



Partnership for Market Readiness

Template for Expression of Interest and Market Readiness Capacity Questionnaire

May 24, 2011

A. Expression of interest

Partnership for Market Readiness (PMR)

Expression of interest in participating in the PMR

Countries seeking support from the PMR are requested to prepare a cover letter, including a short statement confirming the country's interest in participating in the PMR. The cover letter should be accompanied by an Annex containing the following information:

1. NAME OF THE GOVERNMENT AGENCY SUBMITTING EXPRESSION OF INTEREST:
MINISTRY OF ENVIRONMENT - JORDAN

2. Name and contact information of designated PMR Government focal point

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Amman - Jordan

3.Domestic mitigation action:

Please outline what are the purposes and main objectives of your country's mitigation strategy

- a- Provide an overview of domestic mitigation policies and plans and the status of the implementation- at both the national and sub-national levels.

Under the national greenhouse gas inventory chapter of the Second National Communication Report, the anthropogenic emissions by source and sink of all GHGs not controlled by the Montreal Protocol were assessed. The inventory took the year 2000 as a base year. According to the inventory, Jordan contributed about 20140 gigagrams (20.14 million tonnes) of CO₂ eq to the atmosphere. About 74% of the total emissions are attributed to the energy sector, while the waste sector is the second emitter with 14% followed by the industrial sector with 8% and the agricultural, land use and forestry is the least sectors with 4%.

On the gas by gas basis, the inventory found Carbon Dioxide emission to be 17047 Gg, which accounts for 84.6% of Jordan's total greenhouse emissions in the year 2000. Methane ranked the second largest emitted gas with 2754 Gg CO₂eq which accounts for 13.6% of the total emissions. The solid waste landfills and wastewater are responsible for 91.6% of the total methane emitted in Jordan. The least amount of the emission was attributed to Nitrous oxides that were estimated to be 347 Gg CO₂eq, which is 1.7% of the total emissions.

As for the greenhouse gas emissions projections, the second communication report projected the emissions up to the year 2033.

The NEEDS study report has made extrapolation to the total emissions from various sectors until the year 2050. Figure 1 depicts the projected amount of the greenhouse gases emitted from all sectors in Jordan. It can be observed that by the year 2033, the projected total emissions will be 70377 Gg (70.377 million tonnes of CO_{2eq}) For the period 2033-2050, the projection was made based on three scenarios of increase in the emissions, namely 1%, 3% and 5% (i.e. upper bound, mid bound and lower bound). Under the lower bound the emissions are expected to increase to 81,000 Gg (81 million tonnes of CO_{2 eq}), while under the mid bound scenario the emission will increase to 118,000 Gg (118 million tonnes of CO_{2 eq}) and under the upper bound the emissions will reach 170,000 Gg (170 million tonnes). The mid scenario is based on the assumption that the emissions will continue increasing at the current rate, while the upper bound scenario assumes that the economic growth will take place at a higher rate from the current which will be reflected on the emissions level. The lower bound scenario assumes that the emissions rates will be decreased as a result of economic recession and adoption of mitigation measures.

Despite the initiatives that are taking place in the energy sector to increase the contribution of renewable energy in the total national energy mix and to enhance the energy efficiency, energy sector will remain the highest emitter of greenhouse gases in Jordan. It is expected to emit 58167 Gg (58.167 million tonnes of CO_{2 eq}) by the year 2030, which accounts for 82% of the total emissions as shown in Figure 2.

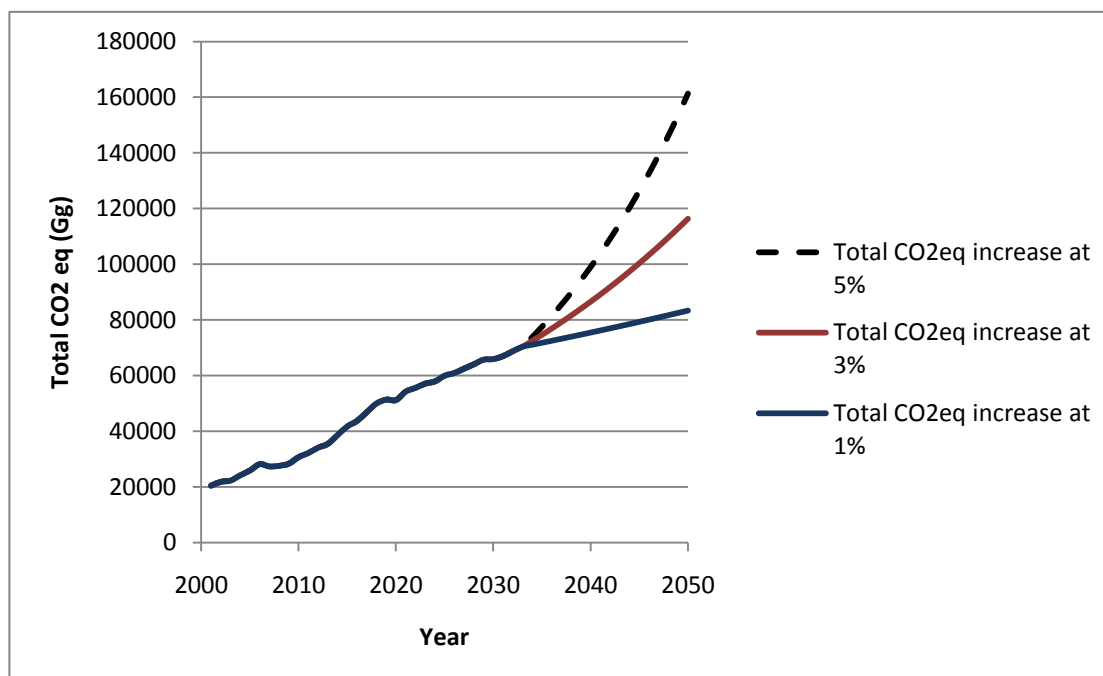


Figure (1) Projected greenhouse gases that will be emitted by all sectors in Jordan up to the year 2050

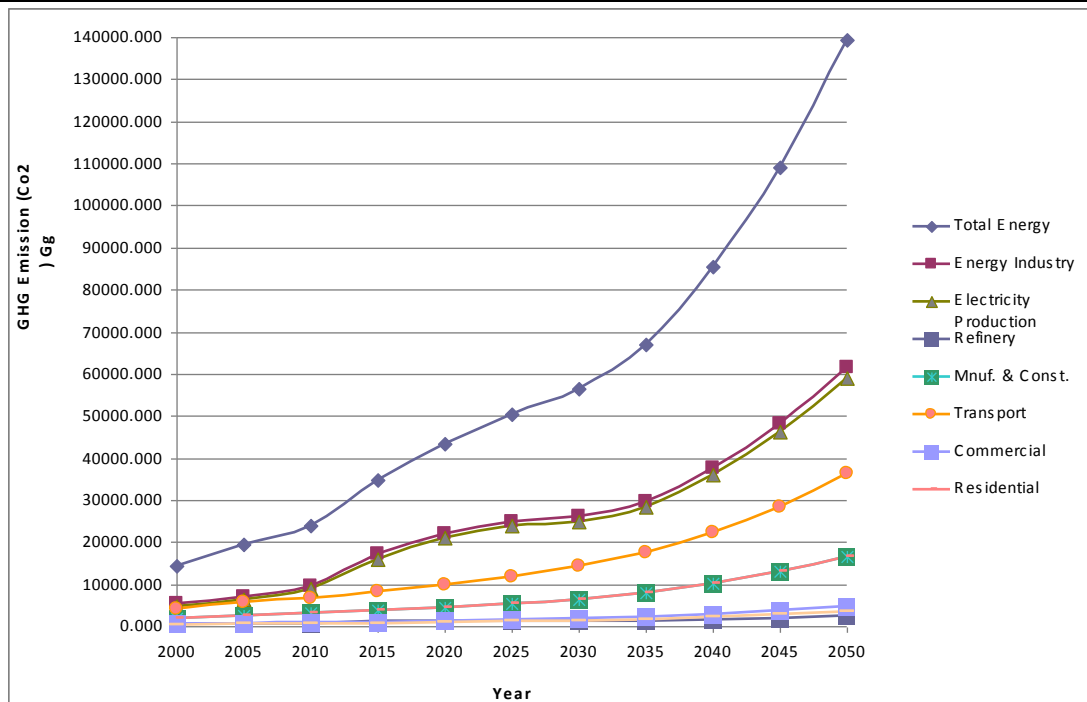


Figure (2) Projected greenhouse gases that will be emitted by energy sector in Jordan up to the year 2050

The SNC report provided analysis of measures to limit and reduce the GHGs emissions, as well as to enhance the GHG sinks. Baseline scenarios for different sectors were constructed based on the trends, plans and policies prevailing in the Jordanian context.

Under the mitigation scenario, the mitigation study proposed thirty eight greenhouse gases mitigation projects in areas like primary energy, renewable energy, energy efficiency, waste and agriculture. The cost benefits and CO₂ emissions reduction are analyzed for each proposed project. Table 1 lists the proposed mitigation projects in all sectors.

Table (1) List of the mitigation projects proposed by the SNC

No	Project Title	No	Project Title
1	Awareness program for applying best management practices in irrigated farming fertilization application	21	Al-Karak DSWLF
2	Winter pool/ hotel	22	Maddaba DSWLF
3	Waste heat rec./ hotel	23	Aldulail DSWLF
4	Insulation /Food factory	24	Al-Salt DSWLF
5	Ceramic factories Condensate recovery/	25	As-Samra DWWTP
6	Solar heating /hotel	26	Wadi Arab DWWTP
7	Solar water heaters	27	Baqa' a tertiary DWWTP

8	Electronic ballasts/ Medical factory	28	Ramtha DWWTP
9	Food factory	29	Mining industry/heat exchanger
10	Regenerative burners/ Steel factory	30	Salt DWWTP30
11	VSD in pumps/Paper factory	31	Aqaba tertiary DWWTP
12	Comp. air control system/ Canning factory	32	Al-hareer wind farm
13	Condensing heat exch./Mining industry	33	Kamsha wind farm
14	CF lamps/Residential	34	Aqaba wind farm
15	Demand Side Management	35	Ma'an wind farm
16	Samra power conversion to CC	36	Fujaij wind farm
17	Natural gas network/Amman	37	Ibrahimya wind farm
18	Natural gas network/Aqaba	38	Growing perennial forages in the Badia region
19	Natural gas network/Zarqa		
20	Al-Ekaider DSWLF		

The annual emission reduction as a result of implementing the proposed mitigation projects over the period 2009 to 2033 are shown in Table 2. As it can be observed from the table, in case of executing the proposed projects, the annual emissions reduction was estimated to be 2.761 million tonnes of CO_{2eq} in the year 2009, and are expected to increase to 12.345 million tonnes of CO_{2eq} in the year 2033.

Currently, there are thirteen projects considered to benefit from the clean development mechanism (CDM). The proposed projects are at different stages in the CDM cycle. Three of the proposed CDM projects are concerned with biogas collection and utilization from landfills and wastewater treatment plant, while the others are concerned with power plants and cement industry.

Table 2 Baseline and mitigation scenarios emissions for the period 2009 -2033

Years	2009	2015	2020	2025	2030	2033
Baseline Scenario (1000 tonnes CO _{2 eq})	28441	41788	51249	59474	65934	70377
Mitigation Scenario (1000 tonnes CO _{2 eq})	25679	34451	40012	47878	53899	58031.23
Reductions (1000 tonnes CO _{2 eq})	2761	7335	11236	11595	12034	12345
Reductions (%)	9.7	17.5	22	19.5	18.5	17.5

Also a number of policies and plans where implemented or under implementation including:

a- Policies :

- **Eco – Cities** work with planners , Managers , Private Sector and other stakeholders to minimizing environmental impacts and develop Green Economy and Incentives .
- **Green Economy**
 - Currently preparing a Green Economy scoping study as a procedure to the first Green Economy strategy for Jordan .
- **Green financing**
 - in the final stage of preparing green finance situation in commercial bank Jordan high - lighting the advantages and challenges .

RE &EE law currently under reviewing in the parliament

b- Briefly identify the key sectors targeted by the mitigation strategy. Energy sector and transport sector two priority in the mitigation program come as result from NEED study which is funding by UNFCCC and all stakeholders agree on that

For mitigation projects that are proposed by the second national communication report, abatement marginal cost analysis was carried out. Figure 3 shows the results of analysis. It can be observed that based on the unit abatement cost, the most feasible options are the energy efficiency projects, where unit costs ranges from – 61 to -245 JD/t CO₂ eq (- 91.5 to – 367.5 US\$/ t CO₂ eq). Therefore, the priority should be for implementing such projects by securing the required finance. Second on the priority scale is the demand side management with abatement unit cost of -28 JD/t CO₂ eq. (- 42 US\$/ t CO₂ eq), followed by fuel switch and landfill biogas utilization with abatement unit costs of -25.5 JD/t CO₂ eq (- 38.25 US\$/ t CO₂ eq) . and -5.5 JD/t CO₂eq., (- 8.25 US\$/ t CO₂ eq) respectively. On the other hand, the methane recovery from wastewater projects and renewable energy projects such as wind farms are less attractive options with positive abatement costs. After the passage of the renewable energy and energy efficiency law, such projects will be more attractive due to the incentives that are offered by the law.

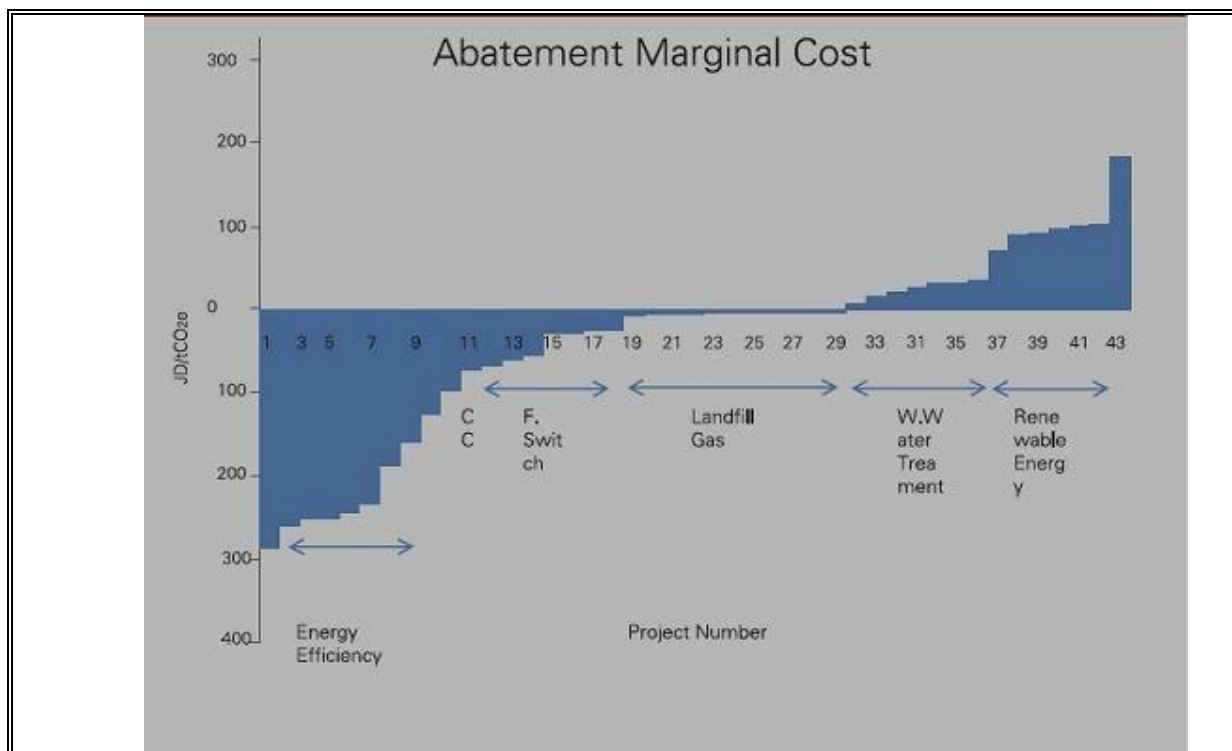


Figure (3) Abatement marginal cost for the mitigation projects proposed by the SNC (1 JD = 1.5 US\$)

Tables costs of the mitigation projects for energy and waste sectors, respectively. It can be observed that the total cost for energy projects up to the year 2020 is 8.265 billions US\$ and the incremental cost is 3.22 billion US\$. On the other hand, the total baseline cost for the waste sector is 250 million US\$ and the total incremental cost is 125 millions US\$.

Energy Sector

The total cost of the proposed projects for energy sector were obtained from the Jordanian public budget and from the government strategic plan. On the other hand, the incremental costs were calculated for energy sector based on comparing the cost and carbon emissions of alternative energy sources (natural gas, wind energy, solar energy) to baseline scenario of using fuel oil.

Waste Sector

In the long term planning, the Ministry of Municipal affairs is thinking to close the existing scattered municipal waste landfills and operate only three regional centralized landfills (In addition to the already existing Al Ghabawi Landfill that serves the central region, another two central landfills will be implemented for Northern and Southern regions).

The baseline project cost (landfill cost without biogas plant) was estimated based on the construction cost of the third landfill cell which is currently under construction at Al Ghabawi landfill Site in Amman. The contract price for the cell excavation and lining is about US\$ 3.6 millions. Since the landfill consists of 9 cells, the total cost

for the landfill cells construction is US\$ 32.4 millions. If we add the cost of infrastructure of about US\$ 5 millions and the annual operation and maintenance of US\$ 1.5 millions for 15 years, the total cost will become US\$ 60 millions.

Considering the alternative project which is the landfill with biogas recovery and electricity generation system. According to the project design document for Al Ghabawi biogas project that submitted to the UNFCCC the total estimated investment cost for electricity production alternative (incremental cost) from AL Ghabawi landfill is about 24 million Euro. (US\$ 30 millions) which is about 50% of the baseline cost. Similar approach is applied to calculate the total and incremental cost for the other planned regional landfills in southern and northern regions of the country which are smaller than Al Ghabawi. The results are presented in Table 4. It can be observed that the total cost for the waste sector is 250 million US\$ and the incremental cost is 125 million US\$.

4- Market Instruments¹: Please briefly outline experience to date with relevant market instruments as well as future plans.

- a. Provide a brief description of experience to date with market-based instruments, e.g., type of instrument, dates of implementation, scope, and key outcomes

Clean Development Mechanism (CDM) is the only market-based instruments that have been implemented in Jordan. The scope of the projects includes projects in energy sector, waste sector and industry sector. At present, there are 16 projects received Letter of Approval (LoA).

- b. To the extent that one (or more) specific market instrument is already identified for future implementation, please provide a brief overview of the status of development/implementation and its relevance to the country's overall mitigation strategy.

There is no specific market instrument indemnified in the existing policy and strategy for future implementation.

5. Support from the PMR: Please provide a short summary of your current assessment of the capacity needs and gaps for which support from the PMR is being sought. To the extent that one (or more) specific market instrument is identified, please outline the type of support that your country may be seeking from the PMR.

Jordan finalized its NEEDS project that represent a National Economic Environmental study the study aims to identify two sectors in Mitigation and two sectors in Adaptation .

In order to promote implement the proposed activities, the support needed include capacity building for all stakeholders to have better understanding on NAMA crediting/trading,

¹ Without prejudging future developments on market instruments, this question refers to instruments providing a price signal that create an incentive to use or invest in climate-friendly technologies and/or processes. Such market instruments can include domestic instruments (e.g. emissions trading and non-GHG based schemes such as renewable energy and energy efficiency trading systems) and international market instruments such as reformed CDM, sectoral and NAMA crediting.

Sectoral Crediting/Trading, and Domestic Trading, technical assistance in development of baseline and monitoring methodologies as well as validation and verification of emission reduction, technical assistance in cap and trade system including national allocation plan, establishment of national registry and trading platform, training on related issues for relevant stakeholders etc.

6. Institutional setting: How would you plan to coordinate the PMR efforts at the domestic level, i.e. which Ministry would lead, and which government agencies would be involved.

The project will be implemented under the Ministry of Environment, the National climate change committee (established in 1998) will act as a steering committee for the project

7. Stakeholder participation: Are there intentions/plans /processes to engage non-governmental stakeholders (e.g. private sector)? If so, please provide brief description.

The National climate change committee do have representatives from Ministries, NGO's, private sectors, Academic institutions and Gender.

8. Initiatives by other bilateral and multilateral development partners: Please outline any initiative(s) pursued with other international partners underway in your country that is (are) relevant to market readiness support (e.g., low carbon development strategies, MRV, etc).

There are no such initiatives currently in the country.

