Climate Investment Funds

CTF/TFC.4/3
October 7, 2009

Meeting of the CTF Trust Fund Committee
Washington, D.C.
October 27, 2009

CLEAN TECHNOLOGY FUND
INVESTMENT PLAN FOR MOROCCO

Proposed Trust Fund Committee Decision

The Trust Fund Committee reviewed document CTF/TFC.4/3, *CTF Investment Plan for Morocco*, endorses the plan and agrees to the further development of the activities foreseen in it. The Trust Fund Committee agrees to an envelope of up to USD150 million in CTF funding to finance the plan.

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Clean Technology Fund Investment Plan for Morocco
Executive Summary

Introduction

1. This Clean Technology Fund Investment Plan for Morocco proposes CTF co-financing of $150 million to support the Moroccan Fond de Developpement de l'Energie ("FDE"), which is being established as a Government of Morocco-owned financial institution. The FDE will mobilize financing in the range of $1.5-2 billion. CTF resources will support an institutional transformation to create a lasting funding mechanism that will significantly increase future investments in the Government's ambitious, multi-faceted strategy to enhance energy security, while at the same time pursuing low-carbon opportunities. It will do so by effectively buying down the costs of low-carbon growth, allowing a number of part-(privately) financed projects to achieve financial closure, thereby crowding in the private sector (as a number of these projects would otherwise not have moved ahead).

Country and Sector Context

2. Strong GDP growth and increasing population are driving rapid increases in Morocco's energy needs. Electricity demand rose 8.2% annually between 2000 and 2006, with fossil fuels making up 95% of total primary energy supply and 94% of total electricity generation. Furthermore, Morocco relies on imports for 95% of its energy needs. This fossil fuel import dependency is growing as modest domestic resources are depleted, placing a significant fiscal burden on the government to maintain retail price stability in the face of high and volatile international prices.

3. Overall, Morocco's CO_2 emissions have increased 35% from 2000 to nearly 40 million tons in 2006. Emissions in the electricity sector have risen even faster, with expanding coal-fired capacity driving a 70% increase from 1997 to 2007. Transport sector emissions have also seen dramatic increases, rising about 50% from 1997 to 2007. Moroccan emissions intensity – ton of CO_2 emitted per unit of GDP – rose nearly 50% from 1971 to 2007 and is now well above international averages.

Priority Sectors for GHG Abatement

4. As part of the preparation of the Second National Communication to the Conference of Parties of the United Nations Framework Convention on Climate Change, the Government of Morocco has developed Business As Usual (BAU) and Low Carbon emissions scenarios. CO_2 emissions related to energy supply and use are projected to rise by 140% from 2005 to 2030 under BAU. However, by implementing a range of mitigation options, emissions in 2030 can be reduced by 25% relative to BAU.

5. The primary national strategy to pursue low-carbon opportunities for achieving national economic and social objectives is the National Plan of Priority Actions ("PNAP"), which was launched in April 2008. PNAP rests on four strategies axes: (a) security of supply with diversification of fuel types and origins; (b) access to energy for all segments of society

at affordable prices; (c) promotion of renewable energy and energy efficiency; and (d) regional energy integration among the Euro-Mediterranean markets.

6. Key measures in PNAP include increases in generation capacity (including about 600% increase in wind power to reach 20% of power generation), construction of international connections and linkages, and optimizing production of hydroelectricity. Demand-side measures in PNAP include a program low energy lighting to reduce peak demand by 800 MW, advanced tariff structure to incentivize conservation, and a national energy efficiency program to reduce energy use by 15% in buildings, industry and transport by 2020.

Rationale for Selected Sectors for CTF Co-Financing

7. The FDE currently has $1 billion, consisting of contributions from the Kingdom of Saudi Arabia, United Arab Emirates, and the King Hassan II Fund. Owing to conditions placed on a large portion of the FDE funds (that they should generate returns and be sustainable), the CTF funds – blended with IBRD, AFDB and/or IFC -- will be instrumental in achieving financial closure for projects with the greatest potential for GHG emissions savings, and which face viability gaps due to additional costs or risk premiums. The focus will be on (a) increased penetration of renewable energy into Morocco's electricity generating portfolio, with an emphasis on wind power, and (b) energy conservation measures, particularly industrial energy efficiency and urban transport.

8. Combining CTF with FDE is expected to have transformational impact in the following manner:

a) Finding more opportunities to channel FDE funds towards renewable energy and energy efficiency projects.
b) Providing greater investor confidence and long term steady source of debt financing to the sector, thereby leveraging further funding into the sector.
c) Permitting a programmatic approach to meeting PNAP targets.

9. *Potential for GHG reduction:* In the wind sector, the full implementation of all projects in the development pipeline under PNAP could account for annual CO_2 emissions reductions of 2.85 million tons per year. Industrial energy efficiency measures have the potential to reduce emissions by 1.9 million tons of CO_2 per year. In the transport sector, measures ranging from modal shifts, low carbon vehicles and traffic management could result in emissions savings of 1.96 million tons of CO_2 per year.

10. *Demonstration potential:* Morocco has world class renewable resources. The wind potential is estimated at 5500 MW. Successful project development and operation would open the pathway to substantial increases in wind capacity. In energy efficiency, the potential for replication is particularly strong in the cement (witnessing substantial growth due to the country's rapid urbanization) and phosphate (Morocco is the world's third largest producer) industries. Similarly, Morocco's growing urban centers require demonstration of a new, clean transport paradigm.

11. *Development impact:* Given Morocco's dependence on imported fossil fuels, increased utilization of domestic renewable resources and demand reduction in industry and transport are amongst the Government's highest priorities. The fiscal impacts of maintaining retail price stability have been significant. Transport interventions would not only achieve the Government's energy security objectives of reducing fuel consumption and oil dependency, but also improve mobility for the poor and urban air quality.

12. *Implementation Potential:* The Government of Morocco is in an advanced stage of setting up the FDE. Some employees have already been recruited and a search for the Director-General is under way. A legal set-up (known as a Société anonyme) has been set-up. The Government of Morocco has also strengthened the legal, regulatory and institutional environmental for the development of renewable energy and energy efficiency, as evidenced by the active interest of the private sector in doing business in Morocco. An energy efficiency law is under preparation. In transport, the creation of an urban transport planning authority for the Casablanca metropolitan area, as well as infrastructure development companies for mass transit projects, are important measures. Finally, the Government intends to address a number of policy measures through an IBRD Development Policy Loan, which is under preparation.

13. *Additional costs and risk premiums:* Based on current equipment and fuel prices, the per unit cost of wind generation is above that of coal and natural gas-based generating technologies. Therefore, CTF financial support will be targeted to fill gaps in financing to enable projects to reach financial closure. Industrial energy efficiency measures might require less concessional forms of funding, but could require CTF support to extend the tenor of loans and overcome many of the other barriers to more efficient investment options. In the transport sector, CTF support is expected to be requested by municipalities/local governments that face funding constraints for projects that are not financially viable at the envisaged level of user fees.

Table 1: Results indicators

Sector	Key indicators
Electricity Generation	• Installed renewable energy capacity [300 MW]. • Percentage of electricity coming from renewable sources [2.3% higher than BAU] • CO_2 reduction on an annual basis [730 kt per annum].
Energy Conservation – industrial	• Reduction in energy and emissions intensity on a sectoral basis (per unit of production) • Net reduction in annual energy use • CO_2 emission reduction on an annual basis [974 kt per annum].
Energy Conservation - transport	• Number of public transport lines or corridors introduced. • Percentage modal shift achieved. • Passenger miles per day using public transport. • CO_2 reduction on an annual basis [590 kt per annum].

Table 2: Indicative Financing Plan for FDE/CTF

Windows	**Sources of funding**	**Amount ($, million)**
CTF	IBRD	75*
	AfDB	50*
	IFC	25*
IBRD and AfDB lending (line of credit to FDE)	IBRD	100-200**
	AfDB	100-200**
FDE (including SIE and 'Fonds perdu')	Hassan II Fund	200
	Kingdom of Saudi Arabia	500
	United Arab Emirates	300
IFC and AfDB (private sector) external parallel financing to projects	IFC	200 or more
	AfDB (private sector)	100-200
Total financing		**1,650-1,950+**

* indicative breakdown

** subject to envelope under Country Partnership Strategy

TABLE OF CONTENTS

INTRODUCTION

2. This Clean Technology Fund (CTF) Investment Plan was agreed among the Government of Morocco (GoM), the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC) and the African Development Bank (AfDB). Its preparation has included consultation with a number of bilateral donors[1]. It proposes to support the Moroccan Fond de Développement de l'Energie ("FDE") to advance a low-carbon growth strategy that will foster continued economic development while substantially reducing GHG emissions compared with business-as-usual[2].

3. The FDE is currently being set up as a wholly GoM owned financial institution. The CTF funds will combine with the FDE. This institutional transformation will create a lasting funding mechanism that will significantly increase future investments in essential components of the GoM's ambitious, multi-faceted strategy to achieve sustainable economic growth (through reduced exposure to fossil fuel use and increased implementation of low-carbon projects). The CTF (blended with IBRD, AfDB and/or IFC as necessary) will effectively buy down the costs of low-carbon growth, allowing a number of part- (privately) financed projects to achieve financial closure, thereby crowding in the private sector (as a number of these projects would otherwise not have moved ahead).

I COUNTRY AND SECTOR CONTEXT

Economic Context

4. The key development objectives of the Government of Morocco (GoM) are "to accelerate employment generation and sustainable economic growth" and "reduce poverty and marginalization" (CAS Report 31879-MA, 2005). These objectives have been supported by reforms aimed at ensuring macroeconomic stability, increasing the efficiency of public administration, improving the investment climate, strengthening a growth-oriented financial sector and increasing the competitiveness of the agricultural sector. The last decade of reforms has enabled macroeconomic stability, solid growth and low inflation. Despite the unfavorable global economic context and a consequent slowdown in the second half of the year, Morocco's growth rate is estimated to be 5.4 percent in 2008, up from 2.7 percent in 2007. Morocco's strong policy reform agenda fuels a positive economic outlook. Over the medium term, Morocco is expected to preserve macroeconomic stability and moderate to high growth. Despite the world recession, the country's external position and fiscal stance should remain sustainable.

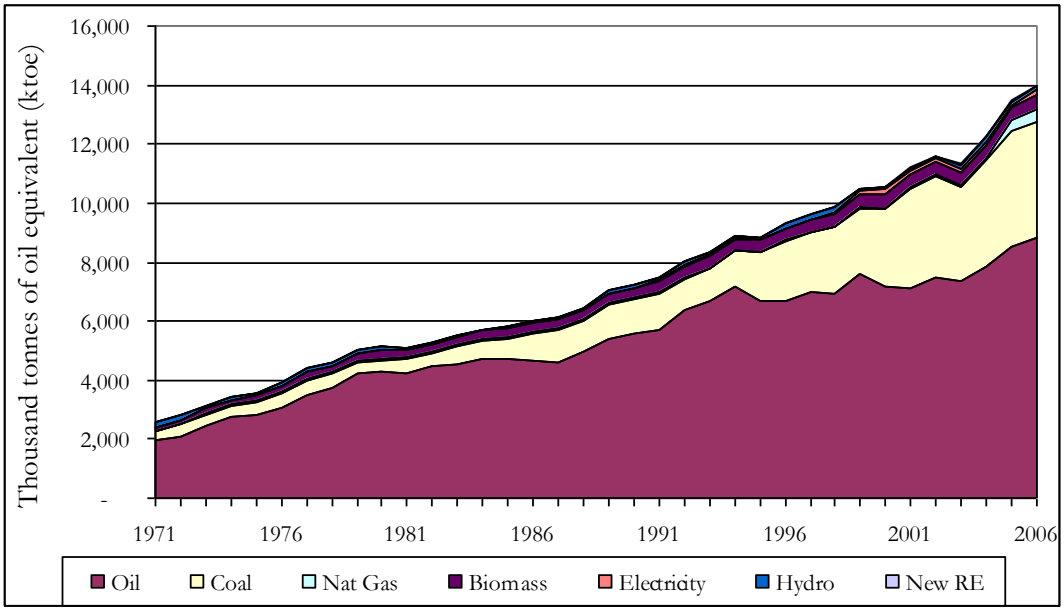
[1] including the European Union, United States Agency for International Development, European Investment Bank, United Nations Development Program, AFD, KfW and GTZ.
[2] Note that this Investment Plan excludes Concentrated Solar Scale-up for Morocco, which is part of a separate CTF Investment Plan being developed at a regional level including Algeria, Egypt, Jordan, Morocco and Tunisia.

Energy Sector

5. Increasing population and strong GDP growth are driving rapid increases in Morocco's energy needs. From 2000 to 2006, total primary energy supply in Morocco rose an average of 4.2 per cent annually. Over the same time, electricity demand rose even faster, at an average of 8.2% annually. A continued high growth in energy needs is forecast both as a prerequisite to and result of continued economic development.

6. Morocco's energy profile is dominated by imported fossil fuels. In 2006, fossil fuels made up 95% of total primary energy supply (TPES), substantially higher than the world average of 81%. Less than 1% of Morocco's fossil fuel is produced domestically. Crude oil and petroleum products accounted for 63% of total supply, coal for 28% and natural gas for 4%. At the same time, Morocco relies on imports for 95% of its energy needs. Import dependency is even higher at 98% when non-commercial energy sources (i.e., small-scale biomass) are excluded. Import dependency has steadily risen over time as modest domestic resources are depleted and energy needs rise.

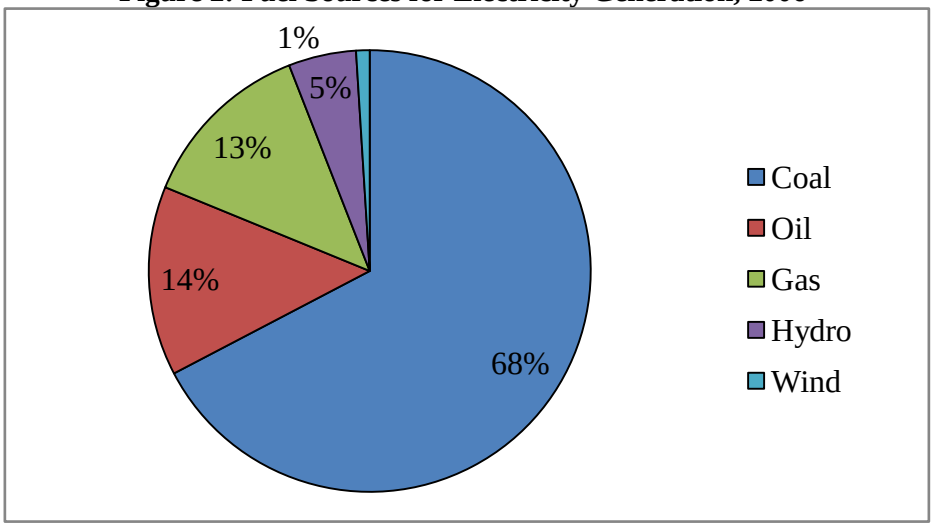
Figure 1: Sources and Growth of Total Primary Energy Supply (toe), 1971-2006



Source: IEA.

7. Like the country's overall energy mix, the electricity sector is also heavily dependent on fossil fuels which in 2006, accounted for 94% of total generation. The graph below shows full breakdown by all fuels. Morocco also relies on electricity imports from Spain to meet demand, in 2008 importing 4,261 GWh, or 18% of total electricity supplied to the system.

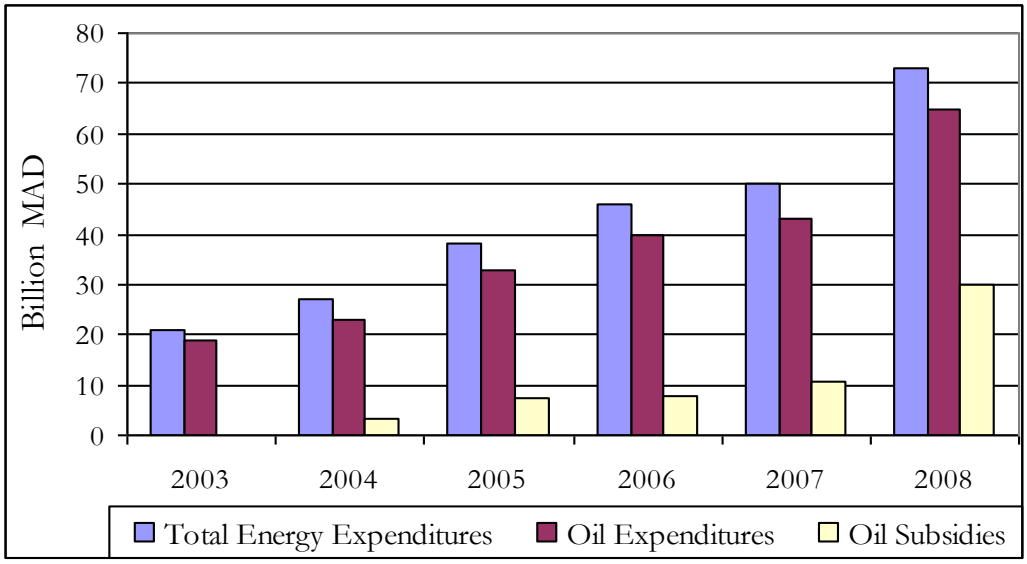
Figure 2: Fuel Sources for Electricity Generation, 2006



Source: Enerdata, ONE, MEM, BF. 2006.

8. Dependence on imported fossil fuels, particularly oil, has had a harmful effect on both national and government budgets. The graphs below show the rapid increase in money going for energy costs, especially for oil, as well as the fiscal burden placed on the government to maintain retail price stability for petroleum products in the context of high and volatile international oil prices.

Figure 3: Growth in Energy Expenditures and Government Subsidies, 2003-2008



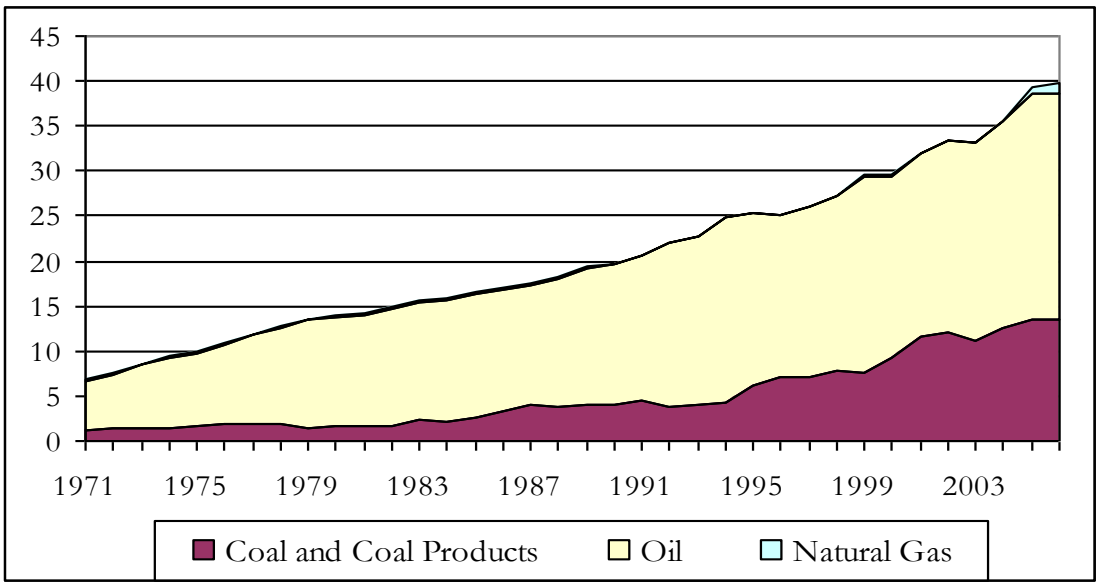
Source: Moroccan Ministry of Energy, Mines, Water and the Environment

CO_2 Emissions

9. Continuing a trend of escalating emissions, in 2006 Moroccan CO_2 emissions from fuel combustion rose to 39.8 million tonnes in 2006. This represents a 35% increase over

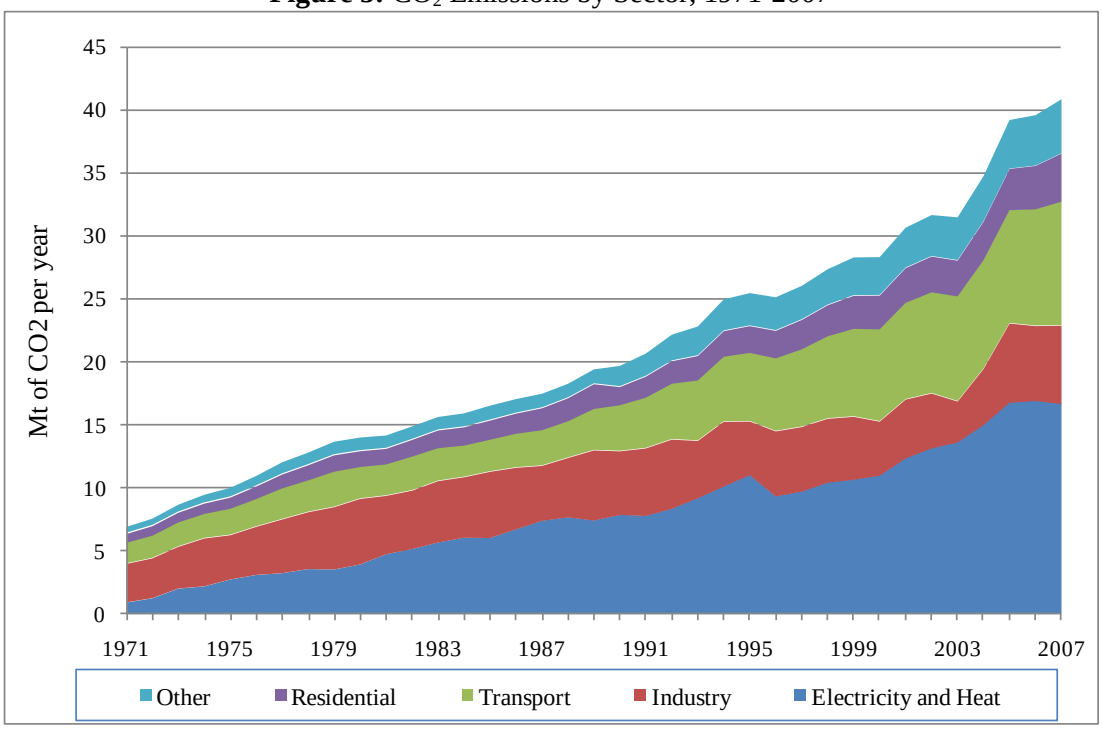
2000 numbers, and annual average growth of 5.2%. Oil products make up 61% of total CO_2 emissions, coal 34% and natural gas 3%. The rise in coal's share of total CO_2 emissions in recent decades (from 11.3% in 1980 to 33.9% in 2006) is linked to increase in coal use for power generation.

Figure 4: CO_2 Emissions by Fuel, 1971-2006 (Mt CO_2 per year)



Source: "CO_2 Emissions from Fuel Combustion", International Energy Agency (IEA).

Figure 5: CO_2 Emissions by Sector, 1971-2007



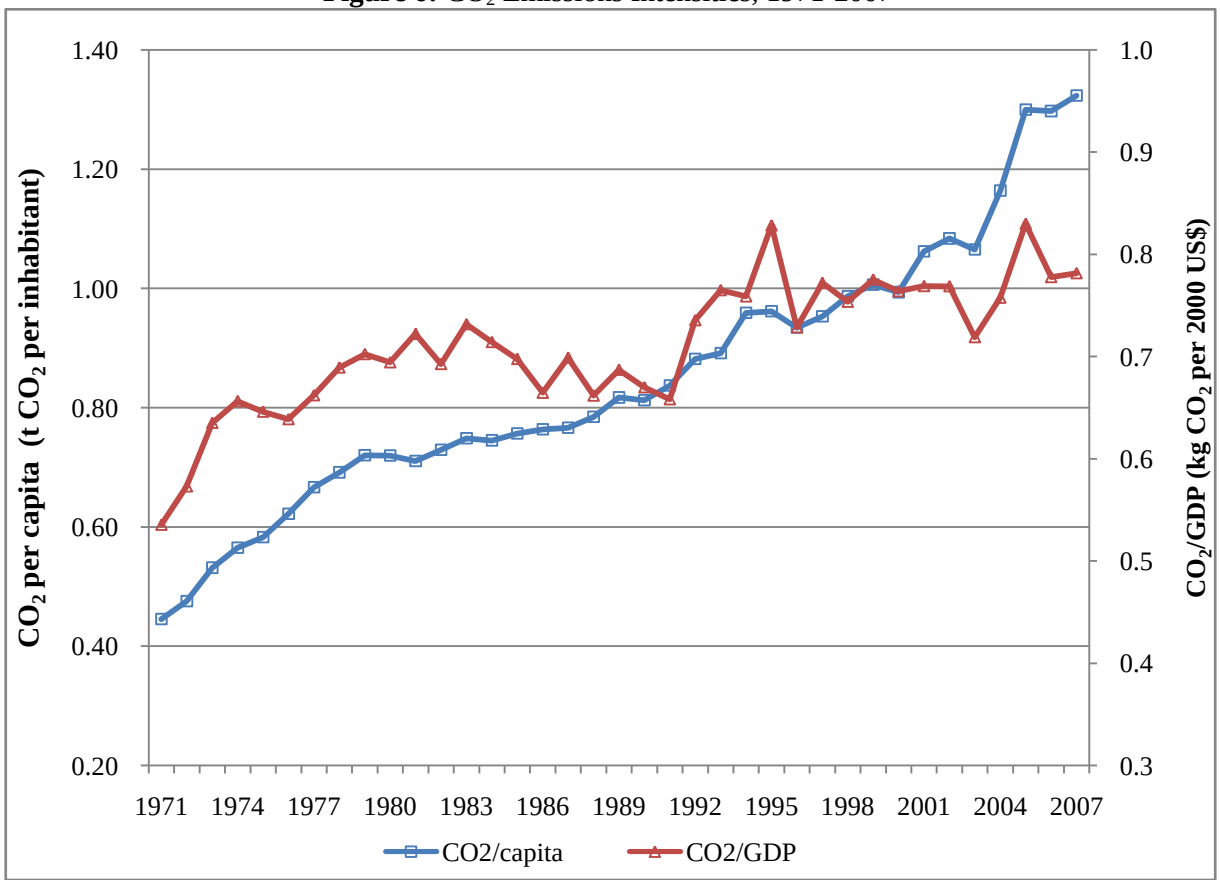
Source: "CO_2 Emissions from Fuel Combustion (2009)", International Energy Agency (IEA).

10. These rising emissions are a result of both population and GDP growth and in some cases, increased shares of fossil fuels in the energy supply mix. Economic growth and rising consumer purchasing power have had a profound effect on transport emissions, which rose nearly 500% from 1971 to 2007 and, more recently, 50% from 1997 to 2007. The electricity sector has also seen dramatic increases, rising nearly 70% in the ten years from 1997 to 2007. This is a result of both sharp increases in electricity production and continued high use of coal as input fuel. Projections under different business-as-usual scenarios project continued CO2 emissions increases from fuel use. These projections are shown in the sections below.

CO_2 Emissions Intensity

11. In addition to Morocco's *absolute* CO2 emissions from fuel use having grown substantially in past decades and recent years, the ratios that gauge the emissions *intensity* of its economy and energy use have also grown. From 1971 to 2007, CO2 emissions per capita nearly tripled, going from 0.45 t per person to 1.3 t per person. The emissions relating to each unit of GDP increased as well, rising nearly 50% from 1971 to 2007.

Figure 6: CO_2 Emissions Intensities, 1971-2007

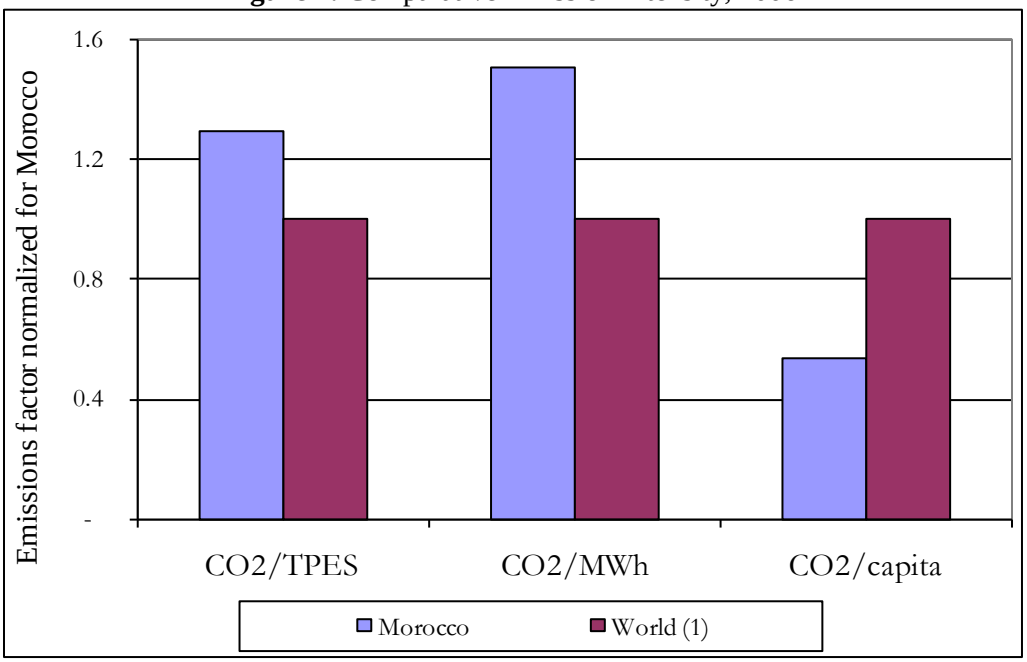


Source: "CO_2 Emissions from Fuel Combustion (2009)", International Energy Agency (IEA) and World Bank database.

12. When comparing against other countries, the CO2 intensity of Morocco's energy use is well above average. While Morocco has a relatively low level of energy intensity

(measured per GDP or per capita), its large share of coal use means that the emissions generated for each unit of energy produced and consumed is above international standards. For primary energy, Moroccan CO_2 intensity emissions are 3.1 tCO_2/toe versus a world average of 2.4 tCO_2/toe. For power generation, Moroccan CO_2 intensity is 0.86 tCO_2/MWh versus a world average of 0.57 tCO_2/MWh. Owing to a low energy intensity of the economy, however, the per capita emissions in Moroccan are below world averages and below averages of all non-Annex 1 countries. Morocco had per capita emissions of 1.31 tCO_2 compared to 4.28 tCO_2 for the world and 2.44 tCO_2 for non-Annex 1 countries. These relationships are all represented in the figure below with emissions factors normalized for Morocco.

Figure 7: Comparative Emission Intensity, 2006



(1) CO_2/capita data shows Morocco versus non-Annex 1 countries
Source: IEA

I PRIORITY SECTORS FOR GHG ABATEMENT

13. The Government of Morocco has a range of strategies and plans to achieve continued economic growth and poverty alleviation along a low-carbon pathway with substantially reduced emissions compared to business-as-usual (BAU). These plans recognize the country's challenges in an energy context: overwhelming dependence on energy imports (>95%), dominance of fossil fuels, growing energy payments, and sustained energy demand. Specific actions within the national and regional plans – including renewable energy, greater efficiency for industry and transport systems – will address both national interests and begin to move the country towards a new energy paradigm where development is effectively de-coupled from emissions. In structuring the CTF support, the intention is to help scale up those aspects of the national strategies that accelerate the transformation towards this type of cleaner growth.

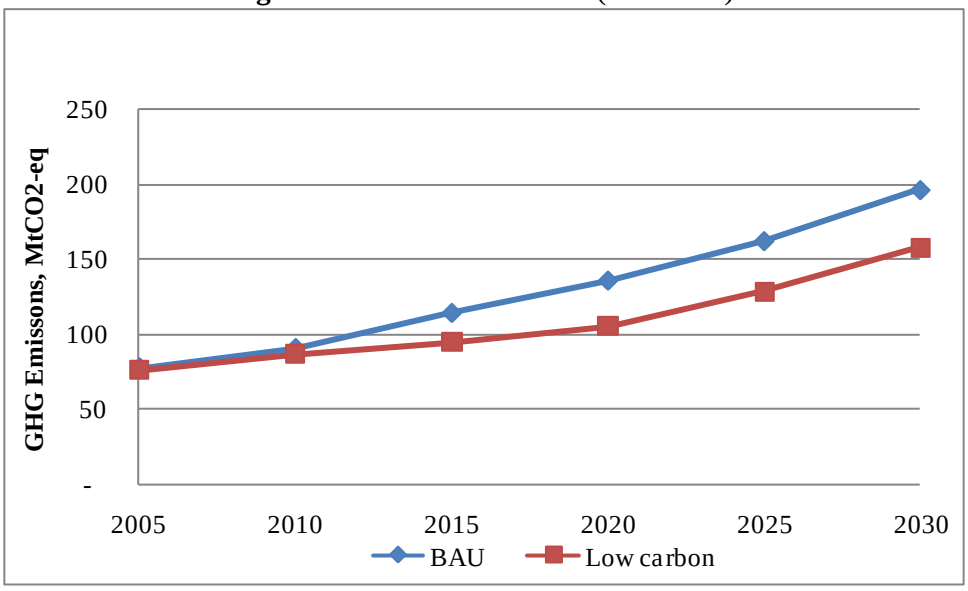
Baseline and Low-Carbon Scenarios

Emission Projections

14. The Government of Morocco is currently preparing its Second National Communication to the Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC). As part of this process, it has prepared scenarios showing the current GHG emissions from different sectors, their development over time under BAU conditions, the options for mitigation between now and 2030 and the scope for emission reduction these options represent. The resulting emission projection scenarios provide an overview of the different emission trajectories Morocco could follow and what types of actions could be pursued to achieve a lower emission path.3

15. Under BAU conditions, total greenhouse gases in Morocco are expected to rise from an annual rate of 77.2 million tonnes of CO2 equivalent in 2005 to 196.4 million tCO2-eq in 2030. This assumes a continuation of existing policies, as well as maintaining the same mix of fuels for energy supply and generation and continued levels of historical demand growth. However, with a mix of actions related to energy supply, energy demand and non-energy sectors, this emission trend can be decreased substantially (see "low carbon" scenario below). Realizing currently available low-carbon options would reduce annual GHG emissions by nearly 40 million tCO2-eq in 2030 or a 20% reduction from BAU.

Figure 8: Emissions scenarios (all sectors)

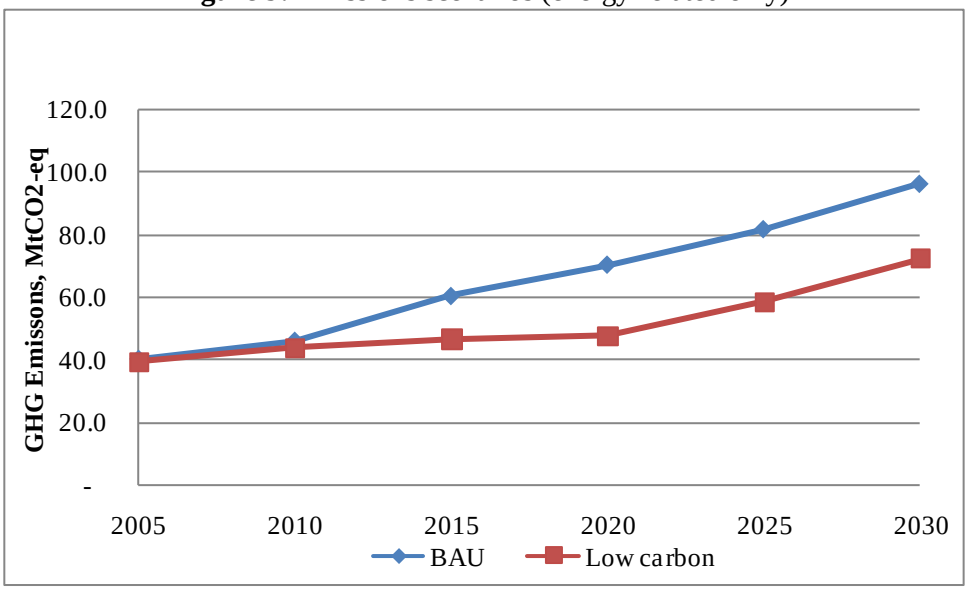


Source: "Project Seconde Communication Nationale sur les Changements Climatiques", May 2009 [DRAFT], Fraquemar – EDIC – SEGU.

[3] Data on different emission paths included herein come from presentations given by Secretary of State in Charge of Water and the Environment, and from "Etude des Mesures et des Programmes d' Attenuation des Emissions de Gaz a Effet de Serre (GES) au Maroc" submitted to the GoM in May 2009 by Fraquemar-Edic-SEGU. This report was commissioned and undertaken within the framework of the government's preparation of the UNFCCC Second National Communication.

16. The opportunities for lowering emissions related solely to fuel combustion are even more attractive on a percentage basis. CO2 emission related to energy supply and use are projected to rise by 140% from 2005 to 2030 under BAU. However, by implementing a range of mitigation options, emissions in 2030 can be reduced by 25% from BAU totals.

Figure 9: Emissions scenarios (energy-related only)



Source: "Project Seconde Communication Nationale sur les Changements Climatiques", May 2009 [DRAFT], Fraquemar – EDIC – SEGU.

17. The table below categorizes the emission reduction, shows the scope of reduction available in different categories and provides examples of the sub-sectors and specific actions to be targeted.

Table 1: Scope of Emission Reduction by Sector

Sector	**Scope of Emission Reduction Potential by 2030 (Mt CO_2-eq)**	**Sub-sectors and Sample Actions to be Targeted**
Energy Demand	6.17 per year	• Industrial Energy Efficiency • Transport • Households and Commercial
Energy Transformation and Supply	17.68 per year	• Renewable energy (wind, solar and hydropower) • Nuclear power • Increased use of natural gas
Non-Energy Sector	14.90 per year	• Treatment of solid waste • Agriculture • Reforestation

Source: "Projet Seconde Communication Nationale sur les Changements Climatiques", May 2009 [DRAFT], Fraquemar – EDIC – SEGU.

Government Strategies for Low-Carbon Growth

18. In order to realize the emission reductions presented in the scenarios above, the GoM has established several programs to place the country on a path for low-carbon economic growth. Details on the specific actions included in each of these initiatives are found below. While the description below does not represent the entirety of the strategies pursued by the GOM in this area, it does include the major efforts to demonstrate the scope and depth of the Government efforts.

National Plan of Priority Actions (PNAP)

19. The primary national strategy currently underway to pursue low-carbon opportunities to achieve economic and social national aims is the National Plan of Priority Actions (PNAP in French: Plan National d'Actions Prioritaires). The development of the PNAP was launched by His Majesty King Mohammed VI on April 15, 2008. The PNAP represents a holistic approach to the country's energy needs, seeking to enhance energy security and increase access, while at the same time lowering CO2 emissions. In a great number of cases, the actions included (e.g., increase in renewable energy and energy conservation) achieve all goals simultaneously. The PNAP measures are to be implemented by 2012.

20. The PNAP is a comprehensive national program representing the efforts and contributions of the ten major Ministries at the national level, among them Ministry for Energy, Mines, Water and the Environment, Ministry of Equipment and Transport, Ministry of Agriculture, and the Ministry of Industry, Commerce and New Technologies. It also holds formal partnerships with the national electric utility, L'Office National de l'Electricité (ONE), the Center for Development of Renewable Energy (CDER) as well as local officials and municipalities.

21. The PNAP is guided and implemented by a set of committees and working groups:

- National Committee on Strategic Direction: presided over by the Prime Minister, the committee is charged with supervision of the implementation of the PNAP.
- Steering Committee: presided over by the Minister of Energy, Mines, Water and the Environment, this committee is charged with following the execution of the PNAP and a national plan of communications.
- Working Groups: there are eight working groups covering different aspects of the PNAP. The working groups include representatives from all relevant Ministries and partner organizations.

22. The PNAP rests on four strategic axes:

1) Security of supply with diversification of fuel types and origins

Energy security is a primary concern of the government. With 97% of energy supply being imported and more than 63% of the primary energy supply coming from oil, Morocco remains vulnerable to shifts and volatility in international fuel markets. Many of the actions of the PNAP will boost capacity through a diversification of both fuel types and fuel sources. Greater renewable energy capacity is especially useful in

this regard in that it represents a domestic resource whose costs are not tied to unpredictable fuel prices.

2) Access to energy for all segments of society at competitive prices

Morocco realizes that energy is essential for both economic development and quality of life, both in its availability and affordability. The country has made impressive gains in electrification, with over 95% of rural communities supplied with electricity.[4] Expanding this and ensuring continued power provision along existing networks remain priorities. In addition, consumers must be able to afford the most suitable forms of energy at the retail level.

3) The promotion of renewable energy and energy efficiency

Morocco has strong domestic renewable energy (RE) resources (wind, solar and hydropower) which have not been fully exploited. Greater RE use helps to achieve many national energy objectives simultaneously and will be particularly effective in reducing emissions given the country's high emissions intensity in the power generation sector from widespread coal use. The PNAP includes measures for substantially increased wind power capacity and optimized production from hydropower generators.

Energy efficiency is also a key tool to achieve numerous objectives simultaneously. Reducing demand, as nearly half of the PNAP measures aim to, reduces the country's vulnerability to fossil fuel markets and also improves the country's economic competitiveness. An important target included in the PNAP is reduction of energy use by 15% in key selected sectors by 2020. Energy saving potential for these sectors is shown in the table below.

Table 2: Share of Total Moroccan Energy saving potential by sector

Sub-sector	Sector share of total energy saving potential
Industry	48%
Transport	23%
Residential	19%
Commercial	10%
Total	100%

Source: Government of Morocco

4) Regional energy integration among the euro-Mediterranean markets

Building on existing gas and power connections, PNAP would substantially increase its connections with both Spain and Algeria. Integration would primarily involve increased trade in gas and electricity with neighboring countries along with a system of supra-national regional planning and strategies. Once achieved, energy sector integration can bring: increased efficiency in power plant dispatch; larger, more cost-effective power plants serving multiple nations; financing opportunities addressing

[4] ONE website.

regional needs; improved energy security through resource pooling and supply diversification; and greater access to supply resources on a regional basis

In addition, enhanced energy integration with neighboring countries strongly supports the development of large-scale renewable energy systems. The non-dispatchability of renewable energy requires a degree of back-up on a system-wide basis which increases costs and – since the back-up is usually fossil fuel based - reduces emissions benefits from renewables. Linked generating portfolios between countries decreases the extent to which such back-ups are required and offers opportunities for linking up highly complementary renewable resources such as wind and hydropower.

Achieving such integration poses a number of challenges including the need for consistent political agreement, a degree of regulatory harmonization and financing and building the necessary interconnection infrastructure. Political support remains solid for enhanced energy integration both in Morocco, neighboring North African countries, and the countries of the European Union and Morocco's energy strategy and any new energy investments should be seen in the context of growing regional energy integration.

23. The specific measures and actions of the PNAP to achieve the objectives along the axes outlined above are shown below. The CTF would not be used to support all the actions to be implemented by the PNAP. Instead, its funds will target those actions with the greatest promise of emission reduction transformation in the country – and which face viability gaps due to additional costs or risk premia – to ensure these components are fully implemented and operational as soon as possible. These actions – as key parts of a holistic national energy strategy strongly supported by the government - represent the first essential steps towards placing Morocco on a path of low-carbon economic development.

Table 3: PNAP Supply side measures

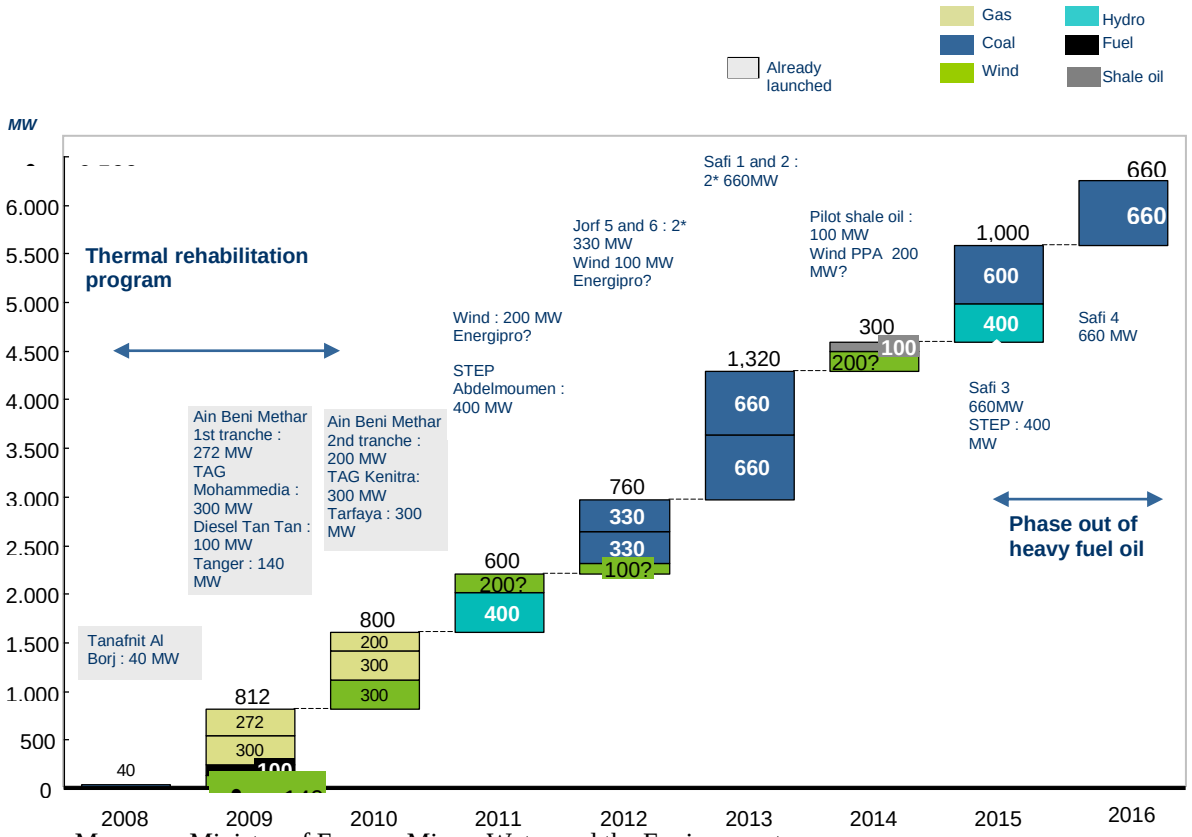
Measure	Action(s)	Impact
Increase in generation capacity	▪ **Increase in existing generating units: *Centrale de Jorf Lasfar* (2x350 MW)** ▪ **New generation: *Centrale de Sidi Boudeniane* (2 x 660 MW)** ▪ **Ain Bni Mathar (472 MW)** ▪ **Tag Mohammédia (300 MW)** ▪ **Tan Tan (116 MW)** ▪ **Tanafit El Borj (40 MW)** ▪ **Tarfaya (300 MW)** ▪ **EnergiPro (1,000 MW)** ▪ **Parc de Tanger (140 MW)**	**4,388 MW**
Enhanced international connections and linkages	▪ Construction of a third interconnector with Spain (700 MW) ▪ Placing in service of the 400 kV line with Algeria (800 MW)	1,500 MW

Optimize production of hydroelectricity	▪ Install retention pools for agriculture to decouple irrigation needs with hydro generation ▪ Improve management of hydro assets at hours of peak demand	300 to 400 MW
National program of condenser batteries	▪ Install in all distribution stations, condenser batteries to reduce line losses	200 MW
Optimize maintenance schedule to reduce generator outage times	▪ Reduce boiler maintenance time from current 70 days to international standard of 30 to 40 days	50-100 MW

Source: Ministry of Energy, Mines, Water and the Environment (March 2009)
(1) Shaded section represents components of the GoM strategy to be supported by the CTF as described in chapter below. Not all parts of each component strategy would be supported, just those leading to substantial emission reduction and requiring viability gap funding. In the case of this table, wind would be supported among the mix of generating technologies to be added.

24. The following chart shows the GoM's expansion plan for generation capacity through 2016 consisting of a mix of thermal and low carbon technologies. Enhanced efforts to deliver low carbon growth – above those already planned – would be needed to ensure the low-carbon generation (primarily wind) is implemented ahead of other forms of (more carbon intensive) generation. The use of the CTF would fall under such enhanced effort.

Figure 10: Government of Morocco proposed generation capacity expansion plan



Source: Moroccan Ministry of Energy, Mines, Water and the Environment

Table 4: PNAP Demand side measure

Measure	Action(s)	Impact
Program of Low Energy Lighting	▪ Distribution by ONE of 15 million low energy lighting units ▪ Distribution of private concessions for 4.4 units ▪ Distribution by municipal utilities of 7.7 million units	Peak reduction of 800 MW
Advanced tariff structure to incentivize conservation	▪ 20% tariff discount for all residences and local collectives that have consumption 20% below established targets	Peak reduction of 300 MW
Optional peak tariff for high-voltage customers	▪ Encourage high voltage customers to reduce consumptions during peak periods through new tariff structures	Peak reduction of 87 MW
Optional bihourly tariff	▪ Bihourly tariffs for low-voltage motors	16 MW
Public lighting	▪ Installing efficient equipment such as stabilizers, economizers and CFLs ▪ Pilot operation by MEMEE and the Ministry of Industry ▪ Full program implementation by ONE	87 MW
National Energy Efficiency Program (Buildings, Industry, and Transport)	▪ **Reduce energy use 15% in targeted sectors** ▪ **Programs for each sector designed by MEMEE and the relevant Ministries** ▪ **Operationalized by MEMEE and CDER**	**15% energy reduction in targeted sectors by 2020**
Modified time zone	▪ Adopting GMT+1 for trial period 1 June 2008 to 31 August 2008	100 MW
Petroleum Products	▪ **Actions to reduce consumption of petroleum products** ▪ **More modern automobile fleet and improved system of control** ▪ **Driver awareness campaigns** ▪ **Public transport** ▪ **Obligatory posting of mileage for new vehicles**	

Source: Ministry of Energy, Mines, Water and the Environment (March 2009)
(1) Shaded section represents component of GoM strategy to be supported by the CTF as described in chapter below. For the component on "Petroleum Products" CTF could only be used for transport-related projects.

The Fond de Développement de l'Energie is currently being set up

25. To assist Morocco in its efforts to increase energy security and reduce its vulnerability to oil price shocks, a fully government owned fund, called Fond de Développement de l'Energie ("FDE") is being set up. It currently has $1 billion, consisting of contributions of $500 million from the Kingdom of Saudi Arabia, $300 million from the United Arab Emirates and $200 million from the Hassan II Fund. Its legal status and operational priorities are set out in the Finance Act of 2009. Coordination is delegated to the Ministry of Energy, Mines, Water and the Environment.

26. The FDE's current priority areas lie in developing generation capacity and security of supply, developing renewable energy and energy efficiency. The GoM is currently putting in place a structure to manage these resources. Of these resources, the Hassan II funds have specific requirements as to how they should be used – i.e. that they should be invested for capital appreciation, that they should be used in a sustainable way and should leverage further financing into the energy sector. Other sectors and activities could be considered if they are deemed sufficiently profitable to meet Hassan II's objectives for long term capital sustainability.

27. Given the limitations created by the Hassan II funds, the FDE (without CTF) is currently being planned in two parts:

- A portion of the FDE will be used to provide grants and low-cost loans for activities that the GoM does not consider to have sufficient returns to be financially profitable investment: rehabilitation of ONE power generating capacity, providing subsidies to increase incentives for energy efficiency improvement and studies/technical assistance.

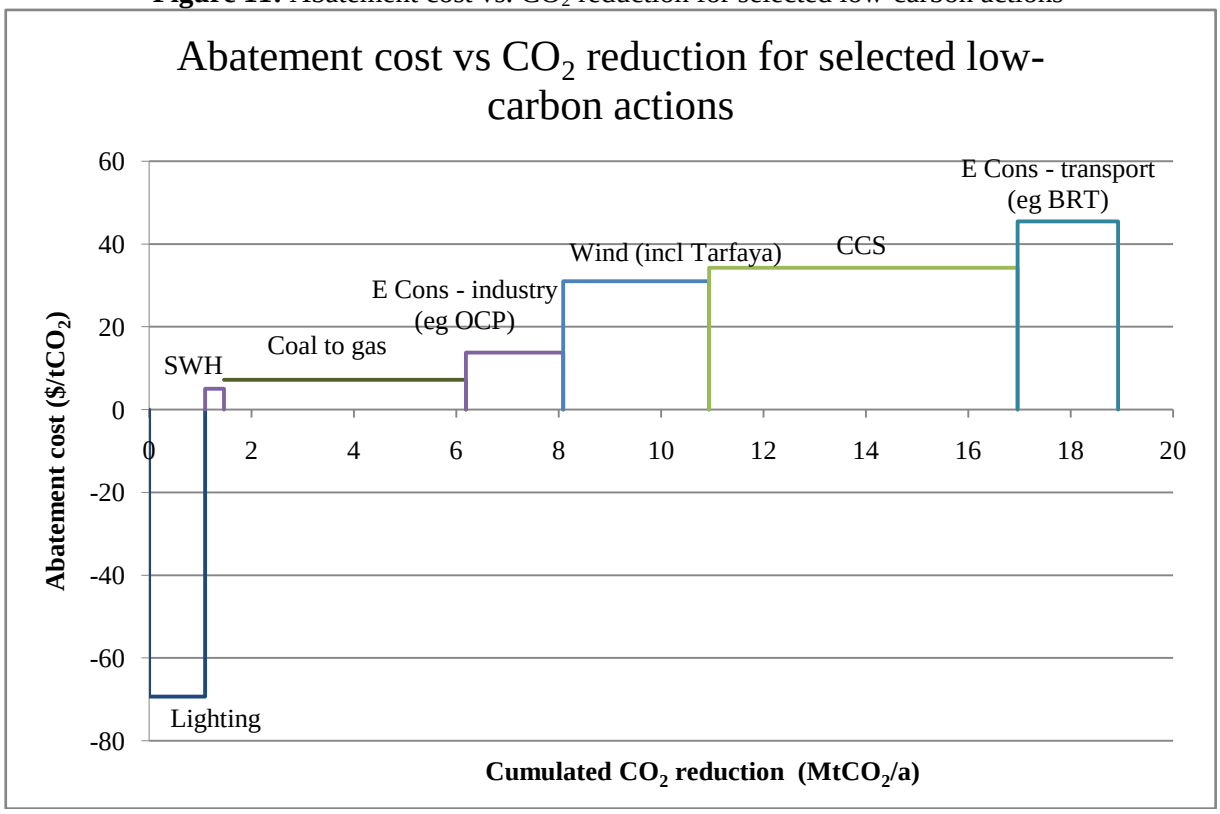
- The GoM currently plans to invest the majority of the FDE funds with the intention of generating returns for the State. For that purpose, it has created an investment fund (called Société pour l'Investissement en Energie or SIE). It will make equity investments in financially viable energy projects. Such projects will include, but will not be limited to, power generation from renewables. Eligibility to this part of the Fund could be extended to energy conservation investment, but so far only energy sector projects had been given consideration.

28. Further details on the status of FDE preparedness are presented in Annex.

II RATIONALE FOR SELECTED SECTORS FOR CTF CO-FINANCING

29. In considering CTF support, it is important at the outset to assess the entirety of the emission reduction options available to Morocco. Sectors to be supported should provide both potential for substantial reduction and cost-effectiveness. The chart below estimates both of these factors for a selection of actions which would lead to emissions reduction in Morocco.

Figure 11: Abatement cost vs. CO_2 reduction for selected low-carbon actions



Source: World Bank based on Beicip Franlab and Projet Seconde Communication Nationale sur les Changements Climatiques", May 2009 [DRAFT], Fraquemar – EDIC – SEGU.

30. The FDE on its own will support the financing of some of the higher cost options to the extent that they meet energy independence/security of supply criteria. However, for a significant part of its resources, the FDE – as is – needs to show returns and the chart above suggests that this objective may conflict with an entirely low carbon abatement strategy. Without the CTF, FDE funds will – in many cases – be used irrespective of whether abatement is supported. To develop abatement opportunities on a significant and transformational scale, CTF funds will be needed to buy down the 'effective cost' of such technologies to the FDE and wider sources of financing.

31. Based on the PNAP and the various actions included in the GOM's strategy to transition to low-carbon growth, two areas where the CTF could make a significant difference by supporting FDE activities are:

1. *PNAP supply side measures of electricity generation* consisting of increasing investment in renewable energy such as wind; and
2. *PNAP demand side measures relating to Energy Conservation* through uptake of new technologies in end-use sectors (especially in industry) and in the form of modal shifts by energy end-users (such as in the transport sector).

Individual discussion of these priority areas and their rationale for selection for CTF support are found below with details on specific opportunities.

Structuring of CTF contribution

32. The presence of $1bn under the FDE presents an opportunity to accelerate low-carbon investment activity. ***The FDE will go ahead irrespective of the CTF. However, to influence the operation of the FDE and to best leverage off the FDE's resources, it is proposed that the CTF will be combined with the FDE under one management structure with clear criteria for use of CTF resources.***

33. Under the planned new combined FDE autonomous fund structure, the two existing parts to the FDE will combine with resources from other sources. As well as the CTF, this would include funds available from multilateral institutions such as the International Bank for Reconstruction and Development (IBRD) and the African Development Bank (AfDB). Each of these institutions could offer lines of credit to the fund. These lines of credit could initially be for a total of $200-400m. The International Finance Corporation (IFC) and AfDB's private sector arm would be able to offer parallel financing directly to sub-projects. The CTF amount to be channeled through FDE is likely to be c. $150 million. Whilst IBRD/AfDB and IFC funds could be used without CTF funds (IFC disbursement would be directly to the project), use of CTF funds will complement/flow together with IBRD/AfDB/IFC co-financing.

34. The FDE would operate as follows. A government agency is normally responsible for awarding a concession or PPP contract to a private project developer. ONE awards contracts for wind and other IPPs after a competitive bidding process. The winning project development company then typically approaches a lead bank for financing. The lead bank will appraise financing options and approach other potential financiers ***including the FDE*** to join the lenders' consortium.

35. Upon being approached, and depending on the project and how it meets the Fund's objectives, the Fund will offer a financing package that could be commercial, concessional or highly concessional in nature. As well as CTF resources, IBRD and AfDB lines of credit (LoCs) will help to increase the range of financing options available to the FDE.

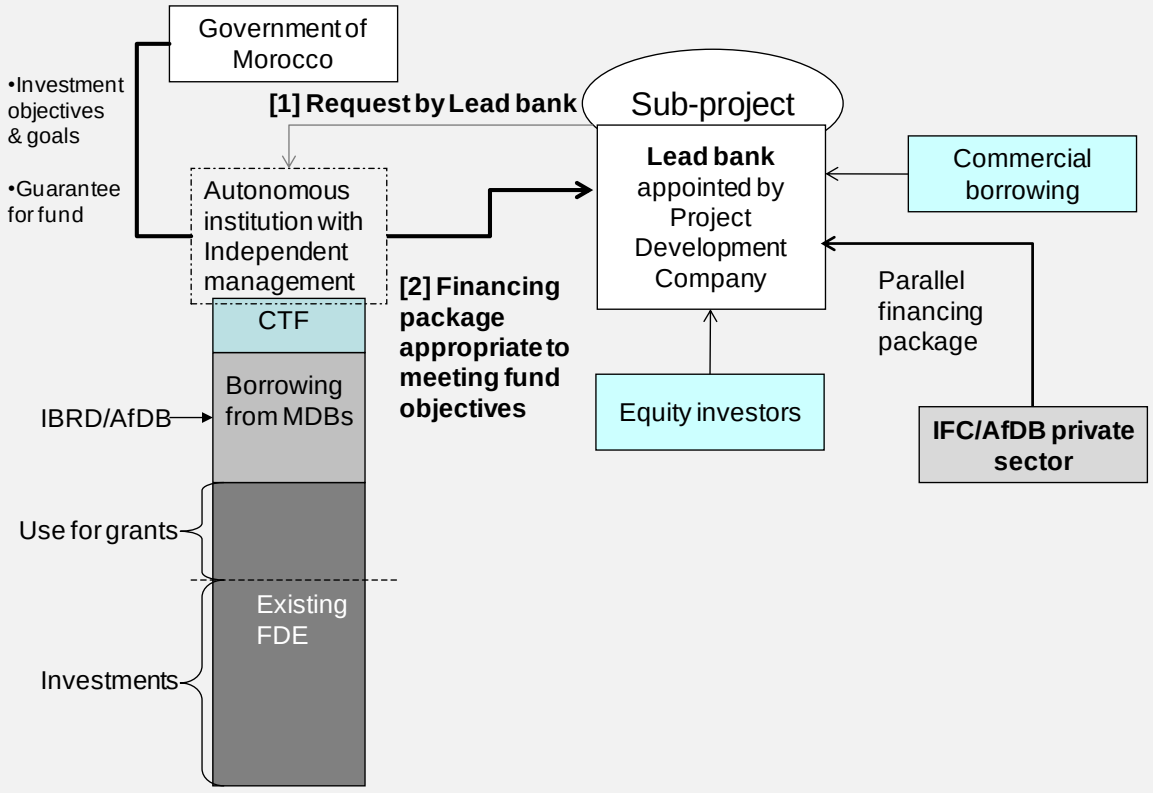
36. Owing to conditions placed on a large portion of the FDE funds (that they should generate returns and be sustainable), the CTF, blended with IBRD, AfDB and/or IFC, will be instrumental in allowing low carbon projects to achieve financial closure by offering (concessional) debt financing to fill the financing gap for projects not financially viable enough to achieve financial closure. Long-term debt financing is expected to be in particular demand. Whilst FDE will have wider objectives relating to meeting Morocco's electricity needs at least cost, the CTF's support in financing low carbon projects will help power generation capacity additions take the form of renewable energy/emission reduction technology and low carbon paths be adopted for end-use sectors, including transport. Combining the CTF with the FDE is expected to have a ***transformational*** impact in the following manner:

- It is anticipated that as part of one fund and one management structure, the combined FDE/CTF fund will be able to *find more opportunities to channel FDE funds towards renewable energy and energy efficiency projects*.
- It is intended that the institution managing the FDE and CTF (as well as funds from other sources) will itself provide greater investor certainty and a long term steady source of debt financing to the sector and therefore *leverage further funding into the sector* – of which a considerable part will go towards renewable energy (especially the wind program). Through such leveraging in, the impact on emission reduction projects will outlast the $150m CTF funds.
- The Ministry of Energy plan for 2020 sets out ambitious goals for power generating capacity addition (including a 600% increase in wind power to reach 20% of power generation and energy efficiency improvements (target of 15% energy conservation). The CTF co-financing of FDE investments permits a programmatic approach to achieving these targets.

FDE combined with CTF : Description of operations in the financial market

The combined FDE could operate in the market as follows.

1. **Government Authority awards contract to Project Development Company (PDC).**
2. **PDC approaches a lead bank to set up financing package.**
3. **Lead bank carries out due diligence and approaches other commercial financiers <u>including FDE</u> to form a consortium.**
4. **FDE conducts its own due diligence of the sub-project to determine whether it meets its objectives. If so, it crafts an appropriate offering (based on the variety of funds including CTF and IBRD/AfDB LoC).**
5. **FDE joins commercial lenders consortium led by lead bank. FDE signs inter se agreement with consortium members and common agreement between consortium members.**
6. **FDE funds flow to the sub-project.**



37. Use of the CTF, as set out above, meets each of the CTF financing criteria.

Potential for GHG emission savings As set out in project illustrations at the end of the IP annex, indicative projects to be financed by CTF funds will lead to total avoided emissions in

the region of 100 million tonnes of CO_2. However, the real impact on emissions reduction will be the lasting impact of the combined fund structure and the extra projects for which the Fund is expected to deliver financing for emissions reductions. In terms of the wind program, it is expected that such a combined fund will finance the wind program within the government's stated objectives for 2012 i.e. 1,000 MW of additional wind capacity leading to c. 60 million tonnes of CO_2 reduction. It is also expected that the fund will invest in a wide variety of further emission reduction projects across a number of sectors.

Cost-effectiveness The fund will use a framework based on least cost investment planning to ensure that it optimizes the use of the resources to meet its objectives for total capacity addition and efficiency improvement.

Demonstration potential at scale It is expected that the combined fund and MDB activities *will mobilize $1.650-1.950 billion* (see Table 11 for details). This will lead to considerable investment in the energy producing and consuming sectors and the potential for scaled-up projects leading to emission reduction is considerable. It is expected that this funding will combine with more than $3bn from the private sector. The fund structure is expected to leverage in further financing in the future to increase considerably the size of investments in emission reduction projects still further.

Development impact and implementation potential Morocco requires urgent power generation capacity addition, as well as other infrastructure such as urban transport, to support economic growth. The proposed structure is highly likely to be implemented as there is strong commitment (and high visibility) for the GoM to operationalize the FDE in the most effective (and rapid) manner possible.

Meeting additional cost and risk premia The objective of the Fund to maximize investment (including in renewable energy and energy conservation), for given levels of fund and market resources, gives the fund management a strong incentive to strike the right balance between on the one hand offering the most appropriate financing package that will maximize the rate of investment and on the other hand not overdoing it and offering overly concessionary financing – thereby undercutting and crowding out commercial investors/lenders. The net impact should be increased overall resources to ensure that the FDE carries out emissions reduction projects that it would not otherwise do without such funds to plug the financing gap.

Results Indicators: The exact target values for the key indicators of the CTF projects financed via the FDE would be developed in conjunction with specific project parameters. However, these key indicators would include the following for the priority sectors. The figures given for each results parameter are indicative and may differ depending on specifics of final project investments.

Table 5: Results indicators

Sector	Key indicators
Electricity Generation	• Installed renewable energy capacity [300 MW]. • Percentage of electricity coming from renewable sources [2.3% higher than BAU] • CO_2 reduction on an annual basis [730 kt per annum].
Energy Conservation – industrial	• Reduction in energy and emissions intensity on a sectoral basis (per unit of production) • Net reduction in annual energy use • CO_2 emission reduction on an annual basis [974 kt per annum].
Energy Conservation - transport	• Number of public transport lines or corridors introduced. • Percentage modal shift achieved. • Passenger miles per day using public transport. • CO_2 reduction on an annual basis [590 kt per annum.

FDE combined with CTF: Governance

Management
The fund will be an autonomous financial institution wholly owned by the Government of Morocco. It will have an independent and professional management/investment committee that will follow clear (national) objectives for use of the different resources available to it.

Determining the financing offer:
The management strategy will be based on an understanding of the relative costs, benefits and associated available capacity for each technology in each sector covered by the fund (coal, gas, renewable, etc).

The fund will, upon being approached by the lead bank for financing, carry out its own financial assessment. Based on this analysis (optimal financing structure, available financing in the market, likely financing gap, etc.), the fund will offer the most appropriate mix of financing to the project. In doing so, the management of ***the fund will have the overall objective to maximize investment towards national targets*** *(including goals for renewable energy (RE) and energy efficiency (EE) improvements in all sectors).* This will be *irrespective* of whether the Fund itself is offering the financing, so that the Fund does not have incentives to un-necessarily undercut and crowd out other sources of investment/finance.

It will be up to the lead bank to develop the final project structure and financing package for a transaction. It is expected that the FDE will allow a number of low-carbon projects – that would otherwise struggle to close the financing gap – to achieve financial closure.

Institutional arrangements
Good institutional arrangements will be critical to delivering the additionality associated specifically with a combined fund (as opposed to financing stand alone projects). The fund itself will be ***ring-fenced from the government's annual budget*** (e.g. as a form of special purpose vehicle). Part of it will invest to generate returns (as envisaged for the Hassan II funds as set out by the SIE). Over time, it may receive a credit rating (in order that it can independently raise capital).

It is envisaged that the same institutional and governance arrangements will apply to all the different sources of funding under the FDE (though the criteria for use of these funds will obviously differ).

Advantages of fund structure

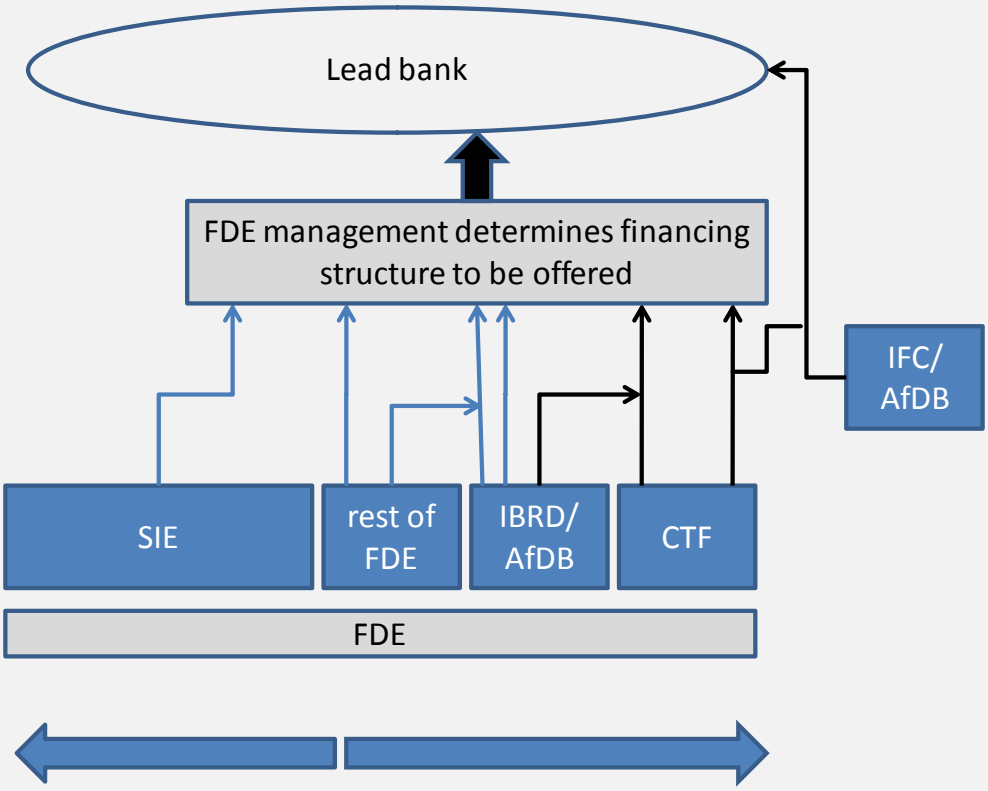
38. Such a structure would be highly advantageous.

- It would ensure that the use of the different forms of financing available to the energy system (including end-use sectors) via the state is properly optimized to ensure that the sector can benefit to the maximum possible.
- It also ensures that the GoM takes a strategic approach to investment. Whilst the private sector is active in Morocco, such a fund will help to encourage further participation in areas that are a priority to the GoM.
- It will reinforce the role of the private sector by offering financing to the lead arranger in ***existing*** transactions. The fund will offer financing to fill the financing gap and will therefore not crowd out pre-existing financing.
- The fund will be able to support a variety of large and small projects across sectors.
- In terms of impact and transformation, this approach will create a high profile and credible financing institution that will be independent of day-to-day political interference.
- It is expected that a highly visible and credible institution that develops a track record of supporting the financing of a variety of projects will leverage further private sector investment (whilst continuing to be the key instrument for delivering donor funding).

FDE combined with CTF: Resource optimization

Each source of funds available to FDE will have slightly different (pre-agreed) criteria for their use and it will be up to the management of the Fund to ensure that the different resources are used appropriately. Further project criteria will apply for specific use of CTF funds by the FDE. These will predominantly relate to emissions reduction potential, specific need for CTF resources to make a low carbon project financeable and least cost optimization of allocation of CTF resources between projects.

With access to this broader range of financing, the FDE will be able to offer debt and equity packages for a variety of different projects. Whilst the FDE is expected to continue to make equity investments in financially viable projects (as required for the use of Hassan II funds), the FDE will also be a major source of long term debt for lower carbon projects using a variety of funds such as existing FDE funds, IBRD, AfDB and CTF. IFC and AfDB's private sector arm will offer parallel co-financing for certain CTF activities. FDE will pass through the concessional terms associated with the CTF funding to the sub-projects.



Priority sectors for CTF support

(1) Electricity generation

39. Increased penetration of renewable energy into Morocco's electricity generating portfolio represents a good opportunity to pursue the country's energy objectives, reduce emissions and contribute to economic development.

Sector Potential for GHG emissions savings

40. RE power generation in Morocco is especially effective in reducing emissions due to the country's high share of coal in power generation. Thus more CO2 is reduced for every MWh of RE generation that supplants a MWh of electricity generated at existing plants. In the wind sector, the full implementation of all the projects in the development pipeline could account for annual CO2 emissions reductions of 2.85 Mt per year.

Replication and Scalability Potential

41. Morocco has world-class renewable resources, notably in wind and solar, with some opportunities for increased hydropower. The GoM has estimated that the country has approximately 7,300 MW of RE potential, although current levels of use are much less. While it is unrealistic that 100% of this RE potential will be realized, successful projects at this time, which fully demonstrate the technology and business models needed for success in this sector, can lead the way for multiple follow-on projects.

42. While a number of RE options hold substantial potential for development (e.g., hydropower and solar power), wind power[5] is the one currently poised to expand the most in the near- and medium-term. According to the Center for Development of Renewable Energies, there is 5,500 MW of wind power potential in the country. There is precedence in Morocco for successful installation and operation of wind power (see Table below) although existing plants still only make up a small share of total power generation.

[5] The vast solar potential of Morocco is being considered for CTF financing under the MENA CSP scale-up initiative, for which a regional investment plan is being prepared together with Algeria, Egypt, Jordan, Morocco and Tunisia.

Table 6: Existing wind plants in Morocco

Wind farms	Application	Year Started	Power (MW)	CO_2 savings/year (t CO_2 per year)
A. Torres	ONE farm	2000	50,4	233 000[6]
Bel Mogdol Essaouira	ONE farm	2007	60	156 000 (CDM project n° 0030)
Tanger	ONE farm	2009	140	348 000 (CDM project under validation)
ONEP	Desalinization	2008	5,6	18 850
Lafarge Tétouan	Auto-production	2006	10	30 000 (CDM project n°0042)

Sources: CDER in National study Plan Bleu 2007, see also http://cder.leguide.ma/pdf/Puissance.pdf

43. The relative absence of suitable infrastructure, appropriately supportive tariff policies and a regulatory structure that does not disadvantage wind still represent impediments to realization of renewable energy's full potential benefits. Successful project development and operation at this point would help mitigate those impediments for future efforts. Advantages and incentives for follow-on plants include: possible sharing of transmission-line capacity, creation of a viable right-of-way between the wind parks and load centers, environmental and social impacts assessments for transmission capacity, regulatory schemes to deal with the new transmission lines (e.g. rules on capacity allocation, and roll-in vs. incremental pricing) and viable financing models.

44. This potential is ready to be realized with numerous projects in the pipeline ready. The table below shows an estimate of wind projects under development that could come on-line by 2012, which would increase capacity from about 260 MW to 1,300 MW.

Table 7: Grid-connected wind projects that could come on-line by 2012

Project	Capacity (MW)
Tanger	140
Touahar-Taza	60
Sendouk	100
Tarfaya	300
Laayoune	240
Foum El Oued	200
Total	**1,040**

Source: Ministry of Energy, Mines, Water and the Environment (WIREC 2008 – Washington DC)

[6] The project is not registered under the CDM and emission reductions seems to be overestimated as around 200 000 MWh/year of electricity is currently being produced by some 90 Wind Turbines of the 600 kW range.

Development impact and related co-benefits

45. Morocco's high import dependence and resulting energy security concerns stem to a large extent from the power sector's reliance on fossil fuels. Using domestic resources to supplant that can greatly enhance security.

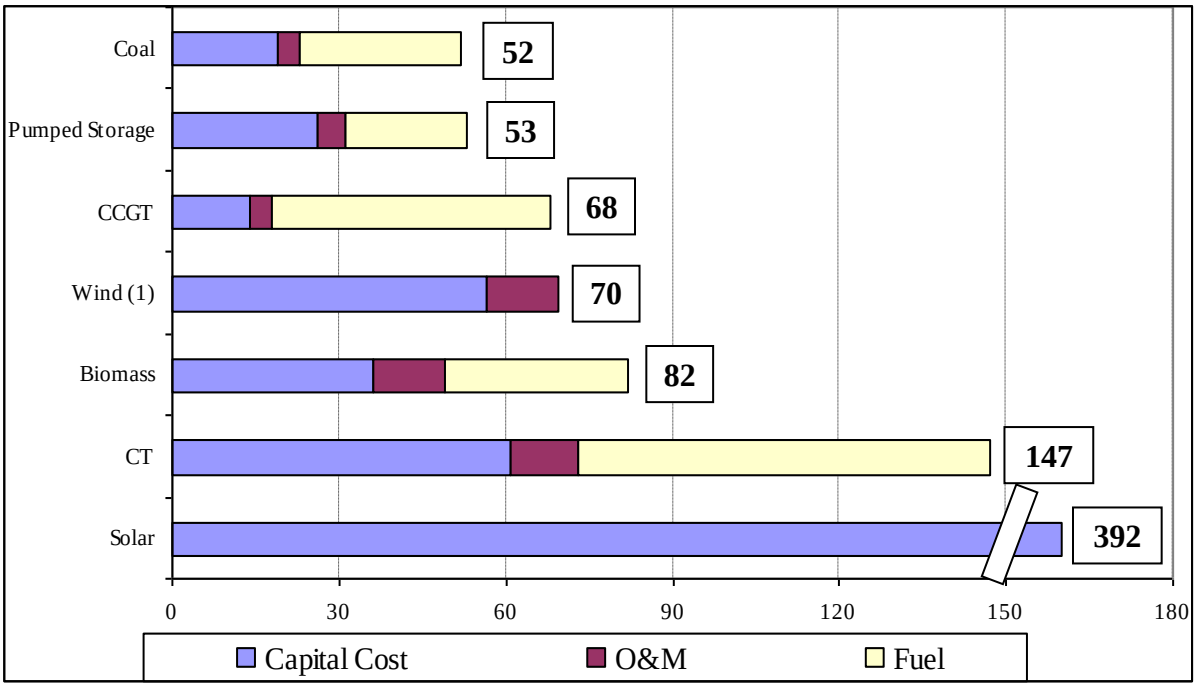
46. Building and operating RE plants in Morocco can boost the local economy in construction, component manufacturing and operations. In addition, the technology transfer from new RE plants can position Moroccan industry to participate in clean energy, one of the world's fastest growing industries.

47. While greater RE penetration will reduce CO2 emissions to address the global issue of climate change, it also directly reduces emissions that have an adverse effect on local health and the local environment. Under BAU, the country envisions continued high shares of fossil fuels to meet growing power demand and this will bring increased local effects. As RE supplants the need for such fossil fuel generation, related emissions will decrease with positive effects on the local environment.

Meeting additional cost & risk premia

48. Based on current equipment and fuel prices, the per unit cost of wind generation is above that of coal- and natural gas-based generating technologies if considerations of CO2 emissions and energy security are not taken into account. The graph below based on calculations of the Moroccan government shows costs of competing power generation options.

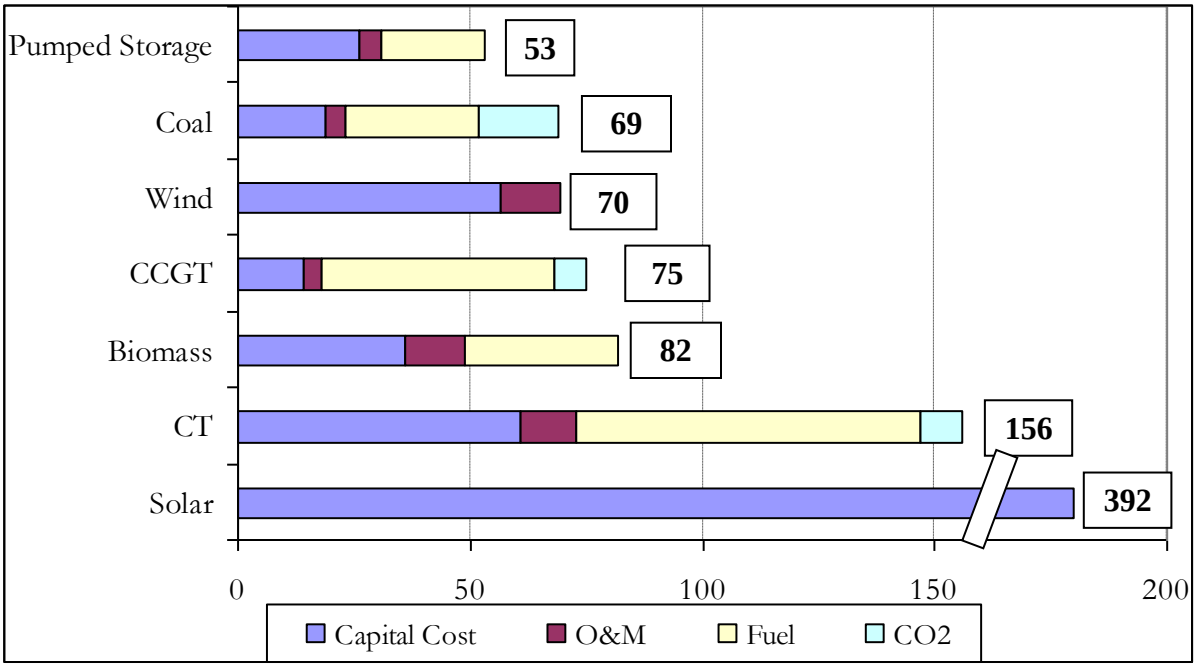
Figure 12: Projected Costs of Competing Generation Options - Euros/MWh



Source: Moroccan Ministry of Energy, Mines, Water and the Environment

49. However, with the inclusion of CO2 emission valuation, wind costs are comparable to conventional options. Government of Morocco calculations including a 20 euro/tonne CO2 price are shown in the table below.

Figure 13: Projected Costs of Competing Generation Options (with CO_2 pricing at 20 Euros/tonne)



Source: Moroccan Ministry of Energy, Mines, Water and the Environment

50. Based on these relative cost assessments of different generating options both with and without CO2 valuation, one can assess the cost-effectiveness of introducing more renewable energy into the Moroccan power sector. Measured as cost per tonne of CO2 abated, this cost-effectiveness is best seen as a range depending on technology introduced and technology supplanted. At the low end, the replacement of gas-fired CCGT generation with wind power would imply an additional abatement cost of about $8/tCO2. At the upper end, the replacement of gas-fired CCGT generation with biomass would imply an abatement cost of $58/tonne. The most relevant figure for cost-effectiveness in this case is wind power supplanting power generation from the portfolio mix of generating plants in Morocco. In that case, abatement costs would be approximately $31/tCO2. Current carbon credits are priced below this figure and the prices 2013 and beyond are substantially discounted, if available at all. Thus even proper exploitation of revenue and financing related to carbon finance would be insufficient to justify new wind generation.

51. ***CTF financing support*** for the case of wind would effectively need to provide a financial substitute for a sustained price of carbon of 20 euro/tonne CO2 (required to deliver financial closure on such a project). It is expected that the FDE would be approached by lead arrangers for such gap financing to allow projects to reach financial closure. Whilst this is the typical support requirement over the portfolio of potential wind projects, many plants will require significantly less support. In these cases, FDE may still be actively involved in the financing package, but may make greater use of non-CTF funds such as IBRD/AfDB LoCs and other FDE resources to offer the lead arranger a package at much closer to market rates than would be possible with the CTF.

(2) Energy conservation measures

52. Energy conservation represents the "low hanging fruit" of emission reduction options in nearly all countries of the world. The International Energy Agency identifies energy efficiency as a key option for emissions reduction that is available right now. Numerous country governments have reached similar conclusions and are pursuing ambitious plans to increase the efficiency of their industry, residences, and commercial establishments. This Investment Plan proposes two sub-sectors in which to target investments to realize a reduction in end-use energy consumption: (a) industrial energy efficiency, and (b) urban transport.

A. Industrial Energy Efficiency

53. The industrial sector represents a key component of Morocco's continued economic development as well as a prime sector for emission reduction potential. Between 1994 and 1999, the added value of the industrial sector was between 40 and 55 billion dirhams (around 16% of GDP) with comparable figures seen in more recent years. Industry accounts for 30% of end-use CO2 emissions in Morocco. Industrial energy demands – and emissions – are concentrated in three sectors: cement, phosphates and sugar. Their energy use is expected to rise substantially in the coming decades, from approximately 1,600 Mtoe in 2005 to 5,200 Mtoe in 2030. If realized, this level of energy use in these three sectors would account for 69% of total industrial energy use.

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56. Energy efficiency - in industry and other sectors – can be highly attractive in many cases with numerous analyses showing low or even net negative costs for many projects. However, there exist a range of non-market barriers that impede full implementation of such opportunities. Such barriers include: competition for financing among a company's competing investment opportunities; lack of knowledge of energy efficiency options ("imperfect information"); subsidies at the retail level which do not give companies proper economic signals; substantial transaction costs that are not figured into theoretical analyses; and the landlord-tenant problem whereby the entity that invests in the capital stock is not the same one that bears the long-term operating costs, in this case energy.

Sector Potential for GHG emissions savings

57. CO2 emissions per unit of energy generated and consumed in Morocco are well above international averages. As a result, reducing demand at the end-user level has a disproportionately large impact on emissions reduction.

58. Based on previous projects for promotion of industrial energy efficiency, the Government has estimated that potential increases in energy efficiency for industrial sites range from 5 to 25 percent with an average of 18%. This is in-line with the Government's target of 15% reduction in energy consumption. According to GoM analyses, industry represents 48% of total efficiency potential for the economy as whole. The average simple pay-back period for many industrial efficiency opportunities would be two years or less.

59. The report assessing the range of emission reduction options commissioned to inform the Government's Second National Communication to the UNFCCC has identified several areas where energy efficiency gains could be realized in the industrial sector. The major initiatives in this area include[7]: a national energy efficiency program targeting 8,800 sites all across all industry sub-sectors (reduction potential of 581 kt CO2/annum), a phosphate pipeline system between Khouribga/Safi (reduction potential of 967 kt CO2/annum), and an energy recovery system for four phosphate facilities (reduction potential of 343 kt CO2/annum). Combined emissions reduction potential for these industrial efficiency programs is 1.9 Mt CO2/annum at a weighted average abatement cost of $13.82 per tonne of CO2.

[7] Data comes from the draft report "Projet Seconde Communication Nationale sur les Changements Climatiques", May 2009 from Fraquemar – EDIC – SEGU.

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Replication and Scalability Potential

61. One or more major projects in industrial energy efficiency supported by the CTF will be an important means by which these barriers are fully understood in a Moroccan context and mitigated to the benefit of follow-on projects. The government is already taking important steps in this direction (described more fully in section below on Enabling Environment), but the first major wave of efficiency projects will bring the essential experience and proven models that will facilitate multiple follow-on efforts that allow the full range of indentified industrial EE emission reduction potential in Morocco to be realized.

62. Among sectors with potential for scale-up are cement and phosphate. The cement industry's importance is expected to continue to grow due to the country's continued urbanization. In the cement industry, opportunities exist to replace a portion of the clinker (a component of the cement) with fly ash, a by-product of coal-fired power plants. Reduction of CO2 emissions by 20% is plausible using Best Available Technologies (BAT).

63. Morocco possesses 75% of the world's phosphate reserves, is the world's largest exporter (28% of the global market) and third-largest producer (20% of global production). The Office Cherifien de Phosphates (OCP) has plans to increase production capacity substantially in the coming years. Increasing efficiency of the phosphate process will decrease net energy use and thus emissions.

Development impact and related co-benefits

64. More than 95% of Morocco's energy is imported fossil fuels and the country is highly exposed to volatile international fuel markets. Demand reduction is the most direct way to mitigate that exposure and enhance the country's energy security.

65. The GoM currently subsidizes several energy products at the retail level. This has created a burden on government budgets, especially in recent years as fossil fuel prices have soared. Reduced demand directly reduces subsidy levels, regardless of fossil fuel price volatility, leading to a stronger government budget.

[8] Data comes from the draft report "Projet Seconde Communication Nationale sur les Changements Climatiques", May 2009 from Fraquemar – EDIC – SEGU.

Meeting additional cost and risk premia

66. ***CTF financing support*** may be used in energy conservation relating to industrial energy use. Such investments are expected to be heavily driven by the private sector. Upon being approached by a firm, the FDE will need to carry out due diligence to understand the sector and potential for replicable reductions in carbon emissions. Such investments could then be considered for debt financing. Such projects may find it relatively easier to secure debt financing (than energy conservation related to urban transport), and thus it is expected that less concessional forms of funding would be likely to be offered by the FDE[9].

B.Urban Transport

67. The transport sector is a major energy consumer and emitter of CO2 in Morocco. In 2006, it consumed about 2.15 million toe (tons of oil equivalent), about 22% of final energy consumption. Energy consumption in the transport sector has grown quickly at about 5% p.a. in recent years. This is mainly due to the growing disposable income of the population and the fast progression of motorization. There are about 1.5 million cars now in Morocco, or about 50 per thousand inhabitants, still below many of the similar MENA countries, and motorization has been growing at about 4.5% per year recently. Road transport is by far the main mode of transport. It accounts for about 95% of all internal passenger transport volume, 70% of freight transport and 98% of the sector's energy use.

Sector potential for GHG emissions savings

68. Transport represents the fastest growing sector for CO2 emissions in Morocco. In 2007, total transport emissions accounted for 25% of the national total and, as such, the sector represents an attractive target for potential emission reduction. Work done on behalf of the government in support of their Second National Communication to the UNFCCC identifies emission reduction potential in the transport sector of 1.96 Mt of CO_2-eq per year. This includes measures to: (i) introduce public transport infrastructure into major urban centers; (ii) develop a younger and more efficient vehicle fleet through fiscal incentives; (iii) speed limits on the national highway system; and (iv) other measures.

69. There are indications that a high proportion of CO2 emissions comes from urban areas. In particular, the metropolitan area of Casablanca, the economic capital, where many of the industries and modern services are concentrated, produced about 2 million tons CO2 from transport in 2008.

[9] though projects that do not prove attractive to the private sector may require more concessional forms of funding

Replication and Scalability Potential

70. Ongoing economic growth is expected to drive continued demand for personal vehicles and other transport services. The coming expansion of transport infrastructure to meet this demand provides an excellent opportunity to put in place clean infrastructure that substantially reduces emissions compared to conventional options going forward. While the government continues to take steps to create an environment that provides proper incentives for sound expansion of the transport infrastructure, major projects in the urban transport sector – supported by CTF – can be the driving catalyst to break down barriers to a clean transport paradigm and create models for transport in Morocco that reduce serve local needs and reduce CO2 emissions.

71. It is likely that the first such urban transport project would take place in Casablanca. As the country's largest urban and economic center, such a project would hold high demonstration value that other cities, all facing growing transport needs and limited current infrastructure, can follow.

Development impact and related co-benefits

72. Improving urban transport performance in Morocco's main cities, particularly the economic capital, Casablanca, has become a national priority. The GoM's strategy to achieve this is through rapid development of public transport, especially mass transit on dedicated rights of way, complemented by better traffic management; restructuring traditional public transport networks; introduction of transport demand management instruments; and promotion of non-motorized transport. As demonstrated in other parts of the world, particularly Latin America, these measures are expected to yield major benefits in addition to CO2 emissions reductions. These include mainly lower congestion, improved mobility for the poor, improved air quality in urban areas, lower fuel consumption and oil dependency, and promotion of a more compact and balanced urban form which is key to the long term energy efficiency of urban transport.

Meeting additional cost and risk premia

73. ***CTF financing support*** for urban transport would be important for cases where the project may not be fully financially viable at the envisaged level of user fees (even though it may be economically viable). Unlike in energy generation and industrial energy conservation, it is expected that FDE/CTF financing support will be predominantly requested by the municipality/city governments. CTF and wider financing from IBRD and AfDB LoCs would help reduce the financing costs for the project. Once financed, as well as reducing long term CO2 emissions growth, the projects are forecast to reduce negative externalities (such as congestion and pollution) and promote positive externalities (such as social integration). In the current context, as evidenced by surveys, these externalities have a high value for the urban population.

III ENABLING POLICY AND REGULATORY ENVIRONMENT

74. In recent years, the Government of Morocco has strengthened the legal, regulatory, and institutional environment for the development of renewable energy and energy efficiency. Current conditions already have many of the key characteristics needed to improve the implementation potential of investments in the CTF priority sectors, and ongoing changes indicate conditions will continue to improve. These policy and other changes are being supported by the World Bank, the African Development Bank and other multi- and bi-lateral aid organizations.

75. One primary measure of the current strength of Morocco's enabling environment is the ongoing, active interest of the private sector in doing projects there. In response to requests for proposals in the priority sectors (e.g., wind development), more than twenty viable companies and international consortia regularly put in bids. Such bidders have choices on which country to target for investment and their preference for Morocco indicates a strong environment for investment that supports the successful development, financing, construction and operation of projects in the priority sectors.

76. At the same time, the government recognizes that provision of investment financing alone will be insufficient to assure project success in the priority sectors, and that they have an important role to play in addressing many of the relevant non-market barriers. Among these barriers are: inadequate institutional structures with proper consolidation among and communication between ministries; insufficient publicly available information; lack of government experience and capacity in sectors, insufficient long-term guidance for investment areas, weak standards and labels (for energy efficiency); and missing tax or other fiscal tools to provide economically sound incentives. The government continues to address these and other relevant barriers.

77. The text below describes the institutions governing the priority sectors and then outlines the role they play in ensuring sound legal and regulatory frameworks for investment and how they address the non-market barriers that can impede realization of the full benefits from such investments.

Governing Institutions

78. Key Ministries

- The Ministry of Mines and Energy (MEMEE) defines and implements the national policy and has technical oversight of the ONE and the CDER.
- The Ministry of Finance (MoF) has financial supervision of ONE and of the electricity distribution utilities ('régies').
- The Ministry of Interior has oversight of electricity distribution concessions and the utilities ('régies') as well as urban transport policy and strategy.
- The Ministry of Economic and General Affairs studies and proposes tariffs that have been held up in the process followed by the interministerial commission on prices.

79. Municipalities

- Grant land leases and building permits and supervise environmental regulations on behalf of the Ministry of Environment.
- In principle, have the right to tender for IPPs. This could be significant for wind farms and other renewable energy IPPs.[10]
- Have financial and technical oversight of their electricity distribution utilities ('régies').
- Are in charge of urban transport management.

80. Office Nationale de l'Electricité (ONE)

- Manages its own generation plants and purchases electricity from IPPs (single buyer).
- Plans and manages the transmission system;
- Manages electricity distribution where there are no operational municipal utility ('régies').
- Proposes tariff changes, and regulatory measures.
- Issues tenders and chairs the tendering process for wind farms and supervises their development on behalf of MEMEE.

81. *CDER/ADEREE:* The Renewable Energy Development Center-CDER, founded in 1982, under the tutelage of the MEMEE, had responsibility for research, promotion and development of renewable energy and, more recently, became involved in energy efficiency It is now being reorganized into the Agency for the Development of Renewable Energy and Energy Efficiency (ADEREE). Under its current responsibilities, CDER:

- Evaluates the potential for renewable energy development (wind, solar, biomass etc.);
- Publishes atlases of relevant resources;
- Manages the off-grid rural energy program and solar thermal program (Promasol)[11].
- Carries out information campaigns on renewable energy and energy efficiency and trains staff of local organizations.
- Develops renewable energy plans with municipalities in pilot regions.
- Prepares the technical agreements on renewable energy and energy efficiency with the relevant ministries.

Under the new law, Article 3, ADEREE will be responsible for:

- Prepares a national and sector plans on renewable energy and energy efficiency for submission to the government.
- Designs and implements renewable energy and energy efficiency programs as well as environmental programs linked to energy activities.
- Identifies and prepares renewable energy maps and prepares assessments of the country's energy efficiency potential.
- Proposes to the government the zones for the potential location of wind power farms.
- Coordinates the national program of energy audits and ensures their implementation.
- Proposes to the government the incentive framework needed for the development of renewable energy and energy efficiency.
- Proposes and disseminates energy efficiency norms and labels for energy consuming equipments and appliances.

[10] The World Bank report on Marchés Fonciers pour la Croissance Economique au Maroc. Les Marchés Fonciers Industriels, of March 2008, does not have anything specific on land acquisition or allocation for power plants, regardless of the source of energy, even though this is a major issue for wind farms.

[11] http://www.cder.org.ma/

- Designs and implements pilot projects demonstrating the viability or enabling the adoption of renewable energy and energy efficiency.

Policy Structure for Renewable Energy

82. *The* five main laws enabling the development of renewable energy resources are:

- The Dahir 2-94-503 of 1994 allows ONE to call for competitive tenders for private electricity production (IPPs) above 10MW to be sold exclusively to ONE under PPA arrangements.
- Dahir 1-06-15 or February 14, 2006 requires public entities to tender openly for projects. This law applies to entities such as municipalities which want to tender for wind farms or IPP power generation from other renewable energy sources.
- Law 16-08, passed in 2008, raised the ceiling for self-generation by industrial producers from 10 MW to 50 MW. Although this law was aimed mostly at wind farm development, a priori it could apply to other technologies. Law 16-08 replaced Dahir 1-63-226, of 1963 which gave ONE (art. 2) exclusivity of electricity generation above 10MW. Self-generation was authorized to 10MW, with all electricity consumed by the producer with no excess sold to ONE.
- Draft Law 13-09 on renewable energy, which was adopted by the Government Council on March 12, 2009 and subsequently by the Council of Ministers, but has not yet been voted by Parliament. The draft law modifies the text of Dahir no.1-63-226 of 05-08-1968 establishing ONE by authorizing the production of electricity from renewable to ONE *as well as* other moral or physical legal entities.
- Draft Law 16-09 on CDER, which has just recently been adopted by the Government Council and by the Council of Minister. The law will replace Law 26- 80 enacted by Dahir no. 1-81-346 of May 6 1982 which created the CDER. The law extends the mandate of CDER to cover both renewable energy and energy efficiency. The organization will be called Agency for the Development of Renewable Energy and Energy Efficiency –ADEREE, underlining the objective of transforming CDER from a research center into a more operational organization.

EnergiPro offer

83. In September 2006, ONE issued the "EnergiPro"[12] offer to large industrial customers aimed at promoting renewable based auto-production. The offer includes two aspects:

i. Wheeling all energy produced from renewable power project to any point of consumption using ONE high-voltage transmission grid. The wheeling tariff has been put at 6cMAD/kWh (post stamp basis) for any project commissioned before 2011 and 8cMAD/kWh thereafter.
ii. Purchase of all excess energy by ONE according to a fixed tariff structure. The tariffs are based on a mark-up of 20% from the ONE peak, full-day and off-peak tariffs. The

[12] See the dedicated website http://industriel.one.ma/index.asp?id2=42&id3=90&t2=1&t3=1 and a presentation at http://industriel.one.ma/pdf/EnergiPro.ppt

EnergiPro tariffs have been recently revised and now represent a weighted average tariff approximately of 41cMAD/kWh. Table below details the tariffs.

Table 8: ONE Tariffs for Purchases of Wind-Power Surpluses

Time of Day	Regular Tariff (MDH/kWh)	20% Mark-up Tariff (MDH/kWh)
Peak hour	0.456	0.548
Regular time of day	0.335	0.403
Off-Peak	0.180	0.216

Source: www.industrie.one.ma/pdf/EnergiPro.PPT

Policy Structure for Energy Efficiency

84. An energy efficiency law is under preparation. Existing arrangements for energy efficiency are based on a set of partnership agreements and memoranda signed in July 2008 between MEMEE, CDER, and four ministries: Industry, Tourism, Education, and Housing.

85. All partnership agreements follow a similar format. They all establish a three way partnership between MEMEE, the CDER and the concerned Ministry. They list a number of specific measures which are to be implemented and detailed in subsequent guidelines. The agreements also call for implementation of monitoring committees with two members of each partner to meet every three months. Although governance and operation of these committees is still being developed, they will in any event track progress towards defined goals and provide synthesis reports on actions undertaken every three months. The partnership agreements also stress the importance of communication campaigns to raise awareness about energy efficiency.

86. Two other energy efficiency partnership agreements are currently being finalized with the Ministry of Transport and the Ministry of Health.

87. In the case of transport, the GoM has moved forcefully in the past two years to develop the institutional, regulatory, and financial framework for urban transport development. The Government strategy is articulated along the following main directions:

- Development of new authorities for all large agglomerations to be in charge of metropolitan urban transport strategy formulation, planning and implementation of investments, organization of public transport operators, and monitoring of outcomes;
- Creation of an apex institution in the central government to formulate and implement national policies, support metropolitan authorities, and build capacity in the sector;
- Development of public private partnerships to improve resource management and speed up sector modernization; and
- Establishment of sustainable financing mechanisms to ensure a predictable flow of resources for urban transport investment, a focus on economic priorities, and the fair compensation of public service obligations.

88. Key measures have already been implemented, such as the creation of an urban transport planning authority for the Casablanca metropolitan area as well as infrastructure development companies for the mass transit projects of Morocco's largest metropolitan areas (Casablanca and Rabat/Sale). Significant actions have also been taken at a more micro level. Furthermore, the GOM has asked the Bank to support the broadening of these activities through a Development Policy Loan (DPL) which the Bank is now preparing. The first phase of this DPL is planned to be in effect early 2010

IV Implementation Potential and Risk Assessment

89. The overall implementation risk is assessed to be moderate.

90. One factor strongly enhancing the projects' potential for implementation is the numerous co-benefits they will bring. In addition to reducing emissions, these projects will reduce Morocco's vast exposure to imported energy and the volatile international fossil fuel market. This exposure represents an immense vulnerability to macroeconomic growth, government budgets and well-being of the poor and the government has clearly stated its intention to address this problem through a number of strategies and plans. The investments in the three priority sectors – renewable energy, energy efficiency improvements in industry, and energy conservation in transport (through end-use energy efficiency improvements and modal shifts) – will all decisively reduce exposure. Such co-benefits will likely continue to motivate the governments to pursue the investments and to take the actions needed for their implementation.

91. The major risks that could jeopardize successful implementation of the investments co-financed by the CTF are outlined in the table below.

Table 9: Risk ratings

Risk	Description	Rating
Regulatory structure	While the GoM has been active in supporting, drafting and implementing new laws to provide proper frameworks for successful investment in the priority sectors, much of this new regulatory structure has yet to be rigorously tested. Most likely, aspects of the evolving regulatory structure will prove insufficient and have to be bolstered. The World Bank and other multilaterals will continue to work closely to support the GoM in developing effective laws and regulations. Scale-up in the priority sectors brought about by CTF investments will provide needed implementation experience of these laws and create a robust system.	M
Institutional capacity	As with the regulatory structure, the GoM is taking ambitious, commendable steps to create the proper institutions to govern the priority investment sectors. For renewable energy and energy efficiency, the expansion of the CDER into the ADEREE will help in this manner. At the same time, this and other institutions are clearly evolving and will most likely require adjustments and adaptation going forward. The FDE institution will benefit from CTF/MDB design and operation support. It is envisaged that the CTF will make grants	M

	available to provide Technical Assistance for FDE institution building (see IP annex for further details).	
Macroeconomics	The macroeconomic condition on both the global and national levels has been adversely affected by the financial crisis. Availability of debt and equity from private sources has been severely curtailed. This risk would apply primarily to private sector financing for renewable plants but is largely mitigated by the substantial share of multilateral funding and donor funding through the FDE.	L
Private sector interest / financial viability	The viability and relative attractiveness of these investments to private sources also represents a risk. Even if global financial market unthaws in the coming months and years, there is still substantial competition from other countries seeking investment in the priority sectors. One example is European countries with long-term feed-in tariffs for renewable energy and established regulatory environments. Attracting needed private sector investment to competing Moroccan opportunities will require tariffs and pricing set at competitive international levels.	M
Technology	The technology to be deployed in all three priority sectors is well-known. Pricing and performance are understood through thousands of hours of operating history.	L
Co-funding from FDE	The CTF investment opportunity in Morocco offers substantial leveraging through co-investment with the FDE funds. At the same time, it depends on timely availability of FDE money and alignment of FDE's investment policies with World Bank Group/AfDB/CTF investment policies. These risks are substantially minimized by continued and consistent strong support from donor countries to the FDE.	L
FDE crowding-out of the private sector	FDE's existing business model includes investing on a semi-commercial or commercial basis. This creates the risk of crowding-out of the financial private sector. As part of the structuring of the CTF, it is envisaged that the World Bank Group/AfDB will help structure the FDE's operations so that they crowd in rather than crowd out private sector finance. This will include objectives for the FDE management tied to extent of success of overall financing in Morocco - irrespective of whether this financing comes from the FDE.	M
FDE governance	FDE's investments will need to be made on the basis of economic and financial considerations. This will require a clear governance structure for the FDE, as well as ensuring that best-in-class transparency, accountability, environmental and social responsibility policies are established. Criteria for FDE investments will also need to be fully transparent. Mitigants include World Bank Group/AfDB support in FDE's establishment and structure design (through a CTF project preparation grant).	M
Environment/Social	Environment and social risks exist in different ways for all three priority sectors. Renewable energy will face environment risk in installation of generating stations, as well as environment and social risk in the installation of transmission lines connecting supply with load. Energy efficiency will face environmental risk in some of the options for demand reduction, for example, mercury content of CFLs and proper disposal procedures. Urban transport will face social risks	M

	in the disturbance of local peoples in the construction work related to the urban transport problems and resulting displacement/disturbance of the local populace. None of these risks represent new challenges and all have been addressed in numerous contexts around the world (as well as in Morocco). The World Bank and African Development Bank will provide Technical Assistance and other support as needed to help the GoM to properly manage and mitigate these risks.	

V FINANCING PLAN

92. The combined FDE fund including CTF and financing from a number of further sources will initially raise in the region of $1.5-2 billion. Indicative breakdown of this financing is set out in the table below.

Table 10: Financing Plan for FDE/CTF (indicative, for illustrative purpose only)

Windows	**Sources of funding**	**Amount ($, million)**
CTF	IBRD	75*
	AfDB	50*
	IFC	25*
IBRD and AfDB lending (line of credit to FDE)	IBRD	100-200**
	AfDB	100-200**
FDE (including SIE and 'Fonds perdu')	Hassan II Fund	200
	Kingdom of Saudi Arabia	500
	United Arab Emirates	300
IFC and AfDB (private sector) external parallel financing to projects	IFC	200 or more
	AfDB (private sector)	100-200
Total financing		**1,650-1,950+**

* indicative breakdown

** subject to envelope under country partnership strategy

ANNEX 1

Fonds de Développement de l'Energie: Project Proposed for CTF financing

Problem statement

93. Given its high level of import dependency (97%) and strong reliance on oil (61%), Morocco is very vulnerable to oil price shocks. To assist Morocco in its efforts to increase energy security and reduce its vulnerability, a fund, called Fond de Développement de l'Energie ("FDE"), of $1 billion was set up, with contributions of $500 million from Saudi Arabia, $300 million from UAE and $200 million from the Hassan II Fund. FDE is to be used to finance new energy production facilities, especially in the field of renewables, and energy efficiency investment (to support greater energy independence), as well as to offer a limited number of subsidies to support implementation of the energy strategy.

94. By merging CTF resources with the FDE, it is intended that the CTF will help to ensure that, where possible, power generation capacity additions (or more generally energy production) take the form of renewable energy/emission reduction technology and that a low carbon path is adopted for end-use sectors, including urban transport. The CTF funds can be used for a number of projects that will include investment in electricity generation, energy efficiency measures for industry and energy efficiency measures for transport.

Proposed transformation

95. It is planned that funds from the CTF will be combined with the larger set of FDE funds in a permanent, state-owned, independently managed fund structure. The large size and ongoing nature of a combined fund with clear investment objectives will lead to significantly greater transformation in the future trajectory of CO2 emissions than is possible from the one-off projects (further discussion on transformational benefits of the fund are discussed in the main text).

Financing plan

Table 11: Financing Plan for FDE/CTF (indicative, for illustrative purpose only)

Windows	**Sources of funding**	**Amount ($, million)**
CTF	IBRD	75*
	AfDB	50*
	IFC	25*
IBRD and AfDB lending (line of credit to FDE)	IBRD	100-200**
	AfDB	100-200**
FDE (including SIE and 'Fonds perdu')	Hassan II Fund	200
	Kingdom of Saudi Arabia	500
	United Arab Emirates	300
IFC and AfDB (private sector) external parallel financing to projects	IFC	200 or more
	AfDB (private sector)	100-200
Total financing		**1,650-1,950+**

Implementation readiness

96. The FDE is in the advanced stages of being set up. Some employees have already been recruited and a search for the Director-General is under way. A legal set-up (known as a Société anonyme) has been set-up. Such a structure will allow FDE to start making equity investments in projects.

97. A small number of projects are currently in the process of putting together their financing package. Such projects will need to move ahead and it is not envisaged that they will be delayed by implementation of the new Fund. Projects will also be appraised separately and directly by IFC and AfDB private sector for direct financing in conjunction with CTF funds from the FDE. The lead bank for such projects will be free to approach the FDE for additional financing.

98. Concrete steps will be taken by the GoM to ensure that the fund governance structure is being prepared in a timely manner. Expected timing for setting up the Fund and its governance framework are provided below.

* indicative breakdown

** subject to envelope under country partnership strategy

99. It is expected that the CTF will also provide a project preparation grant for Technical Assistance in setting up the institution/governance structure for the FDE. A capacity building plan will include the following.

Building up FDE's policies, procedures and staff capacity in critical areas such as:

- credit review, investment decision making and risk management;
- treasury operations;
- procurement risk management and monitoring;
- financial management and reporting;
- environmental and social due diligence;
- risk management and monitoring;
- governance accountability and transparency; and
- overall project implementation and monitoring.

Project preparation timetable

100. The following is an indicative timetable for project preparation.

Table 12: Timetable for project preparation

Window/fund management	**Steps to be followed with indicative dates**	**Operationalization**
FDE		3-6 months
CTF	IBRD ROC 17 Sept	2-3 months
	Review and submission by GoM 30 Sept	
	Submission to CTF cttee 6 oct.	
IBRD LOC	Concept Note 30 Oct.	8-12 months
	Project preparation Nov 09- May 10	
	Appraisal & negotiations June 2010	
	Board Approval Sept 2010	
	Implementation 2010-12	
AfDB LOC	Concept preparation and clearance by May 2010	8-12 months
	Appraisal June 2010	
	Board July 2010	
Overall fund governance	Governance principles 30 Sept	10 months
	Legal framework Aug-Sept 2009	
	Full operating guidelines Dec 2009	
	Complete recruitment Dec 2009	

Illustrative FDE projects

101. As discussed above, once the FDE is operational, it will be up to the lead arranger of financing (whether public or private) to approach the FDE for financing support. FDE will make an assessment of the project's financing requirements and – based on how the project fits with its objectives – may offer finance (with the level of concessionality to be determined on a case by case basis). The following are illustrations.

Power generation capacity addition - Morocco's wind farm program

102. Morocco's wind potential is estimated at 6,000 MW. Many wind farms are in the pipeline and there is a target of 1,200 MW of installed wind power by 2012 (i.e. around 10 times 2007 levels). The goal of the GOM (through the actions of ONE) is to substitute for thermal-based power generation to meet future demand for power in areas with high wind regimes. By doing so the CO2 emission of the electricity sector will be reduced.

103. It is estimated that the total wind program (including Touahar, Tarfaya and Energipro, together with Hydro storage and transmission) would cost US$ 2,670 million. Project sponsors could approach the FDE for a financing package. US$ 100 million of CTF funds could be blended with US$ 100-200 million of IBRD and AfDB lending and further (non-CTF/IBRD/AfDB) FDE contributions to develop a financing package that could effectively support private sector financing together with a mix of IFC/AfDB direct private sector lending. Such a package would be complex and require detailed assessment of financing conditions already available to the program before FDE designs its financing package.

104. Such a wind program would have annual emission reductions of 2,850,000 tonnes CO2. Over a 20-25 year life time it would lead to a reduction of 57-71.3 million tons of CO2 (suggesting a cost/ton of CO2 reduction of US$33-41).

105. The Tarfaya wind farm will be the largest wind power plant in Morocco with a total installed capacity of 300MW. The Moroccan authorities have issued an international call for tenders for the supply of wind generated electricity from independent power producers. The winning bidder will be announced by the end of 2009 and financial closure is expected during early 2010. FDE may be approached to top up any gap left by the private sector. This project should permit saving of 730,000 tons of CO2 emission per annum with a total investment of US$ 600 million.

End-use energy efficiency measures in industry - Transportation of phosphate by pipeline (OCP Group)

106. Morocco is the world leading exporter of phosphate with 30.3 per cent of the phosphate market in 2005. Transporting phosphate for export currently includes a drying stage that uses considerable electricity. It is proposed that there will be investment in a pipeline which will allow phosphate to be transported in liquid form. The overall process from mine to the coast will require significantly less energy and will allow a ramping up of production in a significantly energy efficient manner.

107. It is estimated that the cost of carrying out the energy conservation measures envisaged would be US$756 million. An FDE financing package could consist of US$ 20 million from the CTF to be combined with US$ 50-100 million of (non-CTF/IBRD/AfDB) FDE contributions and/or combined with parallel financing from IFC and the AfDB private sector lending.

108. Such a project would have annual emission reductions of 967,000 tonnes CO2. Over a 30 year life time it would lead to a reduction of 29 million tons of CO2 (suggesting a cost/ton of CO2 reduction of US$26).

Energy intensity reduction and shift to lower carbon content fuels in transport- Casablanca Urban Transport

109. Casablanca is Morocco's major city. With the economy growing, car ownership and congestion are growing rapidly. Better public transport will help to control increases in emissions from cars whilst improving interconnectivity within the city. A Bus Rapid Transit (BRT)/tramway and/or Regional light railway may be considered by the FDE for potential financing.

110. It is estimated that the envisaged project would cost US$800 million. An FDE package could consist of US$ 30 million from the CTF to be blended with US$ 50-100 million of IBRD and AfDB lending and further (non-CTF/IBRD/AfDB) FDE contribution. The remaining gap would need to be partly filled through some commercial borrowing (and the project revenues would need to be structured to allow such financing).

111. Such a project would have annual emission reductions of 584,000 tonnes CO2. Over a 30 year life time it would lead to a reduction of 17.6 million tons of CO2 (suggesting a cost/ton of CO2 reduction of US$45.5).