

SOMMAIRE

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List of abbreviations

ADA	Agency for Agricultural Development
UNFCCC	United Nations Framework Convention on Climate Change
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
NAC	Normal Business
CCDB	National Commission on Climate Change and Biological Diversity
CP	Conference of the Parties
GCF	Green Climate Fund
GHG	Greenhouse gases
IPCC	Intergovernmental Panel on Climate Change
HFCs	Hydrofluorocarbons
CDM	Clean Development Mechanism
MRV	Monitoring, reporting and verification
NMPE	Minimum energy performance standards
ODD	Sustainable Development Goals
NCP	National Climate Plan
PCT	Territorial Climate Plans
GDP	Gross domestic product
TDM	Small and medium hydropower
PMI	Partnership for market implementation
PNAM	Pooled Liquid Sanitation Program
UNDP	United Nations Development Programme
PRG	Global warming potential
RBT	Biennial Transparency Reports
NSDS	National Strategy for Sustainable Development
STEP	Wastewater treatment plants



INTRODUCTION

The Government of Morocco presents here an update of its Nationally Determined Contribution for the period 2020-2030, in accordance with Articles 4.2 and 4.11 of the Paris Agreement, paragraphs 23 and 24 of decision 1/CP.21 and other relevant provisions of the Agreement.

In terms of mitigation, the updated NDC revises upwards the objectives of the first version of the NDC by presenting a target of 45.5% by 2030, including an unconditional target of 18.3%. These new objectives reflect a significant increase in Morocco's mitigation ambition. Morocco's updated NDC is multidimensional and anchored in a variety of enabling elements, such as:

- respect for human rights and gender equality, recognized in the 2011 Constitution of Morocco;
- synergies to be exploited with the other two Rio Conventions, aimed at the restoration, respect and maintenance of biological diversity, integrated water resources management, as well as sustainable land management to counter desertification and land degradation on its territory;
- the alignment of climate change actions, in line with the United Nations (UN) Sustainable Development Goals (SDGs), particularly goals 1, 3, 6, 7, 8, 9, 11, 12, 13 and 17;
- the implementation of advanced regionalisation, which will strengthen the implementation of the NDC by enhancing the potential and resources specific to each region and encouraging interregional solidarity.

Despite its small contribution to global GHG emissions, Morocco has developed its NDC with the firm conviction that global ambitions to tackle the problem of climate change call for a consistent commitment from all parties in terms of mitigation, adaptation, means of implementation, cooperative approaches and transparency.

Morocco, while remaining firmly committed to the Paris Agreement, is determined to pursue climate mitigation and adaptation objectives in accordance with its national circumstances and capacities.

2.

NATIONAL PRIORITIES

Morocco's vision on climate change

Make its territory and civilization more resilient to climate change while ensuring a rapid transition to a low-carbon economy.

Morocco's vision of climate change is enshrined in Framework Law 99-12 on the National Charter for the Environment and Sustainable Development (CNEDD) published in the official bulletin on March 21, 2014 and which specifies "the rights and duties inherent in the environment and sustainable development recognized to natural and legal persons and proclaims the principles that must be respected by the State, local authorities and public establishments and companies".

This political will is also confirmed by the National Strategy for Sustainable Development (SNDD-2030) and the National Climate Plan (NCP 2030):

- The NSDS, adopted on 25 June 2017 by the Council of Ministers, aims to achieve a gradual transition to the green economy, taking into account environmental challenges, working to promote human development and social cohesion and consolidating economic competitiveness in a sustainable manner;
- the development in 2019 of the National Climate Plan for 2030 (NCP 30) constitutes a convergence framework for the development of a medium- and long-term climate policy and offers the country the opportunity to implement its NDCs.

The design of the NCP 30 is the result of a detailed diagnosis of the vulnerability of Moroccan ecosystems as well as an in-depth analysis of sectoral plans and policies. It includes measures and projects to adapt Morocco's key ecosystems and sectors, particularly in terms of water resources, agriculture, fisheries resources and fragile ecosystems. It also proposes to consolidate the mitigation targets of all sectoral strategies and action plans, including energy, agriculture, transport, waste, forestry, industry and housing. It takes into consideration the territorial vocation by advocating the generalisation of Regional Climate Plans (RCPs) and City Climate Plans (PCVs).



Highlights of the updated NDC

Adaptation

Adaptation is a priority for Morocco, given its high vulnerability to the impacts of climate change. The cost of implementing adaptation programmes in the most affected sectors is estimated at nearly US\$40 billion. The sectors concerned include water, agriculture, fisheries and aquaculture, forestry, health, housing and the most vulnerable environments and ecosystems: oases, coastlines and mountains.

Mitigation

Morocco's overall updated target represents a reduction in GHG emissions from its economy by 45.5% by 2030, including an unconditional target of 18.3% compared to the reference scenario, which corresponds to an evolution of emissions in line with the "normal course of business" (NAB). The mitigation scenario leading to the overarching goal is based on 34 unconditional actions and 27 conditional actions on international financing.

Financing and investment flows

The total cost of mitigation actions under the NDC is estimated at US\$38.8 billion, of which US\$21.5 billion is for conditional actions.

The implementation of the NDC requires significant investments that exceed the capacity of a single actor, and therefore requires enhanced interaction between the Moroccan state, the private sector, and international financial institutions, including new climate finance mechanisms, including the Green Climate Fund (GCF) and the financial instruments of multilateral development banks.

Morocco also considers it essential to set up market mechanisms to promote cooperation between the Parties, as provided for in Article 6 of the Paris Agreement, in particular by reducing the total costs of achieving the objective of limiting the rise in temperatures, cited in Article 2 of the said agreement.



3.

ATTENUATION

3.1. Reference scenario

The mitigation targets presented in this updated NDC are consistent with the current practice of developing countries, i.e., they are expressed in relation to a counterfactual baseline scenario corresponding to a 2030 evolution of emissions following the NAC, using 2010 as the base year.

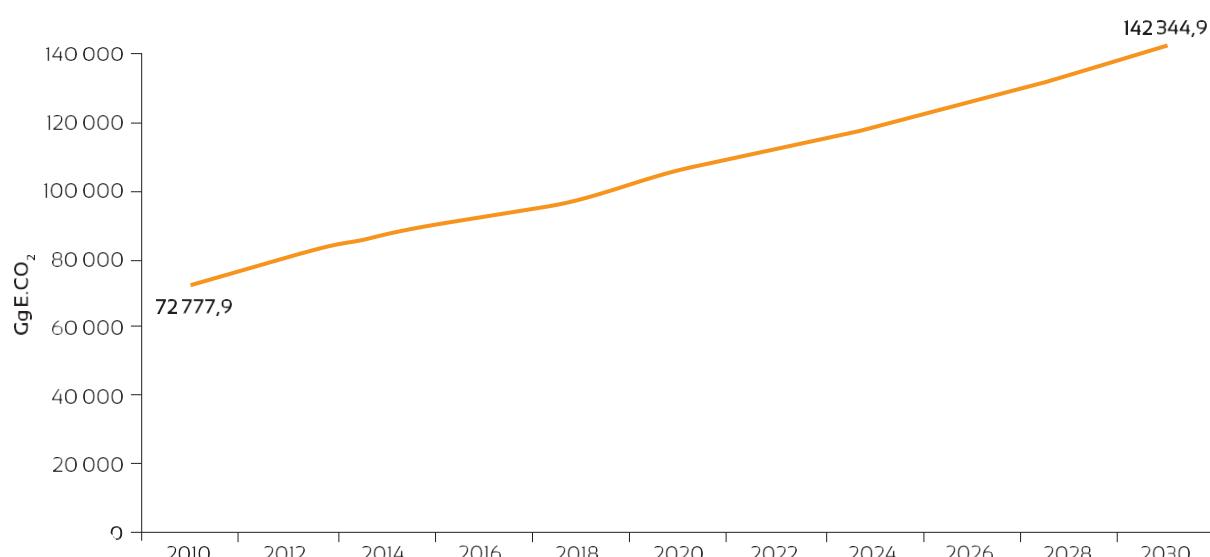
A revision of the baseline scenario during the NDC implementation period may be warranted due to technical updates to the parameters or fundamental changes in the methodology for determining the scenario. In the case of Morocco, the revision of the baseline scenario, when updating the NDC, is linked to the use of the 2006 Intergovernmental Panel on Climate Change (IPCC) guidelines instead of the 1996 guidelines (used in the initial NDC) which has an impact on emissions in the 2010 base year, the starting point of the baseline scenario.

Morocco's baseline scenario includes all mitigation policies and/or measures adopted prior to the 2010 base year. Policies and/or measures adopted after 2010 will be taken into account in achieving the mitigation target. Morocco, a country committed to the modernization of its productive structures and its demographic transition, has more ambitious economic and social objectives than the continuation of the trend of the last decade.

The choice of the reference year 2010 is not arbitrary, it corresponds to the first year of implementation of the National Plan for the Fight against Global Warming in Morocco.

The following figure presents the overall baseline scenario for GHG emissions from all sectors for the period 2010-2030.

Fig. 1. Global GHG emissions baseline



3.2. Unconditional measures

The unconditional mitigation measures scenario includes **thirty-four (34) measures** (Annex 2) to which Morocco commits as part of its Nationally Determined Contribution (NDC) taking into account its internal circumstances and capacities. The unconditional target translates , in absolute terms for 2030, into emissions of 116.1 Mt CO₂eq.

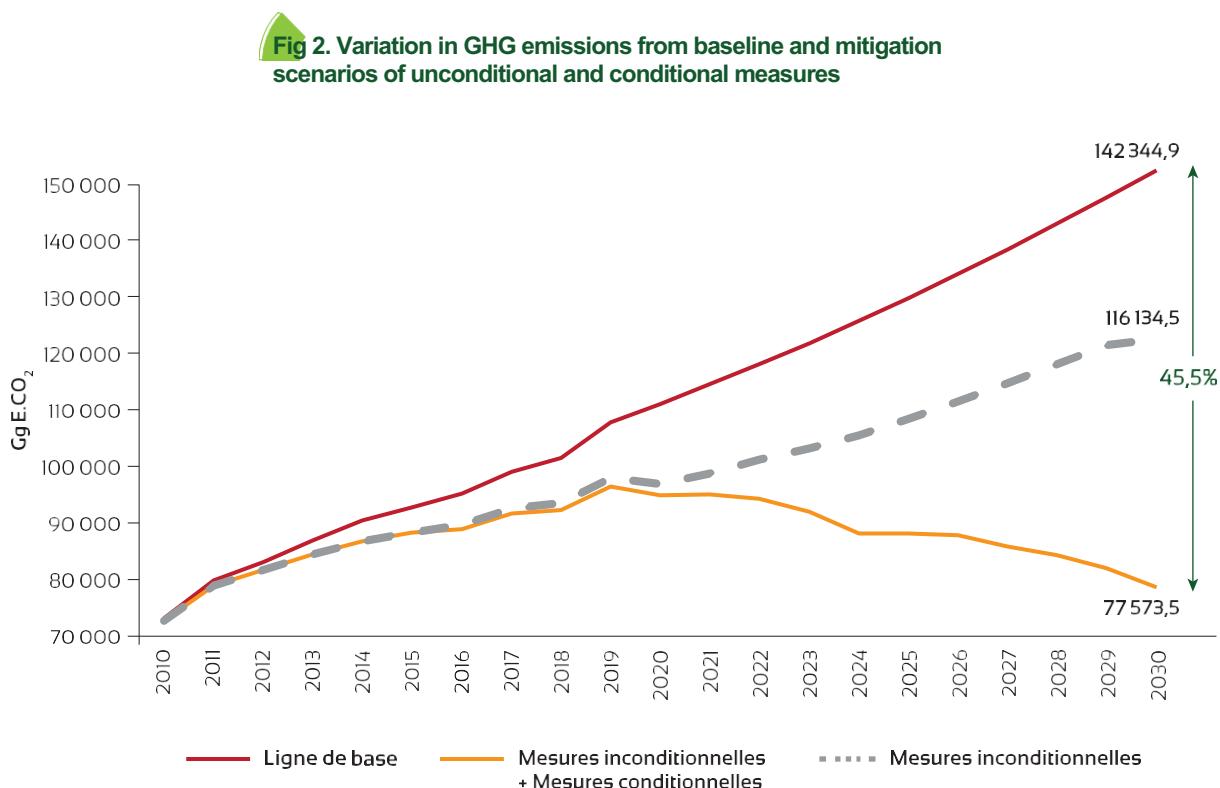
All the **unconditional** measures, at an estimated cost of around US\$ 18 billion, will reduce emissions by 2030 by 26,119.2 Gg CO₂ eq, or **18.3%** of baseline emissions in 2030.

3.3. Overall Objective (unconditional and conditional measures)

The updated NDC presents an overall mitigation target of 45.5% (unconditional and conditional measures) by 2030 compared to the baseline scenario. This new target marks an increase in mitigation ambition compared to the first version of the NDC. It translates, in absolute terms for 2030, into emissions of 77.5 Mt CO₂eq if Morocco receives the necessary support to carry out all the proposed measures (unconditional and conditional).

The increase in the ambition of the updated NDC is attributable to three factors:

- the revision of the baseline scenario following the use of the 2006 IPCC guidelines;
- the inclusion of new sub-sectors of industry, namely cement production and phosphate production;
- the identification of new mitigation actions in the sectors covered by NDC1 and the change in the scope of certain projects.



3.4. Sector Breakdown

The updated NDC includes **61 mitigation actions** (Annex 1), of which **34 are unconditional** and **27 are conditional**. Of the 34 unconditional actions, 9 actions, notably in the energy and agriculture sectors, are already implemented (partially or totally) before 2020 and will continue to mitigate GHG emissions in the period 2020-2030.



Table 1: Number of mitigation actions by sector

Sector	Unconditional actions	Conditional actions	Total
Power generation	6	2	8
Industry	10	5	15
City, housing and tertiary sector	6	3	9
Transport	2	5	7
Rubbish	0	2	2
Agriculture	6	7	13
Land Management and Forestry	4	3	7
Total	34	27	61

Although the transition to a low-carbon economy is a cross-cutting project based on a range of mitigation measures across sectors, power generation and the industrial sector (including phosphates and cement) remain the spearhead of the decarbonization of the Moroccan economy. In the electricity sector, Morocco has announced the ambition to reach 52% of installed electricity capacity from renewable sources by 2030.

For the unconditional objective, the industry sector represents half of the national mitigation effort by 2030, boosted by the phosphate sector alone representing 27.5% of Morocco's objectives in 2030.

Other key sectors included in the updated NDC are: agriculture, land management and forestry, cities, housing and tertiary, transport and waste.

Figures 3 and 4 illustrate the distribution of the mitigation effort by sector of the global target in 2030 and the cumulative global target between 2020 and 2030.

Fig. 3. Sectoral distribution of the overall mitigation effort (unconditional and conditional) in 2030

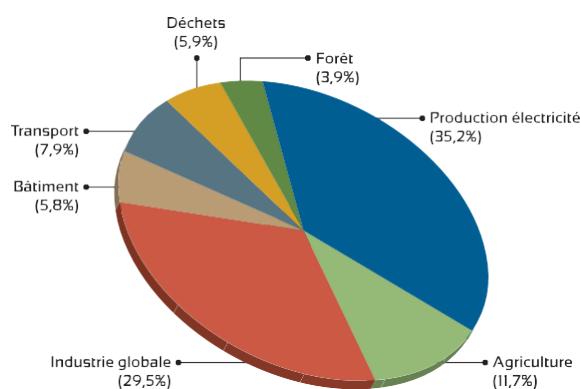
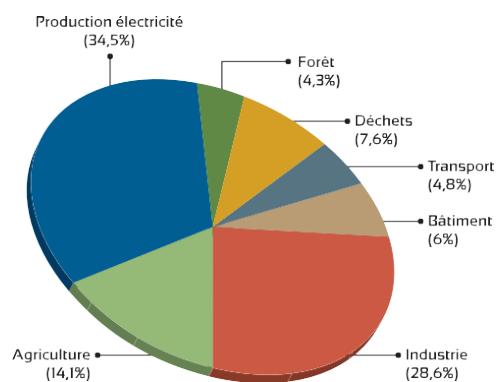


Fig. 4. Breakdown of the overall effort across sectors cumulative mitigation over the period 2020-2030



3.5. Information needed for clarity, transparency and understanding of the NDC

1. Quantified information on the reference point, including, where applicable, a base year	
has. Base year(s) , base year(s), reference period(s) or other starting point(s).	2010.
b. Quantifiable information on the reference indicators, their values in the base year(s), base year(s), reference period(s) or other starting point(s) and, where applicable, in the target year.	The benchmark is quantified on the basis of total national greenhouse gas (GHG) emissions. For the 2010 base year, the base year emission level was 72 979 Gg CO ₂ equivalent.
c. For strategies, plans and actions referred to in paragraph 6 of Article 4 of the Paris Agreement, where policies and measures as elements of nationally determined contributions where paragraph 1 (b) above is not applicable, Parties shall provide other relevant information .	NA
d. A target relative to the benchmark, expressed numerically, such as a percentage or quantity of reduction.	A net reduction in GHG emissions across the economy of 18.3% in 2030 compared to the Reference Case (NAC), with the country's own resources supported by international support compared to that received until 2020. With more substantial support, Morocco could go as far as a 45.5% reduction in emissions compared to the CNA.
e. Information on the data sources used to quantify the baseline(s).	The quantification of the baseline indicators was based on data from the national GHG emissions inventory that will be communicated in the Fourth National Communication.
f. Information on the circumstances under which the country Party may update the values of the benchmarks.	The national GHG inventory is reviewed regularly by the National GHG Inventory Committee following the methodologies and guidelines of the 2006 IPCC. Information on the benchmarks may be updated and recalculated due to continuous methodological improvements or the availability of relevant information not previously available. Information on updates made will be included in the relevant UNFCCC reports and, from 2024, in the biennial transparency reports.
2. Time limits and/or time limit	
has. Timeline and/or period of implementation, including start and end dates, in accordance with any other relevant decision adopted by the CMA.	2020-2030.
b. Whether it's an annual or multi-year goal, as the case may be.	A single year of objective: 2030.
3. Scope and Coverage	
has. General description of the mitigation objective.	Unconditional commitment to reduce GHG emissions by 18.3% (26,119.2 Gg CO ₂ eq) in 2030 compared to the scenario (CNA) with the international support levels in force in 2020 increased to 45.5% (64,771.5 Gg CO ₂ eq) with greater international support.

<p>b. Sectors, gases, categories and basins covered by the Nationally Determined Contribution, including, where appropriate, in accordance with IPCC guidelines.</p>	<p>The NDC concerns the entire economy. It reflects all anthropogenic emissions and removals as reported in the Fourth National Communication and BUR2, and in particular:</p> <ul style="list-style-type: none"> • All sectors, as defined by the 2006 IPCC guidelines, including: Energy, Industrial Processes and Product Use (PIUP). • Agriculture, Forestry and Other Land Uses (AFOLU), Waste. • Greenhouse gases included in the 2006 IPCC guidelines include CO₂, CH₄, N₂O, HFCs, NO_x, SO₂, NMVOCs, and CO. • All categories, as included in the 2006 IPCC Guidelines, occurring in Morocco and listed in the QCN. • All carbon pools in Morocco, as included in Volume 5 of the 2006 IPCC Guidelines.
<p>c. How the country Party has taken into account the paragraphs 31 (c) and (d) of decision 1/CP.21.</p>	<ul style="list-style-type: none"> • Morocco's NDC includes all categories of anthropogenic emissions or removals estimated in greenhouse gas inventories. No source, sink, or activity that was included in the previous version of the NDC has been excluded. • Only categories of anthropogenic emissions or removals that do not exist in the country are excluded. Morocco has not decided to exclude any sector from its NDC. • Efforts are focused for the moment on sectors with the greatest mitigation potential, with the highest likelihood of implementation, aligned with the key category analysis of the GHG inventory.
<p>d. Mitigation co-benefits resulting from the Parties' adaptation measures and / or economic diversification plans, including the description of specific projects, measures and initiatives of the Parties' adaptation measures and / or economic diversification plans.</p>	NA
4. Planning Process	
<p>has. Information on the planning processes that the country Party has undertaken to prepare its NDC and, where applicable, the country Party's implementation plans, including, as applicable:</p> <p>i. National institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-sensitive manner.</p>	<p>NDC Update Process</p> <p>The NDC update process was launched in 2019 and has resulted in the following key activities:</p> <ul style="list-style-type: none"> • July 2019: Completion of a series of bilateral consultations to start the process of updating the NDC; • October 2019: Sector-wide workshops were held to agree on key changes to the first draft of the NDC; • January 2020: Completion of a 2nd round of sectoral consultations to decide on the status of mitigation actions and adaptation objectives enshrined in NDC1 and on the changes to be made during the updating exercise;

	<ul style="list-style-type: none"> • February to July 2020: exchange with various stakeholders to collect the necessary data to inform the technical process of updating the NDC; • September to November 2020: drafting and readjustment process with the sectors and validation of the Draft of the updated NDC; • December 2020 and February 2021: Official presentation of the updated NDC to the National Commission on Climate Change and Biological Diversity twice. <p><i>Institutional arrangements for the implementation of climate policy</i></p> <p>Morocco has put in place new institutional arrangements for governance and technical and financial capacity building that make its ambitions feasible and realistic, namely:</p> <ul style="list-style-type: none"> • The institutionalization of the National Commission on Climate Change and Biological Diversity. This commission is attached to the government authority in charge of the environment and constitutes a consultation and coordination body to monitor the implementation of the commitments provided for in the international conventions and their protocols relating to climate change and biological diversity. the Biological Diversity Sub-Committee and a "Climate Change" sub-committee which is composed of 4 working groups according to the challenges of climate change (Negotiation, Adaptation, Mitigation and Finance); • The institutionalization of the National Commission for Sustainable Development, chaired by the Head of Government with two committees: "Monitoring and Steering Committee for the Implementation of the National Sustainable Development Strategy" and the "Monitoring and Support Committee for the Sustainable Development Goals"; • Implementation of the National GHG Inventory System (SNIGES). The agreed institutional scheme includes a National Inventory Commission (INC), a National Inventory Unit (UNI), a National Coordinator, five Sectoral Coordinators, Inventories and Focal Points. In addition, a draft decree on the national climate action monitoring and evaluation framework is being finalized to implement all MRV criteria and transparency framework reporting.
ii. Contextual issues, including, but not limited to, as appropriate:	
II (a). National circumstances , such as geography, climate, economy, sustainable development and poverty eradication.	<p>Geographical position</p> <p>Located on the southern shore of the Mediterranean, at the northwestern tip of Africa, at the gateway to Europe and at the western limit of the Arab-Muslim world and the Maghreb, Morocco occupies a geostrategic position of choice and has always been a crossroads of civilizations.</p> <p>Morocco's particular geographical position gives it a remarkable range of bioclimates, ranging from humid to desert. This results in the great bioecological diversity it has, which is among the most important in the Mediterranean basin.</p>

	<p>Climate</p> <p>The climate of Morocco is very varied: it is arid and desert in the southern provinces and south-east of the Atlas Mountains, temperate in the northern half with the appearance of semi-arid zones, particularly in Souss, Haouz and the Oriental. Indeed, the average annual amounts of precipitation deteriorate from north to south and from northwest to southeast.</p> <p>Morocco is one of the countries most concerned by CC and its impacts. Analysis of climate data over the period 1960-2018 shows that Morocco has experienced a reduction in rainfall, an increase in temperatures and an accentuation of the aridity of the climate.</p> <p>According to the Directorate General of Meteorology (DGM, 2020), the various CC scenarios project a decrease in rainfall during the winter season in Morocco. This decrease would be accompanied by an increase in the temporal persistence of the drought. The change in the distribution of precipitation would coincide with a warming that would manifest itself on both the seasonal and annual scales, giving rise to the intensification of extreme weather events (heat waves, strong thunderstorms, strong winds).</p> <p>National economy</p> <p>The national economy is highly correlated with the agricultural sector and the global economy. After a year 2016 marked by a decline in growth (1.6%) due to drought, the growth rate rose to 4% in 2017. Morocco is experiencing a slowdown in its economic growth, to 3.1% in 2018, which was confirmed in 2019 with a rate of 2.5% and negative growth in 2020 due to the covid 19 health crisis.</p> <p>The Kingdom is working to promote a better resilience of the Moroccan economy to agricultural fluctuations strongly impacted by climate change . In this sense, important reforms have been carried out as part of a sectoral diversification strategy (decompensation of petrol, diesel and industrial fuel, adoption of an organic law relating to finance laws - LOLF -, new industrial development plan, new agricultural strategy, etc.).</p> <p>Beyond the short-term recovery plan, necessary to restart the economy after a difficult year marked by an unprecedented health crisis, defining the medium- and long-term development ambition is becoming imperative. This crisis reveals and accelerates fundamental economic trends and also triggers new dynamics. A social Morocco, creator of wealth at the territorial level, with a sustainable economy that is decarbonized and resilient to climate change , these are the priorities in terms of the development model that the Kingdom should have, in the medium term, after this crisis.</p> <p>Sustainable development</p> <p>On June 25, 2017, the Council of Ministers adopted the National Sustainable Development Strategy which aims to achieve a gradual transition to the green economy, taking into account environmental challenges, working to promote human development and social cohesion and consolidating economic competitiveness in a sustainable manner.</p>
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	<p>Poverty alleviation</p> <p>In order to eradicate the scourge of poverty, the public authorities have opted for sustainable development based on integrated public policies that are part of a global project to which all components of society must adhere.</p> <p>The National Initiative for Human Development, launched by HM King Mohammed VI in May 2005, is part of this vision and aims to fight poverty, precariousness and social exclusion through the implementation of projects to support basic infrastructure, training and capacity building projects, social, cultural and sports activities as well as the promotion of income-generating and employment-generating activities.</p> <p>The INDH is in its third phase 2019-2023. This phase is structured around four programs:</p> <ul style="list-style-type: none"> • Program 1 : Closing the deficits in basic infrastructure and social services; • Program 2: Support for people in precarious situations; • Program 3: Income Improvement and Economic Inclusion of Youth; • Program 4: Boosting the human capital of the next generation.
II (b). Best practices and experience related to the preparation of the NDC.	<ul style="list-style-type: none"> • Morocco's NDC is developed within an easily verifiable transparency framework. 61 sectoral measures with quantifiable targets for individual reductions were identified with their implementation costs. • Morocco has set up a dedicated online MRV platform for monitoring the implementation of NDC actions. Sectoral focal points have been trained to monitor the implementation of their actions.
II (c). Other contextual aspirations and priorities recognized upon accession to the Paris Agreement.	NA
b. Specific information applicable to Parties, including regional economic integration organizations and their Member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including Parties that have agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16 to 18, of the Paris Agreement.	NA
c. How was the country Party preparing its NDC informed by the results of the global stocktake, in accordance with Article 4.9 of the Paris Agreement?	NA
d. Each Party with an NDC under Article 4 of the Paris Agreement that consists of adaptation actions and/or economic diversification plans resulting in mitigation co-benefits in accordance with paragraph 7 of Article 4 of the Paris Agreement to submit information on:	
i. How have the economic and social consequences of response measures been taken into account in the development of the NDC?	NA
ii. Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also produce mitigation co-benefits, which may cover, but are not limited to, sectors	NA

<p>key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communications, construction, tourism, real estate, agriculture and fisheries.</p>	
<p>5. Assumptions and methodological approaches, including anthropogenic greenhouse gas emissions</p>	<p>used to estimate and account for greenhouse emissions and, where appropriate, removals</p>
<p>has. Assumptions and methodological approaches used to account for anthropogenic greenhouse gas emissions and removals corresponding to the country Party's nationally determined contribution, in accordance with paragraph 31 of decision 1/CP.21 and the accounting guidance adopted by the CMA.</p>	<p>The methodological approach taken to account for anthropogenic greenhouse gas emissions and removals from the NDC is identical to that used in the GHG inventory, which is in line with the guidelines of the 2006 IPCC Guidelines.</p> <p>It is expected that by 31 December 2024, the approach will be in accordance with the accounting guidelines for NDCs set out in Annex II of Decision 4 / CMA.1.</p>
<p>b. Assumptions and methodological approaches used to report on the implementation of policies and measures or strategies in the nationally determined contribution.</p>	<p>The same assumptions and approaches are used to report on the implementation of policies and measures or strategies in the NDC.</p>
<p>c. Where applicable, information on how the country Party will take into account existing methodologies and guidance under the Convention for accounting for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate.</p>	<p>Morocco's current GHG inventory is submitted in accordance with Decision 24 / CP.19 and uses the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.</p> <p>In its accounting of anthropogenic emissions and removals corresponding to the NDC, Morocco highlighted environmental integrity, transparency, accuracy, completeness, comparability and consistency. He also took care to avoid any double counting.</p>
<p>d. Methodologies and parameters used by the IPCC to estimate anthropogenic greenhouse gas emissions and removals.</p>	<p>Methodologies: 2006 IPCC Guidelines.</p> <p>Metrics: Global warming potential as per the IPCC Fourth Assessment Report (AR4). The GWP values used are those determined in (AR4):</p> <p>GWP CO₂ = 1 (by convention); GWP CH₄ = 25; GWP N₂O = 298; GWP HFCs = 1.5 - 14,800.</p>
<p>e. Sector, category or activity-specific assumptions, methodologies and approaches, in accordance with IPCC guidance, as appropriate, including, as appropriate:</p>	
<p>i. Approach to address emissions and subsequent removals from natural disturbances on managed lands.</p>	<p>All emissions and removals reported in the GHG inventory of the Kingdom of Morocco are included in the NDC, with no specific approach to exclude emissions from natural disturbances.</p>
<p>ii. Approach used to account for emissions and removals from harvested wood products.</p>	<p>Informal harvested wood products were estimated.</p>
<p>iii. Approach used to address the effects of age class structure in forests.</p>	<p>The effects of age class structure in forests are not taken into account.</p>

f. Other assumptions and methodological approaches used to understand the Nationally Determined Contribution and, where appropriate, estimate the corresponding emissions and removals, including:	
i. How benchmarks , baselines and/or baselines, including, where applicable, sector, category or activity-specific baselines, are constructed, including, for example, the key parameters, assumptions, definitions, methodologies, data sources and models used.	<p>The 2010 GHG emissions inventory and baseline and mitigation scenarios were conducted according to the 2006 IPCC guidelines. The NAC and mitigation reference scenarios were developed on the basis of data from the Yearbook of National Statistics, data on sectoral activities and economic, demographic and sectoral prospective analyses.</p> <p>Morocco's baseline scenario was constructed based on historical and projected data from mitigation policies and/or measures adopted prior to the 2010 base year. Policies and/or measures adopted after 2010 will be taken into account in achieving the mitigation target.</p>
ii. For Parties whose nationally determined contributions contain non-greenhouse gas components, information on the assumptions and methodological approaches used in relation to these elements, if applicable.	NA
iii. For climate drivers included in Nationally Determined Contributions not covered by the IPCC guidelines, information on how climate drivers are estimated.	NA
iv. Additional technical information , if required.	NA
g. The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.	<p>Morocco is actively preparing to participate in the financial and cooperation mechanisms provided for in Article 6 of the Paris Agreement.</p> <p>In the context of the World Bank's Market Implementation Partnership (PMI) and Transformative Carbon Asset Facility (TCAF), Morocco aims to lay the groundwork for participating in Article 6 pilot activities. Morocco also plans to use its experience in the development and management of projects under the CDM for its participation in Article 6 mechanisms.</p>
6. How the country party considers its NDC to be	fair and ambitious in the light of its national situation
has. How the country Party considers its NDC to be fair and ambitious in the light of its national situation.	<p>The updated NDC revises upwards the objectives of the first version of its NDC for Morocco, presenting a target of 45.5% by 2030, including an unconditional target of 18.3%. These new objectives reflect a significant increase in Morocco's mitigation ambition.</p> <p>NDC1 was universally recognized as being very ambitious, with mitigation targets of 17% (unconditional), 42% (unconditional + conditional) compared to the baseline scenario for 2030, which will be increased in NDC2 to 18.3% and 45.5%, respectively, compared to the baseline scenario.</p>
b. Equity considerations, including fairness thinking .	<p>Equity</p> <p>With a level of 0.2% of total global GHG emissions in 2018, Morocco's per capita emissions are disproportionately low compared to the global average. In addition, in terms of emission intensity per unit of GDP adjusted for purchasing power, Morocco is 38.5% below the global average.</p>

	<p>The accumulation of historical emissions remains low compared to those of industrialized countries. This proves Morocco's weak responsibility for the anthropogenic causes of climate change. The country has a high vulnerability to the impacts of climate change due to its geographical position.</p> <p>Nevertheless, by recognizing the common, but differentiated, responsibilities formulated under the UNFCCC and reconfirmed in the Paris Agreement, Morocco aims to assume a contribution to GHG emissions mitigation that is more significant than that which would be consistent with it according to its historical responsibility. This is based on the conception of an idea of global equity as well as on the observation of the planetary emergency in which humanity as a whole is engaged.</p>
c. How the country Party has dealt with Article 4, paragraph 3 , of the Paris Agreement.	<p>The Government of Morocco submits an update of its Nationally Determined Contribution (NDC 2) under the Paris Agreement for the period 2020-2030, in accordance with Articles 4.2 and 4.11 of the Paris Agreement, paragraphs 23 and 24 of Decision 1/CP.21 and other relevant provisions of the Agreement.</p> <p>The updated NDC represents an improvement over the previous NDC and corresponds to the highest possible level of ambition.</p>
d. How the country Party has addressed Article 4, paragraph 4 , of the Paris Agreement.	<p>The Kingdom of Morocco's NDC is an absolute economy-wide emission reduction target as stipulated in Article 4.4 of the Paris Agreement.</p>
e. How the country Party has addressed Article 4, paragraph 6 , of the Paris Agreement.	NA
7. How the NDC contributes to the achievement of the objectives of the Convention as set out in Article 2 of the Convention	
has. How the NDC contributes to achieving the objective of the Convention as set out in its Article 2.	<p>Morocco considers that its revised NDC is in line with the objective of the UNFCCC and the long-term objective of the UNFCCC Paris Agreement, as explained in points 6a and 6b.</p> <p>Morocco's NDC represents Morocco's contribution to the objectives of Article 2 of the Convention to stabilize GHG concentrations in the atmosphere at a level that would prevent dangerous and anthropogenic interference with the climate system.</p> <p>Sections 4 and 6 detail the mitigation ambition of the Kingdom of Morocco that will contribute to the achievement of Article 2 of the Convention.</p>
b. How the NDC contributes to the achievement of Article 2(1)(a) and Article 4(1) of the Paris Agreement.	<p>Sections 4 and 6 detail the mitigation ambition of the Kingdom of Morocco that will contribute to the achievement of Article 2 of the UNFCCC.</p>



3.6. Implementation planning

The following table provides an overview of the most important sectoral strategies and their mitigation targets that contribute to the implementation of the NDC.



Table 2: Key sectoral strategies, plans and programmes and their targets for the implementation of the NDC on mitigation

Strategies, Plans and Programs	Objectives
National Energy Strategy	<ul style="list-style-type: none"> • Achieve 52% of installed electrical capacity from renewable sources, including 20% solar energy, 20% wind energy and 12% hydropower by 2030; • Achieve energy savings of 20% by 2030 compared to trend trends; • Reduce energy consumption in buildings, industry and transport by 5% by 2020 and by 20% by 2030. For the year 2030, energy savings by sector would be 17% for industry, 24.5% for transport, 14% for the city, housing and tertiary sector and 13.5% for agriculture and sea fishing; • Install an additional 450 MW of combined cycle technology running on imported natural gas by 2030; • To supply energy to major industries through imported and regasified natural gas pipelines.
National Logistics Strategy	<ul style="list-style-type: none"> • Reducing logistics costs for the benefit of consumers and the competitiveness of economic operators and through optimized, secure and mass management of goods flows; • Accelerate GDP growth by increasing value added induced by lower logistics costs; • Contribute to sustainable development by reducing nuisances.
National Strategy for Waste Reduction and Recovery	<ul style="list-style-type: none"> • Reduce waste to landfills and improve the rate of recycling and recovery by 2030, including: <ul style="list-style-type: none"> • 20% recycling of household and similar waste (DMA); • 20% recovery of organic matter from DMAs; • 10% energy recovery from waste; • 25% recycling of industrial waste; • 70% recycling of end-of-life vehicles; • Create sustainable green jobs, in particular with the integration of ragpickers, the creation of more landfill and recovery centres (CEV), the encouragement of the creation of recycling units and the multiplication of public-private agreements.
National Liquid Sanitation and Wastewater Treatment Program	<ul style="list-style-type: none"> • Achieve an overall connection rate to the urban sanitation network of 75% in 2016, 80% in 2020 and 100% in 2030; • Achieve a volume of wastewater treated of 50% in 2016, 60% in 2020 and 100% in 2030; • Treat wastewater up to the tertiary sector and reuse 50% of it for inland cities by 2020.
Green Morocco Plan	<ul style="list-style-type: none"> • Modernize the agricultural sector in order to increase agricultural GDP from +60 to 90 billion dirhams to reach 110 to 150 billion dirhams by 2020, and reach an export value of 44 billion dirhams by 2020; • Take into account the agricultural sector in all its sociological and territorial components, in particular through the development of solidarity agriculture and sensitive and vulnerable areas such as oases and mountains; • Improve the income of 2 to 3 million rural people by 2 times; • Manage natural resources, especially water resources, more efficiently (savings of 20 to 50%).



Strategies, Plans and Programs	Objectives
Generation Green Strategy 2020-2030	<ul style="list-style-type: none"> • Consolidate agricultural value chains, in particular continue planting programs for olive trees, date palms, argan trees, fruit trees, cacti, etc. ; • Developing organic farming; • Promote renewable energies (biomass, solar, etc.) particularly in the field of irrigation by promoting the use of solar pumping in water-saving irrigation projects; • Preserve ecosystems, in particular the development of rangelands.
"Moroccan Forest" Strategy	<p>Morocco's Forest Strategy aims to meet the objectives of halting deforestation and aims to recover 30 years of forest degradation and make the forest sector more competitive and modern, and it aims at four fundamental areas of intervention:</p> <ol style="list-style-type: none"> 1. Reinvent and structure the participatory approach; 2. Differentiate and develop spaces according to their vocation; 3. Invest in and modernize the core business and 4. Rebuilding the institution.
Urban Public Transport Improvement Program	<ul style="list-style-type: none"> • Providing large cities with high-capacity public transport using renewable energy; • Establish a program to renew the taxi fleet; • Establish an urban transport road support fund, capitalized to the tune of US\$200 million.
Ratification of the Amendment from Kigali	<ul style="list-style-type: none"> • Freeze HFC consumption in 2024 and start the first phase of reduction from 2029; • Act early on the reduction of HFCs and introduce climate-friendly solutions . In line with energy efficiency activities focused on refrigerators and air conditioners, Morocco is considering the transition to environmentally friendly and low-GWP refrigerators and air conditioners by replacing hazardous equipment and moving directly to green and climate-friendly technologies.
Plan for the exemplarity of the Administration (developed as part of the implementation of the NSDD 2030)	<ul style="list-style-type: none"> • To encourage and use renewable energy and technologies aimed at sound management or energy efficiency in all public administrations; • Increase the share of ecological cars (hybrid or electric) in the State's fleet by 30%; • Promote waste sorting at source in administrations.



4. ADAPTATION

4.1. Impact of climate change on sectors and their vulnerabilities

The Kingdom of Morocco is particularly vulnerable to three types of climate impacts: increasing temperatures, changes in rainfall patterns, and increasing aridity. These types of impacts are associated with the amplification of the frequency and intensity of extreme weather events, such as severe droughts, floods, forest fires, heat and cold waves, as well as marine storms and submersions, landslides, locust invasions, or snowstorms . A significant part of Morocco's population and several key sectors of its economy are particularly vulnerable to these hazards.

Studies of current and projected impacts and vulnerabilities to climate change are carried out by the various key sectors (water resources, agriculture, fisheries, forestry and biodiversity, coastline, habitat and health). In terms of water resources, the analysis of impacts and vulnerability showed that the impact of climate change is estimated at a decrease of around 25% in water resources, taking into account the effect of the droughts that Morocco has experienced since the 80s. The worsening water deficit is the combined result of declining surface water resources, groundwater and increased demand for irrigation and drinking water. Climate projections according to the RCP8.5 emission scenario for 2050 show a decrease in rainfall that could result in a decrease in agricultural yields of 3% to 39% in several regions and provinces of the Kingdom by 2050 (ADA, 2017).

The fisheries sector in Morocco is vulnerable to the impacts of climate change due to its high exposure to climate variations and the limited economic means of the actors. Overall, climate projections show that the impact of climate change and the vulnerability of the fisheries sector are increasing in severity from an optimistic to a pessimistic scenario. Indeed, according to a global comparative study of the vulnerability of national economies conducted by Allison et al. (2009), Morocco is ranked 11th among the countries most vulnerable to climate change in the fisheries sector, out of 133 countries.

Forest ecosystems are subject to socio-economic constraints linked to the precarious conditions of rural users, and natural constraints, mainly linked to climate change with the increasing aridification of the climate and the accentuation of the risks of extreme phenomena and amplified by the sensitivity of land to desertification. Climate change will lead to the degradation of forests, the destruction of ecosystem structures and architecture, and the alteration of the species' range. The impact of climate change , however small on ecosystems, will affect the people who depend on it by reducing their livelihoods and increasing their exposure to extreme events.

In addition to water, agriculture, fisheries and forestry, other sectors are strongly impacted by climate change, including housing and health. Projections to 2050 show that the housing sector would be more subject to various climatic hazards (floods, drought, etc.) (MATNHUPV, 2020).

In addition, the latest analysis of the vulnerability of the health sector has highlighted several types of risks, the most important of which are:

- the introduction and emergence of new diseases (malaria, leishmaniasis, etc.);
- the increase in respiratory and diarrhoeal diseases linked to changes in the quality of water, air and food.

Morocco's vulnerability is exacerbated by the increased sensitivity of local communities, insufficient climate finance dedicated to adaptation policies and measures, and capitalization on national expertise in the fields of scientific research for climate forecasting, prevention and modelling, as well as the increased erosion of biodiversity and environmental services. In the absence of adaptation to climate change, the risks generated by the vulnerability profile will hinder the achievement of the Sustainable Development Goals.

4.2. Strengthening resilience and adaptation in Morocco: a work in progress

To address the severe economic and social impacts of current and future climate change, Morocco is committed to promoting effective adaptation measures in priority economic sectors for the climate.

Strengthening resilience to climate risks is one of the pillars on which the 2030 National Climate Plan is based. Climate risks are now being factored into investment decisions and development planning.

The PCN2030's priorities are included in the National Strategic Adaptation Plan, which now constitutes a roadmap for the implementation of a coordinated national adaptation policy at the national and territorial levels.

4.2.1. *The National Strategic Adaptation Plan (PNSA): the main orientations (2020-2030)*

Purpose of the NASP

"By 2030, support policymakers and stakeholders at all levels (national, regional and local) to develop and implement coherent and effective policies and measures, putting people at the centre, in order to adapt and increase the resilience of natural, social and economic systems to the impacts of climate change."

The NASP also promotes actions to reduce climate impact through strengthened institutional capacity at the national, sectoral and local levels, improved knowledge management, and a convergent approach to climate change adaptation and disaster risk reduction. Although the technical and financial requirements to build resilience to climate change in all economic sectors are still being assessed, it is already clear that significant efforts will be required, as well as the mobilization of innovative solutions, additional financial resources and institutional capacities for effective adaptation action.

Morocco's approach to climate change adaptation also incorporates aspects of the most vulnerable socio-economic and natural systems, such as the seashore, mountains and oases, population groups, and urban and rural communities. These systems face critical issues that require a coherent and extensive response in the form of transformative adaptation interventions aimed at minimizing climate risks and vulnerabilities.

The PNSA is structured around five axes:

Axes	Strategic Objectives
Strategic Plan Governance	Consolidate and optimize the governance and strategic management of the national adaptation policy, including better coordination with territorial levels of governance and the commitment of civil society actors.
Climate information and knowledge	Inform decision-making by improving access to climate data, information and knowledge, and supporting the development of climate-related scientific research.
Assessment, prevention and reduction of climate vulnerabilities and risks	Assess and prevent risks and vulnerabilities, and reduce climate impacts on security, health and economic assets (social, cultural, public, private, and the population at large).
Resource Resilience and Sensitive ecosystems	Strengthen the resilience of natural ecosystems to climate change through an approach that combines the preservation of ecosystem services and sustainable livelihoods.
Resilience of production sectors	Strengthen the resilience of the most vulnerable economic sectors to climate change.

4.2.2. Sectoral targets to build resilience by 2030 and 2050

One of the objectives pursued by the NSDD, which directly influences the quality of life of Moroccans, is to improve the management and development of natural resources to strengthen the conservation of biodiversity, as well as the population's access to safe sources of water, to promote human development and to reduce social and territorial inequalities.

This overall objective is the basis for measures targeting key sectors of the Moroccan economy that can contribute to the country's sectoral and overall climate resilience, as well as its adaptation to climate change. These actions will contribute to the achievement of the following SDGs: 1, 2, 3, 6, 11, 12, 13, 14 and 15. Morocco's vision for adaptation is broken down into several quantified sectoral objectives for the 2030 to 2050 period. Although Morocco is already investing heavily in adaptation, achieving these goals will only be possible with significant support from the international community and donors. The main adaptation objectives are presented in the following table:

 **Table 3: Key sectoral adaptation targets**

Meteorology Sector	
Objectives to be 2030	<p>Strengthening of the network of meteorological observation stations (currently 200) by acquiring new stations and setting up a national meteorological network by integrating the stations of the other partners, to arrive at a single network of 1000 stations.</p> <p>Expand weather radar coverage from 7 radars in 2019 to 12 radars.</p> <p>Deepen the development of numerical weather and climate prediction in finer spatial and temporal scales (from a resolution of 10 km to a resolution of less than one kilometre).</p> <p>Extending climate change impact assessments to sectors socio-economic (15 studies to be carried out at the rate of one to two studies per year).</p> <p>Increasing the power of the computers of the Directorate General of Meteorology (DGM) to meet forecasting needs at different time scales and for simulations of new climate change projections. Pass from 5800 billion operations per second in 2019 to 15 trillion operations per second (15x1015).</p>

Agriculture sector	
Policies, strategies, programmes, plans and actions for strengthening the resilience of the sector and adapting to climate change	<p>Generation Green 2020-2030:</p> <ul style="list-style-type: none"> • Green Morocco Plan Strategy; • Strategy for the Conservation and Development of Cultivated Plant Genetic Resources; • National Irrigation Water Saving Program; • Strategy for the Development of Rural Space and Mountain Areas; • Development Strategy for the Oasis Zones and the Argan Tree; • National Program for the Development of Rangelands and Regulation of Transhumant Flows; • Programme for the rehabilitation of PMH perimeters planned on 150,000 ha by 2030; • Innovative public-private partnership projects, such as the Water Desalination and Irrigation Safeguard Programs; • Irrigation extension programme downstream of dams Multi-risk climate insurance; • Multi-risk climate insurance.
2030 Goals	<p>Extension of irrigation to new agricultural perimeters, covering an area of 60,000 ha, for a total investment of USD 3.5 billion.</p> <p>Irrigation equipment located on an additional 350,000 ha for a total investment of 1 billion US dollars.</p>

Water sector	
Policies, strategies, programmes, plans and actions for strengthening the resilience of the sector and adapting to climate change	<ul style="list-style-type: none"> • National Water Strategy; • Drought Management Plan; • Master Plans for Integrated Water Resources Management; • National Flood Protection Plan; • National Liquid Sanitation Program; • National Rural Sanitation Programme; • National Wastewater Reuse Plan; • National Water Strategy; • National Water Plan; • Water Act 36/15.
2030 Goals	<p>90% connection to the sewerage network in urban areas with a purification rate of 80%.</p> <p>50% connection to the sewerage network in rural areas (Centres Chef-lieu des communes) with a purification rate of 40% as part of the PNAM.</p> <p>Reuse of wastewater, to reach a capacity of 275 million m³ in urban areas and 16 million m³ in rural areas as part of the PNAM.</p> <p>Reuse of wastewater to reach a capacity of 183 million m³ in coastal cities.</p> <p>Project for the mobilization and sustainable management of water resources in the priority areas of Tangier, Oujda and Meknes affected by climate change.</p>
2040 targets	Flood protection for medium- and high-risk sites by 2040.
2050 targets	<p>Construction of 50 large dams by 2050 covering the entire Moroccan territory with an additional storage capacity of 11 billion m³.</p> <p>Construction of small dams and hill dams for local development, with an inventory of about 900 sites that will be studied and built within the framework of an interministerial committee, and by integrating the local authorities.</p> <p>Realization of 3 interconnection projects between different hydraulic systems for a dynamic and integrated management of water resources, namely:</p> <ul style="list-style-type: none"> • Interconnection of the Loukkos system-Tangier system; • Interconnection of the Oued Laou-Moulouya Basin system; • Interconnection of the Sebou-Bouregreg and Chaouia-Oum Er Rbia-Tensift basins.

	Construction of six seawater desalination plants in the short and medium term, namely the Greater Casablanca plant, Tarfaya, Sidi Ifni, and in the coastal area, Safi and Dakhla, all representing a maximum desalination capacity that could reach 1 billion m3.
	Improvement of the efficiency of drinking water distribution networks, and water for industrial and tourist purposes, with a target of 80% as the national average in 2040 and 85% in 2050.
	Conversion and upgrading of localized irrigation to reach 70% of the total irrigated area.
	Modernization of multi-service channels.
	Rainwater harvesting program of 300 million m3/year.
	Reduction of overexploitation of groundwater by 50% by 2030 and achievement of equilibrium by 2050 (artificial recharge, participatory management of groundwater, improvement of groundwater recognition, etc.).
	Improvement of the quality of water resources by reducing pollution to more than 70% and increasing the reuse rate to nearly 30% by 2050.
	Acceleration of projects to protect sensitive ecological systems, including wetlands and oases.
	Creation of various programmes and actions aimed at preserving water resources and the natural environment, and improving the management of extreme weather events, for a total investment of USD 5.7 billion.

Fisheries and Aquaculture Sector	
Policies, strategies, programmes, plans and actions for strengthening the resilience of the sector and adapting to climate change	<ul style="list-style-type: none"> • Halieutis Plan: <ul style="list-style-type: none"> – Plan for the Strengthening of National Fisheries Research; – Fisheries Management Plans; – Marine Protected Areas Creation Program; – Artificial Reef Disposal Program; – Programme for the Adaptation and Modernisation of the Fishing Effort; – National Aquaculture Development Plan; – Programme for the Strengthening and Development of Fisheries and Marketing Infrastructure; – Integrated Project Programme "Fishing/Exploitation of Catches on Land"; – Plan to Promote the Competitiveness of Fishery Products at the National and International Levels. • IBHAR: programme for the upgrading and modernisation of coastal and artisanal fleets. • Control of fishing activities to combat illegal, unreported and unregulated fishing.
2030 Goals	Establishment of a coastal observation network, equipped with three oceanographic and meteorological buoys, and extension of the environmental and health surveillance and warning system for the coastline to 40 observation areas.
	Continued implementation of management measures aimed at the sustainable exploitation of fisheries resources, based on scientific advice.
	Establishment of marine protected areas corresponding to 10% of the exclusive economic zone.
	Development of two hatcheries for the repopulation of five endangered coastal species.
	Implementation of aquaculture management plans in five littoral zones.

Forest Sector	
Policies, strategies, programmes, plans and actions for strengthening the resilience of the sector and adapting to climate change	<ul style="list-style-type: none"> • New strategy "Forests of Morocco 2020-2030"; • Wood Energy Strategy; • National Strategy for the Surveillance and Monitoring of Forest Health; • Strategy for Urban and Peri-urban Forests; • Forest Fire Control Master Plan; • Reforestation Master Plan; • National Forestry Programme; • National Action Programme to Combat Desertification; • National Watershed Development Plan; • Protected Areas Master Plan; • National Strategy for the Development of the Aromatic and Medicinal Plants Sector; • Morocco's National Biodiversity Strategy and Action Plan; • Strategic Action Plan for the Conservation of Marine and Coastal Biodiversity in the Mediterranean.
2030 Goals	<p>Sustainable management (organization of the population and participatory management):</p> <ul style="list-style-type: none"> • Organization of populations in partner solidarity structures with an unconditional objective of 300 civil society organizations (CSOs), i.e. associations and cooperatives, serving as support structures for sustainable forest management; • Participatory management and improvement of benefits for local populations with an unconditional objective of 200 forest development organizations (FDOs) serving as support structures for sustainable forest management. <p>Strengthening the resilience of socioecosystems in vulnerable areas (mountainous, deserted and coastal dune areas):</p> <ul style="list-style-type: none"> • Watershed management, ravine fixing and improving population benefits through erosion measures to achieve the target of 1,500,000 ha in 22 priority basins (2015-2030); • Opening up vulnerable populations by opening tracks with a target of 240 km/year (unconditional) and 60 km/year (conditional).

Sensitive Environments Sector: Coastline, Mountain and Oasis	
Policies, strategies, programmes, plans and actions for strengthening the resilience of the sector and adapting to climate change	<ul style="list-style-type: none"> • New Orientations of the Public Policy of Territorial Planning; • Regional Spatial Planning Schemes (SRAT); • National Strategy for the Planning and Development of Oases in Morocco; • Oasis Climate Change Adaptation Project (PACC-Oasis); • National Strategy for the Development of Oasis Zones and the Argan Tree; • Strategy for Rural Development and Mountain Areas; • High Atlas Sustainable Territorial Development Programme; • Anti-Atlas Sustainable Territorial Development Program; • Sustainable Territorial Development Programme of the Rif; • National Strategy for Integrated Management of the Moroccan Coastline; • Duplication of the Tafilalet Oasis Development Program to other fragile areas; • National Program of Emerging Rural Centers: choice of five emerging centers; • Fisheries Management Plans.
2030 Goals	<ul style="list-style-type: none"> • Determination of the State's options in terms of regional development, taking into account the vocations and specificities of the different territories in a forward-looking vision shared by all stakeholders. • Promoting the territorial coherence of public interventions on the national territory . <ul style="list-style-type: none"> • Ensuring the articulation of development choices and the framework of territorial strategic planning documents. • Optimal use of resources and creation of a healthy, low-carbon environment, where the territory is a unifying place for initiatives.

	<p>Strengthening the resilience of mountain areas and developing tools and bases to support decision-making.</p>
	<p>Creation of a forward-looking vision and an appropriate and scalable mode of governance, and support for the actors concerned for an integrated management of the coastal area.</p>
	<p>Encouragement of the promulgation of the implementing texts of Law 22.07 on protected areas.</p>
	<p>Strengthening of oceanographic observation and warning systems.</p>
	<p>Promoting the implementation of SDG14 targets.</p>
	<p>Protection and enhancement of fragile ecosystems in territories of great ecological interest.</p>
	<p>Contribution to the reduction of socio-spatial imbalances and inequalities between cities and rural areas impacted by climate change.</p>

Housing, Spatial Planning and Urban Planning Sector	
Policies, strategies, programmes, plans and actions for strengthening the resilience of the sector and adapting to climate change	<ul style="list-style-type: none"> • Regional Spatial Planning Scheme (SRAT); • Regional Development Programme (RDP); • Sustainable Development Program of the Ksour and Kasbah of Morocco; • Master Plan for Development and Urban Planning (SDAU); • Functional Organization and Development Plan (SOFA); • Development Plan (PA); • Communal Development Plan (PCD); • Urban Master Plan (PDU); • Local Housing and Urban Development Plan (PLHDU); • Cities Without Slums Program (PVS); • "Housing Threatening Ruin", "Urban Upgrade" and "Non-Regulatory Housing District" programmes; • National Spatial Planning Scheme (SNAT); • National Urban Development Strategy (SNDU); • Urban Planning System (SPU); • Climate Change Adaptation Plan in the Housing Sector in the Tangier-Tetouan-Al Hoceima Region, developed by the Department of Housing and Urban Policy.
2030 Goals	<p>Generalize City Climate Plans (PCV):</p> <ul style="list-style-type: none"> • Definition and institutionalization of a governance framework for the political support and implementation of VCPs; • Support to local authorities to carry out their Territorial Climate Plans (TCPs) and set up capacity building programmes in this area; • Articulation of the PCTs with the SRATs, RDPS and other territorial planning projects; • Ensuring consistency between PCTs and VRPs; • Support to the city councils concerned in the development of the VRPs; • Support for local authorities in the mobilization of climate finance; • Establishment of the knowledge base on the vulnerabilities of the territory exposed to climate change; • Evaluation of the costs and benefits of adaptation actions by carrying out analytical studies for different sectors in urban areas. <p>Eco-district, a lever towards a sustainable city</p> <ul style="list-style-type: none"> • Capitalization on innovative sustainable city schemes; • Establishment of a charter for eco-district projects to encourage and engage citizens to take charge of the environmental challenges they face collectively; • Annual funding for sustainable neighbourhood projects by 2030 through the programmes of the relevant ministerial departments (Housing, Environment, etc.).

	<p>Ecosystem-based adaptation to mitigate heat island effects</p> <p>Urban:</p> <ul style="list-style-type: none"> • Maintenance and improvement of urban green spaces (e.g. ecological corridors, trees, gardens); • Planting trees with high carbon sequestration potential. Planting will be possible in school yards, in agglomerations all around urban and peri-urban areas, but also along waterways; • Use of treated wastewater to irrigate and maintain green surfaces, especially lawns (e.g. golf courses); • Promotion of green walls and roofs. Green roofs and facades improve the thermal comfort of buildings, especially in a hot and dry climate; • Renaturalization of systems for watercourses bordering urban areas; • Recovery and storage of roof water in areas of low water availability . Roof water collection systems should be encouraged in residential buildings and for community buildings with a large roof area (e.g. schools, mosques, markets, etc.); • Control and optimization of the collection and use of water resources; • Strengthening of the distribution network leakage reduction program; • Optimization of industrial processes to reduce water consumption, and reuse of wastewater after appropriate treatment; • Reuse of treated wastewater for irrigation of certain crops, parks and green spaces.
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Healthcare Sector	
Policies, strategies, programmes, plans and actions for strengthening the sector's resilience and adaptation to climate change	<ul style="list-style-type: none"> • National Strategy for the Adaptation of the Health Sector to Climate Change (under development); • Health Plan 2050; • Operational Action Plan for the Adaptation of the Health Sector to Climate Change 2017-2021 (PAOA); • National Strategy for the Management of Medical Emergencies and Health Risks Related to Natural Disasters; • Hospital emergency plan and an action plan for medical emergencies.
2030 Goals	<p>Addressing the three main types of diseases that can compromise the Health Programs:</p> <ul style="list-style-type: none"> • Vector-borne diseases with the risk of introducing new vectors; • Cardiovascular diseases that will affect more seniors and a larger slice of workers; • Diarrhoeal diseases and respiratory diseases that will affect children due to cold spells and floods. <p>Strengthening the capacity of the system by putting in place mechanisms and tools alerts for:</p> <ul style="list-style-type: none"> • Improve information and warn the population during periods of high air pollution; • Improve the information and capacity of health professionals so that they can effectively contribute to information and awareness campaigns and communicate appropriate protective measures; • Dealing with extreme weather events and implementing health emergency response plans; • Strengthen actions to monitor air quality and its consequences on health; • Reduce the risk of diseases of wild and farmed marine herds related to emerging pathogenic species and other invasive alien species. <p>Developing system capabilities to increase infrastructure resilience and health services through:</p> <ul style="list-style-type: none"> • The development of codes and standards for the design of health infrastructure; • Strengthening research and studies related to "health and climate change"; • The development of community-based training programmes for health workers on the risks of climate change.

4. ANNEXES

Appendix 1 Summary of mitigation measures for the overall target

No.	Sector	Measurements	Description	Attenuation		Cost (US\$ million)
				2020-2030	2030	
				(Gg CO ₂)		
1	Electricity production	National Wind Energy Plan for 2020	Establishment of wind farms on several sites by 2020 for a total capacity of 1,467 MW.	33 761,3	3 305,3	\$ 2,000,0
2		National Solar Plan for 2020	Installation of concentrated thermodynamic solar power plants on several sites by 2020 for a total capacity of 827 MW.	\$ 15,501,7	\$ 1,504,6	2 550,0
3		Hydropower plants by 2020	Hydroelectric power plant: Tanafnit El Borj (Khenifra) of 40MW in addition to 40 MW of micro-hydraulic capacity.	1,064,4	102,2	160,0
4		Combined-cycle power plants by 2020	Tahaddart power plant expansion by 23MW.	557,7	62,6	16,0
5		Combined-cycle power plants by 2030	This is a 450 MW extension project for the Tahadart power plant scheduled for 2025.	6 354,4	1,197,6	2 280,0
6		Hydroelectric power plants by 2030	Establishment of several pumped storage energy transfer stations (WWTPs) and hydroelectric power plants totalling 1098 MW of capacity by 2030.	1,178,8	379,5	1,124,5
7		National Wind Energy Plan 2030	Installation of several wind power plants on several sites for a total capacity equivalent to 2180 MW by 2030.	55 234,8	\$ 10,975,2	2 925,0
8		National Solar Plan for 2030	Installation of thermodynamic concentrated solar power plants and photo-voltaics on several sites for a total capacity equivalent to 4000 MW by 2030.	42,003,0	8 458,5	6 026,0
		Total scenario		140 795,2	22 770,7	\$ 17,081,5
9	Industry (excluding cement and phosphates)	Industrial Energy Efficiency Program	Reduction of energy consumption in the industrial sector by 17% by 2030.	25 106,2	5 028,7	200,0
10		Implementation of energy performance rules (MEPS) for electric motors above 75 kW	Implementation of minimum energy performance standards (MEPS) for electric motors.	630,0	105,0	NA
11		Natural gas in the industrial sector by 2030	Importing liquefied petroleum gas to increase industrial use as a replacement for fuel oil to improve efficiency and the local environment.	6 229,0	1,111,4	650,0
12		Biomass upgrading program in industry	Inventory, organization and valorization of the biomass sector for industrial use as a substitute for fuel oil.	8 487,8	1,657,2	405,5
13		Renewable energy (PV) installation programme for self-consumption in industry	Programme for the installation of photovoltaic solar power plants on the roof of industrial sites with a total capacity of 1,500 MW between 2021 and 2030 in self-consumption mode pending the authorisation to inject electricity into the medium-voltage grid.	886,5	176,4	\$ 3,000,0
		Total scenario		41,339,7	8 078,8	4 255,5

No.	Sector	Measurements	Description	Attenuation		Cost (US\$ million)
				2020-2030	2030	
				(Gg CO2)		
14	Cement	Recycling of used tyres	Replacement of used fossil fuels (petroleum coke) with used tires.	3 730,2	337,9	NA
15		Recovery of WWTP sludge	Replacement of fossil fuels used (petroleum coke) with WWTP sludge.	375,1	36,0	1,5
16		Recovery of household waste	Replacement of fossil fuels used (petroleum coke) by household waste (the case of the um Azza landfill).	1,682,1	203,7	6,0
17		Olive pomace valorization	Replacement of used fossil fuels (petroleum coke) with olive pomace.	1,159,5	108,5	0,0
18		Fly ash recovery	Substitution of part of the clinker by fly ash in a mixture to obtain cement with the desired characteristics and contribute to the reduction of GHG emissions by reducing clinker production.	4 079,5	732,5	13,5
		Total scenario		11,026,5	1,418,8	21,0
19	Phosphates	Slurry pipeline Khouribga - Jorf Lasfar	Phosphate transport by slurry pipeline to replace trains.	\$ 11,767,5	1,230,0	530,0
20		Cogeneration	Thermal power plants and heat recovery systems.	39 818,1	5 246,5	280,0
21		Solar energy	Solar farms.	2 067,4	737,0	100,0
22		Solar phosphate drying	Replacement of the No. 2 fuel oil used for phosphate drying with solar energy.	565,7	191,2	300,0
23		Capture and recovery of CO2 from phosphoric chimneys	Capture and recovery of CO2 emissions related to the process.	\$ 10,521,0	2 195,2	271,4
		Total scenario		64 739,8	9 599,9	1,481,4
24	Building	National plan for the development of solar water heaters from 2010 to 2020	Solar thermal programme of 40,000 m2/year between 2010 and 2020.	28,0	0,0	200,0
25		Programme for the widespread use of LED lamps in the residential sector by 2030	Program to install 40 million compact fluorescent lamps (CFLs) and 40 million light-emitting diode (LED) lamps between 2010 and 2030.	\$ 11,005,7	1,468,0	210,9
26		Implementation of the Minimum Energy Performance Standard (MEPS) for energy-efficient refrigerators.	Improvement of the energy efficiency of refrigerators according to energy performance rules and the promotion of energy-efficient refrigerators.	4 818,8	648,4	500,0
27		Implementation of the Minimum Energy Performance Standards (MEPS) for air conditioners.	Implementation of BPMS and labelling for air conditioners.	1,813,2	296,8	NA
28		Energy Efficiency for New Building Envelopes	Adoption of the Code of Thermal Construction Regulations in Morocco in residential and tertiary buildings.	499,8	80,0	18,0
29		Energy efficiency in tourist accommodation establishments	Implementation of an energy efficiency program in the tourism sector, including: 300,000 low-energy lamps, 300,000 m2 of solar water heaters and the application of the thermal building regulation code in Morocco.	280,8	44,6	86,0
30		National plan for the development of solar water heaters after 2020	Installation of the equivalent of 40,000 m2/year of solar water heaters.	647,5	91,3	308,0
31		Installations of photovoltaic solar panels, by 2030, for self-consumption in the residential and tertiary sectors	Implementation of a program to promote photovoltaic solar panels connected to low-voltage grids with a total capacity of 1,000 MWp by 2030.	4 472,0	942,2	2,020,0
32		Energy efficiency programme in public lighting	Implementation of an energy efficiency program in public lighting in Morocco's major cities.	1,159,9	210,9	310,0
		Total scenario		\$ 3 781,7	3 652,9	

No.	Sector	Measurements	Description	24,689.0		Cost (US\$ million)	
				Attenuation			
				2020-2030	2030		
				(Gg CO2)			
33	Transport	Extension of the Rabat tramway	Extension of the tramway, which provides a solution of choice in Rabat's transport.	153,8	14,3	485,5	
34		Extension of the Casablanca tramway	Extension of the tramway, which provides a solution of choice in the transport of Casablanca.	204,5	19,0	1,600,0	
35		Improving environmental standards for vehicles	Limitation of emissions of certain polluting gases from vehicle emissions. From 2023, the standard requires manufacturers to produce cleaner cars, with respect, in particular, of fine particle and nitrogen oxide emission rates... Thus, from January 2023, all new passenger and commercial vehicles (categories M and N) placed on the Moroccan market will have to comply with the Euro 6 standard.	6 487,2	1,571,2	0,1	
36		Bonus-Malus System	The bonus-malus system aims to encourage the choice of a vehicle with low CO2 emissions and to penalise the purchase of the most polluting models.	1,504,2	363,9	1,2	
37		Renewal and Breakage Program	The program aims to remedy the obsolescence that characterizes the professional road transport fleet in Morocco through the granting of renewal and scrappage bonuses according to eligibility conditions defined in the framework of the finance laws.	233,6	32,4	154,0	
38		Eco-driving	The adoption of good eco-driving practices aims to reduce fuel consumption bills and vehicle maintenance costs, pollute the environment less and contribute to improving road safety.	184,6	26,9	0,3	
39		Application of CO2 emission performance standards for new passenger cars and new light commercial vehicles	This action aims to converge, with a 10-year lag in 2030, towards the application of the European Regulation setting CO2 emission performance standards for new passenger cars and for new light commercial vehicles. This action would drain a greater potential for mitigating CO2 emissions.	\$ 10,935,6	3 113,6	0,6	
	Total scenario			\$ 19,703,5	5 141,3	2 241,7	
40	Rubbish	Valorisation of GHGs from WWTPs	Collection of biogas in wastewater treatment plants (WWTPs) with a view to recovering it in the production of electrical energy.	692,2	129,7	617,2	
41		Mechanical-biological treatment and co-incineration of household waste	Recovery of household waste by biomechanical treatment associated with co-incineration. This process consists of the following operations: mechanical sorting and shredding, biological operation with aerobic drying.	30 446,7	3 720,5	1,309,1	
		Total scenario		31,138,9	3 850,3	1,926,3	
42	Agriculture	Olive Growing Program (Tranche 1)	Planting of 447,000 ha of olive trees in areas unsuitable for annual crops, in order to combat soil erosion and improve the incomes of small farmers.	11,719,5	1,069,8	1,209,5	
43		Fruit Tree Program (Tranche 1)	Planting of fruit trees on 160,000 ha in order to improve and diversify farmers' incomes, especially in fragile mountain areas.	\$ 11,907,6	1,087,0	753,0	
44		Citrus program (tranche 1)	Planting of citrus fruits on 45,000 ha (density of 600 plants/ha) in order to improve farmers' income and export earnings.	1,439,5	131,4	450,0	
45		Date palm program (tranche 1)	Planting of 3 million date palms to improve the productivity of the oases and to combat desertification and the rural exodus of young people.	768,2	70,1	353,0	

46		National Programme for the Development of Rangelands and Regulation of Transhumant Flows – Phase 1	Development of rangelands in order to combat the desertification of the country, improve the income of livestock farmers and protect biodiversity (planting of 14,500 ha of fodder shrubs).	4 233,6	386,5	70,0
No.	Sector	Measurements	Description	Attenuation		Cost (US\$ million)
				2020-2030	2030	
47	Agriculture	Cactus Planting Program (Tranche 1)	Revegetation of bare or eroded land by planting 44,000 ha of cacti in arid areas, resulting in an improvement in the income of smallholder farmers and women's cooperatives.	2 394,1	218,5	31,1
48		Olive Growing Program (Tranche 2)	Extension of the olive growing programme to 300,000 ha.	\$ 3,480,0	661,2	812,1
49		Fruit Tree Program (Tranche 2)	Extension of the arboriculture programme to 400,000 ha.	\$ 13,521,9	2 569,2	917,9
50		Date palm program (tranche 2)	Extension of the date palm program to 2 million plants.	233,4	44,3	236,0
51		National programme for the development of rangelands and the regulation of transhumant flows – Phase 2	Extension of the national programme for the development of rangelands and the regulation of transhumant flows to 300,000 ha.	2 961,7	562,7	60,0
52		Cactus Planting Program (Tranche 2)	Extension of the cactus planting program to 85,150 ha.	2 095,5	398,1	60,5
53		Argan Tree Planting Program	Extension of plantations to 49,300 ha.	1,158,4	220,1	145,3
54		40 MW Dakhla wind farm	Establishment of a 40 MW wind farm to supply energy to the Dakhla seawater desalination plant.	1,521,7	156,9	200,0
		Total scenario		57 435,1	7 576,0	5 298,4
55	Forest	Ecosystem Restorative Activities (unconditional part).	A1: Restorative activities involving biological reforestation and regeneration actions (50,000 ha per year) A2: Distribution of forest plants (6,000,000 plants per year).	6 613,4	1,194,0	593,0
56		Degradation avoided (unconditional part).	B1: Compensation for defence (90,000 ha per year); B2: Energy efficiency through the distribution of improved furnaces (6000 furnaces per year); B3: Better management of fire risks, including the opening and maintenance of firebreak trenches (500 km per year); development of 65 water points per year; monitoring during periods of high sensitivity (1245 lookouts per year); Monitoring and diagnosis (900 observations per year).	873,1	130,6	257,3
57		Strengthening the resilience of socio-ecosystems in vulnerable areas (unconditional part).	D1: Establishment of maritime and continental dunes (800 ha per year).	16,6	3,0	697,6
58		Activities between 2010 and 2020.		6 529,6	590,9	541,6
59		Ecosystem Restorative Activities (conditional part).	A1: Restorative activities involving biological actions of reforestation and regeneration (20,000 ha per year).	2 147,2	387,0	232,0
60		Degradation avoided (conditional part).	B1: Compensation for defences (30,000 ha per year); B2: Energy efficiency through the distribution of improved furnaces (3000 furnaces per year); B3: Improved fire risk management including: Opening and maintenance of fire trenches (53 km per year); development of 5 water points per year; surveillance during periods of high sensitivity (145 lookouts per year); Monitoring and diagnosis (220 observations per year).	1,440,4	247,8	354,4

61	Strengthening the resilience of socio-ecosystems in vulnerable areas (conditional part).	D1: Establishment of maritime and continental dunes (800 ha per year).	4,2	0,8	174,4
	Total scenario		17,624,4	2 554,1	2 850,3
	Total scenario		408 492,2	64 771,5	\$ 38,809,0

■ Conditional Projects □ Unconditional Projects

Appendix 2
Summary of Unconditional Mitigation Measures

No.	Sector	Measurements	Unconditional measures		
			Attenuation		Cost (U\$ million)
			2020-2030	2030	
			(Gg CO2)		
1	Electricity production	National Wind Energy Plan for 2020	33 761,3	3 305,3	\$ 2,000,0
2		National Solar Plan for 2020	\$ 15,501,7	\$ 1,504,6	2 550,0
3		Hydropower plants by 2020	1,064,4	102,2	160,0
4		Combined-cycle power plants by 2020	557,7	62,6	16,0
5		Combined-cycle power plants by 2030	6 354,4	1,197,6	2 280,0
6		Hydroelectric power plants by 2030	1,178,8	379,5	1,124,5
		Total scenario	49 669,5	4,900,7	8 130,5
9	Industry	Industrial Energy Efficiency Program	25 106,2	5 028,7	200,0
10		Implementation of energy performance rules (MEPS) for electric motors above 75 kW	630,0	105,0	NA
		Total scenario	25 736,2	5 133,7	200,0
14	Cement	Recycling of used tyres	3 730,2	337,9	NA
15		Recovery of WWTP sludge	375,1	36,0	1,5
16		Recovery of household waste	1,682,1	203,7	6,0
17		Olive pomace valorization	1,159,5	108,5	0,0
18		Fly ash recovery	4 079,5	732,5	13,5
		Total scenario	11,026,5	1,418,8	21,0
19	Phosphates	Slurry pipeline Khouribga - Jorf Lasfar	\$ 11,767,5	1,230,0	530,0
20		Cogeneration	39 818,1	5 246,5	280,0
21		Solar energy	2 067,4	737,0	100,0
		Total scenario	53 653,1	7 213,5	910,0
24	Building	National plan for the development of solar water heaters from 2010 to 2020	28,0	0,0	28,0
25		Programme for the widespread use of LED lamps in the residential sector by 2030	\$ 11,005,7	1,468,0	\$ 11,005,7
26		Minimum Energy Performance Standard (MEPS) for refrigerators.	4 818,8	648,4	4 818,8
27		Minimum Energy Performance Standard (MEPS) for air conditioners	1,813,2	296,8	1,813,2
28		Energy Efficiency for New Building Envelopes	499,8	80,0	499,8
29		Energy efficiency in tourist accommodation establishments	280,8	44,6	280,8
		Total scenario	18,409,7	2 537,3	1,014,9
33	Transport	Extension of the Rabat tramway	153,8	14,3	485,5
34		Extension of the Casablanca tramway	204,5	19,0	1,600,0
		Total scenario	358,3	33,3	2 085,5
42	Agriculture	Olive Growing Program (Tranche 1)	11,719,5	1,069,8	1,209,5
43		Fruit Tree Program (Tranche 1)	\$ 11,907,6	1,087,0	753,0
44		Citrus program (tranche 1)	1,439,5	131,4	450,0
45		Date palm program (tranche 1)	768,2	70,1	353,0
46		National programme for the development of rangelands and the regulation of transhumant flows (tranche 1)	4 233,6	386,5	70,0
47		Cactus Planting Program (Tranche 1)	2 394,1	218,5	31,1
		Total scenario	32 462,6	2 963,4	2 866,6
55	Forest	Ecosystem Restoration Activities (unconditional)	6 613,4	1,194,0	593,0
56		Degradation avoided (unconditional part)	873,1	130,6	257,3
57		Strengthening the resilience of socio-ecosystems in vulnerable areas (unconditional part)	16,6	3,0	697,6
58		Activities between 2010 and 2020	6 529,6	590,9	541,6
		Total scenario	14,032,7	1,918,5	2 089,5
	Total scenario		205 348,5	26 119,2	17,318,0

Ministry of Energy, Mines and Environment, Department of
Environment