses in urban settlements and irrigation networks, as well as wastewater reuse. Wastewater reuse is expected to attain the goal of 100 per cent in 2030 according to the current National Programme of Sanitation and Wastewater Treatment and a wider application of such technologies could promote Morocco's leadership in this field, encouraging the creation of skilled jobs. From the supply side, aquifer recharge and rain harvesting in sustainable building practices should be mentioned as easy-to-implement measures. A policy of water transfers requires heavy investment and should include a transparent assessment of socioeconomic and resource costs within a transaction cost framework.

Recommendation 7.3:

The Ministry of Energy, Mines, Water and Environment should guarantee the security of water supply under scenarios of climate variability, by:

- (a) Preparing a national programme for more efficient water use, encompassing all sectors in cooperation with the National Office of Electricity and Drinking Water, existing private enterprises and municipal systems;*
- (b) Taking effective measures for artificial recharge of aquifers;*
- (c) Supporting efforts to reach the 2030 goal of 100 per cent of treatment of wastewater;*
- (d) Ensuring that climate adaptation and flooding risk concerns are properly reflected in the design of water supply systems in inland and coastal urban settlements, with the cooperation of the Ministry of Housing, Town Planning and Urban Policy;*
- (e) Implementing measures to mitigate erosion in the watersheds, with the cooperation of the governmental authority responsible for forests, and other relevant stakeholders.*

Close cooperation of the Ministry of Energy, Mines, Water and Environment with ONEE, private water companies, municipalities and the industrial sector is encouraged in order to reduce wastewater impacts. Appropriate technologies and sustainability concepts, in both WWTP design and sludge processing facilities that would recover resources and minimize operation costs are appropriate perspectives.

Integrated resource management would protect freshwater quality but also estuarine and coastal ecosystems and related marine economic activities (e.g. fisheries, tourism and recreation). Besides, the value of ecosystems services is being recognized at the intersectoral level, along with the need to protect the integrity of aquatic fauna and riparian ecosystems. Therefore, hydromorphological impacts require minimization in all water reservoirs disregarding this purpose (energy, irrigation or drinking water).

Recommendation 7.4:

The Ministry of Energy, Mines, Water and Environment should protect human health, aquatic ecosystems and biodiversity by:

- (a) Supporting sustainable and resource-recovery wastewater treatment strategies that discourage wastewater discharge into transitional and coastal waters;*
- (b) Implementing discharge standards for industrial and municipal wastewater into the environment, with values aligned with ecosystem resilience, and collect the corresponding pollution load charges;*
- (c) Implementing the National Strategy on Wastewater Sludge Management;*
- (d) Setting up a regime of ecological water flow and increasing the ecological connectivity of existing and new dams;*
- (e) Preparing, in cooperation with the Ministry of Agriculture and Maritime Fisheries, an action plan to reduce nitrate concentration in contaminated aquifers.*

Chapter 8: Waste management

Since 2003, various legal acts have been adopted to improve the waste management situation in Morocco. Further efforts are now needed to implement the current legislation and to create the skills and expertise needed at all levels. It is also necessary to assess how sustainable waste management can actually be planned in the long term and adapted to the country's needs.

Recommendation 8.1:

The Ministry of the Interior, in collaboration with the Ministry of Energy, Mines, Water and Environment, should continue strengthening capacity, especially in terms of human and financial resources, and developing expertise, especially by staff training, in waste management at the national and territorial levels.

Although the waste legislation provides for the collection of data on waste generation and disposal, no reliable data on waste management are available in the country. Data on MSW and industrial waste are based on estimations, a situation which does not support decision-making in waste management.

Recommendation 8.2:

The High Commission for Planning and the Ministry of the Interior, in cooperation with the Ministry of Energy, Mines, Water and Environment, should set up a system to collect data on generation and disposal of municipal and industrial waste according to international waste classification.

Currently, there is no separation of waste by type, which makes disposal of waste by incineration impracticable, as waste is currently 80 per cent organic matter. The establishment of composting facilities would decrease quantities of waste disposed of in landfills, and permit the incineration of other wastes, resulting in a substantial reduction of liquid and gas discharges. It would also result in the production of compost and biogas, which would lead to the creation of new jobs.

Recommendation 8.3:

The Government should promote mechanical-biological treatment of waste, in particular to stimulate recycling and the effective use of existing composting facilities.

In 2012, 14 controlled landfills are in use and five are being developed in Morocco. It is estimated that there are 300 illegal dumpsites that have to be closed and rehabilitated. It is expected that, by 2021, all illegal dumpsites will be rehabilitated. No environmental monitoring is performed around landfills and dumpsites.

Recommendation 8.4:

The Ministry of Energy, Mines, Water and Environment should ensure that environmental monitoring is performed around landfills and dumpsites.

The service life of a landfill lasts well beyond its operation and can be extended for decades. The costs of post-operational monitoring and landfill rehabilitation or clean-up can be considerable. There is no legislation in place in Morocco to assess these costs and to ensure funds are available to pay them.

Recommendation 8.5:

The Government should:

- (a) Conduct a study on the costs of the landfills under operation and development for the duration of their expected life cycles;*
- (b) Based on the results, ensure that the landfill tax is sufficient to cover the post-operational monitoring and rehabilitation of the landfills.*

Electrical and electronic equipment waste and used batteries are disposed of in Morocco with household waste, and cause harm to the environment. Since they contain precious metals, disassembling them at dumpsites is often an attractive option. However, this disassembly is not carried out appropriately, and creates a hazard for humans and the environment.

Recommendation 8.6:

The Government should:

- (a) Study the possibility of implementing collection and recycling systems for waste with a high pollution risk, such as electrical and electronic equipment waste, in order to prevent informal collection and disassembly, which are extremely harmful to human health and the environment;*
- (b) Consider, on the basis of the experience gained so far (e.g. with packaging wastes) promoting the principle of extended producer/importer responsibility, especially for electric and electronic equipment waste.*

Information describing the situation pertaining to medical waste is lacking. Several methods, such as shredding, autoclave units and incineration are currently being used to dispose of hazardous medical and pharmaceutical waste. However, even though many hospitals are equipped with an incinerator, most of these do not work or are obsolete. It is estimated that most of this waste is stored in public landfills, which is a serious problem, since it is not only a source of environmental pollution but also a potential source for the spread of infectious diseases.

Recommendation 8.7:

The Ministry of Health, in cooperation with the Ministry of Energy, Mines, Water and Environment, relevant territorial authorities and other stakeholders, should develop a national strategy for the safe disposal of medical and pharmaceutical waste. Such a strategy should aim to:

- (a) Strengthen capacity to handle the sanitary risks posed by this waste;*
- (b) Establish and ensure implementation of a master plan to manage hazardous medical and pharmaceutical waste;*
- (c) Establish and ensure implementation of regional master plans to manage non-hazardous medical and pharmaceutical waste;*
- (d) Strengthen the institutional, legal and regulatory frameworks regarding the management of medical and pharmaceutical waste;*
- (e) Build capacity of medical staff to manage medical and pharmaceutical waste.*

Chapter 9: Biodiversity and protected areas

Notwithstanding progress made, there are still substantial uncertainties concerning various aspects of the biodiversity of Morocco. As demonstrated in table 9.1, there are at least 382 species for which there is insufficient data and the status of which is unknown. Furthermore, knowledge gaps were highlighted by several respondents, including gaps relating to specific species/groups, genetic resources and ecosystems/sites.

While the Clearing House Mechanism of Biodiversity of Morocco established in connection with the Convention on Biological Diversity is contributing to a more synthesized knowledge base for Morocco, this is not yet sufficient and further investment in knowledge-building (for infrastructure, research and human capacity-building) is crucial.

Recommendation 9.1:

The Ministry of Energy, Mines, Water and Environment, together with the Ministry of Agriculture and Maritime Fisheries and the High Commission for Water, Forestry and Desertification Control, in cooperation with other relevant governmental bodies, the scientific community and international donors, should conduct a systematic analysis of knowledge gaps relating to Moroccan biodiversity, which would provide the basis for a research plan to address the gaps identified, and which should be accompanied by a comprehensive needs assessment and an action plan.

While Morocco has made substantial progress in extending its network of protected areas and in building a suite of management and regulatory plans, policies and laws, there is substantial evidence to suggest that practice falls short of set targets and objectives, with problems of enforcement and implementation. In this regard, it is crucial that evaluations of management effectiveness be institutionalized, in order to allow for “real” adaptive management and to ensure that conservation resources are being put to the most efficient use possible. In parallel, technical and human capacities for better implementation and enforcement need to be built.

Recommendation 9.2:

The Ministry of Energy, Mines, Water and Environment and the High Commission for Water, Forestry and Desertification Control, in cooperation with the managers of protected areas, conservation bodies and NGOs, should:

- (a) Conduct evaluations of management effectiveness across protected areas and for other conservation plans/measures on a regular basis, with such evaluations institutionalized as part of the management process and considered to form a key part of adaptive management strategies, in order to ensure the conservation and sustainable use of natural resources;*
- (b) Build capacities for implementation and enforcement of conservation measures through financing, investment and training.*

Several key threats to biodiversity in Morocco appear to be intrinsically tied to socioeconomic development challenges; indeed, conservation initiatives that fail to consider the short- and long-term socioeconomic dimension appear to be of limited feasibility. It is difficult to persuade people of the necessity of biodiversity conservation when their basic livelihood needs are not being met and where the use of natural resources (legally or illegally) goes some way towards alleviating hardship.

While there have already been efforts to integrate the two goals of conservation and socioeconomic development, further investment in this area is crucial, particularly for conservation of specific ecosystem types (e.g. forest ecosystems). The recategorization of national parks, as a result of the 2010 Law No. 22-07 on Protected Areas, may provide a useful opportunity for undertaking such an exercise to better integrate conservation and development agendas, within protected areas.

Recommendation 9.3:

The High Commission for Water, Forestry and Desertification Control, in cooperation with the Ministry of Energy, Mines, Water and Environment, should:

- (a) Integrate conservation planning needs with socioeconomic concerns when preparing management plans for protected areas in order to reduce the pressure on biodiversity while also catering to socioeconomic needs;*
- (b) Raise public awareness of biodiversity conservation matters.*

There is a lack of integrated management across different sectoral areas as a major limiting factor for effective biodiversity conservation, with disjointed initiatives and, in some cases, the setting of conflicting objectives by different authorities, with evidence also of competing agendas. This results in resources being put to ineffective use, and casts doubt on the utility of a number of the plans/policies established. A key priority for more

effective biodiversity conservation, therefore, needs to be the establishment of theme-based cross-sectoral initiatives that seek to develop coordinated, and mutually agreed-upon, strategic instruments for subject areas/sites which are of interest to different sectors.

Recommendation 9.4:

The Government, in collaboration with the scientific community and other relevant stakeholders, should review the main activities on biodiversity conservation in the country and develop proposals to promote cross-sectoral and interdisciplinary initiatives, especially in the areas of wetlands, water resources, agricultural land management, mining and tourism.

Morocco possesses many natural habitats of high ecological value. While some of these environments, such as nature reserves and national parks, enjoy legal protection, there are many that do not. In particular, oases and mountain areas are subject to various threats, such as overexploitation of natural resources, loss of crop area, siltation, flooding, droughts, water and wind erosion, and soil salinity. Strategic documents recognize the magnitude of the phenomenon, but also recognize the legal vacuum regarding the protection of these ecosystems.

Recommendation 9.5:

The Ministry of Energy, Mines, Water and Environment, the High Commission for Water, Forestry and Desertification Control, the Ministry of Housing, Town Planning and Urban Policy and the Ministry of Agriculture and Maritime Fisheries, in cooperation with other relevant stakeholders, should prepare legislation to protect sensitive oasis and mountain areas and promote its adoption by the parliament.

Chapter 10: Health and environment

Morocco is confronted with an epidemiologic transition characterized by a progressive decline in infectious diseases and an increase in chronic and non-communicable diseases. The health authorities are thus examining with growing interest the link between protection of the environment and the protection of public health.

The significant efforts undertaken since the early 2000s by the Government to protect the environment need to be enhanced and oriented as well as possible to better protect public health. It is advisable to minimize the exposure of the population to environmental factors likely to cause, either directly or in the long term, harmful effects on human health.

The organizational context created by the National Initiative for Human Development, the National Charter for Environment and Sustainable Development and the cooperation methods established between the relevant ministries and some particularly active institutional partners, such as the Mohammed VI Foundation for Environmental Protection, appears very favourable for the implementation of the cross-cutting actions needed to efficiently handle the environment and health interface. Nonetheless, the current legislation does not contain requirements on environment and health.

Recommendation 10.1:

The Ministry of Health, in cooperation with the Ministry of Energy, Mines, Water and Environment, should draft a coherent legal framework on health and environment and promote its adoption by the parliament.

The National Programme for Health and Environment and related regional plans are an excellent means to ensure efficient collaboration among key stakeholders, such as the Ministries of the Interior, Health, and Energy, Mines, Water and Environment, and all their external services whether at the regional, provincial or municipal level. These plans are a great tool for collaboration and synergy among public actors.

Recommendation 10.2:

The Ministry of Health, the Ministry of Energy, Mines, Water and Environment, the Ministry of the Interior and the Ministry of Agriculture and Maritime Fisheries, with other relevant stakeholders, should ensure that regional plans for health and environment are implemented by enhancing the existing cooperation.

Coastal tourism is a sector of great economic importance for Morocco and therefore special attention should be paid to the quality of bathing waters to provide sanitary conditions along the coastline. The process of developing bathing water profiles is an essential tool for progress in this area.

Recommendation 10.3:

The Ministry of Health, in cooperation with the Ministry of Equipment and Transport and the Ministry of Energy, Mines, Water and Environment, the Mohammed VI Foundation for Environmental Protection and other relevant stakeholders, should work out a legal framework relating to bathing water profiles in order to accelerate the improvement of human health and environmental quality in the coastal areas.

An environmental health information system is needed to identify indicators that contribute to the analysis of the links between environmental degradation and health problems. The implementation of such a system will require several years and the development of consistent approaches by contributors. The regional level appears to be where such initiatives can best be developed, as part of the regional organization in progress.

Recommendation 10.4:

The Ministry of Health, in collaboration with the regional health departments, the regional observatories of the environment and sustainable development, and the Ministry of Energy, Mines, Water and Environment, should elaborate a health and environment information system compatible with the integrated information system for environmental data and WHO standards and guidelines for information, to be run during the first stage at the regional and national levels, with access to data at the provincial and communal levels.

Demographic and social trends, including the inversion of the rural–urban balance, recent modifications in the lifestyles of the population and ongoing economic development in the country have brought with them very significant changes and have led to the population being exposed to various new environmental factors. The phenomenon of intense suburbanization and urban sprawl that the country is facing is of major concern for governmental institutions responsible for health and planning, particularly the urban development authorities. Public health issues are appearing, such as unhealthy housing, poor drinking water supply, the absence of wastewater connection and poor solid waste management.

Recommendation 10.5:

The Ministry of Housing, Town Planning and Urban Policy, in collaboration with the Ministry of Health and the Ministry of Energy, Mines, Water and Environment, should develop a strategy on how to effectively address the health and environmental implications of suburbanization and urban sprawl.

Environmental health impact studies are lacking in EIAs, in some cases. The development of these health impact studies requires the ability to rely on players with a very good knowledge of the potential health effects resulting from either low-dose exposure, or long or short exposure to high doses.

Recommendation 10.6:

The Ministry of Health, in collaboration with the Ministry of Energy, Mines, Water and Environment, should promote eco-epidemiological studies to specifically assess the impact of air pollution on human health and develop health impact assessment methodologies for inclusion in the study records of impact on the environment, since there may be a risk to human health.

Significant pollution of the air or water can quickly and seriously threaten the population. However, there is a lack of an events warning system that would allow the authorities to deal effectively in the event of extreme pollution events.

Recommendation 10.7:

The Ministry of Energy, Mines, Water and Environment, in cooperation with the Ministry of Health and other relevant stakeholders, should implement an early warning system in the event of extreme air and water pollution episodes.

The food analyses performed by the Ministry of Health focus on microbiological parameters. The need to better assess health risks associated with chemical contamination has significantly increased and it is now necessary to strengthen controls of physico-chemical quality.

Recommendation 10.8:

The Ministry of Health should:

- (a) Reinforce the national system for assessing risks to human health from the chemical contamination of food, based on relevant international guidelines;*
- (b) Actively participate in international programmes on the exchange of information on risks to human health from the chemical contamination of food.*

Health risks associated with contamination of drinking water is a major concern because of the risks to the population. WHO guidelines on security plans for the supply of drinking water have not yet been implemented in Morocco.

Recommendation 10.9:

The Ministry of Health should develop and implement water safety plans for drinking water in accordance with WHO guidelines.

The action plan for the integrated management of vector control was initiated in Morocco in 2007. Its implementation is foreseen on the territory but has not been achieved.

Recommendation 10.10:

The Ministry of Health should ensure that integrated vector control management (IVCM) is implemented throughout the country by, inter alia, establishing IVCM committees at the territorial level.

Chapter 11: INDUSTRY AND ENVIRONMENT

The Moroccan industrial sector increased its production levels between 2003 and 2009 by some 7 per cent on average. This result would have been some 10 per cent if there were not the decline in 2009 that was linked to the slowdown in the global economy. Nevertheless, the decline was reversed in 2010 and the added value generated by industry grew continuously until 2011, even during the 2009 production decline. This allows the conclusion that, based on the economic indicators, the industrial sector is developing well in Morocco.

To evaluate whether this industrial development was also sustainable would require data on the environmental pressures caused by industry. Unfortunately, such data are not available and thus it is not possible to assess whether the development has been neutral for, or at the cost of, the environment. The lack of data may suggest, however, that the environment and its protection have not been taken fully into account in the economic development of Moroccan industry in recent years.

Recommendation 11.1:

Following the proposal by the Ministry of Energy, Mines, Water and Environment, the Government should approve a decree establishing an effective mechanism for collection and validation of data on pressures by industry on the environment inspired by international pollutant release and transfer register (PRTR) experience and specifying:

- (a) The type of data, their format and the frequency of collection;*
- (b) The authorities, by responsible departments, that would collect data from industry, and validate and assess them.*

Different industrial activities can cause different pressures on the environment due, for example, to the type of activity, its size or substances used. The activities are therefore categorized into groups within which a similar kind of pressure is exerted, where groups of activities exerting higher pressure have more stringent requirements imposed upon them in respect of authorization to operate, including with regard to the type and frequency of data collection. The existing categorization of Moroccan industry is not based on the environmental pressure principle. As a consequence, industries gain operational authorization without adhering to pollution limits. In addition, there is no link between the category of industrial activity and inspection frequency; thus, industries in higher pressure categories are not even subjected to more frequent inspection.

At the same time, pollution limit values can be introduced, to some extent, in the terms and conditions for operation that are agreed during the EIA process for new installations. Nevertheless, it is not clear how these limits can be imposed on industry when there are no relevant regulations by which the limits would have been brought into force, apart from the orders on DLVs for five particular sectoral industrial activities.

Recommendation 11.2:

The Government should revise the Dahir of 1914 relating to the authorization of industrial activities to include the categorization of activities based on the environmental pressure principle, with activities exerting higher environmental pressures categorized into classes to which more stringent requirements apply, and promote the adoption of the revised law by the parliament.

Recommendation 11.3:

The Ministry of Energy, Mines, Water and Environment, in cooperation with other relevant stakeholders, should:

- (a) Speed up defining emission limit values and discharge limit values for sectoral industrial activities based on best available technology, and link them with the categorization/authorization system;*
- (b) Introduce a flexible approach, which would permit industries, where this is not economically feasible, to be exempt from implementing best available technology.*

Another weakness of the legal framework of Morocco pertaining to industry is the lack of legislation on prevention of and preparedness for industrial accidents. Such legislation obligates industries processing or storing hazardous substances to operate only upon receipt of a safety licence. It also defines the scope of safety documentation linked with a degree of hazard as well as methodologies and methods used for hazard and risk identification and assessment. It sets the inspection frequency linked to the degree of hazard and also links hazard and risk identification and assessment with the preparation of contingency plans. The UNECE Convention on the Transboundary Effects of Industrial Accidents (<http://www.unece.org/env/teia.html>) or guidelines prepared by UNEP – Flexible Framework for Chemical Accident Prevention: Guidance for Governments (<http://www.unep.fr/scp/sp/saferprod/initiatives.htm>) provide a good basis for elaboration of a national legal system on prevention of and preparedness for industrial accidents.

Recommendation 11.4:

The Ministry of Energy, Mines, Water and Environment, in cooperation with other government institutions such as the Ministry of the Interior, should elaborate a comprehensive legal basis for the prevention of and preparedness for industrial accidents.

The programme for industrial clean-up helping industrial enterprises, in particular SMEs, to invest in technologies protective of the environment in Morocco proved to be useful in accelerating the transition to sustainable industrial development. The source of funding within the programme, however, cannot rely only on international donors but must also be based on domestic financing. A possible source of financing could be fines paid for non-compliance with environmental norms and standards, or fees for the use of environmental resources. Thus, the source of funding could be linked to bringing into force the user-pays and polluter-pays principles. Nevertheless, there are gaps in the legal environmental framework which do not allow this, yet.

Apart from the clean-up programme, the efforts and initiatives undertaken by Moroccan industrial associations as well as the Moroccan Clean Production Centre (CMPP) are also crucial for accelerating the transition to sustainable industrial development. What would further benefit industry as well as the country is for the Government to continue to work with the associations in promoting good environmental practices through the preparation of useful guidelines (e.g. on the first steps in environmental management) or working out concrete, businesslike solutions (e.g. the waste exchange) for industry.

Recommendation 11.5:

The Government should:

- (a) Identify and implement solutions to ensure funding for the industrial clean-up programme when the international donor support ends;*

- (b) *Continue to improve cooperation with industrial associations to further accelerate the transition to sustainable industry.*

Chapter 12: Energy and environment

As required by Law No. 13-09 on Renewable Energy and Law No. 12-03 on Environmental Impact Assessment, EIAs are carried out on energy development projects at the planning phase. At the same time, self-monitoring and self-reporting by operators on the impacts on the environment once projects become operational are lacking in this sector. The 2010 Decree No. 2-09-631 setting limit values for clearance, emission or discharge of pollutants into the air from stationary sources of pollution and the procedures for air monitoring recommends voluntary self-monitoring and annual self-reporting.

Recommendation 12.1:

The Ministry of Energy, Mines, Water and Environment should propose to the Government that it revise the 2010 Decree No. 2-09-631 to ensure environmental self-monitoring and self-reporting by energy operators, among other operators that cause significant adverse environmental impacts.

No specific secondary legislation for sectoral ELVs for the energy sector – TPPs and refineries – has been adopted so far, which means that the 2010 Decree No. 2-09-631 setting limit values for clearance, emission or discharge of pollutants into the air from stationary sources of pollution and the procedures for air monitoring should be applied to the energy sector. At the same time, application of this Decree is only an intermediate solution, as the general limits cannot properly address emissions in sectoral activities.

The Government strategy related to energy efficiency aims at reducing Morocco's vulnerability to fossil fuel markets and increasing national economic competitiveness, and thus decoupling economic growth from increased carbon emissions and moving towards a low carbon economy. Energy audits for big energy consumers and for enterprises and facilities related to energy production, transmission and distribution are mandatory according to Law No. 47-09 on Energy Efficiency. Energy impact assessments for new big construction and urban projects are also required by the same Law. However, effective application of the Law requires the adoption of threshold values for economic actors for which the audits and energy impact assessments will have to be applied.

Recommendation 12.2:

The Ministry of Energy, Mines, Water and Environment, in cooperation with the relevant ministries and departments, should finalize secondary legislation on:

- (a) *Sectoral air emission limit values related to energy sources, especially for combustion plants;*
- (b) *Threshold values for energy audits and energy impact assessments, as called for in Law No. 47-09 on Energy Efficiency.*

The funding available in the Energy Development Fund can cover less than 10 per cent of the estimated investment needs for the planned projects on energy from renewable sources. The realization of the country's renewable energy programmes requires that incentives be offered to private investors in order to attract them to participate in the financing of these development projects. However, such incentives are not offered at the moment in Morocco.

Electricity prices for end-users are regulated and are below the recovery cost of electricity generation and transmission. Such a situation discourages rather than attracts private investors to join renewable energy development projects. In turn, this may mean that the plans to achieve an installed capacity of some 42 per cent for electricity generation from renewables may not be realized by 2020.

Recommendation 12.3:

The Government, supported by the National Agency for the Development of Renewable Energy and Energy Efficiency, should:

- (a) *Create incentives for private investors to attract them to co-finance renewable energy projects;*

- (b) *Reconsider its electricity pricing policies to allow electricity companies to recover the costs of electricity generation and transmission from renewable sources.*

Chapter 13: Agriculture and environment

Over the past several years, Morocco has been engaged in a vast range of ambitious structural reforms in the agricultural sector.

The launch of the PMV in 2008 not only aims to optimize and increase the productivity of all agricultural inputs, and in particular water, but also has a specific sustainable development component aiming to ensure that all natural resources are protected in the course of modernization of the country's agriculture. The PMV implements agricultural reforms taking environmental considerations into account. A number of measures have already been taken under the auspices of the Plan, such as the adoption of relevant legal provisions and the initiation of EIAs.

The Agency for Agricultural Development is carrying out a 10-year water conservation programme, mainly built upon the implementation of drip irrigation techniques on an area of 550,000 ha, at a rate of 55,000 ha/year, with the objective to save 1.4 billion m³ of water. The Agency is halfway into its 10-year programme.

Recommendation 13.1:

The Ministry of Agriculture and Maritime Fisheries, in cooperation with the relevant authorities, should perform an interim assessment of the plans and projects under the umbrella of the Green Morocco Plan and present the conclusions to the Government, focusing on the environmental benefits of increasing the consolidation and overall security of land tenure of agricultural producers and support for the use of sustainable agricultural techniques assisted by intensified extension services.

Agricultural soils are under tremendous pressures resulting from desertification, the intensification of agriculture, the negative impacts of the multiplication of dams all over the country and the inadequate control of phytosanitary products. While there is a clear strategy to combat desertification, none exists for the protection of agricultural lands that are not affected by desertification.

Recommendation 13.2:

The Ministry of Agriculture and Maritime Fisheries should define and implement a national agricultural soil protection strategy focusing on environmentally friendly farming methods protecting soil, saving water, promoting adaption to climate change and capable of co-producing food, fodder and energy biomass.

The creation of the National Office of Food Safety (ONSSA) is a notable achievement in the country's institutional framework. However, the safety of whole food chains (the safety of the red meat food chain, in particular, is a time bomb) and the uncontrolled use of phytosanitary products remain of concern. Responsibilities in these areas are spread among different public authorities. As a result, this agency ensures only partial control of the safety of food chains and lacks authority in many important areas of food chains and in the use of phytosanitary products. In addition, the financial and human resources of ONSSA, as well as its knowledge base, are not in line with its strategic role in securing the country's food-related health, safety and environmental protection.

Recommendation 13.3:

The Government should:

- (a) *Give the status of autonomous agency to the National Office of Food Safety;*
- (b) *Place this agency under the authority of the Chief of the Government, since its mandate covers subject matters currently falling under many important ministries;*
- (c) *Secure and sustain the Office's human and financial resources.*