

Royaume du Maroc



LE MAROC

UN ENGAGEMENT MODÈLE POUR LE CLIMAT

What strategic vision on adaptation to climate change in Morocco?

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Introduction

Today, climate change is a reality which is affecting the entire world. The impact of human activity on climate change is well-established. Climate change is currently viewed as one of the most serious threats to sustainable development in our planet.

Because it affects all countries, regardless of their geographical location - albeit at varying degrees - climate change has become a global issue. However, environmental degradation induced by the effects of climate change is not the only cause of insecurity; rather, it is a catalyst for the exacerbation of this phenomenon.

Even if there were to be no further greenhouse gas emissions in the atmosphere, climate change impacts will continue to be felt over the long term, sparing no region and no nation, that is if indifference were to prevail.

The reports of the Intergovernmental Panel on Climate Change and many recent research works and studies underscore the urgent need to act in order to tackle climate change. They also warn against inaction which could lead to future situations that would be hard to manage.

The Tangier Call made in September 2015 by His Majesty King Mohammed VI and President François Hollande advocates determined, collective, solidarity-based climate action. The fight against climate change is a fight for development. Adaptation to climate change should be no less important than mitigation of greenhouse gas emissions. The objective set is to keep global warming below 2°C by the end of the 21st century and achieve the transition to a low-carbon economy.

In Morocco, several indicators show a tendency towards global warming, combined with diminished rainfall over most of the country. Since the 1960s, average annual temperatures in Morocco increased by 0.16 °C per decade, and a significant decrease in the number of cold days has also been noted. In the same vein, spring rains have fallen by more than 40%, and the maximum duration of dry spells has increased by 15 days. Along with this trend, there has been an increase in extreme weather events, such as thunderstorms, showers, droughts, heatwaves and cold spells. Despite their random nature, such phenomena are likely to occur in very close frequency and with increasingly high intensity.

Morocco's water resource mobilization policy is recognized around the world. It was started in the early 1960s and has led to the construction of more than a hundred dams. In 1995, there was an overhaul of that policy, with a greater focus on managing demand than supply.

Other accomplishments were made, including the adoption of the Environment Charter, the national strategy for sustainable development, the new mechanism for the management of shorelines, the protected-area management plan, the strategy for the development of oasis zones and Argan tree grove, the integration of the climate change project in the implementation of the Green Morocco Plan.

Also, mention should be made of the 2009 energy strategy, which includes among its basic objectives energy efficiency and the development of renewable energy, in spite of the fact Morocco is a low greenhouse gas emitter. By 2020, 42% of the country's electricity production is expected to come from renewable sources.

1. IRES study program

Mindful of the nature of the challenges and threats Morocco is facing, the Royal Institute for Strategic Studies (IRES) embarked on a reflection exercise in late 2007 that addressed the complexity of the climate change issue from different environmental, political, economic and social perspectives. It examined adaptation possibilities through a holistic approach in order to address problems from a comprehensive perspective and come up with sustainable solutions that would be politically, economically and socially acceptable.

In the initial phase of this study program an ecosystem-based approach was used. Significant work was carried out by building on national expertise. It concerned such key issues as coastal areas, forest ecosystems, oases, mountains...etc. This work was supplemented by contributions made by international experts who took part in the meeting held by IRES in Rabat on 16 October 2009 on "Climate change: Adaptation challenges and prospects for Morocco".

This first phase of the study program led to the preparation, in early 2011, of a strategic report with recommendations for a national roadmap to make sure Morocco is prepared to rise to the challenge of climate change.

Building on the accomplishments made in the first phase of the study program, the second phase was based on two general guidelines:

- Continue to follow the approach of the Intergovernmental Panel on Climate Change, by tackling hitherto insufficiently explored research fields, and by undertaking periodical evaluations of the extent of knowledge on climate change;
- Give primacy to the security dimension, in keeping with IRES' strategic remit, with a view to assessing the effects of climate change on Morocco's development plans. The ecosystem-based approach, which requires a large amount of information that cannot be supplied by current observation systems, was abandoned in the second phase of the program. Instead, a more strategic approach was adopted to address water, food, health, economic and human security issues. IRES has opted for this concept although its definition is still loose and there is no consensual agreement on it.

As well as updating climate data, the second phase of the study program, which was founded on a holistic approach, looked into the effects of climate change on water resources and on security in many areas. It stressed the need for coherent sector-specific strategies and for mainstreaming climate change in those strategies. It also called for adapting their timeframe to take into account the long-term impacts of climate change.

Given the risks associated with climate change and the damage it can cause, the second strategic report identified

adaptation measures to reduce vulnerability as well as the exposure of societies and ecosystems to those impacts. It also included institutional measures relating to capacity building in the area of risk management.

By the end of November 2015, two strategic reports and a dozen thematic reports had been drawn up under the study program on climate change. 37 research fellows were involved and an international conference was held in addition to some twenty seminars which were attended by national and international experts.

2. Morocco's vulnerability to climate change and the IRES vision on adaptation

Morocco is particularly vulnerable to climate change. This vulnerability is compounded by its geographical location, its weather patterns, its extended coastline and its fragile ecosystems. Climate change represents a real threat for the country. If no appropriate responses suited to the challenges faced are proposed, the Kingdom's accomplishments and the prospects for economic, social and environmental development could be called into question.

According to several general climate models, Morocco is likely become warmer and drier, particularly in the last decades of the 21st century. The results of prospective studies on the future development of Morocco's climate patterns agree on a temperature rise, by 2100, of +1°C to +6°C, and a 20 to 50% decline in precipitation, compared to the 1960-1990 reference period.

Adverse weather conditions could affect all economic and industrial sectors, but the strategic sectors that would be impacted the most are those of water resources, agriculture and tourism.

Morocco's vulnerability to climate change can be seen in several areas:

Growing scarcity of water resources

Water resources per capita per year dropped from 4.074 cubic meters in 1950 to 670 cubic meters in 2010. Because of population growth and climate change, it could drop below 500 cubic meters in 2030. Considering the growing demand for water for domestic use as well as in the agricultural, industrial and tourist sectors, water scarcity could increase in the future, leading to greater use of groundwater resources.

Already today, the intensive use, during droughts, of groundwater resources - which constitute a strategic reserve - has translated into a continuous decline in groundwater levels of several aquifers. In most parts of the country, aquifer levels are alarming, and the quality of the water is at the lower end of the international standard.

Threatened food security

As a result of scarce water resources, food security is threatened since the agricultural production base is shrinking due to desertification; foodstuffs are becoming more expensive. Fisheries production may be impacted as well because of the degradation of coastal ecosystems that are important areas for the reproduction and growth of fish stocks.

Significant risks to public health security

Health security is also likely to be threatened given the resurgence of water-borne diseases and the outbreak of emerging diseases.

Freshwater scarcity and the degradation of its quality constitute a potential threat to human health, raising concerns about a spread of waterborne diseases. Because they are underdeveloped and poorly equipped, rural areas in particular would be more vulnerable to various pathologies. In the absence, for the time being, of health coverage in remote areas as well as inadequate supervision and a lack of funding, low-income populations would be particularly vulnerable.

Morocco's vulnerability in the healthcare sector is related, among others things, to endemic disease outbreaks that can be compounded by climate change, particularly malaria, bilharzia, typhoid and cholera.

Increased vulnerability of coastal areas, with potential impacts on economic security

The coastline is home to nearly 60% of the population, living within 100 km of the coast. It is home to 80% of the permanent workforce employed in the industrial sector, 53% of the tourist capacity and 92% of Morocco's foreign trade. Several areas of significant socio-economic, spatial and environmental importance are located in coastal regions, which may have to cope with a rise in sea level, with the erosion of some coastal fringes and a flooding of low-lying socio-economic infrastructure.

Serious threats to biodiversity

Morocco is known for its rich, diversified biodiversity. However, this biodiversity is currently suffering from erosion due to overexploitation of natural resources, habitat loss and fragmentation as well as pollution. Climate change is exacerbating this vulnerability, thus making the risk of biodiversity loss even bigger. Forecasts indicate that nearly 22% of national biodiversity could be lost by 2050.

Exposure to the impacts of climate migration

Morocco is concerned by the phenomenon of climate migration. The expected impacts of climate change on water, agriculture and health can increase social insecurity in the regions affected by environmental degradation, which may exacerbate rural depopulation. In addition to internal migration caused by growing aridity in a large part of the country, Morocco, which is a crossroads between Europe and Africa, could face greater migration from sub-Saharan Africa, whose extent is difficult to assess today.

Given the scale of the systemic threats to the sustainability of the Kingdom's resources and its development path as a result of climate change, a long-term, overall vision for the adjustment of public policy is necessary. Among other benefits, it would supplement the policy initiated by the Kingdom in the area of energy efficiency and the development of renewable energy, in which Morocco is playing a pioneering role at global level, particularly in solar energy. Through this vision, the focus should primarily be on vulnerable populations and sensitive geographical areas.

The IRES vision on adaptation to climate change, which will be supported by a roadmap for the development of the green economy and, subsequently, the blue economy, revolves around four key elements, each corresponding to a specific vulnerability:

❖ **Putting the water issue at the heart of public policy**

- **rethink the water strategy** by bringing it in line with sectoral strategies and adopting a long-term timeframe to ensure intergenerational equity as well as a pragmatic, flexible approach in order to adjust the water policy as more precise information on climate change becomes available.
- **carry out actions to ensure the country's long-term water supply** through the protection of aquifers, the substantial reduction of water losses in irrigation and urban distribution networks in addition to mobilizing non-conventional water resources, adapting water infrastructure to climate change, ensuring watershed protection and identifying appropriate solutions for inter-basin water transfers. Special attention should be given to combatting all types of water pollution.
- **foster collective appropriation of issues related to water by enhancing coordination between actors** and establishing arbitration mechanisms for an optimal allocation of water resources among different sectors; carry out a solid communications campaign to raise the awareness of stakeholders and citizens about saving water.

❖ **Make food security a strategic priorities** through the following:

- **pay greater attention, in the Green Morocco Plan and the Halieutis Plan, to current and future climate change constraints;** promote family farming and small-scale fishing, which contribute significantly to human development, and make the most of the great potential offered by the development of aquaculture.
- **build on the tremendous prospects offered by technical advancement in agriculture** by developing the educational system, promoting research and development and design programs to enhance farmers' technical and organizational capacities.
- **while taking the necessary precautionary measures, design and implement appropriate regulations on genetically modified plants,** ensure capacity building for the benefit of research institutions and provide the ONSSPA (the national office for the safety of food products) with adequate human and material resources to enable it to carry out its mission.

- **ensure capacity building of public and private actors involved in the country's food security programs** through the large-scale dissemination of weather and climate information, early warning of extreme weather events, crop forecasts and generalized use of climate risk management instruments, including agricultural insurance schemes, among others.
- **in a context marked by increasing prices of basic agricultural and food products, guard against erratic world market prices** by ensuring appropriate coverage against risk and making optimal choice of suppliers.
- **resort to social protection mechanisms** to enable vulnerable sections of the population to have continued access to household staples while making sure these subsidies do not represent a heavy burden for the state budget.

❖ **Enhancing health security in a context of expanding emerging diseases**, through:

- **the development of health infrastructure and the reassessment of the health map in light of the differentiated impacts of climate change**, giving priority to cities and the hinterland regions where impacts would be felt the most.
- **better monitoring of people's health through an efficient health surveillance system** which would be built upon to examine and anticipate health risks, reduce vulnerability and serve for regular campaigns to inform people on climate-related health hazards relating and their serious consequences.
- **preserving the environment, improving its quality and promoting a balanced diet** through nutrition education for the public.
- **accelerating generalized access to medical coverage, strengthening the financing of public health and improving its governance** through better control of spending and a reduction of malfunctions.

❖ **Preserve economic security by safeguarding the coastline and giving priority to strategic sectors**. In this connection, it is important to:

- **secure coastal development through the implementation of an integrated, multi-sectoral policy** providing for close coordination between the stakeholders concerned as well as the promotion of scientific research to broaden knowledge on the effects of climate change on the Moroccan coast, implementing, to this end, the new legislative and regulatory framework governing coastal areas and promoting a land use policy that would help bridge the coastline / hinterland gap.
- **increase the resilience of strategic economic activity to climate change, including agriculture and tourism**, through the adoption of a very long term vision and adapting sectoral strategies to the characteristics of the regions concerned in a context of climate change.

3. The need to revisit Morocco's development model and apply appropriate climate governance

❖ **Making the commitment to the green economy an important component of Morocco's development model**

Reducing environmental vulnerabilities in connection with the Moroccan development model would require the implementation of a national roadmap for the promotion of the green economy. The aim is to consolidate the Kingdom's policy choices for the promotion of renewable energy, energy efficiency and sustainable development in general.

The transition to a green economy provides a unique opportunity for Morocco to address, at the same time, multiple challenges relating to the environment and development. Several considerations support this view besides the need to combat the effects of climate change.

As well as unlocking its renewable energy potential to reduce its energy dependence vis-à-vis the outside world, Morocco should already be anticipating the emergence of new patterns of production and consumption and should thus invest in green economy sectors which are a major source of job creation.

To optimize the impact on the Kingdom's development policy, the green economy option should be implemented territorially, making sure there is a close correlation with strategies to combat poverty and social exclusion. The reference here is to the National Human Development Initiative (INDH), the social and solidarity economy, micro-financing for green projects, green micro-businesses, community energy services based on renewable energy...etc.

By turning the green economy into one of the country's global business lines, Morocco could easily shift its development model towards the blue economy, which is a concept inspired by the biomimetic cycle of nature.

❖ **Adopt a national risk anticipation and crisis management strategy to enhance Morocco's resilience to climate change**

In international negotiations, the climate risk issue has turned out to be a highly strategic question for developing countries, given the technical and financial issues involved. It is especially important for Morocco, a country which is increasingly affected by slow-impact extreme weather events - such as drought, aridity and water scarcity - as well as more violent weather events, such as floods, forest fires, swells and coastal flooding.

In view of the above, Morocco should develop a comprehensive, integrated strategy for risk anticipation and for the management of disasters relating to climate change and the environment in general. This strategy, which should comprise operational action plans, should consider all natural hazards as well as their economic, financial and social impacts. To this end, it should:

- rethink public policies in order to effectively integrate the concept of reducing climate and environmental risks; ensure crisis management on a territorial basis while paving the way for good governance, which would be based on a dedicated regulatory framework and on an appropriate financing strategy.
- make sure the climate change risk anticipation and crisis management strategy is consistent with all public policies, especially human development ones. All the stakeholders concerned should be involved, particularly the private sector and civil society.
- ensure that the national risk mitigation strategy tallies with decentralized strategies to take into account the territorial differentiation of these risks as well as the specific issues involved according to urban and rural areas and the ecosystems concerned.
- ensure close coordination between the various stakeholders concerned by risk prevention and crisis management; this would send a strong signal in terms of reassuring the population as well as national and international public and private investors.
- prepare a framework law on climate change risk anticipation and disaster management in order to ensure the implementation of climate hazard prevention plans and mitigate their impact on the population and the economy.
- ensure capacity-building at national and regional levels in the areas of risk anticipation and crisis management through the development of regularly updated scientific and technical expertise.
- extend the national insurance program to all disasters to cover public and private legal entities as well as natural persons and build on the instruments available nationally as well as at international level.

❖ **Develop appropriate climate governance**

- **ensure capacity-building for public actors** who are directly or indirectly responsible for environmental issues.
- **set up observatories in the country** for the purpose of monitoring extreme climate risks and vulnerabilities to climate change as far as strategic economic sectors are concerned; encourage the development of national expertise to rise to the challenge of climate change.
- **conduct regular monitoring and assessment of sectoral investments in long-term projects** and enhance existing early warning systems on certain climate hazards; generalize these systems to all natural hazards and adapt the existing legislation to local conditions to ensure effective implementation of risk prevention plans.
- **continue to identify vulnerable sites and risk areas** in order to dissuade people from living in these areas and economic actors from carrying out their investment projects there.

- **prepare urban areas to cope with domestic and international climate migration**, providing them with human and material resources that would enable them to anticipate and manage migration flows with greater reliance on international cooperation.

Acting upon all the above guidelines would enable Morocco to enhance its resilience to climate change. The significant human and material investment required for strengthening the Kingdom's climate change adaptation and the funds needed for a transition to a low carbon economy require national funding to be raised, but more importantly the use of international bilateral and multilateral cooperation. The same applies to the important reforms to be undertaken in order to bring the national institutional and legislative framework in line with international standards.