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[Climate Governance and the Role of Climate Finance in Morocco]

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List of Acronyms

Moroccan and International Institutions

ADA	Agency for Agriculture Development
AFD	French Development Agency
AfDB	African Development Bank
ADEREE	Morocco's Agency for Renewable Energies and Energy Efficiency
ANDZOA	National Agency of the Development of Oases and Argan Tree Zones
CEDAW	Convention for the Elimination of all Forms of Discrimination Against Women
CGEM	General Confederation of Moroccan Companies
CMPP	Moroccan Centre for Clean Manufacturing
COP	Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC)
DFI	Development Finance Institutions
DNA	Designated National Authority to the CDM
DNM	National Meteorological Institute
EIB	European Investment Bank
EU	European Union
ICC	Inter-ministerial Consultative Committee on Gender Equality
IMF	International Monetary Fund
INRA	Morocco's National Institute for Agricultural Research
IPCC	Intergovernmental Panel on Climate Change
KfW	*Kreditanstalt für Wiederaufbau,* German Development Bank
MASEN	Moroccan Agency for Solar Energy
MIE	Multilateral Implementing Entities
NIE	National Implementing Entities

OHCHR	UN High Commissioner on Human Rights
OREDD	Regional Observatories for the Environment and Sustainable Development
RIE	Regional Implementing Agencies
UNCED	UN Conference on Environment and Development
UNDP	United Nations Development Programme
UNFCCC	UN Framework Convention on Climate Change

Moroccan and International Programs, Strategies and Funds

AAP	African Adaptation Program
AF	Adaptation Fund
AFB	Adaptation Fund Board
CCPEIR	Climate Change Public Expenditure and Institutional Review
CDM	Clean Development Mechanism
CIF	World Bank Climate Investment Funds
CNEDD	Morocco's National Charter for Environment and Sustainable Development
CTF	Clean Technology Fund
EC FIV	European Commission Investment Fund for Neighborhood
FCCM	Fonds Capital Carbone Maroc
GCF	Green Climate Fund
GEF	Global Environment Facility
ICI	Germany's International Climate Initiative
INDC	Intended Nationally Determined Contribution
KP	Kyoto Protocol
LDCF	Least Developed Countries Fund

LECB	Low Emission Capacity Building Project
LEDS	Low Emission Development Strategy
MTEF	Medium Term Expenditure Framework
NAMA	Nationally Appropriate Mitigation Action
NAP	National Adaptation Plan
NC	National Communication to the UNFCCC
NEP	Moroccan National Water Plan
NPFI	Nagoya Protocol Implementation Fund
NWS	Moroccan National Water Strategy
PCCM	Morocco Climate Change Policy
PDR	Morocco's Reforestation Master Plan
PERG	Morocco's Rural Electrification Program
PMV	Green Morocco Plan
PNRC	Morocco's National Plan against Global Warming
PNA	National Sanitation Program and Liquid and Wastewater Treatment
PNAP/NES	Morocco's National Priority Action Plan (National Energy Strategy)
PoA	Program of Activities under the CDM
RAN	Morocco's National Rural Sanitation Plan
SCCF	Special Climate Change Fund
SIE	Society for Energy Investments
SNAT	National Planning Scheme for the Moroccan Territory

Other Acronyms

BAU	Business as usual
BOT	Build-Operate-Transfer-Model
BOOT	Build-Own-Operate-Transfer-Model
CCM	Country Coordination Mechanism
CER	Certified Emission Reduction
CP	Contract Program
CSP	Concentrated Solar Power
EDA	Enhanced Direct Acess
EE	Energy Efficiency
ESIA	Environmental and Social Impact Assessment
GE	Gender Equality
GHG	Greenhouse Gases
IPP	Independent Power Producers
kWh	Kilowatt-hour
LDC	Least Developed Countries
MENA	Middle East and North Africa
MRV	Monitoring, Reporting and Verification
MSME	Micro-, Small-, and Medium-Sized Enterprises
MW	Megawatt
ODA	Official Development Assistance
PPA	Purchasing Power Agreement
PPP	Public Private Partnership
PV	Photovoltaic
RE	Renewable Energy

ROI	Return on Investment
R&D	Research and Development
SIDSs	Small Island Developing States
SME	Small and Medium-sized Enterprises
STAR	System of Transparent Allocation of Resources (under the GEF)
TOE	Ton of Oil Equivalent
UAA	Utilized Agricultural Area

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Introduction

Morocco signed the United Nations Framework Convention on Climate Change (UNFCCC) at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro (Brazil) in June 1992 and ratified it on December 28, 1995.

In 2001, Morocco hosted in Marrakech the Seventh Conference of the Parties (COP 7), which operationalized the Kyoto Protocol ratified in 2002. In November 2016, Morocco again has the honor of hosting COP 22 which carries many hopes by the international community for advancing quickly with the operationalization of the new global climate agreement adopted at COP 21 in Paris in 2015.

Written just a few weeks before COP 22 is to be held in Marrakech, this publication provides an overview of issues related to climate change in Morocco, challenges and opportunities for national climate policy and domestic actions and the climate financing delivery and expectations for Morocco to ambitiously contribute to the global fight against climate change. Indeed, Morocco is now widely recognized for its global leadership in committing to a renewable energy future and the country's ambitions to significantly expand domestic production in this area. This trendsetter and leadership positioning of Morocco in climate action naturally has implications across the Middle Eastern and North African (MENA) region and more widely for the African continent as a whole.

Thus, the study will examine Morocco's vulnerability to climate change, the country's current and proposed energy mix (use and needs, accessibility, distribution, affordability), and its climate ambitions (expressed for example in its Intended Nationally Determined Contribution, INDC, and other national climate and development plans) for low-carbon and climate-resilient development as well as the social transformations that their implementation would entail.

The study will also focus on Morocco's needs for climate finance and attempt to provide an inventory of existing flows to and inside the country, from multilateral and bilateral sources and national public efforts as well as investments by the private sector (to the extent possible). The analysis provides a look at how the financing of the fight against climate change in Morocco is governed and implemented. It will attempt to answer questions relating to how climate governance decisions in Morocco are made and to what degree national stakeholders, as well as the people and communities most affected by climate change, participate in the decision-making and climate governance implementation process. The study will close with a set of recommendations suggested to improve climate finance governance in Morocco.

I. Assessment of the Current Situation in Morocco

The Kingdom of Morocco has a geographically exposed location, which provides vast opportunities, but also many risks and challenges for the country's efforts to address climate change. Located at the northwest corner of the African continent, it is separated from Spain by the Strait of Gibraltar, a sliver of Mediterranean sea only 15 km wide. Its territory covers an area of 710,850 km^2. The Atlantic Ocean is its western side, while the Mediterranean Sea borders the north. Morocco's coastlines are one of its main assets. Its beaches add up to a length of 3500 km. It is bordered by Algeria to the East and Mauritania to the South. The climate is Mediterranean in the North and semi-arid or arid in the South. The Atlas Mountains, which extend from the country's northeast to southwest, provide the country with significant freshwater resources, which the agriculture dependent country exploits especially for agricultural irrigation.

Figure 1 : Geographic Location of Morocco

Source:https://upload.wikimedia.org/wikipedia/commons/1/1a/Satellite_image_of_Morocco_in_January_2002.jpg.

To structure the Kingdom's administration, the country is divided into 12 regions with 13 prefectures and 62 provinces with each province subdivided into municipalities and districts.

Thus, Morocco is administered in a highly regionalized fashion which was approved by the Board of the Government in January 2015.

According to the last General Census of Population and Housing, as of 1 September 2014, the population of Morocco reached 33,848,242 people.

With an urbanization rate of 60%, the number of urban dwellers increased from 16,463,634 in 2004 to 20,432,439 in 2014, representing an average annual population growth rate of 2.2% during the period between the 2004 census and the 2014 census (in comparison, between 1994 and 2004 the annual population growth rate was 2.1%).

Following the new regional administrative breakdown into 12 regions in 2015, now some 70.2% of the Moroccan population is concentrated in only five regions with a population of over three million inhabitants each. The Greater Casablanca-Settat metropolitan area ranked highest with a population of 6,861,739, representing a share of 20.3% of the total population, followed by the regions of Rabat-Salé-Kenitra with a population of 4,580,866 (13.5%), Marrakech-Safi with 4,520,569 people (13.4%), Fez-Meknes with a population of 4,236,892 (12.5%), and Tangier-Tetouan and Al Hoceima with a population of 3,556,729 (10.5%).

A. Morocco's Exposure and Vulnerability to Climate Change

Morocco has been identified as a very vulnerable country by the 4th Assessment Report of the United Nations Intergovernmental Panel on Climate Change (IPCC). Morocco's regions are already severely affected by increase in average temperatures, droughts, heat waves, changing rainfall patterns, sea level rise or floods. Morocco's climate is characterized by:[1]

- 93% of the land area is exposed to arid and semi-arid climate with a growing expansion toward the north of the country.
- There is a high variability and a downward trend in global precipitation (-3 to -30%) over the period 1976-2006. Rainfall in spring, so necessary for cereal crops, also showed a decrease of 47%. Likewise, the maximum duration of dry periods increased by 15 days since the 1960s.
- The annual rainfall variation coefficient ranges from between 25% in areas near the Atlantic to over 100% in the Sahara.
- There is a significant temperature change: overall, increases in average temperatures have affected the entire country (with a 1°C average increase over two thirds of the country's territory with a maximum average annual increase of 1.4°C in the Southeast of the country). An annual increase of 0.16°C per decade was observed since the 1960s,

[1] National Meteorology Directorate, 2007.

while the number of cold days (maximum temperature below 15°C) decreased during the same period.

- Drought has become a more common occurrence: Morocco was hit by a moderate drought every three years, an average drought every five years, a severe level drought every 15 years, and an extreme level drought every 30 years.[2] The frequency of droughts, which numbered from one to ten over a 40-60 year period, has now increased to 2-3 per decade since the start of the century.[3]

Climate change projections show that due to climate change, Morocco's climate will become ever more arid:

- Arid zones will expand from the Southeast to the Northwest of the country, reaching ever higher elevations.
- Projected average overall temperature increase by 2071 could reach 3°C for all regions, and even 5°C for the southern slopes of the mountains. Thus, along with the temperature changes, the mountain snow cover will further decrease.
- By 2050, evapotranspiration in the northern Sahara will increase by 105-110%.[4]
- As for rainfall, as a result of climate change, average precipitation decreases over time, while rainfall intensity and intra-annual variability increase, thus increasing the risk for extreme weather events such as floods and droughts even further. Between 2041 and 2070 a decline of 10% to 40% of precipitation is forecasted depending on the region, with the reduction in annual rainfall averaging 15%. The Atlantic plains and foothills of the Atlas mountains will likely experience the largest decline in rainfall, which could reach 60% after 2071.[5]

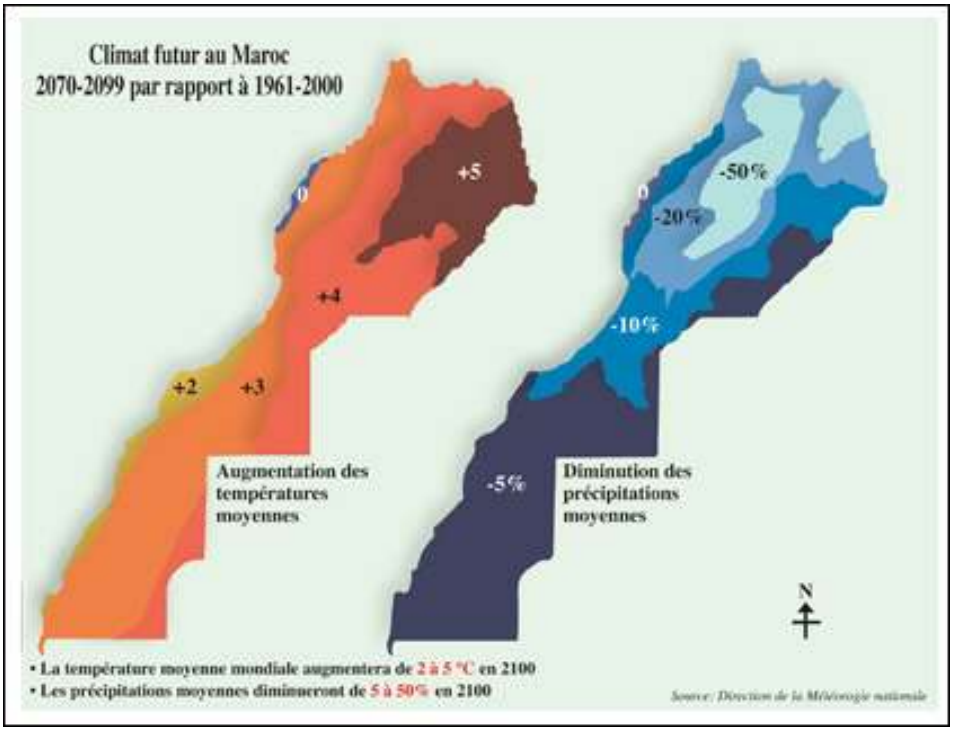
Today, Morocco is already vulnerable to both slow onset climate change phenomena and to immediate disasters resulting from climate variability. These trends could be worsened in the future, affecting more people in every region of the country. Two thirds of Moroccan beaches are already threatened by erosion and the risk of storms along the coast is increasing.[6] Displacement due to extreme weather is already a reality and slow onset events are likely to have an impact on the mobility of people, leading especially to a rural exodus and forcing the

[2] World Bank, 2011. Morocco Natural Hazards Probabilistic Risk Analysis and National Strategy Development-Drought Report. Department of Economic and General Affairs, Kingdom of Morocco.
[3] Agoumi et Debarh, 2005.
[4] UNFCCC, 2010. Seconde Communication Nationale à la Convention Cadre des Nations Unies sur les Changements Climatiques. Department of Territorial Development, Urbanism, Habitat and Environment, Kingdom of Morocco.
[5] Direction de la Météorologie Nationale, 2007.
[6] UNFCCC, 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining, Water and the Environment, Kingdom of Morocco.

settlement of nomadic pastoralists. Both, internal and international climate-forced migration and resettlement also increase the impact on already degraded and climate-vulnerable areas.

Moreover, considering Morocco's natural conditions and circumstances and particularly the increasing pressure on the country's scarce water resources, water shortages are expected in some of the Southern regions as early as 2020 and more widespread by 2050 and the country faces a scenario of increasing desertification. This will have a decisive constraint on Morocco's development potential, with the Moroccan economy currently highly dependent on agriculture, fisheries and tourism. Thus, climate change and Morocco's response to climate change will be major determinants of Morocco's future development options, including addressing social inequities and poverty, which remain despite Morocco's remarkable track record on growth and development. In 2015, Morocco was ranked 126 out of 188 in UNDP's Human Development Index.[7]

Figure 2: The Future Climate in Morocco



The graphic depicts on the left (in red) the average temperature increase projected in different regions of Morocco for the period by 2070-2099 versus the period 1961-2000. The map on the right (in blue) shows the decline in average precipitation in different regions of the country by 2070-2099 in comparison to the period 1961-2000.

Source: Direction de la Météorologie Nationale

[7] UNDP, 2015. Briefing note for countries on the 2015 Human Development Report: Morocco. Available at: http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MAR.pdf.

Thus, it is conceivable that Morocco could be faced with the strongest adverse impacts of climate change among all North African countries. Morocco's answer to these challenges will thus have a signaling function for the entire region.

Table 1: Main Extreme (Weather) Events in Morocco from 1990 to 2014

Type of Event	Year	Number of dead	Total affected population number
Storm	2014		117,000
Flood	2014	47	
Flood	2010		75,000
Earthquake	2004	628	
Flood	2002	80	
Drought	1999		275,000
Flood	1996		60,000
Floor	1995		35,000
Flood	1995	730	

Sources: EM-DAT, 2015; World Bank, 2015; Davies, 2014.

In parallel, internal migration of rural population to the big cities of the country occurs at an unprecedented rate. This population movement has led, in turn, to profound changes in the social composition of Morocco and in its migration policies. These vulnerabilities are especially pronounced in the country's regions and areas deemed most sensitive to climate change impacts, namely the desert oases, as well as the mountain and the coastal zones.

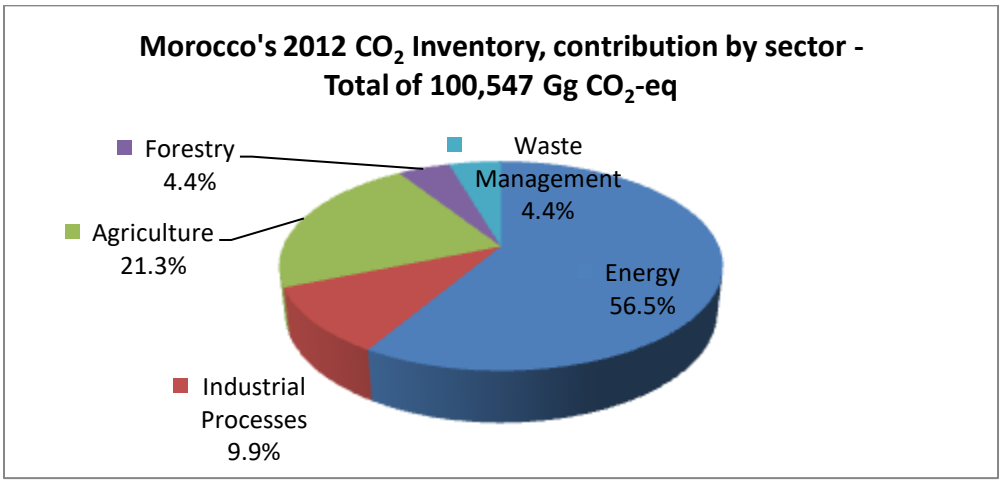
Women and girls in Morocco will be particularly affected by the expected increase in extreme weather events due to climate change. The multiple discriminations that women in Morocco still face - in education, health care, employment and with regard to control over assets - are key underlying factors that inevitably make Moroccan women more vulnerable during the crisis and in post-disaster situations. Research shows in general that women and girls are at significantly increased risk of being adversely affected by climate change-driven disasters and suffering from their consequences.[8]

[8] UN Women, 2009. Factsheet on Women, Gender Equality and Climate Change. Available at: http://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf. GGCA and UNDP, 2013. Overview of Linkages between Gender and Climate Change. Available at: http://www.undp.org/content/dam/undp/library/gender/Gender%20and%20Environment/PB1-AP-Overview-Gender-and-climate-change.pdf.

B. The Current Situation of Strategic Sectors

Morocco ranks among the lowest emitters of greenhouse gases (GHG) among developing countries. According to the Third National Communication,[9] Morocco's net anthropogenic GHG emissions for 2012 were evaluated as 100,547.4 Gg CO_2-eq or 3.10 tons CO_2-eq/per capita (and thus representing an increase over its 2010 emissions estimated at 93,937.2 Gg CO_2-eq and 2.95 tons CO_2-eq/per capita).[10] These emissions are the balance of total GHG emissions from various sources (gross emissions) and removals of CO_2 per plant ecosystems.

Figure 3: Morocco's total CO_2 Emissions for 2012 and Contribution by Sector



The energy sector in Morocco was the largest contributor to GHG emissions (with 56.5 %), followed by the agriculture sector (with 21.3%), manufacturing processes (with 9.9%), and forestry and waste management (with 4.4 % each).

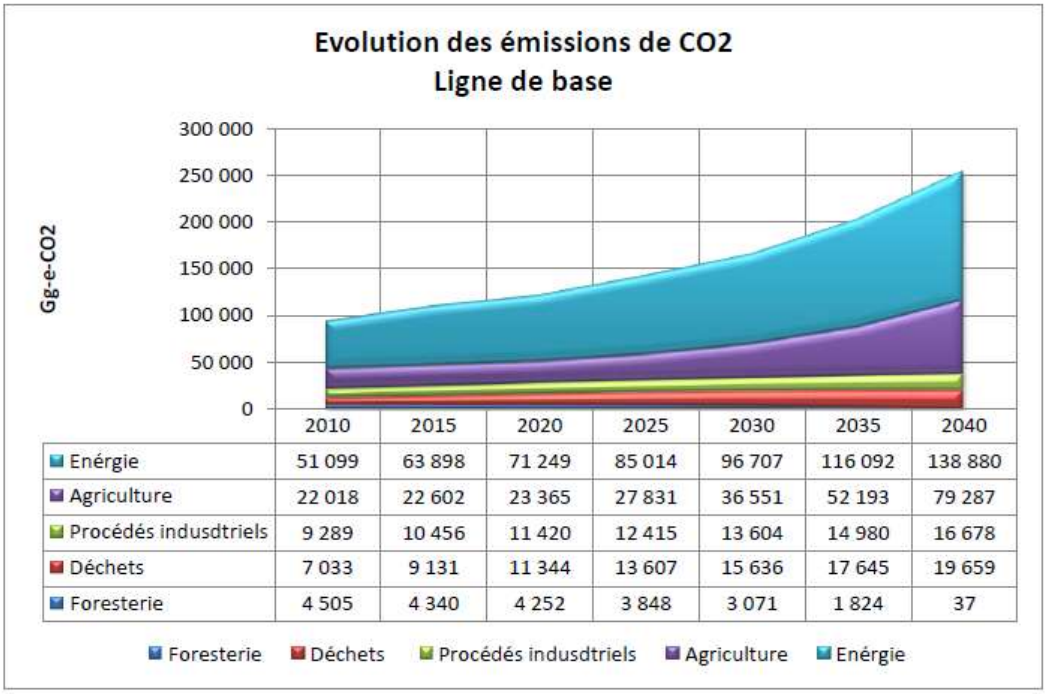
Source: UNFCCC, 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining, Water and the Environment, Kingdom of Morocco, 2016.

The Third National Communication makes projections of GHG emissions by 2040 using a baseline scenario constructed based on inventories of GHG emissions for the years 1994, 2000, 2004, 2005, 2006, 2008, 2010 and 2012 and development strategies of different sectors. The average annual growth rate of total emissions of greenhouse gas emissions in Morocco planned for the period 2010-2040 is estimated at 3.38%. Net emissions per capita vary from 2.95 tons CO_2-eq per capita in 2010 to 6.35 tons CO_2-eq per capita by 2040 with an annual increase of 2.59%.

[9] UNFCCC, 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining, Water and the Environment, Kingdom of Morocco.
[10] Ibid.

Thus, it is evident that the pace of growth in emissions up until 2040 will by far outpace the population growth rate estimated at 0.76%. The figure below shows the baseline reference scenario in GHG emissions for the 2010-2040 period and for each of the sectors most affected.

Figure 4: Projections of GHG Emissions Development by Sector (2010-2040, Baseline)



	2010	2015	2020	2025	2030	2035	2040
Enérgie	51 099	63 898	71 249	85 014	96 707	116 092	138 880
Agriculture	22 018	22 602	23 365	27 831	36 551	52 193	79 287
Procédés indusdtriels	9 289	10 456	11 420	12 415	13 604	14 980	16 678
Déchets	7 033	9 131	11 344	13 607	15 636	17 645	19 659
Foresterie	4 505	4 340	4 252	3 848	3 071	1 824	37

Source: United Nations Framework Convention on Climate Change (UNFCCC), 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining , Water and the Environment, Kingdom of Morocco, 2016.

Energy Sector

In terms of sectors, the Moroccan energy sector accounts for about 78% of the carbon dioxide release and for more than half of Morocco's net GHG emissions and is by far the largest emitter of carbon dioxide and greenhouse gases in general with 54.4% (2010) and 56.5% (2012) respectively. This sector is also responsible for the bulk of emissions of NO_x and CO gases with more than 99% each, with 66% of non-methane volatile organic compound (NMVOC) emissions and about 70% of Morocco's SO_2 emissions.

Actually, despite increased commercial energy consumption in recent years due to greater economic development experienced by the Kingdom of Morocco, energy consumption was 19.08 million ton of oil equivalent (TOE) in 2014, as compared to a consumption of about 10.5 million TOE in 2002. This represents an average annual growth rate of 5.1%, nearly five times the rate of population growth. The energy consumption in 2014 translates into a per capita

energy consumption of 0.56 TOE/per year. This low level of per capita and overall energy consumption is partly explained by the continued heavy use of traditional biomass energies in rural areas, namely firewood and charcoal.

By contrast, recent years have been characterized by increased commercial energy consumption in Morocco, which was about 10.5 million TOE in 2002 and reached the level of 19.08 million TOE in 2014; this represents an average annual growth rate of 5.1%, nearly five times the rate of population growth.

With a very high energy dependency rate (94.63% in 2014), Morocco imports almost all of its energy needs. Therefore, it remains highly vulnerable to rising international energy prices.

With average economic growth rates of 5% over recent years, Moroccan development is accompanied by a strong industrialization, high population growth and urban population growth, which has a direct impact on energy consumption.

Energy Demand of the Households

Household consumption of energy is mainly focused on transportation, the production of heat (hot water, heating, etc.) and the so-called specific electricity (for electrical appliances and lighting). Such energy household demand is a major driving force for change, including social and gender patterns and norms. Indeed, the increase in population and rising living standards will invariably lead to a further increase in energy demand in Morocco.

Energy Demand of the Commercial Sectors

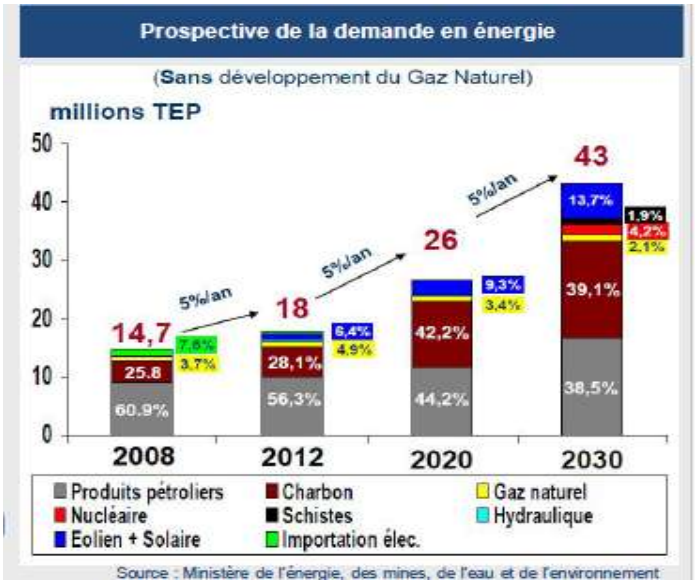
An increase in the activities of the productive sectors (in industry, agriculture, public works and buildings, tourism, transport, fishing, mining, crafts, etc.) is the reason for Morocco's positive economic development in recent years. This increase in activity would not have been possible without a corresponding increase in energy demand of the productive sectors (as the engine of economic growth) and as force for the industrial change of Morocco.

New Consumption Patterns

Changing consumption patterns are also a driving factor for change in Morocco's energy sector. The growing development and prosperity of Moroccan society and its increasing urbanization have created new needs (for example for air conditioning or appliances), a whole range of new activities and increased in particular the population's transportation needs. All these changes have an impact on energy consumption.

The following figure illustrates a projection of likely energy demand in Morocco by 2030:

Figure 5: Projection of Expected Energy Demand in Morocco by 2030

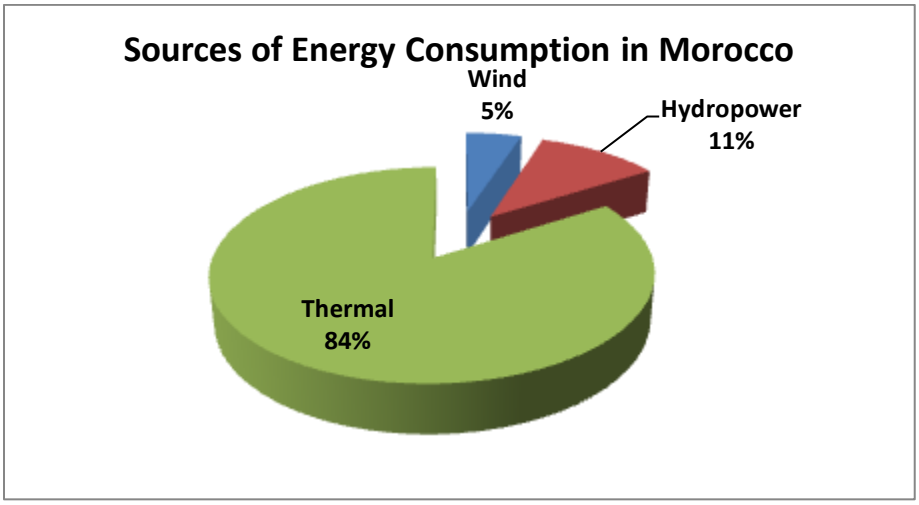


The graph shows a significant rise in the total demand for energy. While the demand for oil (in grey) and coal (in brown) continues to rise in absolute terms, their shares of the total energy mix decline somewhat by 2030, with in particular wind and solar energy (in blue) assuming a growing share. Note that the 2030 energy projection for Morocco also forecasts a worrying growth for nuclear energy, though (in red).

Source: Chambre Française de Commerce et d'Industrie du Maroc, Juin 2011.

At the moment, oil and coal account for close to 90% of the energy consumed, which is an unsustainable structure not only in terms of pollution and $C0_2$ emissions but also from an economic standpoint since these energy products are heavily subsidized by Morocco's commodity price compensation fund, the Caisse de Compensation. Morocco's energy bill amounted to 11% of GDP in 2011.

Figure 6: Sources of Energy Consumption in Morocco



With only 5% of the energy mix provided by wind energy (in blue) and 11% provided by hydropower (in red), 84 % of its energy is still derived from thermal, largely fossil fuel energy (in green).

Source : MEMEE, Department of Energy and Mines, 2011.

Mindful of the climate dimension of its energy policy, Morocco has laid out ambitious plans to raise the share of renewable energy in the country's energy mix all over the country to 42% of Morocco's total capacity by 2020. His Majesty King Mohammed VI in his statement in Paris at COP 21 at the High Level meeting of heads of states promised that by 2030, a majority of 52% of Morocco's energy would come from renewable energy.

The national energy strategy is thus based on the following objectives:

- Achieve a share of 42% of the installed capacity from renewable sources by 2020, of which 2,000 MW are to come from solar power, 2,000 MW from wind energy and 2,000 MW from hydro power.
- Achieve 12% in energy savings by 2020 largely by increasing energy efficiency and by 15% in 2030 compared to the projected trend, with these savings to be realized mainly in the building, industry and transport sectors.

Morocco has also adopted Law No. 13-09 to encourage private initiatives for the production of electricity from renewable sources. Thus, the first wind farms are currently in operation (up to 600 MW, with over 1,000 MW being launched or under construction), and the first concentrated solar power (CSP) project launched in Ouarzazate, Noor 1, which has a capacity of 160 MW, has been operational since November 2015.

In 2014, Morocco also abolished its subsidies for fossil fuels, specifically for gasoline, heating oil and diesel (with the exception of subsidies for natural gas) and has taken steps to reduce the

emission rate per unit of electricity through fuel switching in power plants (such as “cleaner” coal and natural gas).

In terms of energy efficiency, the country has developed a national energy efficiency strategy until 2030, by when it hopes to see a 25% reduction in the energy use compared to a laissez-faire scenario (which would mean energy consumption savings in the order of 7.2 million TOE), and has implemented Law No. 47-09 on energy efficiency.

The Gender Dimension of Energy Access in Morocco

The gender dimension of the future direction of energy growth in Morocco is evident. Access to clean and renewable energy is a special concern for women and girls in Morocco. Every day in Morocco, like in other developing countries, women struggle with a lack of access to modern energy which severely hurts their standard of living and their dignity as well as their safety and that of their families. On average, they have to invest more than 40% of their family’s income in inefficient and dangerous kerosene fuels for lamps and for candles for lighting. Women and girls continue to travel great distances to gather firewood. Many women in Morocco are still forced to give birth in the dark, continue to cook in smoke-filled kitchens, where they are exposed to black carbon and face severe respiratory health problems, and emerge at night to go to outdoor latrines without adequate lighting. Girls' education is likewise compromised by a lack of adequate lighting. Ensuring that women and girls in Morocco have access to clean and renewable energy is not only a women's rights issue, but an issue of basic human rights. Quantitative and qualitative studies have shown that access to clean energy gives girls a better chance to complete at least primary education and allows women to make a better living while helping to reduce gender-based violence.[11]

Water Sector

An analysis of Morocco's economic profile shows that several key economic sectors are heavily dependent on water resources, especially agriculture.

Today, more than in the past, the pressures on existing water resources are growing in Morocco. The country is ranked among the 20 most water-stressed countries in terms of water resource availability. It is indexed at 4.2 on a scale of 5, making it a country "at extreme risk” in terms of water availability.[12] This vulnerability is paramount as the food security of the country depends on domestic agricultural production, itself strongly dependent on sufficient rainfall

[11] Elmorchid, Brahem, 2015. La dimension genre dans les politiques d’atténuation et d’adaptation au changement climatique en Afrique: cas du Maroc. Revue Économie, Gestion et Société, N°2.
[12] Water Resource Index, 2014. Annuel Report.

and the availability of water resources. In fact, rain-fed agriculture accounts for 85% of the area of 7.4 million hectares under agricultural production.[13]

Water resource availability in Morocco is impacted by a number of factors. Characterized by their rarity and irregularity, temporal and spatial variability, Morocco's water resources are under increasing pressure because of population growth, the development of irrigated agriculture, urbanization, industrial growth and tourism. Water resource availability in Morocco is also directly threatened by the negative effects of climate change, by the over-exploitation of aquifers, the low cost for piped water and the deterioration of water quality because of sanitation shortcomings.

In addition, Morocco's climate is characterized by a rainfall pattern with high spatial and temporal irregularity. Indeed, the water resource potential in Morocco is estimated at 22 billion m^3 per year, the equivalent of 700 m^3/per capita/per year.[14] This amount of water could drop to 500 m^3/per capita/per year by 2030 due to pressures primarily from climate change and population growth. In contrast, the demand for water is projected to further grow: at nearly 14.3 billion m^3 in 2010, demand would reach 23.6 billion m^3 in 2030.[15]

It makes matters worse that the country's water resources – at the same time as demand grows and natural availability decreases – are facing additional pressures generated by the degradation of overall water quality due to increased domestic discharges (reaching 600 million m^3 in 2010, potentially reaching 900 million m^3 in 2020 and up to 1050 million m^3 in 2030, particularly in the most affected basins namely Sebu, Loukkos, Souss and Umm Errbia), overexploitation of groundwater, as well as significant water losses in drinking water piping systems.

Indeed, climate change is likely to aggravate all these factors by further reducing rainfall, by increasing temperatures as well as the frequency and duration of extreme weather events. These effects will translate into heightened water stress, further reduced water availability, accelerating depletion of groundwater supplies, and further deterioration of water quality. An increase in temperature leads to an increase in demand for agricultural irrigation water, and also to accelerated snowmelt and consequently a concentration of water availability during the winter months, and an overall deterioration in water quality.

Climate change will create extreme water scarcity which could put the country at risk for a water shortage as early as 2020. This shortage is exacerbated by:

[13] Ministère de l'Agriculture et de la Pêche Maritime, 2014. L'Agriculture Marocaine en Chiffres. Available at: http://www.agriculture.gov.ma/sites/default/files/agriculture_en_chiffres_2014-vf.pdf

[14] UNFCCC, 2010. Seconde Communication Nationale à la Convention Cadre des Nations Unies sur les Changements Climatiques. Department of Territorial Development, Urbanism, Habitat and Environment, Kingdom of Morocco, 2010.

[15] UNFCCC, 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining, Water and the Environment, Kingdom of Morocco.

- Groundwater reservoirs (4 billion m^3, or 20% of resources) are overexploited (down $2m^3$/per year).
- Capacity loss of dams (today 1.2 billion m^3 or 7% of water resources): Losses amount to 70 million m^3/per year.
- Inefficient distribution and use of water. The agricultural sector, using nearly 89% of Morocco's water resources, still has an efficiency rate of only 48%, indicating significant waste. The system of drinking water pipes also experiences water losses, with a performance rate of less than 70%, meaning water losses close to a third.
- A water pricing structure that does not encourage rational and economic use of water.
- Urban water pollution, the main cause of the deterioration of water quality ($600Mm^3$/per year).

The National Water Strategy (NWS)[16] shows that most of Morocco's water dam basins will be experiencing water loss and rapidly sinking water levels by 2030. Water resources are in continuous decline and inflows of water in the dams already fell significantly over the past decades (1970-2000) when comparing to historic observations in the period from 1945 to 1970.

A first quantitative estimate of the possible impact of climate change on water resource availability in Morocco highlights that already by 2020 the overall water volume availability could decrease by about 10-15%.

To cope with these water resource challenges, Morocco has made great efforts by launching a NWS in 2009 and the National Water Plan (NEP), which focus on the role of complementary water management actions to address Morocco's water supply/demand in a context of sustainable development and while ensuring a more equitable distribution between rural and urban areas.

To this end, the NEP, a roadmap to implement the NWS by 2030, has outlined several measures that strengthen efforts to adapt to climate change impacts. An adaptation policy was set up, which – adapted to the context of territorial entities around specific projects – provides for:

- The construction of several large and small dams (a total of 38 dams to store around 1,000 million m^3/per year, not counting the twelve dams under construction which aim to store 616 million m^3/per year).
- Use of non-conventional water resources: desalination of sea water (510 million m^3/per year), demineralization of brackish water, reuse of treated wastewater (325 million m^3/per year).

[16] Ministry of Energy, Mining, Water and Environment, 2009. National Water Strategy.

- Incentives for water savings in agriculture, through conversion of localized irrigation systems covering 920,000 ha in 2030, water savings for drinking water as well as in the areas of tourism and industry through improved water pipe network could yield water savings of up to 80% of the national average in 2020.
- The preservation of groundwater resources through artificial recharge, limits to how much groundwater can be pumped and a more participatory approach to the management of groundwater exploitation of groundwater tables under contract, as well as the fight against pollution through the accelerated implementation of the country's national sewerage and wastewater treatment plan.
- Protecting water dams from water loss through structural erosion via treatment of nearly 110,000 ha upstream dams.
- The fight against extreme events, mainly floods and droughts.
- The substitution of overexploited groundwater tables with surface water, including via the reforestation of 200,000 ha of forests by 2020.
- Desalination of 285 million m^3/per year for drinking water supply, reuse of 325 million m^3/per year of treated wastewater, construction of 38 new dams, and erosion treatment of 22 dams for 1.5 million hectares of dammed water storage over 20 years as priorities by 2030.

This water policy also takes into account the mitigation component of hydropower and its contribution to reducing GHG emissions. Indeed, the NWS also plans to develop a hydroelectric power capacity of 2,200 GWh/per year by equipping existing large dams with hydroelectric turbines in addition to the construction of two energy transfer pumping stations.

Furthermore, the NWS also provides for the establishment of a national information system on water and will have as a main objective the improvement of knowledge on the linkages of water and climate.

Finally, Morocco's water act is based, among others, on three basic principles which implicitly integrate gender equality concerns. These are (i) the development of land use and water allocation planning systems based on a wide consultation between users and public authorities, (ii) the health protection of all citizens through the regulation of the operation, distribution and sale of drinking water, (iii) and the regulation of activities that pollute water resources.[17] It will be important that those implicit gender dimensions are highlighted in the implementation of actions under Morocco's water act, for example by ensuring that women and representatives from women groups hold at least a third of all seats in water user groups and in land use and water allocation planning and management committees throughout the country.

[17] Kingdom of Morocco, 1995. Loi 10-95 sur l'Eau. Available at: http://www.water.gov.ma/reglementation/lois-10-95-sur-leau/.

Water Burden for Women and Girls in Morocco

In the rural areas in Morocco, all women regardless of age are involved in fetching water. Girls and young women are the majority of those tasked in securing the water supply for their families. Women and girls use up to two hours per day for fetching water and wood—time that could be used more productively for study or economic activities and thus contribute to the empowerment of women and girls in Morocco. For private use and irrigation of family crops, some 70% of rural women have to pump their water from a well.[18]

Agricultural Sector

The agricultural sector is one of the strategic sectors for the Moroccan economy. With a contribution of 14% of national GDP, agriculture plays a crucial socio-economic role in providing 43% of jobs for the growing workforce, and by ensuring a stable income for 80% of the rural population.

With a total land area of about 71,085 million ha in Morocco, less than 40 million ha represent agricultural land, pastoral land for livestock and forest cover. The utilized agricultural area (UAA) covers 8.7 million ha; forests cover 5.8 million ha; Alfalfa grass 3.2 million ha and rangelands of 21 million ha.

In Morocco, cultivated agricultural land represents only 12% of the total land area of the country, of which only 13% are under irrigation, while a share of 87% of the cultivated land is not irrigated. Agricultural cultivation in Morocco employs about 80% of its rural population.

Moroccan agriculture is highly vulnerable to climate hazards. A study by the World Bank[19] shows that for climate change scenarios used, the studied crops (barley, wheat and durum) under rain fed conditions provided will do worse in the future because of temperature rise.[20] This could affect productivity of Morocco's agro-ecosystems and pose severe problems for food security in the future, especially toward the end of this century. Similarly, a study conducted by Morocco National Institute for Agricultural Research (INRA) in partnership with international bodies revealed that 59% of Morocco's land is currently unsuitable for grain farming and in

[18] Brahim Elmorchid, 2015. La dimension genre dans les politiques d'atténuation et d'adaptation au changement climatique en Afrique: cas du Maroc. Revue Économie, Gestion et Société, no. 2.
[19] World Bank, 2013. Développement et Changement Climatique.
[20] The scenarios used were IPCC A1B and A2. A1B is describes a future of rapid economic growth, a peak of population growth by the mid-century, as well as efficiency gains. In scenario A1B a balanced development of energy sources is assumed. Scenario A2 describes a heterogeneous development in different parts of the world in terms of economic and population growth as well as the energy mix. (IPCC, WGI. The scientific basis. Available at : https://www.ipcc.ch/ipccreports/tar/wg1/029.htm).

2050 (according to climate scenario A1B), approximately 71% of Morocco's land area will have become unsuitable for the cultivation of this crop.[21]

Variability and climate change will affect mainly rainfed crops which are the basis for the economic outcome of small farmers. Forecasted winter storms and the decrease of productivity of cereal crops will reduce their economic incomes as early as 2020 by as much as 10% in a normal year or about 50% in a dry year.[22] Climate change will also affect the yield of vegetable cultivation, which could decline by almost 40% by 2030; these would affect mainly vegetables for domestic consumption with export crops being affected to a lesser degree.

Furthermore, the agricultural sector was responsible for 23.4% of Morocco's 2010 GHG emissions and 21.3% in 2012 respectively. Thereby it contributed in particular over 92% of nitrous oxide (N_20) emissions and about 33% of methane (CH_4) emissions. Morocco's agricultural sector emits virtually no carbon dioxide.

Indeed, the agricultural sector accounts for a significant share of the nation's energy consumption, concentrated mainly in utilization of agricultural technologies such as irrigation equipment, tractors and engines, dryers and livestock buildings (milking sheds for cattle, air conditioning and heating in poultry farming, processing and storing of feed materials).

The Green Morocco Plan (Plan Maroc Vert, PMV)[23] which devises a strategy for sustainable agriculture in Morocco, underscored the climate dimension of Morocco's agricultural productions systems (which employ over four million rural Moroccans) by including two interrelated components in the plan, namely a vulnerability assessment and the establishment of an adaptation policy to climate change and a climate mitigation component for the reduction of GHG emissions through implementation of low carbon development measures.

The National Program on Solar Pumps, launched in 2013, a result of a partnership between the Ministries of Energy and Agriculture, the Moroccan Agency for the Development of Renewable Energy Resources and the Promotion of Energy Efficiency (ADEREE) and the Credit Agricole Maroc Group, aims to enable small- and medium-sized farmers. It uses a grant from the Agricultural Development Fund (provided by the Ministry of Agriculture and Fisheries), to purchase water pumps that run on electricity generated from solar panels, in order to improve their yield and production, while conserving water and energy.

The grant provided does not exceed 50% of the cost for the installation of a solar-powered water pump up to 75,000 MAD (roughly 8,000 USD) per project. Provision of the grant is dependent on the completion by the farmer of a drip irrigation system in addition to obtaining

[21] Benaouda, H. and Balaghi, R. 2009. Impacts des changements climatiques sur l'agriculture au Maroc. Actes du Symposium International «Agriculture Durable en région Méditerranéenne (AGDUMED)», Rabat, Maroc 14-16 Mai 2009.
[22] FAO, 2001. Crop Wat Model – Version 730. Available at : http://www.fao.org/nr/aboutnr/nrl/en/.
[23] Information available at: http://www.maroc.ma/en/content/green-morocoo-plan.

a pre-approval certificate from the Ministry of Agriculture. This program with an overall budget of 400 million MAD (some 42 million USD), includes the installation of 3,000 photovoltaic pumping systems per year, with a total cumulative installed capacity of 15 MW-Crête (power of a photovoltaic panel per unit time). The State expects to recover the grant investment under this program over three to five years through savings for fuel expenses for gas-driven water pumps under the *Caisse de Compensation* allocation for butane gas.

As for the Green Morocco Plan's adaptation component, one should mention the National Program of Irrigation Water Savings which aims to alleviate water stress, as well as to conserve and sustainably manage scarce water resources for irrigated agriculture, by switching to drip irrigation over an area of 555,000 ha under agricultural production, which would allow for a considerable saving of water resources of nearly 1.4 billion m^3/per year by 2020.

The last important and innovative strategy within the Green Morocco Plan tackles the reorientation of the agricultural sector while maintaining an ecological balance. It highlights a holistic approach to agricultural production in all of the cultivated areas in order to ensure food security and protect natural resources in different regions, while at the same time facilitating the integration of Moroccan agriculture in the global marketplace. Great importance was given to spell out accompanying measures to support the precarious livelihoods of small subsistence farmers, the majority of whom are women farmers. The objective here is to improve the ability of farmers to adapt to climate change through the dissemination of appropriate technologies; thus the gender dimension of access to technology, the use of technology and technology choices must be considered to be successful.

Female Workforce Participation in Morocco

Nationally, the agricultural sector occupies up to 47.3% of Morocco's total workforce. Looking at the gender distribution of employment across industries, it is apparent that Morocco's female workforce is highly concentrated in agriculture were most jobs for women are created. The agricultural sector employs 55% of Morocco's female workforce versus 42.3% of the male workforce. Agricultural employment is concentrated in rural areas: nearly 80% of all female jobs are found in agriculture, forestry and fishing activities in rural areas of the country – by contrast, only 5% of the female urban workforce works in these sectors.

Distinct Sensitive Land Areas

The National Charter of Territorial Planning[24] as well as the National Territorial Planning Scheme (SNAT)[25] identified three main sensitive land areas in Morocco that are extremely vulnerable to climate change: The oases, the coast and the mountain areas.

The Oases

Oases, which are very vulnerable to climate change, are covering 15% of the land area of Morocco and are home to 5.3% of its population. The inhabitants of oases in southern Morocco are exposed to increased desertification of arable land, high population pressure, as well as an expected decline in agricultural productivity in this region. Oases are in an advanced stage of deterioration where they lose significant parts of their surfaces for cultivation.[26] The date palm, among the most significant indicators for the state of a healthy oasis, saw its number reduced to a third in the 20th century, on the one hand because of climate damage and pathological conditions,[27] on the other hand through the overuse of water in agriculture production leading to a general decline in the groundwater level by an average of -15 to -20m. Agricultural productivity in the oasis region is expected to be 17-30% lower than the average for the period between 1972-2000, while consumption of groundwater in oases is expected to double,[28] resulting in a drop of about a third of the date harvest.

To overcome this situation, several programs have been developed for the protection and development of oases as a crucial national heritage. Indeed, the diagnosis of the SNAT[29] described the situation for oases as catastrophic and recommended emergency intervention. This prompted the Department of Territorial Planning to highlight the issue on its national agenda, and initiate between 2002 and 2004 a national strategy for their rehabilitation through the establishment of a short- and medium-term action plan.

This strategy has been translated in collaboration with UNDP through the implementation of three programs for saving and safely developing Morocco's oases, namely:

- The sustainable territorial development oases program of Tafilalet, initiated by the Department of Territorial Planning;

[24] Ministry of Territorial Planning and Urbanism. Charte Nationale d'Amenagement du Territoire et du Development Durable. Available at: http://www.territoires.gov.ma/attachments/article/45/La%20Charte%20Nationale.pdf.
[25] Ministry of Territorial Planning and Urbanism. Le Schéma National d'Amenagement du Territoire. Available at: http://www.territoires.gov.ma/index.php?option=com_content&view=article&id=48&Itemid=61&.
[26] Adaptation Fund and Agence de Développement Agricole, 2015.
[27] Institut Royal des Etudes Stratégiques, 2015. Les négociations climatiques et les meilleures pratiques internationales, Rapport de synthèse.
[28] Janpeter Schilling et al., 2012. Climate Change, Vulnerability and Adaptation in North Africa with focus on Morocco. In: Agriculture Ecosystems & Environment, no. 156, p.12-26.
[29] Ministry of Territorial Planning and Urbanism. Le Schéma National d'Amenagement du Territoire. Available at: http://www.territoires.gov.ma/index.php?option=com_content&view=article&id=48&Itemid=61&.

- The program for saving and safely developing the southern oases, initiated by the Southern Provinces Development Agency;
- The integrated local development program for the oasis of Figuig, initiated by the Development Agency of the Oriental.

Based on a territorially defined approach, these programs aim to support local actors, including local authorities, to develop and implement a strategic local planning for sustainable development of oases; such an approach is consistent with major activities undertaken by Morocco in its fight against poverty, and for local democracy, and the protection of human rights. These approaches also embody the commitments made by Morocco in the frameworks of a host of international conventions including the three Rio Conventions for the fight against desertification, climate change and to protect biodiversity and in the implementation of the Millennium Development Goals, as well as their successors, the Sustainable Development Goals.

A diagnostic made in the context of a UN Women's project in Morocco shows, that in its rural areas in general and in particular in oases, prevailing gender norms and existing pattern of gender relations result in very differentiated socio-economic conditions for men and women.[30] In particular, the inequitable distribution of roles, access to resources and power hinders women to take proactive action on climate change affecting their livelihoods, and make them more vulnerable to climate change-induced crises which produce gender-differentiated effects and often hit women and girls first and hardest.

The Coast and Coastal Areas

Morocco's coast and its coastal areas are highly vulnerable to climate change. This vulnerability is exacerbated by the high population density, with 61% of the urban population of large cities today and 75% in 2025 living in coastal regions. Furthermore, 80% of permanent staff employees, 53% of the tourism capacity and 92% of the external trade are located in the coastal zones of the country. Because of this, the Moroccan coastal areas are inherently fragile. Their excessive exploitation by different sectors of activity and exposure to risks associated with rising sea levels, estimated to reach from 26-82 cm in the late 21st century when compared to 1980-1999 levels, accentuate this vulnerability.

Different segments of the population in the coastal zones are vulnerable to climate change because of their socioeconomic status and their geographical position. The urban population living in coastal urban areas is particularly vulnerable to rising sea levels and changes in rainfall patterns leading to flash floods, as well as to more frequent and intense storms. Poor individuals and households remain the most vulnerable, since they are often living in informal

[30] ONU Femmes, 2013-2014. Projet d'appui à une planification locale sensible au genre et intégrant la réduction des risques et désastres climatique.

settlements and makeshift housing. Coastal cities of Morocco, such as Rabat and Casablanca, continue their expansion due to population growth in areas subject to the risk of rising sea levels, to flash floods and coastal erosion. This phenomenon is also aggravated by the extraction of marine sand near the main coastal cities for construction, exacerbating the vulnerability of these urban centers even further.

In light of this priority, the Ministry of Territorial Planning, Environment, Urbanism and Habitat currently devises an Integrated Strategy for the Management of Coastal Zones that highlights the dysfunctions of the coastal areas. Thereby it should come off with options for a better and more sustainable management and ensure that Morocco meets its commitments to international conventions.

Mountain Areas

Integrating climate change considerations into territorial planning and land management plans is important for considering the future of Morocco's mountain areas, which represent 25% of the country's territory, and hold 70% of its water resources and 60% of forests.[31] They house 1/3 of all farms in Morocco, but also 3% of the country's poor, with only 5% of the country's GDP generated in this areas.

Plans for the sustainable development of mountain areas focus mainly on the fight against floods, the development of natural resources, improvement of the living conditions of the population in and the comprehensive integration of climate change considerations, employing means of project development.

C. Morocco's Ambition in the Fight against Climate Change

As a signatory of the UNFCCC, Morocco is obliged to respect the general commitments described in Article 4, paragraph 1.[32] Parties to the UNFCCC in their obligations to contribute to the global fight against climate change have to take into account their common but differentiated responsibilities and respective capabilities by looking at their specific national and regional development priorities, objectives and circumstances.

It is in this context that Morocco has subscribed to contributing to international action for climate change adaptation and mitigation since 1992 and has taken own strong and ambitious commitments.

Indeed, the reduction of climate change vulnerability and adaptation to climate change impacts is one of the priorities for Morocco, whose economy has several highly resource dependent

[31] The Moroccan mountains are also called „Morocco's Water Tower".
[32] United Nations, 1992. United Nations Framework Convention on Climate Change. Available at: https://unfccc.int/resource/docs/convkp/conveng.pdf.

sectors very sensitive to climate change impacts. Increasing attention is given to the integration of the climate component in public policies, programs, and strategies by analyzing their current or future exposure to climate change and the incorporation of adaptation-specific required measures to address climate change impacts.

Morocco, a low emitter of GHG but vulnerable to the effects of climate change, aims to continue efforts to ensure the domestic transition to a low-carbon and climate-resilient development, while aspiring to contribute to global efforts to address this phenomenon. In this sense, Morocco is in line with its commitments to the international framework on climate change. The First and Second National Communication submitted in the past several years, demonstrate its commitment to serve the UNFCCC; these commitments are confirmed and strengthened by the Third National Communication which was submitted in May 2016.[33]

Nationally, Morocco has made several efforts to comply with UNFCCC commitments by setting up the institutional framework for the development of a national policy of adaptation and mitigation of climate change effects. In addition, the legal arsenal has been strengthened by the adoption of the framework Law No. 99-12 with the National Charter for Environment and Sustainable Development which states among its main objectives the fight against climate change and the enactment of the Law No. 13-09 on the liberalization of the production of renewable energy and Law No. 47-09 on the regulation of energy efficiency in all economic sectors.

Morocco has initiated several major sector-specific strategies affirming the integration of environmental concerns, and notably climate change considerations, in key areas of the national economy (energy, transport, agriculture, tourism, construction, fishing, water, waste, forest, etc.). This commitment clearly demonstrates Morocco's move towards a new climate policy in line with the socio-economic development objectives of the country.

Furthermore, Morocco has been one of the first countries to establish a Designated National Authority (DNA) for the Clean Development Mechanism (CDM) in the Kyoto Protocol.

It also supported the Copenhagen Accord by notifying the UNFCCC Secretariat in a submission in January 2010 of a listing of nationally appropriate mitigation actions (NAMA) it intends to implement to mitigate its GHG emissions by 2020. Nevertheless, the implementation of various planned projects and measures describes in the NAMA face limited financial resources at national level, and thus might be conditional on receiving multilateral climate finance support.

[33] UNFCCC, 2011. First National Communication to the UNFCCC. Department of Territorial Development, Urbanism, Habitat and Environment, Kingdom of Morocco.
UNFCCC, 2010. Seconde Communication Nationale à la Convention Cadre des Nations Unies sur les Changements Climatiques. Department of Territorial Development, Urbanism, Habitat and Environment, Kingdom of Morocco.
UNFCCC, 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining, Water and the Environment, Kingdom of Morocco.

In June 2015, Morocco submitted to the UNFCCC its INDC under the new Paris Agreement. Morocco was thus the 38th country to submit its contribution in a timely manner well in advance of the Paris COP21 summit, and the first member of the Arab countries' negotiating group and second after Gabon among the African constituency.

In its INDC, Morocco has set an ambitious program to reduce its greenhouse gas emissions by 13% by 2030, with a possible additional reduction of 19% subject to international financial support, which would combine to 32% reduction by 2030.[34] To realize these emissions reductions, an estimated investment of 45 billion USD is required (with an estimated 10 billion USD in domestic resources to be provided by the Kingdom of Morocco and dependent on an additional 35 billion USD from international climate finance support).

Lastly, Morocco's international positions in climate negations is strengthened by respect for its commitments vis-à-vis the UNFCCC, the development of cooperation projects at regional and sub-regional levels and the strengthening of South-South cooperation and triangular, i.e. South-South-North, cooperation efforts. It has benefited from broad multilateral and bilateral support of the international community.

Morocco has also developed partnerships and been present at regional level, continuing its traditionally solidary stance regarding economic, social and political issues towards the Arab and African world, which whom it shares many geographic, historical and human ties and cultural roots. The European-Mediterranean and transatlantic partnerships are also fundamental to realize Morocco's climate ambition. Specifically, on climate change, the Kingdom joined the regional climate change initiative of Arab countries as well as the Africa-EU Climate Change Initiative.

Morocco is an African developing country and therefore needs a lot of investment to cope with the effects of climate disturbances. In this sense, Morocco pursues its climate politics in a regional, particularly African context, aware that while climate regulatory approaches need a global comprehensive partnership, concrete climate action must be regional and local.

Morocco's climate actions must also strike the necessary balance between adaptation and mitigation while ensuring that sustainable development principles are guarded by highlighting a shared responsibility of all UNFCCC parties which enables a clear differentiation between mitigation commitments of developed countries and voluntary actions of developing countries, the latter in need of developed countries' support in terms of finance, capacity building and technology transfer.

[34] UNFCCC, 2015. Intended National Contribution, Morocco. Available at: http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Morocco/1/Morocco%20INDC%20submitted%20to%20UNFCCC%20-%205%20june%202015.pdf.

D. The Integration of a Gender Approach in National Climate Policy

Climate change poses severe risks to the entirety of humanity. However, women and girls are particularly affected, because of persistent discriminations and cultural and social norms. The latter regulate access to information, resources and decision-making power for men and women and thus influence their ability to take concrete mitigation action or adapt to the adverse effects of climate change. Women and girls in particular, who in many developing countries including in Morocco, spend an often unquantifiable amount of time and personal efforts looking for food, fuel and water to sustain their families and communities, are already struggling to maintain their livelihoods, traditions and cultures and the potential climate change impacts usually aggravate and exacerbate the struggle.

Despite progress in recent years, disparities between the sexes remain large within the Moroccan society. According to the index of gender inequality, Morocco is 130th out of 187 countries.[35] In the World Economic Forum's global index of gender disparity, it occupied the 129th place out of 134 countries just a few years ago. In relation to climate change, good intentions and reform efforts have not yet shown a real improvement in social relations between men and women. Clearly the situation of Moroccan women remains critical.

Due to these persistent disparities, women in Morocco are in fact disproportionately affected by the consequences of gradual and long-term climate change impacts. In particular, the depletion of natural resources and increased environmental stress affect women particularly hard because of their dependency on natural resources and their status in society. Mainstreaming gender equality and the empowerment of Moroccan women into all efforts and actions in the fight against climate change is therefore a cross-cutting issue. Climate policies and actions that are responsive to gender inequalities are not only more effective, efficient, sustained in the long-term and equitable, they also ensure that the implementation of responses to climate change contributes to the achievement of a human-rights centered sustainable development.

In Morocco, as in many African countries, and under the influence of several factors (including the increasing impoverishment of women in arid or semi-arid areas, their vulnerability to floods, international gender equality and women's empowerment commitments such as the Convention for the Elimination of all forms of Discrimination Against Women (CEDAW),[36] or the pressure of civil society groups), the government has engaged in a long process of reforms to reduce gender inequality in terms of the country's action on mitigation and adaptation to climate change.

[35] UN Council of Human Rights, 2012. Economic Review, Management and Society No. 2 December 2015 14, p. 4.
[36] Morocco is both a signatory party to CEDAW as well as to the UNFCCC. As such, Morocco also has a legal obligation to pursue climate policies and actions taking into account CEDAW and other human rights conventions and treaties.

Affecting mainly the regulatory, institutional and organizational aspects, a number of these measures have been adopted since the Rio Conference (1992) and evolved in a difficult context in Morocco during a time which was marked, among others, by a series of droughts becoming more severe and more extended in time and space.

At the constitutional level, the principle of equality between men and women has been enshrined and re-iterated in the subsequent constitutions adopted in Morocco over the years (the constitutions of 1962, 1972, 1992, 1996 and 2011). The new Constitution of the Kingdom from July 2011 mandates the implementation of the principle of equality between women and men in all areas.

> "*The men and women enjoy, in equality, the rights and freedoms of civil, political, economic, social, cultural and environmental character, enounced in this title and in other provisions of the Constitution, as well as in the international conventions and pacts duly ratified by Morocco and this, with respect for the provisions of the Constitution, of the constants [constantes] of the Kingdom and of its laws. The State works for the realization of parity between men and women. An Authority for parity and the struggle against all forms of discrimination is created to this effect." (Article 19, Constitution of 2011)* [37]

According to the Constitution, the public authorities are required to develop and implement policies to address and prevent the vulnerability of certain categories of women and mothers. Particularly concerning the environmental aspect, the new constitution provides for the mobilization of all means available to the state, public institutions and local authorities to create the conditions to allow all citizens to enjoy their rights access to water and a healthy environment (Article 31, Constitution of 2011).

Moreover, the National Strategy for Equity and Gender Equality (GE), adopted in 2006, marks a turning point on the road to gender equality in Morocco and reflects the political will of the country's leadership to construct balanced social relations, through which Moroccan women can hope for a better life. In other words, the strategy is one of gender mainstreaming aiming at integrating the concerns of men and women in the design, implementation, monitoring and evaluation of all government programs. It relies *inter alia* on an original approach that takes into consideration the specific needs of women and girls to improve their living conditions and correct the various forms of discrimination they suffer daily.

To consolidate the achievements in the integration of gender equality (GE) in the reform of human resources management and encourage the various ministries to implement measures to better take into account GE, the Ministry of Public Sector Modernization set up an Inter-

[37] An English translation of the constitutional text is available at: https://www.constituteproject.org/constitution/Morocco_2011.pdf?lang=en.

Ministerial Consultative Committee (ICC) on GE. In this context, in 2013 a gender report was developed in conjunction with the finance bill.

It is appropriate to look in particular at gender budgeting efforts. Indeed, each year, the Moroccan government is tasked to ensure that public funds are raised and spent more equitably between men and women. This action is in the interest of efficiency, effectiveness and performance of public policies. It also forms part of the response of the Kingdom's international commitments. Thus, allocations of ministerial departments concerned with the issue of the environment in terms of their differential impact on women and men are increasingly provided through a new budget approach that is focused on results and gender-sensitivity of approaches. Furthermore, through pilot projects co-financed by the State and NGOs, rural women are increasingly involved in the fight against desertification in Morocco.

As for the inclusion of the gender issue in the analysis of public policies for mitigation and adaptation to climate change in Morocco, this remains still a challenge. Indeed, public policies often maintain a gender-neutral, if not gender-blind tone and outlook. Such seemingly gender neutral policies, however, do have effects on gender relations, even if they do not explicitly target women and men as such. Gender is therefore often both ubiquitous and only implicit in public policy on climate change. This is certainly some area, where there is room for improvements. Meanwhile, there are other more general environmental policies that address gender considerations more explicitly and directly. It would be useful to study what has led to their successful integration as a way to apply such good practice to Morocco's climate policies and actions going forward more specifically.

Lastly, it needs to be pointed out that women in Morocco are severely under-represented in national and international bodies and agencies managing and addressing climate change issues. This under-representation can be attributed to archaic social norms, historical cultural heritage and political resistance. The fact that environmental issues in Morocco are often managed by scientists and field technicians adds to this, because very few women are covering these profiles in Morocco.

E. Morocco's Position and Role in International Climate Negotiations

As a country very vulnerable to the impacts of climate change and a low GHG emitter, Morocco has always been convinced that the UNFCCC is the legitimate multilateral framework within which the international community should develop and implement long-term cooperative action against climate change, by enhancing cooperation in order to contribute to achieving its ultimate objective, including limiting temperature increase to below 2°C compared to the preindustrial era.

Thus, Morocco has always actively participated in the negotiation process on climate and in particular its yearly COP. The country has invested more since the Copenhagen Conference in 2009, both in the preparation process as well as in the participation of this annual global climate conferences.

Morocco also has an organizational system of governance for its international climate diplomacy that allows monitoring and implementation of the commitments made by the country.

Regarding Morocco's governance of its international climate diplomacy, the main stakeholders are:

- The Ministry for the Environment as the National Focal Point of the UNFCCC and with a mission of coordinating the national implementation of commitments taken on under the Convention.
- The Ministry of Foreign Affairs and Cooperation, which has a monitoring mission and coordinates national diplomacy around various international commitments in all conventions and treaties that Morocco is a party to.

Both departments mobilize other ministries during the preparation phase for Morocco's participation in international climate negotiations, including the COP. This outreach serves also domestic coordination and raises other ministries' awareness of issues related to climate change. It also increases their greater involvement in the process of climate negotiations in order to give these issues a high political profile.

Furthermore, in terms of position and international climate alliances, Morocco is part of the African negotiation group, the Arab countries constituency and part of the Group of 77+ China. These heterogeneous groups adopted different positions within the climate negotiations:

- The position of the African group is highly demanding, requiring the developed countries to reduce their GHG emissions by 40% by 2020 and by 80% to 95% by 2050, as well as to ensure the transfer of significant resources (200 billion USD) to allow the developing countries to engage in mitigation programs while pointing out that all of Africa contributes only 7.8% of global GHG emissions.
- Other groupings of developing countries' parties, namely the Group of 77+ China and the group of Arab countries, have adopted a less demanding stance on mitigation objectives than the Africa group. They demand the transfer of capital and technology to developing countries to support them in their development, as well as mitigation and adaptation efforts. They also propose in the future to adopt sustainable development strategies.

These collective positions do not adequately target the specific challenges and interests of Morocco. Being itself a low GHG emitter, Morocco faces extreme climate vulnerability. The urgent implementation of adaptation action must therefore be a priority concern. As an economy in transition, Morocco seeks to engage in programs that secure its strategic natural resources, its economically and socially fragile territories and put the country on a pace to advance a competitive green economy.

This situation partly explains the absence of Morocco in some informal intersessional consultations and groupings, which are generally devoted to prepare positions at the COPs, in particular that of the African group. Nevertheless, the interest by Morocco to self-organize in groups with the same strategic interests, economic and political structures is vital. It serves to attract climate finance and the necessary technologies, including by offering potential financial partners, from both public and private, opportunities for mutually profitable green investments.

Morocco's Presidency of the COP22 – Priorities and Opportunities

Morocco holds the presidency of the UNFCCC COP during its 22nd session (COP 22) from November 7-18th in Marrakesh – the second COP hosted by the Moroccan government after COP 7 in 2001.[38] In the lead-up to COP 22, the government of Morocco has worked intensively with the French Presidency of the COP 21 and with the UNFCCC Secretariat to ensure progress in Marrakesh on operationalizing the Paris Agreement, which entered into force on November 4th 2016.

The Moroccan COP Presidency has indicated that it hopes to strengthen the participation and integration of non-state actors, including from the private sector, in implementing the broad working plan resulting from the COP 21, both with a view to ramping up pre-2020 ambition, but also to develop new mechanisms under the Paris Agreement. The Moroccan COP22 will also serve as an outreach, knowledge sharing and capacity-building opportunity for the government to ensure the support of the Moroccan population for climate priorities at home and globally.

Morocco is attempting to put its COP 22 Presidency under the banner of innovation by focusing on technical innovation as well as the social dimension as a key to success, putting these issues on equal footing with consolidating INDCs, mitigation and adaptation commitments. It is in this context that the Moroccan COP 22 Presidency can play a strong leadership role in ensuring a continuation and enhancement of the Lima Work Program on Gender and Climate Change.[39]

[38] See also the website of the Morocco COP22 Presidency, available at http://www.cop22.ma/.
[39] UNFCCC, 2014. Lima Work Program on Gender. Draft Decision. Available at: https://unfccc.int/files/meetings/lima_dec_2014/decisions/application/pdf/auv_cop20_gender.pdf.

Without decisive action at COP 22 and strong championship by the COP 22 Presidency, this program could expire two years after the COP 20 in Lima, or continue without the reforms necessary to strengthen the mainstreaming of gender equality considerations in all issue areas of the UNFCCC.[40]

The Moroccan COP 22 Presidency will focus on actions meant to keep up positive momentum and pressure Parties towards ambitious implementation of the Paris Agreement. Itself severely affected by the impacts of climate change and as an African country as well as host of the COP 22, Morocco has made very clear that it will make progress on financing for adaptation a litmus test of COP 22 success. Among other activities, it hopes to bring together a broad alliance and commitment of private sector actors, including impact and institutional investors, in support of adaptation actions. Climate finance overall, including discussions about a road map to secure the 100 billion USD in climate financing for developing countries by 2020, will be a strong focus of the COP 22 Presidency, including in their connections to technology transfer regimes, capacity-building and the introduction of monitoring, reporting and verification (MRV) guidelines for developed country public finance delivery.

Morocco, as host of the COP 22, has vowed to run an "inclusive presidency" by reaching out to a broad set of stakeholders and realizing that formal and informal summits in the lead up to COP 22 will have to be complemented by a more bottom up approach. Such an approach must bring in the non-profit as well as the private sector as partners in implementation of climate actions and strengthen in particular the participation of local actors, including the most vulnerable groups and increasing the participation of women, in all dialogue and negotiating processes.

[40] On this issue, see a CSO submission by the Heinrich Böll Stiftung at: http://us.boell.org/2016/09/01/what-it-will-take-strengthen-gender-mainstreaming-unfccc.

II. Mapping of Climate policies and Institutions in Morocco

The alignment of Morocco's actions with universal rights is reaffirmed in the Preamble to the Constitution, which forms part of the constitutional text of 2011.[41] Indeed, Morocco undertakes to "*comply with the international conventions duly ratified by it, within the provisions of the Constitution and of the laws of the Kingdom, within respect for its immutable national identity, and on the publication of these conventions, their primacy over the internal law of the country, and to harmonize in consequence the pertinent provisions of national legislation*." (Preamble, Constitution of 2011).[42] According to this constitutional text, international treaties and conventions that the Moroccan government signs on behalf of the Moroccan state and that are ratified, are paramount to national laws. This is conditional upon the compliance of the other parties to the treaties.

The new constitution of 2011, which has allowed the consecration of the right to a healthy environment, the enactment of the framework law on the National Charter for Environment and Sustainable Development (CNEDD) in 2012 and the development of a National Strategy for Sustainable Development (SNDD) in 2015 represent the distinct stages in Morocco's engagement in the fight against climate change.

With the Moroccan government fully aware of the country's high vulnerability to climate change and its potentially heavy socioeconomic impacts on national development, it has engaged for several years in the formulation of comprehensive policies and put in place a governance framework and institutions to ensure sustainable low-carbon and climate-resilient development.

A. Policies Governing the Response to Climate Change in Morocco

As a low GHG emitting country that is very vulnerable to the effects of climate change, Morocco early on took responsibility for gradually mapping out its own national policy, while complying with measures necessary to be undertaken at the global level.

Morocco elaborated a National Plan against Global Warming (PNRC)[43], which it presented to COP15 in Copenhagen in 2009. This plan contains a portfolio of actions as well as detailed programs for both mitigation and adaptation and is a first attempt in addressing the need for an integrated approach with coordination of sectoral policies.

[41] Constitutional text available at: https://www.constituteproject.org/constitution/Morocco_2011.pdf?lang=en.
[42] Ibid.
[43] Kingdom of Morocco, 2009. Plan National de lutte contre le changement climatique. Available at: http://climateobserver.org/wp-content/uploads/2014/09/Morocco_PNRC-2009.pdf.

The mitigation actions described concerned the Moroccan energy strategy, in particular its components on renewable energy, energy efficiency of buildings, a Reforestation Master Plan (PDR), a National Plan on Domestic Waste Management (PNDM) and actions concerning emissions reduction from transportation. Adaptation actions listed represented sectoral strategies in relation to climate change challenges and constraints (such as the National Water Plan, the Green Morocco Plan, or the Plan Azur).

As for the Morocco Climate Change Policy (PCCM) developed in 2013, it poses the main principles, defines global strategic priorities for mitigation and adaptation and traces systematically the sectoral actions to address climate change by different sectors in Morocco. This document is intended to serve as a frame of reference and a guide for the orientation of specific individual programs to address climate change.

The PCCM established a time horizon until 2030 with specific deadlines and goals for the majority of sectoral and inter-sectoral national strategies, and aims to be a dynamic and flexible instrument, with a monitoring and evaluation mechanism that allow for the necessary refinements. Within this policy, ambitious sectoral strategies in the areas of energy, water, agriculture, transport, or waste management have been launched with the aim of reconciling the socio-economic development imperatives of sustainable development and the necessary transition to a green and inclusive economy for Morocco.

On a quick side note, the latest ranking of the "Climate Change Performance Index 2015" placed Morocco as the only developing country under the top ten climate performers at place 9th in the world, constituting a win of six seats compared with the 2014 index and improvements of 19 percentage points compared to 2010.[44] This reflects the effort made by Morocco in the fight against global warming and the international recognition for those efforts the country receives. Especially noteworthy is the kingdom's adoption of ambitious renewable energy targets which it supports with a thorough legal and institutional framework on renewable energy and energy efficiency, thus making the country one of the global forerunners in renewable energy policy.[45]

Mitigation Policy

The implementation of climate change mitigation measures focuses on reducing greenhouse gas emissions and consolidating development efforts, including through the introduction of clean technologies. This qualified Morocco as a mitigation pioneer for voluntary emission reduction efforts even before such mitigation efforts became mandatory for all parties to UNFCCC starting after 2020 under the Paris Agreement negotiated during the COP21 in 2015.

[44] Burck, Jan; Marten, Franziska; Bals Christoph, 2014. The Climate Change Performance Index, Results 2015. Germanwatch & Climate Action Network. p.8. Available at: http://germanwatch.org/en/download/10407.pdf.
[45] Germanwatch (2015). Climate Change Performance Index 2015. Available at: http://germanwatch.org/en/download/10407.pdf.

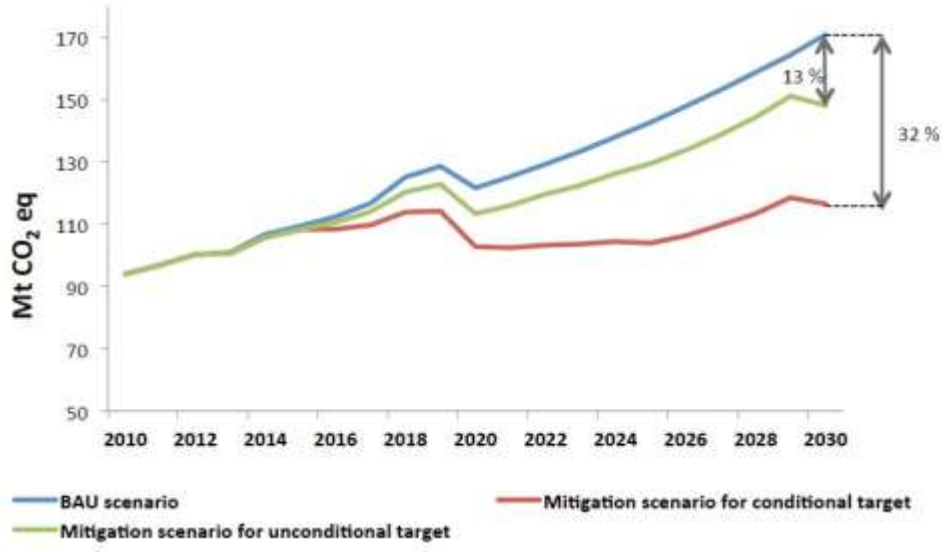
(Intended) Nationally Determined Contribution (INDC)

Following its belief that global ambitions -to counter the effects of climate change- call for a substantial commitment of all parties both in terms of mitigation and adaptation implementation, Morocco has developed its INDC.[46]

This contribution has been developed through a broad consultative process with stakeholders. This thorough process allowed for the review of the policies and programs implemented by Morocco up to now in the fight against global warming and to define the level of ambition that the country wishes to adopt as part of its contribution.

Although Morocco is focusing its efforts mostly in the energy sector, its GHG targets will be achieved through measures taken in all sectors of the economy, based on strategies and sectoral action plans in particular concerning the areas of agriculture, water, waste management, forests, energy, industry and housing. In its INDC, Morocco committed to reduce its greenhouse gas emissions by 2030 by 32% compared to projected emissions for that same target year under a business-as-usual (BAU) scenario.

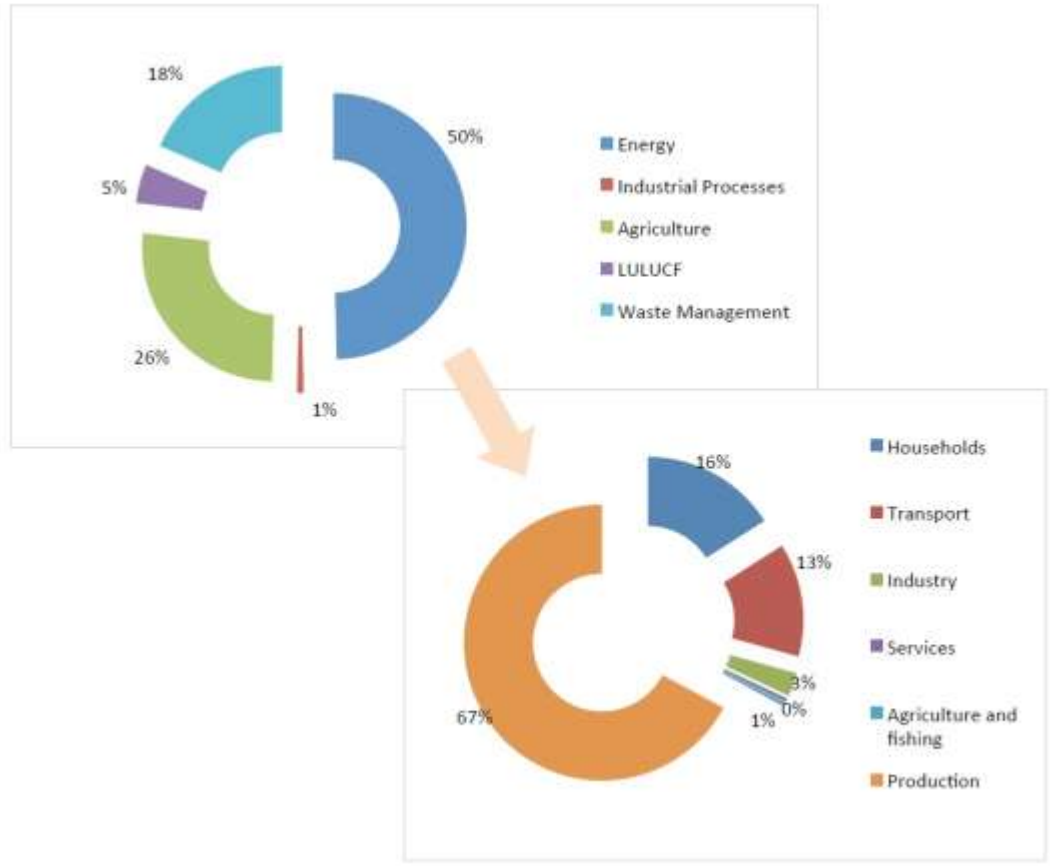
Figure 7: BAU and Mitigation Scenarios



Source: Morocco (2015). Intended Nationally Determined Contribution

[46] UNFCCC, 2015. Intended National Contribution, Morocco. Available at: http://www4.unfccc.int/Submissions/INDC/Published%20Documents/Morocco/1/Morocco%20INDC%20submitted%20to%20UNFCCC%20-%205%20june%202015.pdf

Figure 8: Distribution of the Mitigation Effort in Each Eector over the Period 2020-2030, to Achieve the Conditional Emissions Reduction Objective



Source: Morocco (2015). Intended Nationally Determined Contribution

Low Emission Development Strategy

Morocco is in the process of developing a low GHG emission development strategy. It relies on a better understanding and analysis of the national context, while at the same time building on what is already existing, including work in progress or work completed in domestically reducing GHG emissions. This is a strategic framework that articulates on the basis of concrete actions sectoral policies and programs and plans that once implemented will allow Morocco to advance economic growth, improve the management of the environment and achieve the objectives of sustainable development. This framework will provide a basis for achieving long-term policy to reduce emissions of greenhouse gases, measured in relation to a BAU development path and according to the guidelines adopted by the INDC of Morocco.

Morocco's Low Emission Development Strategy (LEDS) will take into account the NAMAs covering most economic sectors. The Low Emission Capacity Building Project (LECB) aims to build capacity in these areas as well as for the development of NAMA portfolios for the industrial, construction and agriculture sectors.[47]

At this time, five specific NAMA documents are under development with the help of international cooperation support. NAMA priorities were identified on the basis of the following list of criteria:[48]

- The willingness of governments to overcome implementation obstacles;
- The progress and maturity of the implementation of the NAMA;
- Identifying funding sources and opportunities to develop a mitigation mechanism;
- The impact of NAMAs on indicators for sustainable development;
- The potential for reducing GHG emissions;
- Opportunities to develop an MRV system for verifying the avoided emissions.

Under the LECB, three NAMAs were developed for the agricultural sector, natural habitats and waste management. For each sector, the current situation was analyzed and potential NAMAs have been selected and are being validated with their own MRV systems.

The potential mitigation of greenhouse gas emissions in the period from 2015-2030, which can be realized by NAMAs matches, is as follows:

- NAMA in natural habitats leading to emissions reductions of 39,180 kilotons CO_2-eq between 2015 and 2030.
- NAMA solar pumps leading to emissions reductions of 1,384 kilotons CO_2-eq between 2015 and 2030.
- NAMA solar PV roof systems connected to the low voltage network in the residential sector leading to emissions reductions of 18,900 kilotons CO_2-eq between 2015 and 2030.
- NAMA promoting "arganiculture", i.e. the agricultural production of argan oil under the Green Morocco Plan leading to the sequestration of 2,091.2 kilotons CO_2-eq between 2015 and 2030).
- NAMA on household waste management leading to emissions reductions of 4,050 kilotons CO_2-eq between 2015 and 2030.

[47] The development of Morocco's LEDS is part of the LECB international capacity building initiative and supported by UNDP. For further information see: http://lowemissiondevelopment.org/lecbp/countries/morocco.

[48] UNFCCC, 2016. Troisième Communication Nationale à la Convention des Nations Unies sur les Changements Climatiques. Delegated Ministry of Energy, Mining, Water and the Environment, Kingdom of Morocco.

Market Mechanism/Clean Development Mechanisms (CDM)

To participate in the global effort to mitigate greenhouse gas emissions and to consolidate and strengthen its national sustainable development policy, Morocco early on expressed its wish to participate through investments in the Clean Development Mechanism (CDM), one of several flexible market mechanisms defined in the Kyoto Protocol (KP). It has ratified the KP in 2002 and has made every effort at the COP 7, hosted in Marrakesh in 2001, to ensure that the KP and its flexible market mechanisms could be adopted as quickly as possible.

As part of this commitment, Morocco has set up its Designated National Authorities (DNA) for the Clean Development Mechanism (CDM) in 2002 and conducted a series of capacity building activities for proponents of national projects and experts as well as promoted the activities of the CDM both at the national level and internationally.

As of July 2014, Morocco was the 4th placed country in Africa in terms of registered CDM projects with 37 CDM projects including 4 Programs of Activities (PoAs) avoiding a combined 5,917,581 $TECO_2$/per year:

- 18 registered projects including 3 PoAs with 2,492,840 tons CO_2-eq/per year
- Six validation projects underway with 866,837 tons CO_2-eq /per year
- 13 projects in various stages of development with 2,519,229 tons CO_2-eq/per year

The main sectors covered by the CDM in Morocco are biomass energy, waste management, solar energy and wind power. The first wind farm in Africa under the CDM and a PoA was registered at the end of 2012. Although a portfolio of CDM projects has been developed in recent years, only a fraction of potential CDM has been deployed to date. This is mainly due to the complexity of the mechanism, its constantly changing rules, the requirement of financial additionality, transaction costs and the lack of domestic experience mainly due to the reliance on external consultants.

Morocco has significant experience with the credit mechanism of the CDM and could leverage this experience for the design and implementation of other market mechanisms. Any new market mechanism should combine simplicity and efficiency with environmental integrity and should contribute to capacity building in Morocco, at both the institutional level and sectoral levels.

Climate Change Adaptation Policy

In the past, over the period from 2005-2010, the Kingdom of Morocco devoted some 64% of its domestic climate finance expenditure for adaptation, a sum equivalent to 9% of Morocco's total capital expenditure. The considerable share of the national investment budget dedicated

to adaptation demonstrates the extent of the adaptation challenges the Moroccan society faces. Morocco's adaptation efforts and expenditures are necessarily set to increase in the years and decades to come. Extrapolation and forecasts see national investment in adaptation actions to increase to at least 15% of domestic capital expenditure.

On adaptation, Morocco has made significant efforts. It is committed to developing, in the short term, its National Adaptation Plan to Climate Change 2030 (NAP), to better coordinate its actions and maximize their benefits.

Indeed, in the context of the preparation of the Third National Communication of Morocco on Climate Change, an assessment of vulnerability and adaptation to climate change in key sectors of the national economy was conducted.

For the adaptation component of the Third National Communication, the evaluation recommended:

- To evaluate the programs containing measures to facilitate adequate adaptation to climate change in key sectors;
- To evaluate the steps taken by Morocco to integrate adaptation to climate change in all socio-economic and environmental policies and actions;
- To assess the needs for the provisions of the necessary means of implementation (MOI) for all relevant adaptation actions, namely capacity building, transfer and/or development of technology, and finance.

The implementation of the country's adaptation strategy revolves around three main axes:

1. Observe, detect and track climate impacts through the installation of automated measures in areas not covered and by improving the early warning system (radar and detection of thunderstorms) for extreme weather events (storms, heavy rain, etc.).
2. Develop knowledge and a better understanding of climate impacts and climate system to inform public decisions on adaptation through the integration and inclusion of researchers and scientists within national communities and international research groups.
3. Develop an institutional framework of the National Meteorological Directory (DNM) and support areas of climate change issues in order to capitalize on the national experience in this field and to enhance and bring out the national expertise in this field.

New Options and Possible Measures for the Adaptation of Ecosystems to Climate Change at the National Level

Sector	Possible Adaptation Measures
Water resources	To fulfill the goals of sustainability and capacity gains in the water sector, the following measures are recommended at the national level. 1. Improve planning and foster integrated management of water resources by strengthening the synergy between the different national strategies and plans related to water and the institutionalization and operationalization of Water Basin Councils for big watersheds. 2. Strengthen the conservation of water resources mainly through widespread and quick implementation of so-called "watershed contracts"[49] and the intensification of the fight against illegal drawing of water resources. The latter could be ensured by utilizing the human power and material capacities of the water police. Another means to conserve water is to encourage the use of non-conventional water resources in all regions of Morocco, but especially in basins suffering from water scarcity. The extraction of those water resources could be coupled with the use of renewable energies. 3. Strengthen the protection against the pollution of water resources through (i) the acceleration of the implementation of the National Sanitation Program and Liquid and Wastewater Treatment (PNA, 2005), (ii) the development and implementation of a National Plan for Rural Sanitation, (iii) the acceleration of the implementation of standards for industrial waste, (iv) the acceleration of the application of the polluter-pays principle as contained in water law No. 10-95, (v) the effective establishment of the perimeters of protection against pollution around catchments and capturing fields of drinking water (surface and groundwater) and (vi) the establishment of a permanent coordination between the water police and other protection bodies environment at each water basin. 4. Strengthen education, research and awareness in the areas of water and climate change through the establishment of a National Centre for Research, Innovation and Expertise in the areas of water and climate comprising all national experts and areas of competence, in order to optimize human and material resources available and to build the awareness of the public and different user group for the rarity and scarcity of water resources water, water saving (including in agriculture) and the fight against pollution through textbooks, media, audio-visual media, civil society engagement, etc.

[49] A "watershed contract" (contrat de nappe) is a technical and financial contract on watershed level, i.e. concerning a river, a lake or a bay, by which partners engage in a holistic, concerted and sustainable water management.

Agriculture	In terms of proposals for new options and adaptation measures, the analysis of progresses and accomplishments should generate a list of measures and actions of interest in the fight against climate change in the context of which particular attention should be paid to the short and medium term. These include measures and actions referred to in many documents dealing with climate change (such as the PNRC, 2009; the Green Investment Plan, 2014; the National Water Strategy, 2014; etc.) and which are necessary in fact as national priorities in the fight against climate change. The measures and actions requiring continuation and reinforcement are those, which are focusing on assessment, monitoring and forecasting the impacts of climate change, while others are more concretely aimed at intervention on agricultural production systems.
Forest	The 2000-2020 National Forest Program (NFP), as updated in 2005 and as operationalized through the Ten Year Territorialized Plan PDT, is implemented in the form of ten-year project contracts (2005-2014). The budget allocated to this program by the Office of Water and Forests and the Fight against Desertification is estimated at 180 Million USD annually. The aim is to continue the programs, which aim to restore and regenerate until 2020 an area of 200,000 ha of forest or reforest the equivalent of 40,000 ha per year, by giving priority to native species for reforestation (cedar, oak cork, cedar, argan). These programs are considered a priority for the High Commissioner for Water, Forests and Desertification Control. These programs, which highlight the multifunctional character of forest ecosystems, are based on three main strategic objectives: • the fight against desertification; • conservation and development of forest resources; • human development in the forested and deforested areas.

Fishery	In Morocco, the climate change policy is already quite advanced and clearly elaborated in the fisheries sector, which is better managed than in most countries in the region. Climate change policy in the fishing sector is expressed in: • a component dedicated to coastal and marine resources in the National Plan for the Fight against Global Warming; • the Halieutis strategy for sustainable fisheries. Further progress could be made, particularly in terms of access to finance and for those involved in artisanal fishing.[50] Adaptation to climate change also depends on the geographical location of fishermen or fleets, with differentiated climate change impacts for fishing activities in the Atlantic Ocean or the Mediterranean Sea.
Hydropower	New options for adapting the hydropower sector aim to make existing and planned hydropower infrastructure less vulnerable to long-term changes in climate parameters and to extreme weather events, like droughts, excessive flooding or large surface water precipitation. The new adaptation measures include: • increasing the height of dams and the expansion of the discharge valves to accommodate the increasing variability and extremes of water flows; • soil management of watersheds upstream of dams to reduce the potential erosion and siltation of dams; • expansion of installed hydropower production capacities in order to adapt to potential for increased river flows.

[50] Kingdom of Morocco, 2009. Stratégie de l'Halieutis. Information available at: http://www.maroc.ma/fr/system/files/documents_page/HALIEUTIS%20Marrakech2010.pdf.

Environment and Biodiversity	• Strengthening of the workforce and accelerating the establishment of state authority officials responsible for environmental protection, allocating the necessary logistical support and ensuring the legal and regulatory framework are consistent with environmental protection objectives; • Strengthening the national environmental legal arsenal through enacting legislation concerning environmental protection; • Accelerated approval of the legal status of Regional Observatories for the Environment and Sustainable Development (OREDD) and their widespread use by providing the necessary human and material resources; • Integrating area-specific environment and biodiversity information into the elaboration of climate change adaptation strategies; • Improving the consistency between various actions initiated at the local level, such as the municipal development plans, various planning schemes; • Strengthening the involvement of local authorities in the implementation of climate change adaptation and mitigation programs; • Development of national expertise and strengthening the promotion of research, development and action in environment and biodiversity, through establishing funding mechanisms for projects and by removing administrative hurdles to their implementation; • Acceleration of the process of rehabilitation of non-sanitary landfills; • Making environmental and biodiversity education mandatory for all levels of education; • Strengthening the adoption of adaptation technologies for environmental and biodiversity protection; • Provision of adequate human and financial resources for Water Basin Agencies monitoring the state of the environment; • Strengthening and increasing the number of air quality stations in areas potentially vulnerable to pollution.

Coastlines	• Ratification of conventions related to the oceans and coastlines; • Elaboration of obligations under signed conventions signed in plans, programs, projects; • Accelerated development of legislative processes focusing on the implementation of applicable law; • Establishment of a Coastline Climate Change Adaptation Plan; • Creation of National and Regional Oceanic and Coastal Observatories; • Strengthening allocations for actions by local communes under national Law No. 81-12; • Strengthening the Research-Development-Action triangle and innovation as referred to in Law No. 81-12 to allow for the effective contribution of universities to safeguarding the coastline.

UNDP-implemented Climate Change Adaptation Project on Building Resilient Oases

The Climate Change Adaptation Project on Building Resilient Oases is part of the African Adaptation Programme (AAP).[51] With funding of 92.1 million USD from the government of Japan, UNDP launched the program to support the implementation of integrated and holistic approaches to climate change adaptation in Africa in partnership with the United Nations Industrial Development Organization (UNIDO), the United Nations Children's Rights and Emergency Relief Organization (UNICEF) and the World Food Program (WFP). The AAP supports 20 countries across the African continent to integrate climate change risks and opportunities into national development processes to secure development gains in a variable climate.

The program has two regional coordination offices, for French speaking countries in Dakar, Senegal and for Anglophone countries in Johannesburg, South Africa. Each country included in the program established a national coordination.

Morocco has participated in this program with a project focused on adaptation in oases, given the extreme vulnerability of these areas to climate change and desertification.[52] This engagement is also in line with the National Action Plan against Global Warming and with result 4 of the United Nations Development Assistance Framework (UNDAF) for Morocco (2012-2016).[53]

Indeed, Morocco's oases are now facing additional challenges brought on by climate change, which is likely to bring greater constraints, like water scarcity and extreme weather events. Maintaining economic, ecological and social services provided by oases to the communities that depend on them is of paramount importance. In fact, it is important for the entire country as oases serve as ramparts against the desert, biodiversity refuges, for the regulation of the local climate and for agricultural products. It is also crucial to develop coping mechanisms for adapting oases' resource provision to climate change impacts are.

With an overall budget of up to 6,031,712 MAD (about 640,000 USD), the project originally scheduled to be implemented by 2011 was extended until 2014. The project aimed to achieve the following objectives:

- Managing and reducing the risk posed by climate change to the productive systems of oases in Morocco.
- The introduction of innovative approaches to adaptation and the building of local capacity in a regional approach.

[51] https://www.undp-aap.org/.
[52] https://www.undp-aap.org/countries/morocco.
[53] Royaume du Maroc, 2011. Plan Cadre des Nations Unies pour l'Aide au Développement 2012-2016. Available at: http://www.unfpa.org/sites/default/files/portal-document/Morocco_UNDAF.pdf.

The project builds on an integrated and multi-sectoral approach with regional and local dimensions, both in terms of institutional capacity building as well as for demonstrating adaptation options. This approach is consistent with Morocco's major guidelines on decentralization and regional development. The ultimate goal of this project is to serve as an example for the launch of similar projects in other ecologically sensitive areas or zones most vulnerable to climate change impacts such as mountain and coastal areas.

Support for Local Gender-Sensitive Disaster Risk Reduction and Management

In December 2012, the Swiss government represented by the Swiss Agency for Development and Cooperation signed with the UN Women Office in Rabat a project financing agreement to support local gender-sensitive disaster-risk reduction and management measures with a total budget of 603,014 USD.

The project has as its main goal to contribute to efforts by the Moroccan government to reduce poverty linked to gender inequalities in areas most affected by climate change.

To contribute to this development objective, the project is divided into three areas covering:

- Support and guidance for four towns in improving their municipal development plans in line with human and gender rights considerations and integrating climate change adaptation considerations by focusing on social priorities for the fight against poverty and of risks and climatic disasters in these areas.
- Empowering vulnerable women through capacity-building to participate in and by strengthening their resilience to the risks of climate disasters.
- Development of best practices to reduce climate risks and manage disasters in a way that integrates gender concerns for wider dissemination and replication.

Five specific objectives are targeted by the project, which has from the beginning adopted and integrated a multi-sectoral local and regional approach for both institutional capacity building as well as the demonstration of adaptation options:

- Adopting a regional approach by integrating gender concerns and risk reduction and disasters related to climate change in local planning process;
- Provide the targeted communities with a Community Gender-Mainstreamed Information System which includes indicators for vulnerability and adaptation to climate change;
- Support the reduction of climate risks and disasters through community projects;
- Strengthen the capacity of local actors and women's groups on adaptation to climate change;

- Develop and disseminate knowledge on gender and climate risk and disaster reduction and management.

Green Investment Plan

Morocco has developed its Green Investment Plan, titled “Morocco's commitment to the fight against the effects of climate change"[54] which seeks private sector investments. It was presented at the UN Climate Change Summit held in September 2014 in New York on the sidelines of 69th UN General Assembly session, recognizing the voluntary nature of developing countries proactive policies for the protection of the environment and the fight against climate change. The Green Investment Plan was prepared with the support of the World Bank and German Development Cooperation (GIZ). It highlights the intention of Morocco to mobilize 25 billion USD, or 217.5 billion MAD, with the aim of achieving a reduction of cumulative emissions of GHG of 181 $MtCO_2eq$ over the period from 2015-2030. It elaborates thirty projects seeking private sector investments in seven areas relevant for mitigation, namely water, energy, forestry, agriculture, cities, transportation and solid waste management.

Focus on Energy First

With a planned investment of 134.3 billion MAD (15.44 billion USD), the energy sector is the most ambitious in terms of reducing GHG emission. Morocco’s Green Investment Plan focuses on a solar program worth 78 billion MAD (8.3 billion USD) and an integrated wind energy program over a period of ten years and worth 30.5 billion MAD (3.2 billion USD) already underway. The Green Investment Plan adds a plan to develop a further 400MW of photovoltaic power generation to be managed by the National Office of Water and Electricity (ONEE) as a set of planned medium-sized solar photovoltaic plants of 20 to 30 MW with an estimated investment volume of nearly 7 billion MAD (740 million USD).

A national program focusing on the energy efficient renovation of buildings owned by the state, period from 2014-2030 and an energy efficiency program for the industrial sector with estimated investments of 1.74 billion MAD (184 million USD) and the construction of further hydropower plants with an anticipated investment of 12 billion MAD (1.3 billion USD) are also on the agenda. The energy component of the Green Investment Plan alone is expected to reduce CO2 emissions by 147 $MtCO_2eq$ by 2030.

With respect to the transportation sector, which anticipates the need to mobilize nearly 34.8 billion MAD (3.7 billion USD), the focus is on the renewal of the commercial transport fleet for

[54] Kingdom of Morocoo, 2014. L’engagement du Maroc dans la lutte contre le changement climatique. Available at: http://www.4c.ma/medias/Plan%20d'investissement%20vert%20VF.pdf.

goods from 2014-2016 and integrating climate change considerations in a national transport logistics strategy and transport logistics platforms.

To address growing energy needs of municipalities and cities, the Green Investment Plan proposes to mobilize nearly 26 billion MAD (2.8 billion USD), including for the solar water heater program "Shemsi" (calculated at 8.2 billion MAD, 867 million USD), as well as an already announced integrated photovoltaic (PV) development program for the residential and tertiary sector (worth 17.4 billion MAD, 1.8 billion USD), which still awaits approval. Furthermore, the integration of renewable energy provision and energy efficiency into the construction of the new city of Chrafate, which will cost an estimated 897 million MAD (95 million USD), should be founded by the means of the Green Investment Plan.

Ambitious Plans for Agriculture and Rural Sanitation

Agriculture is the fourth sector highlighted in the Green Investment Plan with investment needs budgeted at estimated 11.12 billion MAD (1.2 billion USD) in order to improve the resilience of Morocco's agricultural production. .

Planned investment priorities include an ongoing program promoting solar pump to power drip irrigation (581 million MAD, or 61.5 million USD); a project to expand irrigation in the Gharb plain (with estimated investment needs of 6.1 billion MAD or 645 million USD); an irrigation project utilizing desalinated ocean water in the plain of Chtouka Aït Baha (for an estimated cost of 2.8 billion MAD, or 296 million USD); a program for the preservation and planting of argan trees in Morocco (projected financial needs are 993 million MAD, or 105 million USD), a project for the reintroduction of sylvo-pastoral practices (with estimated investment needs of 601 million MAD, or 63.5 million USA) and, finally, a waste-to-energy processing program for olive production in the province of Taounate (with a projected investment of 6.5 million MAD, or 688,000 USD).

With detailed investment needs of in total 7.3 billion MAD (772 million USD), the water sector belongs to the sectors to which the Green Investment Plan draws less attention together with the forestry and waste management sector. With many prior investments made, the Kingdom nevertheless plans to move forward with a rainwater catchment program and a National Rural Sanitation Project (RAN). The first water sector investment priority involves the construction of ten rainwater collection sites in each river basin agency for a total cost of estimated 22.6 billion MAD, or 2.4 billion USD.

As for the RAN (7.3 billion MAD or 772 million USD), it foresees the construction of about 372,000 household sanitation systems serving 2.23 million people, and the construction of about 226 collective sanitation systems covering about 678,000 inhabitants. With a smaller budget of 3.13 billion MAD (331 million USD) and 2.14 billion MAD (226 million USD) respectively, the areas of forest and waste management covered in the Green Investment Plan

foresee a number of useful projects. For the forest sector, one should mention the improvements of forests covering 200,000 ha (with investment needs of 2.6 billion MAD or 275 million USD), the EcoGharb reforestation project, which is led by the private operator Planetic and supported by local community, with a focus on catchment areas and hillsides upstream of dams (estimated costs of 403 million MAD, or 42.5 million USD).

Finally, the Green Investment Plan highlights a single project for waste management, namely the valuation of GHG emission from landfills with investment needs projected to be around 2.14 billion MAD (226 million USD), due to start next year.

B. The Institutional Framework for the Fight against Climate Change

Morocco has a favorable institutional framework for national climate governance which supports domestic dialogue and actions and allows for the monitoring and implementation of international commitments undertaken by the country in the fight against global warming. It includes a set of entities responsible for different aspects of climate policy, according to a concept inspired by the structure of the UNFCCC. Notable agencies and actors within Morocco's domestic climate governance framework include:

- The Ministry of the Environment (MEMEE) which, as the country's national focal point to the UNFCCC, is responsible for coordinating the national implementation of the Convention.
- A National Committee on Climate Change (CNCC) comprising representatives of key public stakeholders involved in the issue of climate change in Morocco, in addition to representatives from the private sector and civil society.
- A National Scientific and Technical Committee-Climate Change (CNST-CC) composed of national scientific and technical experts from public institutions, universities and consulting firms which covers the main themes of climate change.
- A CDM Designated National Authority (DNA) which is responsible for reviewing and approving national CDM projects under the Kyoto Protocol.
- A National Air Quality Monitoring Committee and regional air quality monitoring committees.
- A National Designated Authority (NDA) serving as liaison to the Green Climate Fund (GCF), which is charged with the national coordination of climate financing priorities proposed for consideration by the GCF during its board meetings. There is also a focal point for engagement with the Global Environment Facility (GEF) as well as a Designated Authority (DA) for the Kyoto Protocol Adaptation Fund respectively. All three are housed at MEMEE.

- An Interministerial Monitoring Committee (CIS) responsible for monitoring and validating technical studies undertaken by Morocco in response to UNFCCC commitments and obligations (such as National Communications, INDCs, NAMA, NAPs, etc.).

This system also relies on other institutions such as the DNM, or the National Focal Point to the IPCC. To better streamline this system and accompany Morocco's policy on sustainable development, the Kingdom has undertaken a major structural reorganization at the MEMEE by creating a central management dedicated to climate change, biodiversity and green economy (DCCDBEV), whose functions are:

- Data integration of climate change and biodiversity protection in government policies, strategies and programs in consultation with the ministries concerned;
- Oversight over monitoring and implementation of Morocco's commitments as a party to the United Nations conventions on climate change and biodiversity;
- Putting forward and activating instruments to promote greening the economy and consultation with relevant departments;
- Work towards the establishment of a national governance in the areas of climate change and biodiversity.

C. Morocco Competence Centre for Climate Change (4C Maroc)

As part of Germany's cooperation with Morocco focused on environment and climate change, the German Society for International Cooperation (GIZ) in partnership with the National Observatory of Environment is supporting the implementation of the Morocco Competence Centre for Climate Change (4C Maroc), funded by the German Federal Ministry of Environment (BMU) under the International Climate Initiative (ICI), Germany's bilateral dedicated climate fund.[55] The overall budget of the project amounts to 2 million EUR (21.2 million MAD).

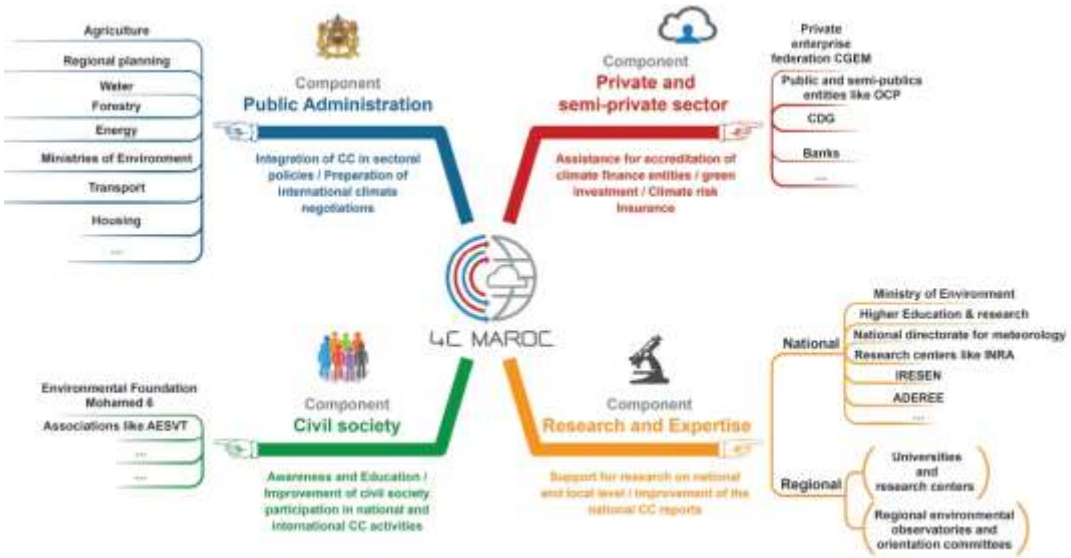
The ICI project 4C Maroc aims to enhance Morocco's overall capacity to adapt to climate change and to reduce GHG through. The 4C Maroc project is a capacity building platform of relevant actors from different sectors, like public administration and regional and local authorities, private sector, research and training, as well as civil society and a hub for the development and dissemination of expertise in change climate committed to its regional and African environment.

To achieve this vision, four tasks are defined: 1) Institution building; 2) development of mitigation and adaptation instruments for implementation of climate policy; 3) support for the preparation of Morocco's Intended Nationally Determined Contributions (INDC); 4) and training

[55] https://www.giz.de/en/worldwide/27018.html.

and capacity building as well as exchange of experiences and international dialogue. The 4C has four components. The diagram below shows the envisioned contribution of the four components and respective actors of the 4C Maroc activities.

Figure 9: Mind Map of Morocco Competence Centre for Climate Change (4C Maroc)



Source: https://www.giz.de/en/downloads/giz2015-en-mind-map-4c-morocco.pdf

IV. Governance Structure and Role of Climate Finance in Morocco

While Morocco is highly vulnerable to the impacts of climate change particularly with regard to its water resources and coastal and desert regions, as a lower middle income North African country, it has substantial public sector and private sector capacity, making the country less dependent on official development assistance (ODA) than many other African countries. Nevertheless, although the level of concessional development assistance is only around 1 % of GDP, the country draws for many of its investments in sustainable development measures on ODA inflows. They amount to about 2.247 billion USD, or 66.20 USD per capita in 2014, with substantial loans coming from the African Development Bank (AfDB), the World Bank (WB) and the European Investment Bank (EIB). [56]

The Government of Morocco has given high priority to climate change and has distinguished itself internationally as a global leader on renewable energy. In 2008 it adopted its National Energy Strategy, the so-called National Priority Action Plan (PNAP), which establishes a target of 42% installed RE capacity by 2020. It was renewed in 2016 with a new target of 52% installed RE capacity until 2030. Morocco's renewable ambition relies on the following four strategic axes:

1. security of supply with diversification of fuel types and origins;
2. access to energy for all segments of society at affordable prices;
3. promotion of renewable energy and energy efficiency; and
4. regional energy integration among the Euro-Mediterranean markets.

These axes are coupled with concerns for the climate, while at the same time providing a "green stimulus" to achieve development objectives such as continued economic growth, job creation and skill development, in particular through integrated solar and wind development projects

Key supply-side measures in the PNAP include increases in installed electrical power from renewable energy sources (with 14% each from solar, wind and hydraulic energy by 2020). Demand-side measures in the PNAP include a program of low energy lighting to reduce peak demand by 800 MW, advances in the electricity tariff structure to incentivize conservation, and a national energy efficiency program to reduce energy use in buildings, industry and transport by 15% by 2030.[57]

[56] http://www.oecd.org/statistics/datalab/oda-recipient-sector.htm.
[57] UNFCCC, 2015. Intended National Contribution, Morocco. Available at: http://www4.unfccc.int/submissions/INDC/Published%20Documents/Morocco/1/Morocco%20INDC%20submitted%20to%20UNFCCC%20-%205%20june%202015.pdf

Although hydro-electric power capacity has been a crucial element of Morocco's energy system for many decades and is expected to reach 2,000 MW by 2020 and up to 3,000 MW by 2030,[58] Morocco is shifting climate finance resources increasingly into boosting its solar and wind development. It launched an ambitious Moroccan Solar Project (Noor) costing an estimated 9 billion USD with the aim to create 2,000 MW of solar generation capacity by 2020 and roughly 4,8000 MW by 2030 via the construction of five solar power stations. Both photovoltaic (PV) and concentrated solar power (CSP) technologies are employed. Once completed, the solar project will provide 38% of Morocco's annual electricity generation. The Moroccan Integrated Wind Program aims to achieve 2,000 MW installed wind power capacity by 2020 and up to 5,000 MW by 2030, with the first wind farms already up-and-running.[59]

In this context, global public climate finance flows to Morocco focused on supporting large- and medium-scale solar and wind projects that are instrumental to the NES/PNAP implementation, especially the CSP projects which at early stages of technology and market readiness are capital intense and could not be realized without significant public support.

[58] Which means that an additional hydropower capacity of 1,330 MW has to be installed from 2016-2030.
[59] Germanwatch, 2016. MENA-SELECT, Summary: Country Fact Sheet Morocco. Energy and Development at a glance 2016. Available at: https://germanwatch.org/en/download/15120.pdf.

Box 1: Normative Framework for Public Climate Finance

Under Article 4.3 of the UNFCCC, developed countries committed to provide funding for the "agreed full incremental costs" of climate change in developing countries, meaning the additional costs of transforming fossil-fuel dependent economic growth strategies into low-emission climate-resilient development pathways. The Convention, the Kyoto Protocol and follow-up agreements and decisions by the COP have laid out some of the key principles relevant to the financial interaction between developing and developed countries. Other important principles, which can be instructive for a climate finance governance framework stem from Parties' existing human rights obligations, including the CEDAW, or a larger body of environmental law outside of the UNFCCC (such as the Rio Declaration which enshrined the polluter-pays-principle and follow-up conventions and agreements). While the precise meaning of these principles remains a matter of interpretation and discussion, collectively they can nevertheless serve as normative guidance for a coherent framework by which to assess and compare existing as well as new funding mechanisms and commitments, including under a new universal legally binding global climate agreement concluded in Paris in December 2015. Such a framework is strengthened by adding a human rights perspective. While human rights obligations are not yet formally addressed in the UNFCCC nor the IPCC, the Paris Agreement in its pre-amble urges Parties in its climate actions to "respect, promote and consider their respective obligations on human rights", supporting expert legal analysis confirming their compatibility with the UNFCCC. Parties are signatories to, and thus obligated to uphold, existing international human rights covenants focusing on economic, social, cultural, political and civil rights as well as on women's rights and gender equality. The UN High Commissioner for Human Rights (OHCHR) also has repeatedly warned of the effects of climate change on the enjoyment of human rights.

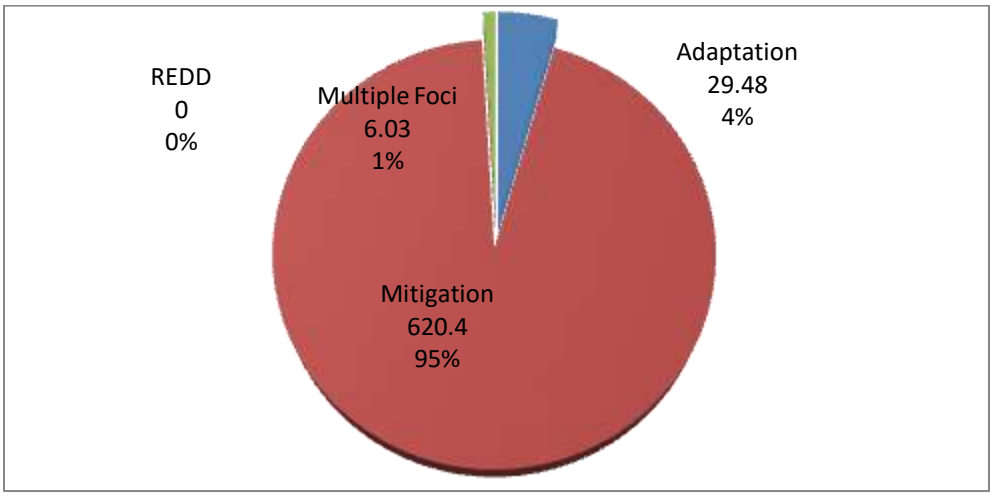
Source: Schalatek, Liane & Neil Bird (2016). The Principles and Criteria of Public Climate Finance -- A Normative Framework. Climate Finance Fundamentals, Brief 1, ODI/Heinrich Böll Stiftung North America

A look at the support provided by dedicated multilateral and bilateral climate funds to Morocco from 2003-2016 shows that from the 655 million USD approved for Morocco by October 2016 (631 million USD from multilateral funds and 24 million USD from bilateral climate funds), only around 4%, i.e. 29.5 million supported adaptation (compared to 8-9% of dedicated public climate flows for adaptation globally).[60] As shown in figure 11, Morocco benefited hugely from dedicated public funding on the global level. Nevertheless, international support for Morocco's adaptation efforts remains weak. Thus, in conjunction with international climate finance efforts to improve the allocation between mitigation vs. adaptation finance towards a more balanced approach, Morocco as a country highly vulnerable to climate change needs to focus

[60] The website Climate Funds Update (CFU), a collaboration project between ODI and Heinrich Böll Stiftung North America, tracks the public climate flows channeled through more than two dozen major dedicated climate funds and funding mechanisms. Data accessed on September 30, 2016 at: http://www.climatefundsupdate.org/data.

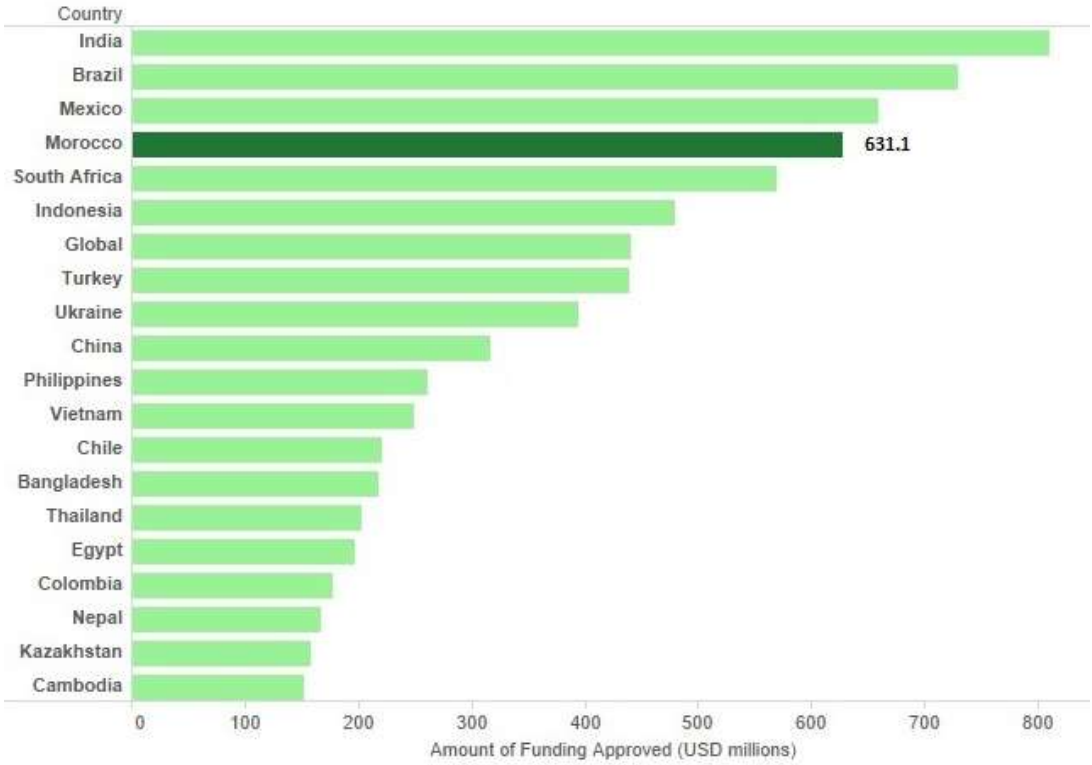
on developing more impactful and inclusive adaptation projects as a priority for the near future.

Figure 10: Morocco's Approved International Climate Finance by Focus Area (in mio USD)



Source: Climate Funds Update (CFU), September 2016, http://www.climatefundsupdate.org/data

Figure 11: Recipient Countries of Multilateral Dedicated Public Climate Finance (as of September 2016)



Source: Climate Funds Update (CFU), September 2016, http://www.climatefundsupdate.org/data

Being one of the main beneficiaries of global public climate finance, Morocco receives more than 65% of all climate finance flows to the MENA region, far outranking second-placed Egypt with less than a third of Morocco's international public climate finance inflows.[61] Nevertheless, the financing received is nowhere near enough to realize the country's ambitious climate change targets for both mitigation and adaptation. For mitigation, Morocco's INDC submitted in June 2015 highlights a range of emission reduction efforts both unconditional and conditional with the latter dependent on international financial support. While it expects to mobilize domestic finance to pay largely for its efforts to reduce 13% in GHG emissions by 2020 compared to a BAU scenario, Morocco contends that its conditional target of an additional 19% reduction for a total GHG reduction of 32% below BAU emissions levels by 2030 can only be met through overall investments of 45 billion USD between 2015 and 2030. Some 35 billion USD would have to come through access to new sources of finance and enhanced support, including via the operating entities of the Paris Agreement's new climate finance mechanism, such as the Green Climate Fund (GCF). For adaptation needs, Morocco's INDC foresees a significant increase of necessary investments and expects to dedicate at least 15 % of its overall national investment budgets in the near future to adaptation to climate change. Morocco's Green Investment Plan, highlights that the most urgent short-term adaptation needs in the water, agriculture and forestry sector alone would necessitate investments of about 2.5 billion USD.[62]

A. Mobilizing Domestic Resources and Governance Mechanisms for Climate Finance

Public Expenditures and Budget Support for Climate Change

Morocco is highly vulnerable to climate change, particularly with respect to water resources, agriculture and physical infrastructure. These challenges are taxing the public expenditure of the country, as significant domestic budget resources are needed to address those climate challenges. But there are also advantages, namely growth and employment opportunities resulting from addressing climate change, for example as Morocco takes the regional lead in developing renewable energy, particularly at large utility-size scale. With limited budget resources and competing national priorities, it is therefore crucial that domestic budget support for climate change activities is provided in the most efficient and effective manner by adjusting how domestic resources are allocated in line with pro-active policies and government planning for low-carbon and climate resilient development, that for example maximize social welfare

[61] ODI/Heinrich Böll Stiftung North America, 2016. Climate Finance Regional Briefing: Middle East and North Africa. Climate Finance Fundamentals No.9.
[62] UNFCCC, 2015. Intended National Contribution, Morocco.

and distribute benefits across society amongst other things. Such a focus on the incidence of climate-related expenditures must look at gender, ethnicity or regional differences as relevant determinants for more equitable climate-responsive government actions.[63]

In 2012, the World Bank at the request of the government of Morocco conducted a thorough Climate Change Public Expenditure and Institutional Review (CCPEIR) by looking at Morocco's public expenditures from 2005-2010.[64] Morocco was one of the first developing countries to undergo such a review. Five sectors were selected based on their mitigation potential and climate vulnerability, namely agriculture, energy, water, forestry, and waste management. The CCPEIR assessed the extent to which climate-related expenditures were tagged and how well climate spending was mainstreamed in the national budget process, and looked at the country's climate governance arrangements. It also developed a climate-specific Medium Term Expenditure Framework (MTEF) for Morocco.

The CCPEIR found significant public investments by the government of Morocco in the selected five sectors, mainly in infrastructure programs and with a focus on adaptation-related water resources management. During the review period, climate spending doubled. In 2010 alone, the Government of Morocco spent about 525 million USD (4.4 billion MAD) on projects and programs integrating some climate objectives. Most of the domestic support was in favor of adaptation. This was also a necessary effort at counter-balancing international climate finance inflows during the period that were overwhelmingly focused on mitigation.

Government spending on adaptation focused primarily on the water and agriculture sectors and accounted for 64% of all domestic climate expenditures and 9% of all national investment expenditures.[65] Investment programs in these two sectors targeted water efficiency and were closely linked with traditional development projects. At the time of the review, 1/3 of climate-related expenditures were funded through special accounts managed by sectoral ministries, such as a Fund to Address Natural Disasters. The review also revealed that the mainstreaming of climate change issues into strategic decision-making and processes needed further improvement. For example, until the review, Morocco did not identify climate change-related expenditures in its national accounts.

Since the review in 2012, government efforts have focused on improving the integration of climate change consideration into a number of sector specific plans and strategies, such as the

[63] World Bank, 2014. Climate Change Public Expenditure and Institutional Review Sourcebook. Available at: http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/World_Bank_CCPEIR_Sourcebook_0.pdf
[64] World Bank, 2012. Morocco Climate Change Public Expenditure and Institutional Review. Available at: http://documents.worldbank.org/curated/en/629591468060293893/pdf/875570WP0P11370C00FRENCH01000CCPEIR.pdf
[65] http://www.climatefundsupdate.org/regions/middle-east-north-africa

Green Morocco Plan for agriculture. The review also resulted in an update of measures under the National Plan against Global Warming (PNRC) and work to better align programs listed in the plan with sectoral strategies and respective budget allocations.

However, further improvement in Morocco's climate finance governance is possible in line with recommendations made by the CCPEIR in 2012. For example, to strengthen the mainstreaming of climate change considerations in sectoral policies and to monitor related climate resources and expenditures, climate focal points should be set up in each key government ministry or agency. They should not only further the exchange and the coordination among ministries and agencies, but also serve as knowledge providers to help build the climate understanding and capacity of their colleagues.

As climate change impacts are highly localized, in a further development of the decentralization efforts introduced by the July 2011 Constitution and the development of regional observatories for environment and sustainable development (OREDD), the development of territorial plans against global warming – to be understood as living documents with frequent updates – need to be informed by a locally driven "bottom up" approach to project identification. Such locally determined priorities must be developed by giving the most affected and most vulnerable population groups, including for example women or nomadic pastoralist tribes, an opportunity to have their concerns and needs fully integrated.

Electricity Tariffs and Energy Subsidies

Unlike some of its neighbor countries, Morocco is highly dependent on imported energy with over 91% of its energy supplied from sources abroad in 2014, including coal, oil and oil products from world markets, gas from Algeria and imported electricity. This is a significant burden on Morocco's balance of payment, and because of subsidies for some domestic energy supplies, a drain on Morocco's budget.[66]

Increasing Morocco's renewable energy generation, including through multi-year budgetary support to pay for the differential between production cost and the selling price, especially for solar energy as a temporary measure, is the strategy that Morocco is employing to transform its energy sector fundamentally.

In past years, Morocco imported every year nearly 100 billion MAD (10.6 billion USD) of fossil fuels using the Hassan II Fund and government agencies to lower the costs to consumers and

[66] IEA, 2014. Morocco 2014. Energy Policies Beyond IEA countries. Available at: https://www.iea.org/publications/freepublications/publication/Morocco2014.pdf

providing approx. 200 million USD in the form of subsidies. The heavy use of energy subsidies over the years has been largely driven by the rural electrification program (PERG), started in 1996, which increased the national electrification rate from 18% to 99% in both urban and rural areas. More than 12 million Moroccans living in rural areas have gained access to electricity over the past 20 years, on-grid as well as off-grid through decentralized electrification systems. For example, the rural electrification program deployed 15 MW of small rooftop solar photovoltaic (PV) systems in remote rural areas by 2012.[67] This development push also targeted the inclusion of the country's poorest, most isolated and vulnerable communities and population groups through subsidizing the price of electricity (social price).

Until 2014, when the Government took important steps to eliminate the effective subsidy on gasoline and fuel oil, as well as to significantly reduce the subsidy on diesel fuel, fossil fuel consumption subsidies in Morocco ballooned to 7% of the budget in an effort to calm social unrest in the wake of the Arab Spring, after reaching 5.5% of Morocco's GDP and 17% of its investment budget in 2011, according to the International Monetary Fund (IMF). As a condition of IMF loans to deal with Morocco's ongoing budget deficit, these subsidies are expected to fall to 3% by 2017. A high level of subsidy remains in the socially very sensitive area of butane bottled gas, which is the main domestic fuel used for cooking and heating and is heavily used by low-income households. Consequently, the price of a 25-pound canister of butane gas has not changed since 1990. In Morocco, the subsidized price at which a 25-pound butane canister used in cooking was sold in 2014 was 42 MAD (5 USD), though it traded for 14.50 USD on commodities markets.[68]

While the Government of Morocco is in the process to eliminate consumption subsidies on gasoline and fuel oils, it plans to shift its energy subsidy focus on lowering the cost of electricity from solar power for the population, especially for the still very expensive CSP projects. It sees this as a necessary part of its overall renewable energy expansion strategy by paying for the differential between solar power's higher production costs per kilowatt hour and the current socially acceptable price for energy. In comparison, the price for electricity generated from wind is closer to the price of coal, which is the determining factor for the centrally determined price of electricity in Morocco.

Thus, the renewable energy strategy of the Moroccan government which revolves around the installation of several large CSP projects is for the foreseeable future dependent on the government's willingness to subsidize the price of domestic solar power generation to below production costs. For solar power generation, the government will continue over the next years

[67] Vidican, Georgeta, 2015. The emergence of a solar energy innovation system in Morocco; a governance perspective. Innovation and Development, 5:2, p. 225-240.
[68] http://www.climatechangenews.com/2015/06/08/morocco-bids-to-axe-fossil-fuel-subsidies-in-climate-pledge/.

to provide the subsidy that covers the difference between the price at which the Moroccan Agency for Solar Energy (MASEN) buys and sells power. MASEN's role as a power purchaser (off-taker) is key to the business model of the public-private partnership (PPP) to guarantee significant private sector investments in the solar energy sector, in which part of the private investors' return-on-investments are secured through a price guarantee for solar power generated through long-term purchasing power agreements (PPAs).

Market Formation and Readiness

For Morocco, the implementation of its renewable energy goal hinges on the success of several large scale wind and solar power demonstration projects that are meant to help improve the market readiness for future private sector investments in the country's RE sector. The government of Morocco expects its RE sector, especially its investments in CSP, to be internationally competitive in the near future.

This optimism is driven by an enabling international policy context in favor of RE development, with ongoing high investments in RE research and development (R&D) in countries like USA, Germany and Japan, which will lead to significant cost reductions in the future and will improve the return-on-investment of solar energy projects. Morocco has decided to move ahead forcefully with a focus on a strategy targeting the development of large-scale concentrated solar power (CSP) projects, with the underlying objective of encouraging the development of a national solar energy industry, by working closely together with international leaders in R&D, and by promoting local development in the vicinities of solar projects. The government calculates that while electricity production in general supports economic development, the installation and the expansion of domestic RE better supports industrial integration and employment than for example a coal fired power plant or electricity imports from Spain, which are a net drain on the government budget for fossil fuel imports and jobs created abroad. In contrast, with solar installations the benefits in terms of jobs and electricity outputs build capacity and provide livelihoods in the domestic economy.

Simultaneously, the government of Morocco maximized the mobilization of international technical and financial cooperation on highly concessional terms in order to reduce as much as possible the overall investment costs. And indeed, some first assessments show, that for example the Noor I Ouarzazate CSP plant was built as one of the least expensive large-scale solar thermal plants globally in the last few years (with an estimated unit cost of 5,300 USD/kWh).[69]

[69] Frisari, Gianleo & Angela Falconer, 2013. San Giorgio Group Case Study: Ouarzazate I CSP Update.

International climate financing provided by multilateral mechanisms such as the World Bank's Climate Investment Funds (CIFs) and bilateral funding channels such as Agence Française de Développement (AFD) or the German Kreditanstalt für Wiederaufbau (KFW) plays a strategic role in support of Morocco's efforts to succeed with an energy transition to clean energy that focuses on public-private partnerships (PPPs), with concessional public finance lowering the risk perception and improving the investment outlook for private sector actors coming into Morocco's RE market. In Morocco's case, such international public climate finance support for "leveling-of-the-playing-field" for investments in RE versus conventional energy infrastructure needs to be maintained, if not expanded to allow Morocco's RE strategy to succeed, even if, ideally, just as a temporary bridging mechanism.

International public climate finance for Morocco's CSP strategy, delivered primarily as highly concessional loans, helps in improving the investment perspectives of private sector investors for building CSP plants as it lowers the cost of each KWh generated an estimated 25-30% when compared to finance available from commercial banks active in the market. In Morocco, the going price for electricity per KWh is centrally set (and there is no feed-in tariff). If developers can assure the lowest price for solar power generation, they win the bid for the CSP project.

CSP projects in Morocco are legally structured as Independent Power Producers (IPPs) with international private sector developers selected through a competitive bidding process, with the assigned objective for the private investor(s) to design, built, and operate the CSP plant for 25 years, before ownership is transferred fully to the country (Build-Operate-Transfer, BOT model). For example in Noor I (phase I of the Noor Ouarzazate CSP Complex), the Morocco Solar Energy Agency (MASEN) took a 25% equity stake in a newly set up Solar Power Company (SPC). The size of the minority equity stake by the government in Noor I (phase I of CSP Plant of Ouarzazate) is meant to reassure private investors of the long-term support by the Government for such projects, but without exceeding a threshold that would otherwise scare them off. This is key feature for making the Moroccan RE market ready for public-private partnerships. The majority stake of 75% in Noor I is held by a private consortium of companies led by Saudi energy company ACWA with Spanish operators.

The Moroccan government in a top down approach focusing on CSP has set up the institutional framework to support deployment of solar energy years ago. In particular, Law No. 13-09 allows solar energy producers access to the country's electricity network by permitting power plants to be built and operated by IPPs with long-term power purchase agreements (PPAs) with ONEE. ONEE, the national utility, owns the transmission and most of the distribution grid (with a stake

of around 45% of the domestic market and private producers already generating more than half of the country's energy needs).

However, the system does not allow for the possibility to feed-in surplus electricity into the grid, which limits the openness of Morocco's solar power market to small-scale power producers. Likewise, the set-up for distribution of electricity in Morocco, divided between ONEE, private distributors and municipal utilities, provides a disincentive for private distributers to support decentralized solar energy generation. Small-scale solar projects, such as those supported by the Society for Energy Investments (SIE), or the solar water pumping program established by the Ministry of Agriculture and MEMEE, are focusing almost exclusively on mini-grid or off-grid PV systems.[70]

B. The Role of International Public Multilateral and Bilateral Climate Funding Mechanisms

Morocco's ambitious climate goals and targeted actions for mitigation, such as its cumulative reduction of 401 Mt CO_2eq over the period 2020-2030, and for adaptation up to 2030 under its INDC are conditional on the provision of significantly ramped up international financial support through climate finance mechanisms, including the new 10 billion USD Green Climate Fund (GCF). The INDC identified 35 billion USD investment support needed.

From dedicated international public multilateral and bilateral climate funds, since 2003 more than 655 million USD have been approved for Morocco for close to 30 projects up to October 2016 according to CFU. The majority of climate finance from dedicated public climate funds is in form of large concessional loans under the Clean Technology Fund (CTF), part of the Word Bank's Climate Investment Funds (CIFs), for several large scale wind and CSP projects. Several smaller grants are provided by the Global Environment Facility (GEF), the Adaptation Fund (AF) and the Adaptation for Smallholder Agriculture Program (ASAP). Only 4% of CFU tracked climate finance for Morocco has been for adaptation measures so far. However, the GCF in mid-October approved 39.3 million USA for a cross-cutting project in Morocco with a significant adaptation component, thereby contributing to increasing current international public adaptation support for the country. Table 2 provides an overview of active climate finance projects in Morocco according to CFU up to October 2016.

The 655 million in dedicated climate finance approved for projects in Morocco according to Climate Fund Update (CFU) up to October 2016, do not take into account climate-relevant

[70] Vidican, Georgeta, 2015. The emergence of a solar energy innovation system in Morroco: a governance perspective, Innovation and Development, 5:2, p. 225-240.

development finance (climate-relevant ODA) provided through multilateral and bilateral development agencies, including the World Bank, (whose Morocco portfolio currently includes 13 projects worth 1.26 billion USD in concessional finance, several of which are relevant for Morocco's overall climate change approach[71]), the EIB, AfDB, AFD, or the German KfW, to name just the most important ones.

Table 2: Overview of CFU-tracked active climate finance projects in Morocco

Name of Project	Dedicated Climate Fund	Fund Type	Funding Approved (in mio USD)	Funding Disbursed (in mio USD)
Climate changes adaptation project in oasis zones – PACC-ZO	Adaptation Fund (AF)	Multilateral	9.97	
Programme de Developpement Rural des Zones de Montagne (PDRZM)	Adaptation for Smallholder Agriculture Programme (ASAP)	Multilateral	2.00	
Increasing Productivity and Adaptive Capacity in Mountain areas of Morocco (IPAC-MAM)	Special Climate Change Fund (SCCF)	Multilateral	6.57	
Integrating Climate Change in Development Planning and Disaster Prevention to Increase Resilience of Agricultural and Water Sectors	Special Climate Change Fund (SCCF)	Multilateral	4.55	4.55
Enhancing the climate resilience of the Moroccan ports sector	Special Climate Change	Multilateral	6.39	
Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco	Global Environment Facility (GEF4)	Multilateral	3.00	3.00
Energy Efficiency in the Industrial Sector	Global Environment Facility	Multilateral	2.73	2.73
Market Transformation for Energy Efficient Lighting in Morocco	Global Environment Facility (GEF4)	Multilateral	0.89	0.89
One Wind Energy Plan	Clean Technology Fund	Multilateral	125.00	
Ouarzazate I Concentrated Solar Power Project	Clean Technology Fund	Multilateral	197.00	80.00
Noor II and III Concentrated Solar Power Project	Clean Technology Fund	Multilateral	238.00	
Clean and Efficient Energy Project	Clean Technology Fund	Multilateral	23.95	
Programme for Cleantech Innovation and Green Jobs in Morocco	Global Environment Facility (GEF6)	Multilateral	0.91	0.91
Greening COP22 in Marrakesh, Morocco	Global Environment Facility	Multilateral	1.83	1.83
Promoting the Development of Photovoltaic Pumping Systems for Irrigation	Global Environment Facility (GEF5)	Multilateral	2.64	
Mainstreaming Climate Change in the National Logistics Strategy and Roll-Out of Integrated Logistics Platforms	Global Environment Facility (GEF5)	Multilateral	2.27	2.27
Market Readiness Proposal MRP	Partnership for Market Readiness	Multilateral	0.40	
PMR Program Morocco	Partnership for Market Readiness	Multilateral	3.00	
Promoting Wind Energy and Other Renewables in Morocco	Germany's International Climate Initiative (ICI)	Bilateral	1.98	
Quarzazate I Solar Power Plant	Germany's International Climate Initiative (ICI)	Bilateral	19.28	
Morocco National Competence Centre for Climate Change (4C Maroc)	Germany's International Climate Initiative (ICI)	Bilateral	2.76	
	Total Climate Finance Support		**655.12**	**96.18**

Source: Climate Funds Update (CFU); http://www.climatefundsupdate.org/data; accessed 9/30/2016

[71] http://maps.worldbank.org/p2e/mcmap/map.html?.org=ibrd&level=country&code=MA&title-Morocco.

For the realization of its NES, Morocco is dependent on large sums of international concessional finance, both from dedicated climate funds but also from public development finance institutions (DFIs). Frequently, as the case study of the Ouarzazate CSP projects (Noor I, II and III) illustrates, the realization of ambitious and transformative climate projects in countries such as Morocco (in terms of innovative technology approaches, business models or regarding its impact on the sustainable development of the host country) are only possible through the combined investment and risk-sharing efforts of several international public finance institutions. They are the indispensable international public support, without which many of Morocco's planned flagship activities could not be realized. Their involvement also signals to private sector investors that it is safe for them to join in climate projects often perceived to be too risky to guarantee a suitable rate-of-return.

The Role of International Climate Finance Support for the Ouarzazate CSP Project

The Moroccan solar plan with estimated costs of 9 billion USD foresees the construction of five CSP complexes country-wide between 2015 and 2020 for a total capacity of 2000 MW in Ouarzazate, Foum Al Oued, Boujdour, Sebkhat Tha, and Aïn Béni Mathar. The Ouarzazate Complex will be developed as a 580 MW CSP facility. Construction on the first phase of the Ouarzazate Complex, the 160 MW Ouarzazate I CSP plant (Noor I), began in late 2012. Phase 1 of the Ouarzazate Complex (Noor I) involved the design, construction, commissioning, testing, ownership, operation and maintenance of the 160 MW CSP power plant with three hours of thermal storage. This is the biggest project of its kind in the world. In February 2016, Noor I was connected to the power grid. Noor I, Morocco's first large-scale solar power plant, will produce electricity for 350,000 people with 537,000 mirrors over an area the size of 650 football fields.

Over the next four years, three additional solar power plants are to be installed close to the southern Moroccan town of Ouarzazate, supplying eventually power for around 1.3 million people and expected to save at minimum 800,000 tons of CO_2 emissions per year as compared to conventional electricity generation.[72]

In September 2014, the World Bank listed the projected overall public finance project costs for the Noor Ouarzazate CSP Complex to be at 2.677 billion USD.[73] The table below reflects the proposed financing plan according to estimates at the time.

[72] https://www.kfw-entwicklungsbank.de/International-financing/KfW-Development-Bank/News/News-Details_338561.html.
[73] http://www.worldbank.org/projects/P131256/?lang=en&tab=financial.

Table 3: Public Financing Plan for the Noor Ouarzazate CSP Complex (as Proposed in 2014)

Public Financier	Commitment in mio USD
African Development Bank (AfDB)	135
EC: European Commission	122
EC: European Investment Bank (EIB)	473
France: Agence Française Développement (AFD)	68
WB: International Bank for Reconstruction and Development (IBRD)	400
Germany: Kreditanstalt für Wiederaufbau (KfW)	884
Borrower: Government of Morocco/MASEN	357
Clean Technology Fund (CTF)	238
Total public finance commitment	**2,677**

Source: http://www.worldbank.org/projects/P131256/?lang=en&tab=financial; accessed on September 30, 2016.

The Ouarzazate Complex is designed to be managed and financed as a public-private partnership (PPP) by bringing together private investors, international finance institutions (IFIs) and the Government of Morocco. For Ouarzazate Noor I, the PPP incorporates a substantial subsidy by the Government of Morocco to private investors in the form of two power purchasing agreements (PPAs), which are to cover the expected 25-year lifetime of the project. The development of Noor I was based on the build, own, operate and transfer (BOOT) model. Under this model, an international private investor consortium (lead by ACWA Power International with Spanish investment partners), selected under a competitive bidding process, is constructing, operating and owning the CSP plant for 25 years, before the ownership is transferred to Morocco. Under the first PPA, MASEN will purchase power at the cost of the power generated from the Solar Power Company (SPC), which was set up as joint equity investment of the private consortium (with a majority stake) and MASEN (with a minority stake) for the purpose of the BOOT model. Under the second PPA, the Office National de L'Eau and de L'Electricity of Morocco (ONEE) will buy all power from MASEN, at the grid price and dispatch it from the plant. [74]

The Government of Morocco guarantees the financial stability of MASEN and compensates it for the price difference between the two PPAs which is in effect the incremental cost of CSP technology in the Moroccan market. Initial estimates projected the subsidy component to be

[74] Falconer, Angela & Frisari, Gianleo, 2012. San Giogio Group Case Study: Ouarzazate I CSP. CPI Report.

around 60 million USD per year. However, the winning private sector consortium was able to offer a tariff substantially lower than the initial cost projections, so that the Moroccan solar subsidy amount is now estimated at only 20 million USD per year. The lower bid reflected overall final project cost savings of about 25% over initial projections, due to increased production estimates (now around 420 GWh from initially forecasted 370 GWh), significantly lowered capital costs through concessional finance provided by the IFIs, and the willingness by the winning bidding private sector consortium to accept a much smaller after-tax return on investment of just around 6.5% than those 10 to 12% usually expected in the Moroccan market. The latter might have been a reflection of ACWA's attempt to aggressively build market share as well as the reduced risk perception due to the heavy engagement of the Moroccan public sector and IFI financing. In Ouarzazate Noor I, the public sector ended with financing 85% of the overall investment costs of around 850 million USD, versus projected 1 billion USD.[75] Through public sector concessional financing, as detailed in table 4 below, the cost of a kWh of electricity could be reduced by between 25% and 30%, in comparison to the sole reliance on commercial finance for the project.

Table 4: Public International Finance for Ouarzazate Noor I , as Projected in August 2012

Source	Amount in Mio	Instrument
AfDB	200 EUR	Project loan
CTF/AfDB	100 USD	Project loan
CTF/WB	97 USD	Project loan
IBRD	200 USD	Loan for financing of operating costs
EIB	250 EUR	Project loan
AFD	100 EUR	Project loan
KfW	100 EUR	Project loan
KfW/ICI	15 EUR	Grant
EC: Neighborhood Investment Fund (NIF)	30 EUR	Grant
Total Projected Int'l Finance	**~ 1,251 USD**	

Source: Falconer, Angela & Gianleo Frisari (2012). San Giorgio Group Case Study: Ouarzazate I CSP. CPI Report.

The second phase of the public-private financing process for the future phases of Ouarzazate is underway, with MASEN continuing to use the PPP model employed in phase I and to act as both shareholder in the power company and guaranteed purchaser for the solar power produced. However, it is questionable that the public sector can come up with a similarly high share of concessional finance provision for these phases as well.

[75] Frisari, Gianleo & Angela Falconer, 2013. San Giorgio Group Case Study: Ouarzazate I CSP Update. CPI Brief.

Climate Investment Funds (CIFs)

The World Bank Climate Investment Funds (CIFs) are a portfolio of climate funds coordinated through the World Bank and implemented through the regional development banks. It biggest fund is the Clean Technology Fund (CTF).

Under the CTF, Morocco receives public international investments through a MENA Region CTF Investment Plan approved for 750 million USD, with expected 250 million USD flowing through the African Development Bank (AfDB), which focuses on CSP expansion programs in the five MENA countries of Algeria, Egypt, Jordan, Morocco and Tunisia.[76] Whereas the allocation of the MENA CSP CTF was intended to be spread in the MENA region, thereby boosting regional co-operation and integration, some events in the region, particularly, the Arab Spring negated this. Further, some countries in MENA did not want CTF loans, but only technical assistance. Thus, so far the MENA Region CTF investment plan has failed to reach its regional impact objective, as most of the financing under this plan approved has benefitted Morocco's Ouarzazate CSP Complex. Two tranches of CTF concessional loan financing for CSP Ouarzazate Project Phase I (Noor I) and Phase II (Noor II and Noor III) were approved in June 2011 and May 2013 for 197 million USD and 238 million respectively. These tranches of funding are channeled from the World Bank and the AfDB as implementing entities to MASEN as the public executing entity.[77]

Table 5: Funding Allocation under the MENA Region CTF Investment Plan for CSP

Country	CTF Financing (USD Million)	Project Capacity (MW)
Egypt	123	100 (Komo Ombo)
Jordan	50	Up to 100 (including CPV)
Libya	20	100
Morocco	197 238 50	160 (Noor I) 350 (Noor II&III) 100 (Phase II of Midelt or Tata)
Tunisia	62	50 (Akarit)
Technical Assistance (Algeria, Egypt, Jordan, Libya, Morocco, and Tunisia)	10	
Total	750	960

Source: Revised MENA Region CTF Investment Plan, June 2014; https://www-cif.climateinvestmentfunds.org/sites/default/files/CTF_13_6_Revised_Investment_Plan_for_MENA_CSP..pdf

[76] https://www-cif.climateinvestmentfunds.org/country/middle-east-and-north-africa-region.
[77] CIF, 2014. Revised MENA Region CTF Investment Plan. Available at: https://www-cif.climateinvestmentfunds.org/sites/default/files/CTF_13_6_Revised_Investment_Plan_for_MENA_CSP..pdf

Morocco also receives funding under the Morocco CTF Investment Plan worth 150 million USD, which focuses on increasing the penetration of renewable energy into Morocco's electricity portfolio, mainly from wind, but also focused on PV power generation. In June 2012, the CTF approved a 125 million USD concessional loan to benefit the ONEE Wind Energy Plan. The remaining 25 million USD were approved for the ONEE Sustainable Energy Project.

Morocco's Wind Plan is defined by the PNAP, which has been described above. It pursues a national strategy to generate 2,000 MW wind power by 2020, with the private sector expected to generate 1,000 MW, while the remaining 1,000 MW are to be generated through the integrated wind program of ONEE launched in 2010. It is to be implemented in two phases: Phase 1 involves the Taza Wind Farm (with a capacity of 150 MW); under Phase 2, ONEE will develop five wind farms split between the South and the North of the country. One of the five wind farms under the program project is the Tanger 2 project (100 MW) which is benefiting from the CTF concessional finance and is scheduled to be completed by June 2018. The other four wind farms are a first one in Midelt which is to begin service in 2016; the second one is the Tiskrat Farm (with 300 MW between Tarfaya and Layoune, of which 150 MW are to go online by December 2017 with the remaining 150 MW slated to come on the grid by December 2018); the third on is the 200 MW Essaouira Wind Farm project, which is supposed to be in service in 2019). The last one under the ONEE Wind Energy Plan is the Boujdour Wind Farm (150 MW), which is planned to be in service by 2020.

The CTF-funded ONEE Sustainable Energy Project consists of a Solar PV Complex in Tafilalet (between 20 and 75 MW). This project is benefiting from 25 million USD from CTF. The financial structuring of the project is under development. The project will obtain an additional 125 million USD from AfDB. Maximum power generation of 75 MW will be realized on three or four sites. Each PV power plant will be between 10 to 20 MW. The objective of this project is to improve the quality of electricity service in remote areas that are both far from the grid and from production sites.

Global Environment Facility (GEF)

The Global Environment Facility (GEF) Trust Fund was established following the 1992 Rio Earth Summit, to serve as the operating entity for the financing mechanisms of the three Rio Conventions on climate change (UNFCCC), on biological diversity (CBD) and to combat desertification (UNCCD). The Paris Agreement also confirmed the GEF as operating entity of the financial mechanism for the agreement.

GEF funding to support the projects is contributed by 39 donor countries though replenishment cycles every four years. The current sixth replenishment phase from 2014-2018 (GEF-6) provides 4.43 billion USD in grant resources for actions under all three Rio Conventions, with about 1.25 billion going mainly for climate change mitigation activities. The GEF employs the STAR allocation system, which guarantees a specific funding allowance for each eligible recipient country. GEF funds are available to developing countries and countries with economies in transition to meet the objectives of the international environmental conventions and agreements the GEF supports via several trust funds. Under the System for the Transparent Allocation of Resources (STAR), under GEF-6, Morocco is entitled to receive grants in the amount of 4.85 million USD for projects under the GEF's climate change focal area, with 4.9 million USD in grants for biodiversity activities and grants of 4.77 million USD to address land degradation (for a total of 14.53 million USD). Morocco received allocations similar in size under the fifth replenishment cycle (GEF-5), with previous replenishments (and thus STAR allocations per country) being lower.[78]

The GEF also houses the trust funds for three adaptation funds under the UNFCCC, the Special Climate Change Fund (SCCF); the Least Developed Countries Fund (LDCF); and the Kyoto Protocol Adaptation Fund. As a lower-middle income country, Morocco is not eligible for project support under the LDCF, but has received financing for three SCCF projects. It also received funding approval for a number of mitigation-focused activities under the GEF's climate change focal areas. In total, the GEF project database lists 17 climate change projects for Morocco, including two enabling activities, of which one was cancelled and eight have already been completed under earlier GEF replenishment cycles, leaving eight projects still under implementation. Morocco is a member of a regional constituency comprised of the following other countries: Algeria, Egypt, Libya and Tunisia. In addition to country-specific projects, the GEF funds a number of regional projects that benefit all of these countries together. Climate-relevant GEF projects are also funded with multiple foci (for example looking at biodiversity, climate change and/or desertification together).[79]

[78] GEF, 2014. GEF-6 Indicative Star Allocations. GEF document GEF/C.47/Inf.08. Available at: https://www.thegef.org/sites/default/files/council-meeting-documents/40_EN_GEF.C.47.Inf_.08_GEF-6_Indicative_STAR_Allocations.pdf.
[79] The GEF project database is available at: http://www.thegef.org/projects.

Table 6: GEF Climate Change Project Portfolio in Morocco (as of September 2016)

	GEF Project ID	Focal Areas	Implementing Agencies	Project Type & Size	GEF Project Grant	Co-financing Total	Status
Renewable Energy for the City of Marrakech's Bus Rapid Transit System	9567	Climate Change	UNDP	Medium-size Project	1,319,863	56,173,683	Project Approved
Integrating Climate Change in Development Planning and Disaster Prevention to Increase Resilience of Agricultural and Water Sectors	3967	Climate Change	The World Bank	Full-size Project	4,345,454	100,000,000	Completed
Energy Efficiency in the Industrial Sector	4112	Climate Change	AfDB	Full-size Project	2,730,000	8,855,000	Completed
Elaboration of a National Climate Change Strategy and Action Plan	39	Climate Change	UNDP	Enabling Activity	140,000	0	Completed
Second Biennial Updated Report and Fourth National Communication under the UNFCCC	9482	Climate Change	UNDP	Enabling Activity	852,000	100,000	Project Approved
Programme for Cleantech Innovation and Green Jobs in Morocco	9485	Climate Change	UNIDO	Medium-size Project	913,242	2,900,000	Project Approved
Greening COP22 in Marrakesh, Morocco	9486	Climate Change	UNIDO	Medium-size Project	1,826,484	3,600,000	Project Approved
Repowering of Power Plant	574	Climate Change	The World Bank	Full-size Project	6,000,000	39,700,000	Cancelled
Market Development for Solar Water Heaters	646	Climate Change	UNDP	Full-size Project	2,965,000	2,400,000	Completed
Integrated Solar Combined Cycle Power Plant (formerly Solar Based Thermal Power Plant)	647	Climate Change	The World Bank	Full-size Project	43,200,000	70,460,000	Completed
Energy and Environment Upgrading of the Industrial Park of Sidi Bernoussi Zenata, Casablanca	1838	Climate Change	The World Bank	Medium-size Project	750,000	11,150,000	Completed
Energy Efficiency Codes in Residential Buildings and Energy Efficiency Improvement in Commercial and Hospital Buildings in Morocco	2554	Climate Change	UNDP	Full-size Project	3,000,000	12,610,000	Completed
Promoting the Development of Photovoltaic Pumping Systems for Irrigation	5539	Climate Change	UNDP	Full-size Project	2,639,726	49,100,000	Project Approved
Increasing Productivity and Adaptive Capacity in Mountain Areas of Morocco (IPAC-MAM)	5685	Climate Change	UNDP	Full-size Project	6,510,000	24,000,000	Project Approved
Mainstreaming Climate Change in the National Logistics Strategy and Roll-Out of Integrated Logistics Platforms	5358	Climate Change	UNDP	Full-size Project	2,274,429	17,550,000	Project Approved
Market Transformation for Energy Efficient Lighting in Morocco	4139	Climate Change	UNEP	Medium-size Project	889,091	3,915,000	Completed
Enhancing the Climate Resilience of the Moroccan Ports Sector	6951	Climate Change	EBRD	Full-size Project	6,192,694	48,900,000	Project Approved
Total Financing Provided					**86,547,983**	**451,413,683**	

Source: GEF Project Database, http://www.thegef.org/projects; accessed on September 30, 2016.

Adaptation Fund

The Kyoto Protocol Adaptation Fund was officially launched in 2007 although it was established in 2001 at the COP 7 to the UNFCCC in Marrakech, Morocco to finance concrete adaptation projects and programs that reduce the adverse effects of climate change facing communities, countries, and sectors. It is intended to finance climate adaptation projects and programs in developing countries that are parties to the Kyoto Protocol.

At its conception, the Adaptation Fund was forecasted to be primarily financed by a share of 2% of the total carbon assets from clean development mechanism (CDM) project activities and also with funds from other sources. As the market for carbon credits plunged, other funding sources

became more critical for the Adaptation Fund, and include contributions from Annex 1 countries, although the Adaptation Fund is struggling to receive enough contributions to address developing countries' demand for support. By September 2016, the Adaptation Fund had committed 354 million USD for 53 projects in 61 countries directly benefitting 3.61 million vulnerable people.[80]

The Adaptation Fund is unique for the way it is governed and in supporting recipient country's ownership over the process. The Adaptation Fund Board (AFB) is composed of 16 members and 16 alternates, with a majority representing developing countries and with dedicated seats for the representation of Least Developed Countries (LDCs) and Small Island Developing States (SIDSs). The Adaptation Fund also pioneered a direct access mechanism, which enables accredited national implementing entities (NIEs) and regional implementing entities (RIEs) in developing countries to directly access climate adaptation financing without having to rely on multilateral entities such as MDBs or UN agencies to act on their behalf.

Morocco has one NIE accredited since 2012, the National Agency for Agriculture Development (ADA). So far, the Adaptation Fund has financed one project in Morocco through ADA as the NIE and selecting the National Agency of Development of Oases and Argan Tree Zones (ANDZOA) as the executing entity for the project totalizing 10 million USD. Due to the funding challenges the Adaptation Fund continues to face, disbursement to any single country are currently capped at 10 million USD.

The project focuses on improving the adaptability of the 1.733 million inhabitants of the southern oases zone in Morocco to the impacts of climate change. As a result of the degrading ecosystem, the oases no longer provide sufficient means of subsistence. Thus, the oasis populations are forced to resort to seasonal migration and have an increased dependence on the income earned from migrating. This results in the abandonment of practices adapted for the oases zone, and leading to a loss of environmental services. Productive activities in the Moroccan oases, which have already been weakened by recurrent periods of drought, are subject to an arid climate and experience over-exploitation of natural resources (overfishing, overgrazing, excessive water pumping, etc.) are being further degraded.

The project aims to improve the adaptive capacities of the water sector; diversify income sources and improve living conditions of populations vulnerable to climate change in the targeted areas; improve the ecosystem's resilience in response to climate change and variability; improve the awareness of all stakeholders though the management and sharing of knowledge; and strengthen the capacities of participants in the design and implementation of

[80] Adaptation Fund website at https://www.adaptation-fund.org/.

adaptation measures. The project documentation acknowledges the need to take gender considerations into account, especially in ensuring women's participation in the Southern oases zone in knowledge and capacity building activities and in ongoing project implementation.[81]

The Green Climate Fund (GCF)

GCF was conceived as the new central channel for international climate finance delivery, especially for multilateral adaptation flows, and will play a significant role to help developing countries in implementing their commitments under the Paris Agreement. Created in 2010, it became fully operationalized with the approval of its first set of projects in late 2015. As an operating entity of the financial mechanism of the UNFCCC, the GCF's objective is to promote the paradigm shift towards low-emission and climate-resilient development in recipient countries.

An initial resource mobilization netted 10.3 billion USD in contributions (mostly in form of grants) from 43 states, including several developing countries. The GCF is mandated to achieve a balanced allocation of 50:50 between mitigation and adaptation over time and ring-fences a minimum of 50% of the adaptation allocation for particularly vulnerable countries, including least developed countries (LDCs), small island developing states (SIDS) and African states.

All developing countries are eligible to access GCF resources through either accredited multilateral implementing entities (MIEs) via international access, or through accredited national and regional implementing entities (NIEs or RIEs) via direct access. The GCF is also piloting Enhanced Direct Access (EDA) modalities, which would bring decision-making over individual projects under an approved programmatic approach to the national level. A country's national designated authority (NDA) provides a no-objection approval of proposals brought forward through accredited entities. The GCF is the first multilateral climate fund which has started out with a gender-sensitive mandate for all its financing. Every project proposal coming before the Board for approval is supposed to include an elaborated project-specific gender action plan. The ability of implementing entities to oversee gender-sensitive implementation of projects on the ground is also a criterion for their accreditation as partners of the GCF.

Morocco has accredited ADA as its NIE for the GCF (a function ADA also fulfills under the Adaptation Fund).[82] At its mid-October 2016 meeting, the GCF Board approved Morocco's first GCF project proposed by ADA, a cross-cutting medium-risk proposal focusing on both mitigation and adaptation benefits through the *"Development of Argan Orchards in Degraded*

[81] https://www.adaptation-fund.org/project/climate-changes-adaptation-project-in-oasis-zones-pacc-zo-2/.
[82] http://www.greenclimate.fund/-/agency-for-agricultural-development-of-morocco?inheritRedirect=true&redirect=%2Fpartners%2Faccredited-entities

Environment". The 50 million USD project seeks financial support of 39.3 million USD in grants from the GCF.

Morocco committed in its INDC to reduce its GHG emission by 32% by 2030, through nationally appropriate mitigation actions (NAMAs). Arganiculture, aiming to plant 43.000 hectares of argan tree orchards, is a priority NAMA. The six-year project (to start in early 2017) aims to strengthen the resilience of rural communities and the argan biosphere reserve through planting 10.000 ha of argan tree orchards with soil conservation and rain water harvesting capabilities, and supporting argan fruit producers' professional organizations and market access, and promoting beneficiaries capacity building, knowledge sharing and natural forest co-management. According to ADA, the project proponent, it was developed through an extensive stakeholder consultative process involving 8 provinces and 31 rural communes. The activities once achieved contribute to relieve the anthropic pressure on the natural forest, and improve livelihoods of the communities' members, in particular women, who traditionally pick and process the argan fruits and are to benefit from employment and marketing opportunities created by the project. In the long-term, carbon sequestration is estimated at 604 223 Mt CO2 eq. Executing entity for the project is the ANDZOA.[83]

Within the Moroccan government, the MEMEE, represented by Her Excellency Ms. Hakima El Haité Minister delegate in charge of Environment to the Minister acts as the country's NDA to the GCF since early 2015, the high level representation indicating the importance the Moroccan government attributes to the GCF as a way to implement its INDC. Morocco's NDA has cleared and endorsed already several project proposals to be submitted to the GCF Board for consideration in the foreseeable future.

Figure 12: GCF Financing Structure

Source: Green Climate Fund (GCF), www.greenclimate.fund

[83] GCF, 2016. Consideration of Funding Proposals – Addendum V. Funding Proposal Package for FP022, GCF Document GCF/B,14/07/Add.5. Available at: http://www.greenclimate.fund/documents/20182/409835/GCF_B.14_07_Add.05_-_Consideration_of_funding_proposals___Addendum_V.pdf/1c9b8361-ad8b-4bfc-a210-cf933201aa58

Bilateral and Multilateral European Climate Finance Support: KfW, ICI, AFD and EIB

For the realization of its ambitious NES focused on increasing the share of renewable energy in the country's electrical power mix by 2020 to 42%, in particular for several large-scale wind and CSP projects, the government of Morocco can draw on significant concessional support from European financing institutions. Clearly, Morocco was able to use its support by the World Bank and the AfDB for CTF projects to leverage other concessional loans from multilateral and national development banks within the European Union, in particular from the German KfW, the AFD and the EU's multilateral development bank, the EIB. All of them, as elaborated previously were part of the public finance consortium covering initial investment costs for the Ouarzazate CSP Complex (Noor), although they've been leveraged to varying degrees. Together, their loans contributed to the 25% equity stakes of MASEN in the SPC in the Noor I plant.

The Kreditanstalt für Wiederaufbau (KfW)**,** as a 100% German government owned bank, is seen as an important instrument under German development cooperation. It is also one key implementer, together with the German Society for International Development (GIZ) of bilateral climate finance support provided by Germany under its bilateral climate fund, the International Climate Initiative (ICI), which supports mitigation and adaptation projects worldwide. Germany has a long cooperation history through its ODA and climate funding with Morocco, supporting mitigation demonstration technologies such as Ouarzazate CSP, but also wind and capacity-building projects.

Under the **International Climate Initiative (ICI)**, Germany provided a total of 24 million USD in grant money for three projects: a 19.3 million USD grant for the Ouarzazate I (Noor I) CSP Plant; 2 million USD to promote wind energy and other renewable in Morocco as well as 2.8 million USD support for the set up of Morocco's Competence Centre for Climate Change (4C Maroc), discussed in more details above.

In Morocco, KfW is involved in co-financing several projects including projects under the CTF for approx. 500 million EUR. For Noor I, KfW provided a fully concessional 15-year ODA loan of 100 million EUR as well as a 15 million EUR (19.3 million USD), grant under the ICI. For the second phase of the project, KfW committed already 330 million EUR for Noor II and 324 million EUR for Noor III, making KfW the largest lender for this phase. KfW has indicated that it will support Noor IV with up to 95 million EUR, probably as the sole provider of finance. With its investment, KfW is communicating its high confidence in solar plans in Morocco and in particularly in the Noor complex as the largest solar complex in the world.

Agence Française de Développement (AFD) is the development aid agency of the French government with a legal status of a public bank under French banking laws. With Morocco, it has a long history of support in many sectors of the Moroccan economy (agriculture, logistic, transport, etc.), focusing its financing support often on bottom-of-the-pyramid beneficiaries with a clear commitment to sustainable development and gender equality. AFD financed a study on the social and environmental impacts of Noor I CSP project (focusing in particularly also on gender impacts) and elaborating positive and negative impacts that the power plant could bring to the region of Ouarzazate. The study highlighted a number of actions to try to optimize the benefits provision of the Noor I plant at the community level. It also co-financed phase 1 of the Ouarzazate complex with a 100 million concessional long-term loan at competitive interest to MASEN and a grant of 0.3 million EUR. AFD is expected to support Noor II with 50 million EUR. ADF is not yet involved in the Morocco's wind program but is working with ONEE on reinforcing the electricity transfer grid.

The **European Investment Bank (EIB)** took the lead in organizing the EU donors' consortium for the Ouarzazate CSP project by regrouping financial commitments by the KfW, the AFD and the European Commission's Neighbourhood Investment Facility (NIF). While 90% of EIB's activity is concentrated on the European continent, one EIB objective is focused on regional integration of Europe and its neighborhood, including the MENA countries, and especially the promotion of regional electricity and gas markets. The EIB sees investments in these projects as a way to help the European Union to reach its renewable energy goal of 20% by 2020. EIB support for RE projects in Morocco, such as Ouarzazate, is made with a view to creating RE exports to Europe. For example, Spain is a potential importer of CSP power from Morocco given its physical proximity and existing connections. For CTF projects, including the Ouarzazate, EIB provided long-term (26 years) financing with an open, market-rate dependent interest rate. Its support for the entire Noor Ouarzazate CSP Complex could reach up to 473 million USD according to some 2014 estimates.

Improving the Coordination of Public Climate Finance in Morocco

Morocco has profited from a significant amount of international public climate finance inflows, both from dedicated climate funds, but also climate-related ODA from DFIs, including bilateral ones such as KfW or AFD. However, there is so far little harmonization by those providers of concessional public finance regarding investment criteria or project approval processes. What is more, within the government of Morocco – as in most other developing countries – different focal points or designated authorities are acting as liaison with different finance providers (for example the Ministry for Environment with a separate person each for the GCF, the GEF and the Adaptation Fund as climate funds under the UNFCCC, while the Ministry of Economy and

Finance is responsible for interaction with the DFIs, including the CIF). Each funding source will also require separate project endorsement by the government (usually a no-objection procedure, although some, such as the GCF, require an active affirmative no-objection letter). Project developers seeking to assemble financing packages from various public funding sources will thus have to deal with a multitude of different actors and procedures.

Morocco should consider having an exclusive national climate finance coordination mechanism (CCM), which would have to be not just a single person, but an agency with the ability to outreach and include a wide swath of national and local stakeholders beyond just coordination within the government in a determination of Morocco's priorities for international climate finance support. Having such a single CCM would also lead to better coordination and complementarity of different projects (avoiding for example project duplication or a missing integration of individual projects into a broader strategic framework or program).

In a growing number of developing countries, for example on the African continent in Benin, Ethiopia, Mali, Rwanda or South Africa, national climate funds are set up.[84] Morocco could profit from an exchange on lessons learned and best practices with its African neighbors about the utility of such a national climate fund for Morocco. Such a specially set up national climate fund in Morocco could serve as a country coordinating mechanism on all matters climate finance and also as single repository of all international public climate finance inflows. The Climate Public Expenditure and Institutional Review (CPEIR), which the World Bank conducted in Morocco at the government's request in 2012, recommended the creation of such a national climate fund as a way to strengthen the country's management of climate finance inflows and to optimize access to climate finance at the international level.

C. Private Sector Investments in Climate Action in Morocco

Morocco has adopted a market-based approach to development and seeks to promote private sector development, mindful that climate change provides both opportunities and threats to Morocco's private sector. The General Confederation of Moroccan Companies (CGEM) is taking the lead in coordinating domestic private sector investments in climate action, including through the Moroccan Centre for Clean Manufacturing (CMPP). It has also formed an Energy, Climate, and Green Energy Commission, which will play an important role in galvanizing private sector engagement for the COP22, hosted by the government of Morocco.

[84] See also an overview of the emerging global climate finance architecture at Climate Funds Update (CFU) at: http://www.climatefundsupdate.org/about-climate-fund/global-finance-architecture

Created in 2000 as a PPP between the CGEM and the Ministry of Industry, Commerce and New Technologies (with support by the government of Switzerland), the CMPP promotes the adoption of green technologies and production processes and is seeking to support the development of green industries in Morocco through technology transfer, with a particular focus on solar and wind power and waste management for both solid waste and sanitation. Work by the CGEM and CMPP on adaptation is less well developed however, including in responding to dangers of flooding of industrial areas (such as in the area around Tangiers).[85]

The government of Morocco has encouraged private sector engagement in climate projects in Morocco by providing economic instruments, and an encouraging regulatory framework as well as financial incentives. These government measures have gained traction especially since 2008 in the context of rising energy pricing and the country's new renewable energy development strategy.

For example, the Fonds Capital Carbone Maroc (FCCM) was set up by the Caisse de Depot et de Gestion of Morocco, with EIB and French Caisse de Depots joining, as the first carbon fund to be established in Francophone Africa with an initial fund size of 300 million MAD for 2008-2017 to promote private sector investments in renewable energy projects and other emission reduction measures under the CDM in Morocco with the aim of acquiring CERs in Morocco and then trade them internationally.[86]

Historically, until the early 1990s, ONEE, the national utility company, was the only entity able to produce electricity in Morocco. To address this unsustainable situation, it liberalized the energy market by allowing the production and buying of electricity by the private sector, which led to projects such as the Ain Beni Matar Project and the Jorf Al Asfar Project.[87]

By 2020, when the country hopes to reach 6,000 MW of RE production, more than 70% will be produced by the private sector. Under the renewable energy Law No. 13-09 introduced in 2009, ONEE has the obligation to buy electricity produced by the private sector. This law opened the door to the construction of several private sector operated wind farms around the country.

In late 2015, the government of Morocco adopted Law No. 58-15 as a complement to Law No. 13-09 by amending the renewable energy law and introducing a net-metering scheme for solar PV and onshore wind plants, initially only for power plants connected to the high-voltage grid.

[85] OECD, 2011. Climate Change Financing and Aid Effectiveness. Morocco Case Study. Final Report.
[86] http://www.moroccotomorrow.org/fonds-capital-carbone-maroc-moroccan-carbon-capital-funds/.
[87] The liberalization of the energy market relies on the Law No. 13-01. Ain Beni Mathar is a thermo solar power plant, located in Western Morocco. It was established in cooperation with the African Development Bank as their first energy cooperation project. Information is available at http://www.afdb.org/en/projects-and-operations/selected-projects/ain-beni-mathar-a-unique-thermo-solar-powerplant-in-morocco/

Those connected to the middle- and low-voltage level will also be eligible at a later date. Private producers may sell up to 20% of their production to the grid. It also extends the minimal electric production capacity from hydro power from 12 to 30 MW. It is hoped that the legal reform will increase the attractiveness of the sector for private investors while at the same time lowering the electricity bills of Moroccans. The social impact of this revision could be significant, as it stimulates creation of green jobs and improves the supply of water and electricity in remote rural areas. In terms of Morocco's macroeconomic outlook, this law will help reduce Morocco's dependence on fossil fuel imports and improve its balance of payment.

While the business model of CSP in Morocco has been elaborated in detail above, the wind energy program of ONEE is another example of employing a public-private partnership model successfully in generating wind power. ONEE has chosen the PPP model for the design, construction, operation and maintenance of all its wind farms (with public financing provided by international donors, the Hassan II Fund and the SIE – Society for Energy Investments), with ONEE taking initially equity shares in the five projects companies, to be substituted by debt provided at concessional levels. A similar scheme has been used for the first phase of the 150 MW Taza Wind Project, which is benefiting from a fixed price for its electricity under the 20 years' purchasing contract with ONEE, with financing from KfW. While it is not yet clear what the KWh price from these wind projects will be, it is apparent that the support for Morocco's Integrated Wind Energy Program through international public climate finance will have a significant impact on KWh cost. The experience of the AfDB has played an important part, which AfDB assisting ONEE decisively with help in structuring necessary public investments (for the ONEE wind program, 359 million EUR have been mobilized by AfDB in addition to 125 million from the CTF).

Box 2: Electricity Provision and Pricing in Morocco

ONEE nation-wide peaks in electricity use are between 7pm and 11pm and between 7am and 9am, with the smallest off-peak period from noon to 5 pm. All other hours show average use. Therefore peaks are linked to domestic consumption rather than a sign of industrial peak demand (with agriculture water pumping a main use). The production of electricity from hydro accounts for 15%, from coal for 60% (with the largest single contributor the Safi GLEC project), combined cycle fuel & gas-powered electricity generation accounts for the rest. Morocco's electricity grid is interconnected for a total national installed capacity of 6000 MW. Electricity tariffs for final consumers (residential and businesses) are fixed by government degree, regulated by the Ministry of Energy and with differentiated pricing for tariffs for industry (excluding cement plants) and households, rural and urban areas. While the government is reducing subsidies, electricity tariffs remain below production costs, while high in a regional comparison. ONEE is not involved in setting tariffs. While ONEE generally generates a profit, its social welfare objective means that it sometimes sells without a profit, particularly as import prices for fossil fuels rise.

Over time, Morocco has a clear potential to become a net exporter of electricity from RE. Today, Morocco's still relies to 95% on imports for its energy needs, with 15% to 20% of electricity imported from Spain. By 2020, thanks to the ONEE program and the stimulus to private sector RE production programs in Morocco under Law No. 13-09, Morocco could become a net exporter of electricity to Europe, especially since European energy demand peaks and Morocco's peak demand are not at the same times. Also, Article 9 of the EC Renewable Energy Directive 2009/28/EC encourages its member countries to increase the share of RE in their energy mix to 20% by 2020, therefore EU countries have a self-interest in supporting Morocco and other MENA countries in investing in RE. Morocco could conceivably also export electricity from RE to its African neighbors in the south including Mauritania and Senegal as well as others.

Currently, the capacity of the connection between Morocco and Spain is 1,400 MW via two subsea cables, with a third interconnection in progress, and used at full capacity. Looking at the RE strategies of the EU and the Maghreb region, it is clear that those are insufficient to meet future needs. These first two interconnection lines have been funded equally with 50% by Spain and 50% by Morocco. For the third interconnection line under discussion, climate financiers are interested in providing concessional loans and even grant financing (for example from the EC Neighourhood Investment Fund, FIV). Without international public concessional finance support, it will be impossible to increase the competitiveness of Moroccan electricity support to Europe.

Box 3: Three Different Models of Private Sector Wind Projects in Morocco

1) Project directly developed by ONEE and held on its own balance sheet (in general developed in partnership with a technical supplier).

2) IPP is the second one and most important one (in a build-operate-transfer or BOT model) based on a PPA (Power Purchase Agreement) with maturity of 20 years; the development of the project is given to the private sponsors (they produce and sell electricity exclusively to ONEE via a PPA), often through a Special Purpose Vehicle (SPV), a project entity with equity investments by the public and the private sector (a kind of PPP). ONEE is the single off-taker; this PPA generally is guaranteed by Government of Morocco.

3) Pure private development; a private sponsor designs and builds wind plants, then sells private PPAs directly to industry clients; private producers and private consumers use the ONEE grid only for electricity transport; this model is only suitable for high voltage and large industrial consumers.

While public climate finance provision is increasingly focused on maximizing leverage of private climate investments, most public climate funds are not directly accessible to the private sector but reach them only via intermediation through the public sector. Private sector companies, both internationally operating and domestic ones, feel also insufficiently consulted by multilateral IFIs and climate funds on how they could best contribute to the fight against climate change via specific projects and programs for which concessional finance is used.

Although international public climate finance has supported important demonstration projects in PPPs in Morocco, the government of Morocco by itself does not provide direct incentives for private RE project developers, as there is no feed-in tariff or official subsidy support. Thus, businesses wanting to invest in RE see themselves unable to compete with other more traditional energy projects. This is especially discouraging for potential large-scale private sector investments in wind power as Morocco has several areas with an excellent wind energy potential, particularly in the greater Essaouira, Tanger and Tétouan areas and in the Dakhla, Tarfaya and Taza. The economics of such private sector projects are further challenged since private RE companies have to pay fees to ONEE to use the grid. The potential for private sector wind power generation might be at the moment more promising for off-grid projects.

A leveling of the playing field for private sector investments in RE in Morocco would not necessarily have to come from direct subsidies to private companies, but could be already partially accomplished by the total removal of fossil fuel subsidies. Help is needed especially for

small-, and medium-sized enterprises (SMEs) in Morocco, which form the backbone of Morocco's job creation and economic development and should be at the forefront of national efforts to promote RE in Morocco. Unfortunately, SMEs are the business segment currently most in need of patient, long-term, affordable debt financing to sustainably invest in REs in Morocco.

International climate funds in particular need to focus more attention and prioritize funding for SME engagement in REs in Morocco and other developing countries. For SMEs, and the private sector more generally, the upfront capital intensity of RE investments does not necessitate equity investments, but structured debt finance as the foundation for their ability to invest. Thus, climate funds and international public backers of climate projects need to think of how to provide risk guarantees and concessional debt for SMEs (and not solely for large entities such as ONEE, which are big enough to mobilize debt financing commercially and are not dependent on such assistance). Especially when it comes to promoting wind or other proven RE technologies for 2 to 5 MW projects, SMEs would need a helping hand, as many local commercial banks will not even consider their credit requests. Concessional public climate finance must play an enabling role, for example by providing risk guarantees to commercial banks or by buying down interest rates for SME investments in RE for small-scale, green credit lines. In Morocco, such publicly backed RE investment credits could be given preferentially to small-scale private sector investments in wind power, as in Morocco wind power can already be produced at a price competitive with conventional energy sources, and increasingly often below.

The new Green Climate Fund is showing some promise in its expected engagement with the private sector. It accredits international, regional and national/sub-national private sector entities via its Private Sector Facility (PSF) directly as implementing entities. That allows them access to GCF funding without intermediation through public sector actors (as is the case in many other climate financing mechanisms). Such access is not just reserved for commercial banks but theoretically also for project developers. The GCF also started a 200 million USD pilot program to support micro-, small-, medium-sized enterprises (MSMEs). Importantly, in a first request-for-proposals, the GCF highlighted the need to consider the gender dimension of MSMEs, as women entrepreneurs area overwhelmingly concentrated in this segment of the private sector in most developing countries, but are often those most thoroughly excluded from access to investment finance for climate projects, due to cultural as well as legal reasons (such as lack of sufficient collateral due to traditional ownership structures).[88]

[88] https://www.greenclimate.fund/documents/20182/24891/FP_2016_PSF_001_MSME_Pilot_Program.pdf/47c13bcb-1d84-406e-b4fa-ebe24f92f17b.

D. National Planning, Country Ownership, and Stakeholder Participation in Climate Finance in Morocco

The Government of Morocco most recently in its INDC has elaborated the key mitigation and adaptation goals of the country up to 2030 and detailing a significant ramping up in ambition for the time-frame 2020-2030. The implementation of Morocco's INDC is based on several laws, strategies and sector-specific action plans with specific targets. For mitigation, the key national strategy to pursue low-carbon opportunities for achieving national economic and social objectives is the National Priority Action Plan (PNAP) for the National Energy Strategy (NES) launched in April 2008, although a number of other sector-specific strategies such as the Green Morocco Plan also play an important role. For adaptation, however, such a dominating single unifying document with a corresponding action plan is still missing. Until Morocco has developed its National Adaptation Plan (NAP) detailing national adaptation priority actions until 2030, something the government intends to do in the short term, it remains a challenge to coordinate and maximize the synergy and complementarity of numerous adaptation-related activities under more than 20 national sector and territorial plans, programs and strategies.[89]

The delivery of international climate finance as well as climate-related development finance is supposed to be country-driven and country-owned with the government taking the lead in the development of proposals and related consultation processes through thorough in-country coordination.

Several multilateral climate funds, including the GCF, have anchored the principle of country ownership centrally in their founding statutes as a guiding mandate.[90] However, in practice country-ownership is often relatively narrowly defined. A designated authority or focal point selected by the government is meant to act as the safeguard to secure country ownership in interactions by the government with the Adaptation Fund, the GEF or the GCF. This task is generally considered to be largely fulfilled by providing a no-objection-letter for proposed projects to be implemented in their country stating that the proposals are in line with national plans and priorities. Usually these projects are brought forward by implementing entities, ideally after thorough engagement with various government entities and national stakeholders. For all three climate funds, in Morocco, the Ministry for Environment, Mining, Water and Environment fulfills this role, although the lead responsibility is assigned to a different person at varying rank for each fund.

As Morocco's liaison to the CTF, the Ministry of Economy and Finance provides oversight, with a focal point appointed to see to its day-to-day operations. The Ministry is also in charge of coordinating through focal points with the various MDBs and international donors more

[89] As listed under the adaptation section of Morocco's INDC.

[90] The GCF Governing Instrument, for example, mandates in para.3 the GCF to "pursue a country-driven approach and promote and strengthen engagement at the country level through effective involvement of relevant institutions and stakeholders."

generally together with the Ministry of Foreign Affairs. Often, an initial outreach by IFIs involves working with sector ministries (transportation, energy, agriculture, housing etc.) to design and clarify the technical details of a project at an early stage.

Country-ownership, however, has to go much deeper than the government in order to ensure that climate finance projects are truly driven by the country's needs and priorities and country-owned. It must include a thorough and early engagement of multiple stakeholders in the process of articulating a country's climate financing needs more broadly (for example in a country program under the GCF or through a country investment plan as in the CTF). A national designated authority or focal point must see it as their task to reach out not only to other government actors, but to different citizen groups and communities, especially in communities and among population groups to be affected by internationally funded climate projects and programs by serving essentially as a country coordination mechanism (CCM) for that respective climate fund. Such a CCM would see it as a main task to bring a broad range of domestic stakeholders together and give not just the government, but also a diverse group of civil society organizations, academics, and private sector representatives a seat at the decision-making table determining Morocco's internationally support climate action priorities. The GCF for example provides a set of best-practice country coordination guidelines for its NDAs that ask for their capacity to facilitate and coordinate multi-stakeholder engagement country-wide, including by paying attention to the engagement of women and vulnerable groups in consultation and planning activities.[91]

The importance of early and ongoing comprehensive outreach to stakeholders and affected communities, especially for large-scale climate projects, to secure communities' support and goodwill and to prevent environmental and social harm, is best illustrated by experiences made in Morocco with the Ouarzazate Noor I CSP project. Both the planning and the construction phases of Noor I have already had both positive and negative effects on people's livelihood in the project area, varied within and between communities and across different project phases.[92]

In general, because of the high legitimacy that MASEN as the project proponent enjoys and because of its early efforts to maximize the livelihood dimension of the project, the project experienced a high degree of acceptance by the hosting communities. MASEN made great efforts to align CSP deployment within the broader productive structure of the local economy, for example through local content requirements as an opportunity for small- and medium-sized enterprises (SMEs), and to meet broader human development objectives, for example through local employment opportunities and improvements to the social infrastructure in adjacent communities. National and local NGOs were likewise involved during the consultation period

[91] GCF Decision B.08/10 and related Annexes XIII and XIV. In: Document GCF/B.08/45, Decisions of the Board – Eighth Meeting of the Board, 14-17 October 2014.

[92] Wuppertal Institute/Germanwatch (2015): Social CSP – Energy and development: exploring the local livelihood dimension of the Noor0 I CSP project in Southern Morocco. Available at: https://germanwatch.org/en/download/11797.pdf.

and supported local populations with expressing their needs and expectations as well as during the land mobilization efforts.

Overall, investments in the Noor Complex are expected to bring great benefits in social, including gender and economic terms. Social infrastructure such as schools for girls, or health centers that benefits primarily marginalized people in the area will be supported; overall job creation during construction phase is estimated at 3000 jobs (with around 550 for Noor I), with hundred permanent ones for the operation of the plants and related research and development (R&D). The region is also to benefit more broadly, as the Noor Complex is estimated to be an overall boost for the future of the region, including through expected site visits and by putting it firmly on the map of international experts and academia.

While efforts to ensure the effective participation of stakeholders achieved positive impacts, Noor I also highlighted several issues with potential negative consequences that should be more pro-actively addressed in the second phase of the Noor Complex as well as in other utility-scale solar projects in Morocco in the planning phase (f.ex. the Midelt and Tata projects). Specifically community concerns about the operational water demands of the plant and long-term repercussions for regional water security, such as depriving local farmers in the Ouarzazate region of the necessary water resources with cascading effects in the downstream oases of the Draa Valley have to be taken seriously by taking a precautionary approach. Communities also perceived a lack of participation in decision-making and their expectations for livelihood improvements could have been better managed through ongoing community engagement with pro-active information provision. While during the construction of Noor I local jobs were created, they were distributed very inequitably and there was a general mismatch between the skills that local labor provided and those in demand by the project. Employment and income benefits were also mostly captured by men. Thus, the promotion of gender equality and women's empowerment must be given a stronger focus in CSP and other climate projects, by including local women deliberately in project-related recruitment, and community benefit-sharing and decision-making processes and by providing training and capacity building opportunities to improve their skills and competencies.[93]

One of the best ways to improve the long-term livelihood and community benefits of climate projects is to economically include local micro-, small- and medium-size enterprises (MSMEs) in the construction, service-provision and operation of structures like the Noor I Ouarzazate CSP plant. In fact, MASEN had guaranteed a certain percentage of local content for the plant; the winning private sector consortium had even promised to upgrade the percentage of local content, including as a way to reduce costs. Nevertheless, at Noor I, many especially micro-level local enterprises felt economically excluded. For the long-term sustainability and success of

[93] Wuppertal Institute/Germanwatch, 2015. Social CSP – Energy and development: exploring the local livelihood dimension of the Noor0 I CSP project in Southern Morocco.

climate finance supported RE infrastructure in Morocco, it is important that this issue is addressed centrally.

There is a general consensus that local MSMEs are the private sector companies that provide most of the economic growth in Morocco. However, many domestic MSMEs are not aware of the existence and role of climate finance tools for Morocco's green economic transformation. It will take the concerted efforts by the Government of Morocco and others to improve the inclusiveness of the outreach of main providers of international public climate finance at the national, and especially local and community levels. Stakeholder engagement overall, including that of domestic MSMEs, must be strengthened by focusing beyond formalistic compliance with international standards (such as a mandatory Environmental and Social Impact Assessment, ESIA, for large-scale, riskier climate projects) on a more community-focused assessment of local needs, capacities, concerns and aspirations. This would also integrate the projects and actions funded by international climate finance more into the economic and social fabric of Morocco.

Conclusions and Recommendations

In his fifth report of 2014, the Intergovernmental Panel on Climate Change (IPCC) estimated the economic cost of climate change between 0.2 and 2% of global GDP. Developing countries, such as Morocco and those on especially the African continent, will be affected disproportionally, although the region has contributed the least to historic GHG emissions. As a country very vulnerable to climate change, Morocco is already spending a significant amount of its domestic resources for adaptation measures, which could in the years to come necessitate at least 15% of its overall domestic investment budgets.

While Morocco has received a significant amount of public climate finance over the last years (ranking at fourth place among developing country recipients globally), only 4 % of the roughly 655 million USD received by October 2016 from dedicated climate funds have been for adaptation. And the support provided is quite obviously inadequate to address the country's needs. The vast majority of public climate finance has come to Morocco in the form of concessional loans for a number of utility-scale demonstration projects in wind and solar power, such as the Ouarzazate Noor Concentrated Solar Power (CSP) Complex and the ONEE Integrated Wind Energy Program. They are at the core of Morocco's National Energy Strategy and present a top-level approach to determine funding priorities. At the same time, Morocco estimates that in order to achieve its ambition to reduce its total GHG emissions to 32% below BAU emission levels by 2030, it will need overall investment estimated at 45 billion USD between 2015 and 2030.

As president of the COP22 to be hosted in November 2016 in Marrakesh, Morocco will have the opportunity and legitimacy as an African country highly vulnerable to climate change to focus international climate finance discussions in Marrakesh on efforts to improve the allocation between mitigation vs. adaptation finance towards a more balanced approach by pushing industrialized countries to ramp up their commitment for public finance for adaptation. Likewise, domestically, Morocco will have to focus on developing more impactful and inclusive adaptation projects as part of a comprehensive master strategy as a priority for the near future. The Green Climate Fund (GCF), which aims to allocate its initial resources of 10.3 billion USD in a 50:50 balance between mitigation and adaptation over time, provides an important opportunity for Morocco to access significant multilateral adaptation funding. With ADA, Morocco has accredited a national implementing entity for direct access to GCF resources.

With limited international public flows, constrained domestic budget resources and competing national priorities, it is crucial that domestic budget support for climate change activities is provided in the most equitable, efficient and effective manner. The government must adjust domestic resource allocation in line with pro-active policies and government planning for low-carbon and climate resilient development that maximizes social welfare and distributes benefits

fairly across society. Such a focus on the incidence of climate-related expenditures must look even more than it already does at gender, ethnicity or regional differences as relevant determinants for more equitable climate-responsive government actions.
As climate change impacts are highly localized, in a further development of the decentralization efforts introduced by the July 2011 Constitution and the development of regional observatories for environment and sustainable development (OREDD), the development of territorial plans against global warming – to be understood as living documents with frequent updates – need to be informed by a locally driven "bottom up" approach to project identification. Such locally determined priorities must be developed by giving the most affected and most vulnerable population groups, including for example women or nomadic pastoralist tribes, an opportunity to have their concerns and needs fully integrated.

The following are some key recommendations to improve climate governance and inclusiveness of climate finance decision-making, delivery and implementation in Morocco:

- Since Morocco is dealing with a multitude of climate finance providers with often different investment criteria or project approval procedures, consider designating a single agency with the ability to outreach and include a wide swath of national and local stakeholders as the national climate finance coordination body. Having such a single national body would lead to better coordination and complementarity of different projects (avoiding for example project duplication). In following the example of other countries on the African continent, such a body could be set up as National Climate Fund and serve as central recipient of all international public climate finance inflows. This could strengthen Morocco's management of climate finance inflows and optimize access to climate finance at the international level.

- In the absence of a single national climate fund, ensure that Morocco's national designated authorities or focal points liaising with multilateral climate funds or IFIs (for example the GEF, GCF, AF, CTF or MDBs) see it as their task to serve as a country coordination mechanism (CCM) for that respective finance provider. Such a CCM would bring a broad range of domestic stakeholders together and give not just the government, but also a diverse group of civil society organizations, academics, community and women's groups and private sector representatives a seat at the decision-making table for determining Morocco's climate finance priorities.

- Strengthen the mainstreaming of climate change considerations in sector policies and the ability to monitor related climate resources and expenditures by designating climate focal points in each key government ministry or agency, including ministries addressing

social and gender issues. Such focal points will not only strengthen the exchange and the coordination among ministries and agencies, but also serve as knowledge providers to help build the climate understanding and capacity of their colleagues.

- Prioritize the development of Morocco's National Adaptation Plan (NAP) detailing national adaptation priority actions until 2030 through comprehensive participatory multi-stakeholder engagement, in order to address the needs of Morocco's most vulnerable population groups and communities and as a way to rationalize, coordinate and maximize the synergy and complementarity of adaptation actions currently scattered among more than 20 national sector and territorial plans, programs and strategies.

- Put micro-, small-, and medium-sized enterprises (MSMEs) in Morocco, which form the backbone of Morocco's job creation and economic development, at the forefront of national efforts to promote RE in Morocco by working with multilateral climate funds and international public backers of climate products. Concessional public climate finance must play an enabling role, for example by providing risk guarantees to domestic commercial banks or by buying down interest rates for MSME investments in RE via small-scale, patient, affordable green credit lines. Especially when it comes to promoting wind or other proven RE technologies for 2 to 5 MW projects, SMEs would need a helping hand, as many local commercial banks will not even consider their credit requests. Such efforts must also address the barriers in access to finance that women entrepreneurs, who are primarily concentrated in the micro- and small business sectors, face.

- Consider the introduction of a feed-in-tariff to allow small-scale wind or solar energy producers to feed-in surplus electricity into the grid; in this context, also rethink the current set-up for distribution of electricity in Morocco, as it currently provides a disincentive for private distributers to support decentralized solar and wind energy generation.

- Go beyond formalistic compliance with international standards for stakeholder engagement (such as a mandatory Environmental and Social Impact Assessment, ESIA before large-scale, riskier climate projects) by focusing on detailed community assessments of local needs, capacities, concerns and aspirations as a way to integrate the projects and actions funded by international climate finance more into the economic and social fabric of Morocco.

- Focus on improving the long-term livelihood and community benefits of large-scale climate projects by including local micro-, small- and medium-size enterprises (MSMEs) in the design stages as well as in the construction, service-provision and operation of RE plants such as the Noor Ouarzazate Complex.

- With large-scale RE projects in wind and CSP, ensure that local green jobs are distributed equitably and focus on improving the skills of the local workforce to match those for the jobs provided. To avoid that employment and income benefits are mostly captured by men, include the promotion of gender equality and women's empowerment as an explicit goal in CSP and other climate projects, by including local women deliberately in project-related recruitment, and community benefit-sharing and decision-making processes and by providing training and capacity building opportunities to improve their skills and competencies.

- Finally, in order to ensure lasting benefits to the people and business in local communities, in which publicly funded or supported climate actions are placed, allocate a share of the economic revenues, royalties or taxes such projects might generate in the medium- to long-term directly to local communities through local benefit-sharing processes that are transparent, fair and ensure equal benefits for men and women.