

CLIMATE INVESTMENT FUNDS

SREP/SC.IS.2/5
February 21, 2012

Intersessional Meeting of the SREP Sub-Committee
Nairobi, Kenya
March 8-9, 2012

Agenda Item 6

REVIEW OF ADDITIONAL INFORMATION ON INVESTMENT PLAN FOR MALI

Proposed Decision by SREP Sub-Committee

The SREP Sub-Committee, having reviewed the *Investment Plan for Mali* (Document SREP/SC.6/7) and the *Review of Additional Information on Investment Plan for Mali* (Document SREP/SC.IS.2/5),

- a) confirms its endorsement of the Investment Plan as a basis for the further development of the projects foreseen in the plan;
- b) recalling its approval of USD1.48 million in SREP funding as a first tranche of preparation grants for the project concepts, approves an additional USD1,920,000 in SREP funding for the preparation grants for the following projects to be developed under the investment plan,
 - i. USD450,000 for the project “*Solar PV IPP* “ (AfDB) (total SREP funding, USD950,000); and
 - ii. USD1,465,000 for the project “*Development of Micro/mini Hydroelectricity for Rural Electrification in Mali (PDM-Hydro)*” (AfDB) (total SREP funding, USD2,200,000)
- c) takes note of the project proposal, “*SREP-Mali Program Strategic Coordination*” (AfDB), proposed in the *Additional document to the Investment Plan for Mali* (document SREP/SC.IS.2/5), and approves USD150,000 as a first tranche of funding for MDB preparation and supervision services for the project.



REPUBLIC OF MALI

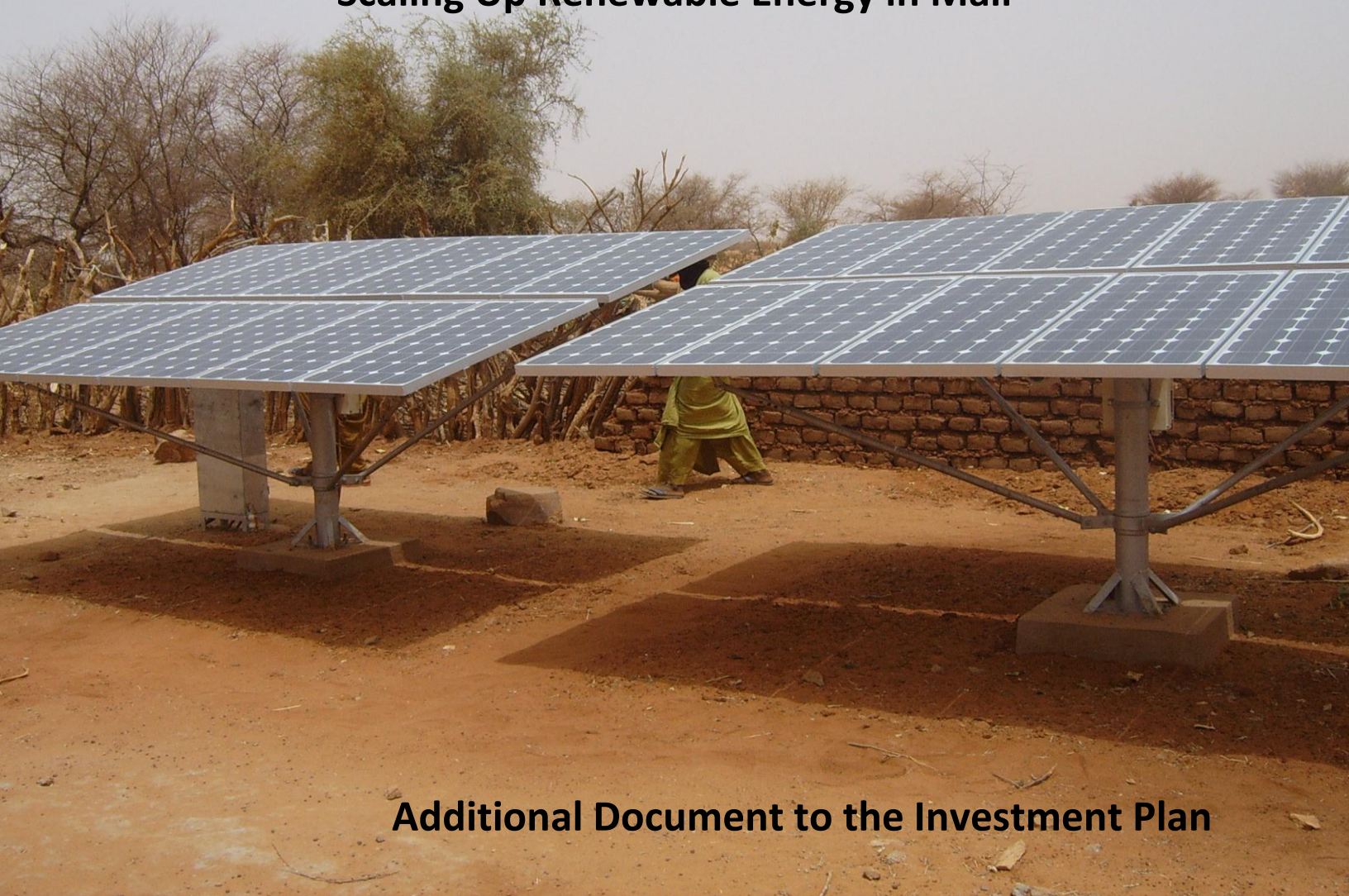
MINISTRY OF ENERGY AND WATER

NATIONAL DIRECTORATE OF ENERGY



SREP MALI - INVESTMENT PLAN

Scaling Up Renewable Energy in Mali



Additional Document to the Investment Plan

Table of Contents

1. Introductory Remarks	Page 1
2. Responses to the comments sent by Switzerland	Page 3
3. Additional information on projects costs	Page 9
4. Request for Project Preparation Grant – Project 1	Page 16
5. Request for Project Preparation Grant – Project 3	Page 19
6. Project brief for the Program Strategic Coordination	Page 21

ANNEXES

Annex 1: Terms of Reference related to the preparatory activities of Project 1

Annex 2: Terms of Reference related to the preparatory activities of Project 3

Acronyms and Abbreviations

AfDB	African Development Bank
AMADER	Mali Agency for Domestic Energy and Rural Electrification
ANADEB	National Agency for Bio-fuel Development
API	Investment Promotion Agency
CDM	Clean Development Mechanism
CIF	Climate Investment Funds
CNESOLER	National Solar Energy and Renewable Energies Centre
CREE	Electricity and Water Regulatory Commission
DNE	National Energy Directorate
EDM	<i>Energie du Mali SA</i>
FER	Rural Electrification Fund
GHG	Greenhouse Gas
GoM	Government of Mali
GWh	Giga Watt per hour
IFC	International Finance Corporation
IP	SREP Mali Investment Plan
KWh	Kilo Watt per hour
MDBs	Multilateral Development Banks
MWh	Mega Watt hour
NGO	Non-Governmental Organization
PEN	National Energy Policy
PV	Photovoltaic
RE	Renewable Energies
RI	Interconnected Grids
SREP	Scaling Up Renewable Energy Program
WB	World Bank

Introductory Remarks

1. The SREP Sub-Committee Meeting that was held in Washington on 1st November 2011 approved “in principle” the SREP-Mali Investment Plan (IP), giving the green light to the Government of Mali (GoM) and the Multilateral Development Banks (MDBs) to start the preparation of the three proposed Mali SREP investment projects and their associated technical assistance and capacity building activities.

2. During this meeting, questions were raised by the Sub-Committee members on several issues. The GoM has made all possible efforts to provide answers to these questions, considering that the Mali SREP investment phase is at a very early stage and that feasibility studies for the projects have not yet been done. ***Feedback to the Sub-Committee members’ questions is provided from page 3 to page 15 on the basis of the Mali specific information and data currently available. Furthermore, the GoM will take the comments raised by the Sub-Committee members into consideration during the project design, with guidance from the MDBs.***

3. One decision of the SREP Sub-Committee was that the GoM had requested too much preparation funds for the proposed projects and that only half of the requested preparation funds would be allocated as a first tranche, with the possibility to ask for the second tranche if needed. The GoM would like to highlight the fact that ***there is no cap in the SREP Programming and Financing Guidelines regarding Project Preparation Grants (PPGs) and that feasibility studies are authorized to be funded by the PPGs as per the Guidelines; the development of the IP was made under this assumption.***

4. Since November 2011, the GoM in cooperation with the MDBs started working with a view of advancing the preparation and fine-tuning the design of the three projects. To this end, detailed TOR have been prepared for Project 1 (see Annex 1 page 26) and Project 3 (see Annex 2 page 45). The preparation of Project 2 is also in early stages, in line with ongoing MDB energy activities in Mali, and TOR are currently revised on the basis of the SREP Sub-Committee guidance received. On the basis of the these TOR, ***the GoM wants to highlight the extensive work that needs to be done in the coming months to prepare the projects and the necessity of having sufficient preparation funds*** in order to be able to procure the consultant teams that will carry out the planned work. Therefore, updated requests for Project Preparation Grants for Project 1 and Project 3 are submitted in this document (see pages 16 to 20) for the SREP Sub-Committee to consider and approve. With regards to the PPG for Project 2, the request is likely to be submitted to another SREP Sub-Committee meeting after the upcoming Kenya March 2012 meeting.

5. Regarding Project 1, the SREP Sub-Committee Meeting approved a Project Preparation Grant of USD 495.000 for the development of the Solar Photovoltaic IPP Project. Since then, the AfDB and the SREP National Commission worked closely on the development of detailed TOR for the hiring of a Transaction Advisory Team. The consultants will: (i) Undertake a Comprehensive Feasibility Study for the Project that will help the National Directorate of Energy (DNE) in determining the full project cycle costs,

its affordability limits, risks and their costs, optimal value-for-money methods of delivery and market sounding; and (ii) Provide Advisory Services for the PPP Procurement Cycle to the relevant national entities. The consultants are expected to provide the necessary technical, legal and financial advisory support throughout the different procurement stages up to selection of the Project Developer and Power Purchase Agreement (PPA) negotiations. ***Given the detail and intensity of the activities to be carried out, the AfDB and the SREP National Commission believe the USD 495.000 approved is not enough and request the Project Preparation Grant to be increased to USD 950.000.*** This request is made bearing in mind that by increasing the amount of the Project Preparation Grant and consequently reducing the amount of the investment component, the positive impact of the concessionality in the project as a whole is reduced. The direct consequence of such decision can be a residual increase in the tariff under the PPA. Nonetheless, the risk of launching the competitive bidding process for the recruitment of the Transaction Advisory Team without sufficient resources committed through SREP would represent an onerous reputational risk to AfDB and the GoM and would considerably delay the implementation of Project 1. Should the overall cost of the Transaction Advisory Team be below the proposed USD 950.000 or the AfDB able to tap into other sources of financing, then, any unspent amount of SREP resources tabled for the Project Preparation Grant will be channeled back into the investment stage of Project 1.

6. Regarding Project 3, the SREP Sub-Committee Meeting approved a Project Preparation Grant of USD 735.000 for the preparation of the Mini/micro Hydroelectricity Project. Since then, the AfDB and the SREP National Commission have worked closely on the preparation of detailed TOR for the feasibility studies, the preparation of the detailed preliminary design documents and bidding documents for the mini/micro hydroelectric plants. The work that has to be carried out has been assessed and according to this assessment, ***the AfDB and the SREP National Commission believe the USD 735.000 approved is not enough and request the Project Preparation Grant to be increased to USD 2.200.000.*** This amount is needed for the GoM to undertake the work that is mentioned in the detailed TORs from page 45 to page 119. However, if the GoM receives from bidders financial proposals that are below USD 2.200.000, the unspent amount of SREP resources will be channeled back to the investment stage of Project 3.

7. During the Sub-Committee meeting in November 2011, the opportunity of having the Program Strategic Coordination as a small technical assistance project was discussed and some Sub-Committee members supported this option. Initially, the GoM has asked for the Program Strategic Coordination to be included in Project 3 in order to process it at the same time and therefore limit the processing costs. However, considering that the preparation of Project 3 will take some time while the Program Strategic Coordination should be up and running at an early stage of implementation of the three projects, ***the GoM confirms that the Strategic Coordination will become a Technical Assistance project of about USD 4 million, with the understanding that USD 1.5 million will be funded by SREP.*** Therefore, a project brief has been prepared for this Technical Assistance project (see pages 21 to 24).

Responses to the comments sent by Switzerland

	Comments from the SREP Sub-Committee	Responses from the Government of Mali / MDBs
1	<p>The budgeted costs per installed kW for all three components are clearly exaggerated. We urge Mali and the MDBs to verify costs and come up with more realistic estimates that should be supported by specific projects.</p>	<p>Please see additional information provided page 9 and onwards related to the projects costs.</p>
2	<p>We believe that the concept of just using grant money to buy down investment costs is not sustainable. In order to have a transformative impact, the IP should foresee market conform mechanisms to induce the private sector to invest. Beneficiaries of off-grid installations should be induced to participate in the investment and get ownership of the installed equipment.</p>	<p>Information related to Project 1 (grid connected 20 MW solar PV plant): Among the numerous barriers that are delaying the implementation of renewable energy IPPs in African countries (and other emerging markets globally) is, amongst others, the weak financial situation of public utilities, and the considerable high capital expenditures of such projects. In order for a project to be financially viable, the tariff structure within the power purchase agreements (PPA) in line with international best practice needs to be such that it rewards the equity holders and allows them to repay not only the total debt but also construction, operation and maintenance costs without putting too much stress on the utilities' financial statements as high tariffs makes them unwilling to enter into long-term agreements that do not contribute to their financial health. Since the objective is to not transfer this burden to the end users, the use of SREP as a capital buy-down has the potential to mitigate the aforementioned barriers as the same tariff is expected to be brought down to acceptable levels. The PPA is the key contract in this type of transactions as it assures the private counterpart (and the lenders) of a continuous and fixed stream of revenues over the life of a project. SREP has therefore potential to make the project commercially and financially viable and sound if used as proposed and will maximize Private Sector Participation as the construction and operations and management of the SPV are to be carried by private companies.</p> <p>Information related to Project 2 and 3 (mini-grid projects): The GoM agrees with the necessity to have a financing approach that is sustainable in the medium to long term. This is why, for rural electrification, the GoM is implementing since a decade public-private partnerships (PPPs) for village and community based rural and peri-urban energy services, and has moved forward to set up supportive legislation and regulation for rural energy services, such as the decree to establish a Rural Electrification Fund (see "L'ORDONNANCE N° 00-019/P-RM DU 15MARS 2000 PORTANT ORGANISATION DU SECTEUR DE L'ELECTRICITE" and "LOI N° 05 0 1 9 /DU 3 0 MAI 2005"). According to Mali's established rural electrification framework, rural energy projects</p>

		<p>(investments and related technical assistance and capacity building) are designed, co-financed and managed by private operators, community organizations, etc., with support from AMADER in partnership with other national institutions, under an authorization and concession contract provided for 15 years. Local knowledge and consent of project beneficiaries in the proposed off-grid renewable energy projects is part of the planning and design process under Mali's existing legislation, and includes amongst others participation of project beneficiaries at early stages, which furthermore reduces the investment risks for private and/or community managed rural energy schemes. Therefore, Project 2 will be optimized and implemented along the lines of the existing approach of public-private partnerships between AMADER and local private operators under the established rural electrification framework, with support from the Rural Electrification Fund, as described in the SREP IP and summarized above. Under Project 3, the private sector will also play a key role through the construction and operation of the hydro power plants; PPPs are foreseen to further mobilize the private sector in Mali.</p> <p>Participation of project beneficiaries to the payment of off-grid equipment will be made possible in Project 2, under which some off grid solar lighting equipment and some solar home systems are planned to be installed, in coordination and cooperation with the <i>Lighting Africa Program</i> in Mali, AMADER and the CNESOLER. Lighting Africa, a joint IFC and World Bank program, amongst other activities, informs commercial financial institutions on market development and offers risk mitigation instruments in order for them to provide long term growth capital, short term working capital and trade finance to manufacturers and distributors. The program in Mali is at its early stages, with support from the SREP activities could be further developed in line with the preparation of Project 2. More detailed information is available on the following website: http://www.lightingafrica.org/.</p>
3	<p>At a total of USD 3,790,000, the requested project preparation costs are too high in relation to the overall investment (9.4%).</p> <p>Moreover, Mali also requested an additional USD 2,500,000 to fund a strategic coordination mechanism, further increasing the preparation and coordination cost to over 15% of the total. We would welcome a sounder balance between</p>	<p>After the Terms of Reference have been elaborated for the preparation phase of the projects, the preparation funds requested by the Government of Mali amount USD 3,650,000, for the three projects, which represents 9.1% of the SREP funding and 1.4% of the total IP costs. The requested project preparation costs are consistent with the need to have feasibility studies done; feasibility studies are authorized to be funded by SREP funds as per the SREP guidelines in which there is no cap for preparation costs.</p> <p>Mali has requested USD 2,500,000 to fund a strategic coordination mechanism that include activities that are consistent with the needs identified in the country to scale up renewable energies, and that are also consistent with the SREP requirements mentioned in the SREP guidelines, especially in terms of Lessons Learned and Monitoring and Evaluation. It was considered that the willingness from the</p>

	<p>effective investment and project preparation/coordination costs.</p>	<p>SREP Sub-Committee to see better M&E and knowledge management for RE was in line with country needs and could therefore benefit from SREP funding. Considering the discussions on November 2011 with the Sub-Committee, the GoM has agreed to reduce the SREP allocation to the Strategic Coordination Mechanism to USD 1,500,000; the other USD 2,500,000 needed will be drawn from the national budget and other sources of funding.</p>
<p>4</p>	<p>While not entirely opposed, we have strong reservations regarding the promotion of biofuels. Studies and recent development show that, while recognized to contribute to a reduction of CO2 emissions, biofuels have a potentially even higher (negative) ecological impact than fossil fuels. In any case, a thorough analysis of the whole value chain must be made to assure that the production of biofuels does not negatively affect the local food supply nor the environment.</p>	<p>It is stated in the Mali SREP Investment Plan that, in Mali, biofuel based rural energy schemes are building on a small scale, non-industrialized, village based approach, mainly relying on a specific plant, called jatropha, which has been studied and tested in the country's context as climate resilient. It is produced in Mali mainly by local farming and community associations and institutions or small scale private operators for local biofuel production and usually in co-cropping with food crops to avoid negative effects on local food supplies at the village level. Jatropha plants don't require a lot of water nor chemical entrants and do not alter food supply – they actually could provide farmers and local communities with an additional revenue and income that should improve livelihoods of rural communities. Jatropha is considered by the GoM as a crop for pro-poor development, in line with existing environmental and energy sector legislation.</p> <p>Regarding the environmental and social impacts, it should be mentioned that :</p> <ul style="list-style-type: none"> • a feasibility study has been done on socio-economic aspects of biofuel production in Mali in 2008 ; • some analytical work has been undertaken in 2011 to come up with “sustainability criteria” for the production of biofuels in Mali. A 50 page report is available in French that details the selected criteria to ensure sustainable production of biofuels in Mali and provides guidance for developing a certification label to ensure quality ; • specific research is ongoing by the University of Leuven that will be made available in 2013; it focuses on “Impacts of the conversion of land use for Jatropha crops on rural livelihoods and ecosystem services in Mali, 2010-2013” . <p>Also, the environmental impact analysis that will be done as part of Project 2, in line with MDB safeguard procedures, will clearly evaluate and take into account the pros and cons of this crop for the Malian farmers and their environment in selected rural and peri-urban communities in Mali.</p> <p>For more information, see the official website of the national agency in charge of biofuels in Mali: http://anadeb-mali.org/index.php.</p>

		<p>Some information can also be read here : http://www.mvo.nl/Portals/0/duurzaamheid/biobrandstoffen/nieuws/2010/08/i1219e.pdf</p>
5	<p>What is the proposed location for the 20 MW Solar PV IPP? Does the necessary transmission infrastructure already exist or it is included in the Project? What community(ies) will benefit from the realization of this project?</p>	<p>The location of the project is not yet defined and it is expected to be captured in the Request for Proposals (part of the Competitive Bidding Process) to be launched by the Government of Mali. There are many possibilities to be explored and some flexibility at this stage is advisable. One sure thing is that the electricity to be produced by the solar plant is to be sold to the grid, under a long-term Power Purchase Agreement. This ensures a fixed stream of revenues deemed as obligatory under such financing schemes. Concerning the required transmission lines and substation, this is an obligation that falls with the utility as the responsibility of the private counterpart ends in the power plant itself. This is, among the risks assumed by the private counterpart are the design, construction, operation, maintenance and financing risks of the project but not the risk of transmitting and distributing the electricity. Since the exact location of the project is not known at this time, it is not possible to identify the communities that will benefit from the realization of the project; this will be defined during the preparation phase of the project. Also see Terms of Reference page 26 for more information.</p>
6	<p>In the results framework, we miss at least two indicators “GHG reduction” and “number of additional households with access to energy”. Could you produce baselines and target figures for these indicators. Also for many indicators, the values are still “tbd”. Who will define them? When?</p>	<p>At this stage, the “GHG reduction” is estimated at 140,000t/year for the three projects. The estimation will be fine-tuned in the coming months. Also, the “number of additional households with access to energy” will be fine-tuned at the end of the preparation phase of the projects, but at this time, it is estimated at about 85,000 households for the three projects.</p> <p>Most of the indicators are given as “mandatory” by the SREP Sub-Committee in the SREP results framework. They do not exist for now in the country and will be developed, in the context of the strengthening of the national M&E energy system, as part of the two-year “testing phase” agreed by the Sub-Committee to develop the M&E system in each country (see Appendix 7 of the Volume 2 of the IP, page 41). The values will be defined by the team that will be put in place, especially the M&E specialist who will be part of the Strategic Coordination Unit to set up and maintain the M&E system. The Program M&E specialist will work with the MDBs and M&E specialists of the three projects as mentioned in the IP. The baselines and targets will therefore been defined during the preparation phase of the projects and will be fine-tuned during the first year of implementation of the projects.</p>
7	<p>Regarding component I (Solar PV IPP), while supporting a disbursement to the Special Purpose Vehicle owned by the successful bidder, we believe that joint share ownership with the</p>	<p>The concept note already takes the possibility of the Government of Mali in becoming a shareholder of the SPV (please see Indicative Financing Table). Partial ownership of the SPV at a minimum share is advisable and can improve the Project’s viability</p>

	<p>Government of Mali would reduce the fiduciary risk of the project and assure that benefits would not be entirely privatized.</p>	<p>Regarding fiduciary risks, it is worth mentioning that as part of the Paris Declaration commitment to implementing harmonized diagnostic reviews and performance assessment frameworks, the AfDB assesses fiduciary risk using diagnostic analyses and tools developed with and/or by other donors, particularly the WB and the OECD. In assessing fiduciary risk, the Bank pays particular attention to treasury management, financial management information systems, public procurement, and internal and external auditing.</p>
8	<p>With regards to electrification in remote areas, we believe that solar PV applications (costing about USD250 per household) are a good alternative to provide access to electricity. In a country like Mali, access to electricity is still a high priority and the impact on education as well as access to information and communication is at least as important as the employment effect of factories.</p> <p>Because of the high costs involved, a grid based system may therefore not be the best solution for the electrification of rural and remote areas. We would support a program seeking to install off-grid solar systems to households, whereby productive use is emphasized by proposing larger systems to small enterprises and using synergies with the electrification of community buildings (schools, administrations).</p> <p>To enable a large scale replication of off grid solar systems, the beneficiaries should be induced to acquire property of the installed systems by paying for them in installments, pre-financed by a micro credit system with reasonable interest rates. Subsidies should be avoided/minimized.</p>	<p>In Mali, rural electrification is considered as a tool and motor for rural and peri-urban development. Productive activities are - and should continue to be - developed in areas with access to energy services (including lighting and electricity). A comparative analysis of rural energy schemes in Mali shows that a broader range of productive energy uses could be developed from village level mini-grid systems (independently from the energy source) than from individual solar home systems or community based solar home systems, that only provide lighting and lower qualities and quantities of electricity. The GoM's National Energy Policy focuses on providing energy services first to large communities of over 3000 people since they represent key development areas in the country. Providing access to electricity for these large communities is done through the development of mini-grids that are more efficient than individual solar systems.</p> <p>With regards to the cost estimate of USD250 per household, the MDBs and the GoM would be interested to know more details about the data source. As stated in a recent publication of a researcher from the RISO Sustainable Energy Laboratory in an international energy journal in June 2009 in the context of the European review of energy markets, the comparison of costs of a 50 Wp solar home system (including panel, four lights, charge controller, installation material, and installation), in several African countries vary enormously, from USD 575 in Kenya to USD 1200 in Zambia. The publication explains, among others, that several constraining non-institutional and non-technical factors need to be considered carefully when pricing SHS in African countries, such as low density of consumer demand; readiness of markets; access to supportive infrastructure. The Mali SREP team is in close contact with the Kenya SREP team for related technical exchanges and technical assistance in view to optimize costs in a medium to longer term, in line with the current status of energy sector development in Mali and in Kenya.</p> <p>The GoM's National Energy Policy, the national rural electrification framework and the GoM's ten-year rural electrification program highlight the need to increase rural electrification through mini-grids; off-grid solar systems for households are being installed in some places as part of the Lighting</p>

<p>In order to be sustainable, the program must foresee local facilities for regular maintenance, repairs, and recycling of obsolete equipment. Life cycle consideration should ensure that the most sustainable and environmentally sound solar PV technology is used.</p>	<p>Africa Program, but this is not considered to be the best long term solution since energy needs in rural areas keep increasing – solar off-grid solar systems might not be sufficient in a few years while mini-grids will be better suited to respond to increasing needs of the population and small businesses.</p> <p>Rural electrification through isolated mini-grids promotes productive uses and provides sufficient power for social and community buildings (schools, health centers, administrations). In Mali, forty private operators provide energy services in rural areas where productive activities are being developed.</p> <p>The concept of "fee for service" was the choice of Mali for the development of rural electrification through public/private partnerships. Private operators contribute 20% to finance rural electrification projects.</p> <p>Private operators for rural energy schemes in Mali are mainly energy sector professionals who have hired and continue to train the human resources suitable for maintenance and repair of some of their equipment, including photovoltaic equipment. As part of the program, life cycle consideration will be explored to ensure that the most sustainable and environmentally sound solar PV technology is used.</p>
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Additional Information on Projects Costs

CONTEXT

Objective of this complementary analysis

1. The SREP Sub-Committee has approved in principle the SREP-Mali IP on November 1, 2011. However, comments and questions were raised and additional information was requested on: (i) benchmarking of costs; and (ii) explanation of how proposals will lead to reduced costs on the long term. Since November, the SREP National Commission has received support from the MDBs and from an expert consultant to start a "benchmarking" exercise which objective is to compare, on an early phase, capital expenditures (CAPEX) with other similar projects, to come up with further cost related information (construction, operating costs and maintenance of equipment proposed, etc.), in view to guide and fine-tune the SREP related projects during the preparation phase, and, in the medium term, to start analyzing and evaluating how to best contribute to lower down long term electricity costs in rural and peri-urban areas in Mali. This work is currently ongoing.

Overview of the Methodology Used

2. In order to move forward to achieve the aforementioned objective, projects that have similarities with the three SREP projects have been identified and selected. Criteria used for selecting these benchmark projects are for instance: (i) similar RE technologies; (ii) similar geographical and climatic conditions; and (iii) similar power generated among others. For each project, the specific investment costs are compared to those of the SREP projects. The specific investment cost of a project is the ratio of the total investment of the project by the installed capacity. The difference between the specific investment costs of the SREP projects and those of the benchmark projects are being analyzed in order to find out whether the specific investment of the SREP projects are higher or lower than those of the benchmark projects and if they are relevant in the Malian context.

3. Then, during project preparation with guidance from MDB technical staff, the operation and maintenance costs will be estimated for each SREP project, depending on the Malian context and the site specific aspects of renewable energy sources in Mali, and compared to benchmark projects of similar nature, if available. Lastly, a prospective analysis of measures on how to reduce these costs in the long run will be proposed and planned into the project design and implementation.

BENCHMARKING - Preliminary results

Note: these are early results; there are not many similar / comparable projects available and/or fully analyzed yet. This work will be continued during project preparation phase, under MDB procedures.

a) PROJECT 1: SOLAR PV IPP PROJECT (20MW)

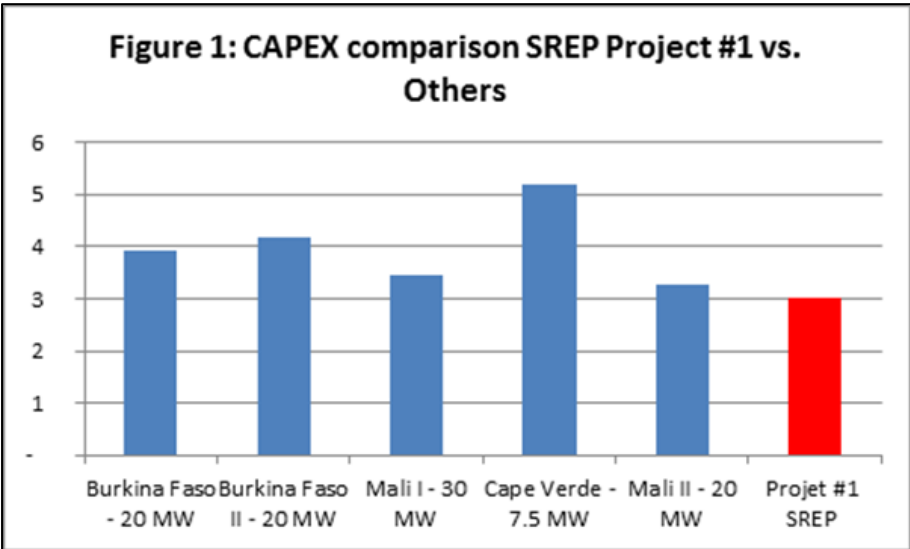
4. Installation of this type of solar PV plant is still rare in Sub-Saharan Africa. The largest existing project in the West African sub-region is operating in Cape Verde (7.5 MW). However, there are some similar projects that are under preparation in a few countries, developed by Governments or private investors. Costs related to these benchmark projects have been used to compare with the

proposed costs of the SREP Project 1. Table 1 below shows the characteristics and costs of the benchmark projects compared to the SREP Project 1:

Table 1: Solar PV Projects in West Africa – Preliminary results

Project	Burkina Faso I	Burkina Faso II	Mali I	Cape Verde I	Mali II	Project #1 SREP
Installed Capacity (MW)	20	20	30	7,5	20	20
Financing	Project Developer, AfDB and GoM	European Union, Private Banks and Government		GoCV		Private operator, AfDB/IFC, GoM
Development Stage	Ongoing	Full Implementation planned in 2012	Under preparation	Project implemented	Under discussion	Under preparation
Investment Costs (USD Million)	78	83	103	39	65	60
Specific Investment Costs (USD Million/MW)	3.90	4.15	3.43	5.20	3.25	3.00

5. The table above and figure 1 below show that the specific investment costs of SREP Project 1 are in line with ranges for the specific investment costs of the benchmark projects at the current status of analysis and evaluation.



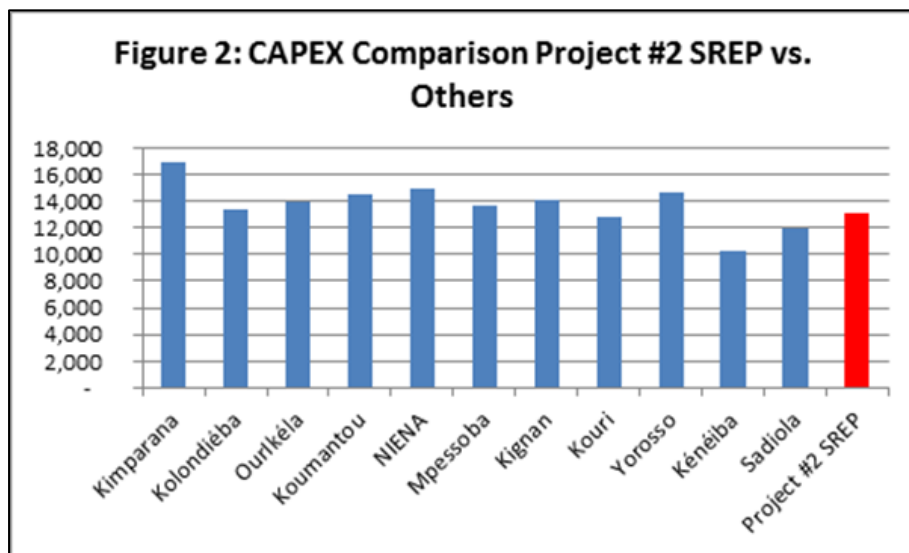
6. This highlight the fact that, while comparing with similar projects in West Africa, the specific investment costs determined for the SREP Project 1 is not high. The benchmark projects which are under preparation will provide more information on costs issues in the near future (in Burkina Faso and Mali) while we prepare the SREP Project 1.

b) PROJECT 2: HYBRID RURAL ELECTRIFICATION

7. Some similar solar diesel hybrid projects for village based rural energy schemes are already being implemented in Mali, supported through the country’s rural electrification fund managed by AMADER. Data presented here related to these limited, preliminary benchmark projects costs and will be further analyzed and compared with the investment costs of the SREP Project 2 (see figure 2 below) during the project preparation phase that is currently ongoing.

8. In addition, similar solar diesel hybrid options for village based electrification that are implemented in similar country settings in other developing countries, are currently being analyzed and will provide lessons learnt for the project design. Those examples include mainly countries in Latin America and Asia which compared to Mali and other countries in Sub Saharan Africa, started earlier in creating incentives and regulations to support renewable and rural energy schemes, including solar diesel hybrid systems for off-grid areas in rural villages in Peru, Thailand, and Nepal. Those results will be further presented and discussed during the MDB’s technical review of project design in the coming months.

9. Figure 2 below gives a preliminary overview of the specific investment costs of the benchmark projects that are implemented in Mali. The average specific investment cost of the projects currently analyzed is in line with the cost estimates presented in the Mali SREP IP for the SREP Project 2. As a preliminary result, the proposed financing plan seems realistic for these types of projects and in relation to the Malian context.



c) **PROJECT 3: MINI/MICRO HYDROELECTRICITY PROJECT**

10. Generally speaking, hydroelectricity power plants are classified according to the installed capacity such as:

- Micro-Hydro Power Plants for those with installed capacity between 20 and 500kW,
- Mini-Hydro Power Plants for those with installed capacity between 500kW and 2MW
- Small-Hydro Power Plants for those with installed capacity between 2MW and 10MW.

11. The hydroelectricity power plants proposed under the SREP Project 3 are therefore classified as such:

Table 2: Micro Hydroelectricity Power Plants

Country	SREP Projects				Mali	RWANDA	RDC
Project	Farako 1	Billy	Kéniéto	Woroni	Micro-hydro power plant in Sikasso	7 micro-hydro power plants in Rwanda	Kamonia micro-hydro power plant
Installed Capacity (KW)	55	170	280	393	150		150
Specific Costs (USD/KW)	\$9 555	\$5 018	\$3 549	\$1 950	\$10 200	\$3 728	\$1 333

Table 3: Small Hydroelectricity Power Plants

Country	SREP Projects			Mali	Mali
Project	Djenné	Talo	Kourouba	SOTUBA Project	MARKALA Project
Installed Capacity (KW)	7000	3700	10000	6000	10000
Specific Costs (USD/KW)	\$3 120	\$2 860	\$3 510	\$3 900	\$3 800

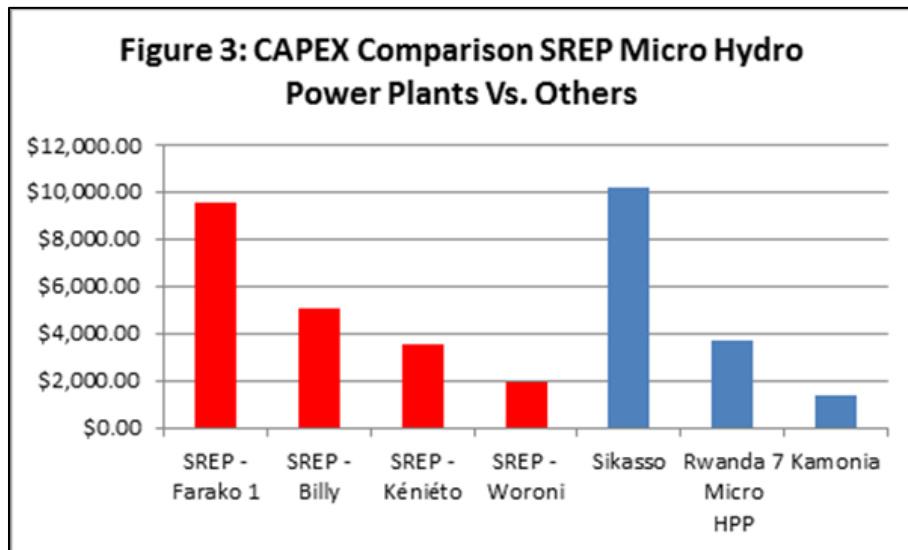
12. For each of the defined hydroelectricity power plant class, benchmark projects have been identified to check the accuracy of the proposed investment costs for the SREP Project 3:

- For the micro-hydro power plants, data from the following benchmark projects have been considered: (i) the study undertaken on seven micro-hydro power plants in Sulawesi, Rwanda, by Entec GVEP International, (ii) the micro-hydro power plant which is being built in the area of Sikasso, Mali, by a private operator under the supervision of AMADER, and (iii) the micro-hydro power plant of Kamonia in Democratic Republic of Congo.
- For the small-hydro power plants, data from the following benchmark projects have been considered: (i) study by Contour Global on current Markala project (10MW), and (ii) information related to the extension of the Sotuba mini-hydro power plant (6MW).

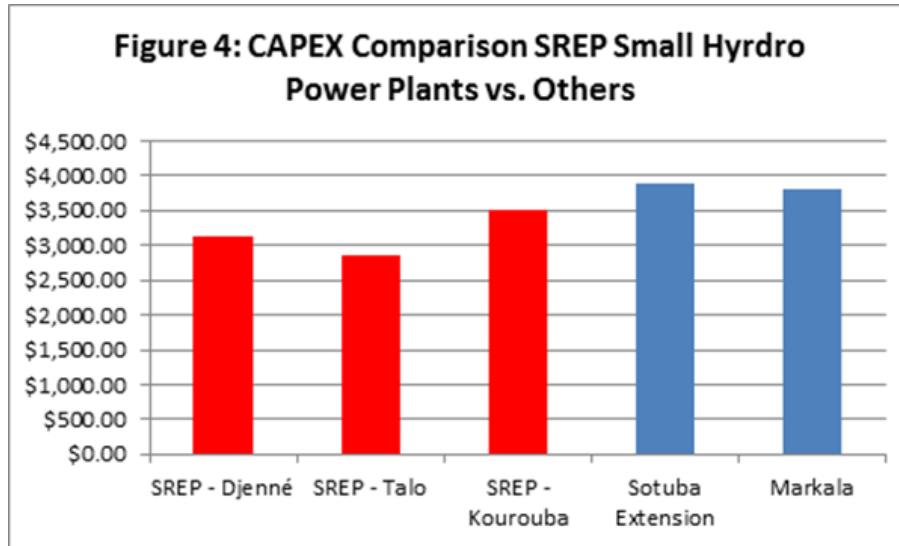
13. As shown in Figure 3, there is a large disparity between the specific investment costs of the aforementioned projects. Such discrepancy is specific to hydroelectricity power projects. Indeed, while differences between specific investment costs are low for other RE types of projects (solar PV and hybrid power plants), there is often a significant gap between the specific investment costs of various hydro power projects because of the specific costs related to civil engineering and the physical conditions of the projects sites (drop heights, access roads to be built, etc.).

14. Therefore, with such discrepancies from one site/country to another, trying to get an average would provide false results. At this very early stage of the project preparation, the proposed specific investment costs can be accepted for the following reasons:

- The proposed investment costs are within the range of costs that can be observed for benchmark projects and take into account the specific conditions of the proposed sites in Mali;
- The feasibility studies and detailed design documents that will be prepared during the preparation stage of the project will allow fine-tuning the real specific investment costs of the micro-hydro power plants.



15. For the small-hydro power plants, the benchmark shows that the specific investment costs for the SREP Project 3 are lower than the benchmark projects existing in Mali.

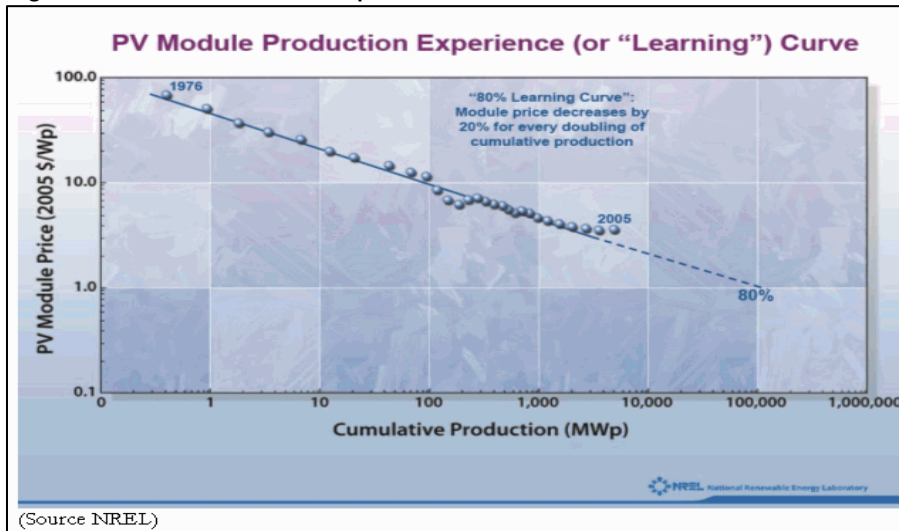


DISCUSSION ON HOW THE PROPOSALS WILL LEAD TO REDUCED COSTS ON THE LONG TERM

Decreasing costs of the solar PV technology

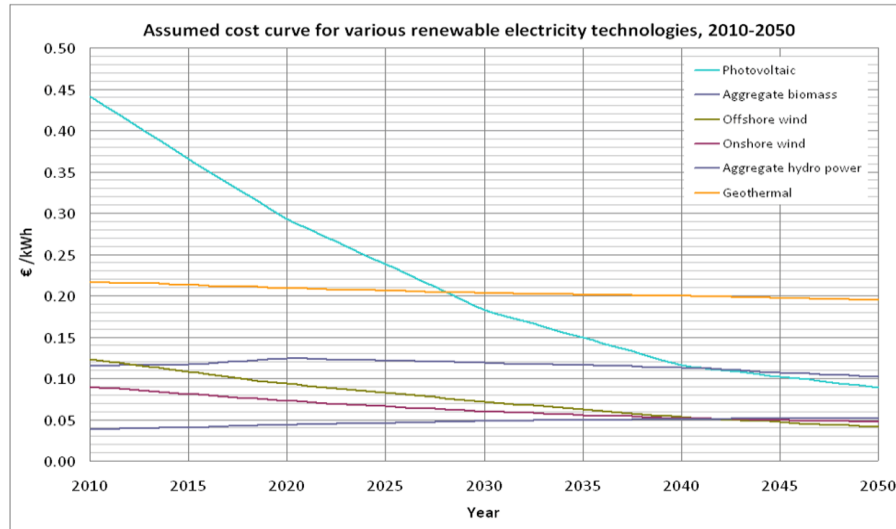
16. The downward trend in the cost of photovoltaics is expected to continue. The proliferation of photovoltaic systems and increasing production capacity in the world largely contribute to the decreasing of costs. Figure 5 below confirms the correlation between decreasing costs of solar PV systems and increasing world production of electricity by solar PV systems, which approximately amounts 15,000 MW annually. The current price per Wp is around USD 1, surpassing NREL optimistic forecasts. For example, the German Association of Solar Energy indicates that, between 2009 and 2011, the installation costs of solar PV systems on roofs went from approximately 3000 euros to 2500 euros, which represents a 15% decrease.

Figure 5: PV Module Production Experience Curve



17. In projects such the SREP Project 1, the costs of solar PV panels account for about 38% of the project total cost. For the rural electrification hybrid power plants, the costs of solar PV panels account for about 20% of the project total cost. Therefore, the continued decrease price of Wp will affect the total project costs of the SREP Projects 1 and 2.

Fig 6: Posited cost curve for various renewable electricity technologies, 2010-2050
Source: SRU 2010, based on Nitsch 2008



Economies of scale

18. With the rising costs of fossil fuels, renewable energies are becoming more profitable and are considered an alternative by the countries of West Africa. Thus, many projects and programs to promote the use of these energies have emerged. Many renewable energy projects are under consideration or construction. To this, is added the SREP program which will contribute a wide dissemination of renewable energy, playing a catalytic effect in the region. This should consequently increase the market size of renewable energies and thereby produce economies of scale in Mali and in the sub-region.

CONCLUSION

19. The initial results of the benchmarking exercise that was carried out to further analyze the costs of the SREP Mali projects confirms that the proposed investment costs for Projects 1 and 2 are below the investment costs of the benchmark projects analyzed. For Project 3, it is acknowledged that the proposed investment costs have been defined after a thorough analysis based on the data available at this stage and that they should be fine-tuned during the preparation of the project.

Project Preparation Grant Request – Project 1

SREP INVESTMENT PROGRAM			
Project Preparation Grant Request			
1. Country/Region:	Mali	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Title:	Solar PV IPP		
4. Tentative SREP Funding Request (in USD million total) for Project at the time of Investment Plan submission (concept stage):	<i>Grant / Loan:</i> USD 12 million The objective of the SREP allocation is to buy down the capital cost of the project that enables the economic and financial viability of the project at acceptable tariff under the Power Purchase Agreement (PPA). Since the financing instrument to be used will have a directly impact on the tariff under the PPA, the instrument will be decided based on the principle of minimum concessionality.		
5. Preparation Grant Request (in USD):	<i>Grant:</i> USD 950,000	<i>MDB:</i> African Development Bank	
6. National Project Focal Point:	National Directorate of Energy Sinalou DIAWARA, Directeur de l’Energie directionenergie@energie.gouv.ml Phone: 20 22 45 34		
7. National Implementing Agency (project/program):	National Directorate of Energy		
8. MDB SREP Focal Point and Project/Program Task Team Leader (TTL):	<i>Headquarters-CIF/SREP Focal Point:</i> Mafalda Duarte	<i>TTL:</i> M. Richard CLAUDET	

9. Description of activities covered by the preparation grant:

The National Energy Directorate (DNE) is in charge of formulating the national energy policy and to cater for the coordination and technical control of regional and sub-regional services as well as relevant services that contribute to implementation of the policy. The DNE will be the executing agency of the proposed Project Preparation Grant (PPG).

Since this will be the first Independent Power Project (IPP) to be implemented in Mali as a result of solicited bid, its implementation is intended to be used as a model for future replication. Therefore, the objective of the PPG is to procure the services of a consortium of experienced transaction advisors to assist through the phases of the Public-Private Partnership (PPP) project cycle. The team of consultants will be composed by a team of suitably qualified and experienced financial, technical and legal advisors with extensive knowledge of the regulatory environment, the licensing of activities needed to govern the electricity sector and enable private sector investment in the generation of solar PV energy.

The work will be divided in two parts:

- (i) Undertake a Comprehensive Feasibility Study for the Project: This will help DNE to determine full project cycle costs, affordability limits, risks and their costs, optimal value-for-money methods of delivery and market sounding.
- (ii) Provide Advisory Services for the PPP Procurement Cycle: The transaction advisors will provide the necessary technical, legal and financial advisory support throughout the different procurement stages up to selection of the Project Developer and PPA negotiations.

10. Outputs:

Deliverable	Timeline
(i) Procurement Plan and Financial Management Procedures Design	May 2012
(ii) Grant Signature	May 2012
(iii) RFP to the selection of the Transaction Advisors	June 2012
(iv) Recruitment Process completed	August 2012
(v) Feasibility Study	November 2013
(vi) Commencement of PPP Procurement Cycle	January 2013
(vii) Finalization of PPP Procurement Cycle	January 2014

11. Budget (indicative):

Expenditures ¹	Amount (USD)
- Consultants	USD 1.000.000
- Contingencies (max. 10%)	USD 100,000
Total Cost	USD 1.100.000
Other contributions:	

¹ These expenditure categories may be adjusted during project preparation according to emerging needs.

• Government	USD 50.000 (in kind staff support)
• MDB ²	USD 100,000
• Others (please specify)	
12. Timeframe (tentative)	
• Submission of pre-appraisal document for SREP Sub-Committee Approval:	<u>Third Quarter 2014</u>
• Expected Board/MDB Management approval date:	<u>Last Quarter 2014</u>
13. Other Partners involved in project design and implementation ³ : Following consultations with various stakeholders and partners, it is expected that the Project will be supported by other Development Financial Institutions and other interested investors. Both IFC and AfDB Private Sector will consider their engagement as co-financiers, up to the amounts possible. These partnerships will be confirmed during appraisal of the project. A mechanism will be sought to pass through any possible carbon credits to the end users. The AfDB, as an implementing agency of this PPG, will on a best effort basis, try to bring other financial resources to cover the costs of the activities mentioned herein.	
14. If applicable, explanation for why the grant is MDB executed: N/A	
15. Implementation Arrangements (incl. procurement of goods and services): In executing the PPG, the procurement and fiduciary function will be ensured by DNE. The funds will be channeled by the AfDB which has a field office in Mali with procurement and financial management staff. Procurement of goods and services will be done according to the AfDB rules (or national procedures if validated by the implementing agency) and under the guidance of the local expert staff.	

² On a best-effort basis.

³ Other local, national and international partners expected to be involved in design and implementation of the project.

Project Preparation Grant Request – Project 3

SREP INVESTMENT PROGRAM			
Project Preparation Grant Request			
1. Country/Region:	Mali	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Title:	Development of Micro/mini Hydroelectricity for Rural Electrification in Mali (PDM-Hydro)		
4. Tentative SREP Funding Request (in USD million total) for Project at the time of Investment Plan submission (concept stage):	<i>Grant:</i> USD 11 million		
5. Preparation Grant Request (in USD):	<i>Grant:</i> USD 2 200 000	<i>MDB:</i> African Development Bank	
6. National Project Focal Point:	National Directorate of Energy Sinalou DIAWARA, Directeur de l'Énergie directionenergie@energie.gouv.ml Phone: 20 22 45 34		
7. National Implementing Agency (project/program):	National Directorate of Energy		
8. MDB SREP Focal Point and Project/Program Task Team Leader (TTL):	<i>Headquarters-CIF/SREP Focal Point:</i> Mme Mafalda DUARTE	<i>TTL:</i> M. Nigambaye NDOUNDO	
9. Description of activities covered by the preparation grant:	<p><i>For the PDM-Hydro Project,</i> the preparatory work includes feasibility/analytical studies as well as capacity building work. Main activities are grouped into two main components:</p> <p><u>Component 1:</u> (i) Series of studies⁴ including feasibility studies and environmental and social impact studies for the planned mini/micro hydroelectricity plants and associated power lines; (ii) preparation of the detailed project design and the bidding documents;</p> <p><u>Component 2:</u> (i) Activities related to the elaboration of the project M&E system; (ii) consultations with local stakeholders to inform them and ensure appropriate preparation of the project, and capacity building on mini/micro hydro for MEE staff and its regional offices.</p>		

⁴ See Terms of Reference pages 45 to 119

10. Outputs:	
Deliverable	Timeline
Grant Signed	June 2012
RFP to the selection of the consultant firm	July 2012
Recruitment Process completed	September 2012
Series of studies available, including feasibility studies, environmental and social impacts analysis, preparation of bidding documents	Mai 2013
Project M&E system set up	April 2013
Local stakeholders informed and supportive of the project	Mars 2013
MEE staff trained on mini/micro hydro	Mai 2013
11. Budget (indicative):	
Expenditures⁵	Amount (USD)
Consultants	USD 1 730 000
Equipment	USD 40 000
Workshops/seminars	USD 150 000
Travel/transportation	USD 80 000
Others (admin costs/operational costs)	USD 100 000
Contingencies (max. 10%)	USD 200 000
Total Cost	USD 2 300 000
Other contributions:	
Government	USD 50 000 (in kind staff support)
MDB ⁶	USD 50 000
Others (please specify)	
12. Timeframe (tentative) <ul style="list-style-type: none"> • Submission of pre-appraisal document for SREP Sub-Committee Approval: <u>Third Quarter 2013</u> • Expected Board/MDB Management approval date: <u>Fourth Quarter 2013</u> 	
13. Other Partners involved in project design and implementation⁷: Following consultations with various stakeholders and partners, it is expected that the Project will be supported by the Islamic Development Bank, the OPEC Fund for International Development, ECOWAS and the UE. These partnerships will be confirmed when the findings of the feasibility studies are available and the project design is finalized. Carbon Funds and private sector operators are also expected to contribute to this project.	
14. If applicable, explanation for why the grant is MDB executed: N/A	
15. Implementation Arrangements (incl. procurement of goods and services): The fiduciary and procurement function will be implemented by MEE through DNE whose capacities will be strengthened in the spirit of the programmatic approach and in line with the national procedures. The funds will be channeled by the African Development Bank which has a field office with procurement and financial management staff in Mali. Procurement of goods and services will be done according AfDB rules (or national procedures if validated by AfDB) under the guidance of the local expert staff.	

⁵ These expenditure categories may be adjusted during project preparation according to emerging needs.

⁶ On a best-effort basis.

⁷ Other local, national and international partners expected to be involved in design and implementation of the project.

Project Brief for the Program Strategic Coordination

TA Project: Program Strategic Coordination

Executed by: DNE

MDB Support: AfDB

Context - Problem Statement

For more information related to the Program Strategic Coordination Mechanism, please see pages 36-39 of the Investment Plan (Volume 1) as well as Appendices 6 and 7 - pages 25 to 46 (Volume 2).

1. During the preparation of the SREP investment plan, it was highlighted that there was a good existing basis to scale-up renewable energies in Mali, but that it needed to be strengthened on various aspects such as: better coordination among national stakeholders working on RE issues, better monitoring and evaluation system for the energy sector, better energy planning, improved human and technical capacities on RE technologies, more appropriate financing instruments at the national level, increased financing available for RE through improved fundraising capacity and better enabling environment for private sector operators, etc. In this context, activities have been planned as part of the Investment Plan to respond to the aforementioned needs.
2. In addition, the SREP Sub-Committee made it clear that the pilot countries should use the SREP funding for activities and projects that go beyond “business as usual”, focusing on improving the enabling environment for RE projects to be scaled-up in the future, putting in place a strong M&E system to monitor results across countries, developing specific tools for knowledge management and lessons sharing that will support the replication of best practices within the country and across countries, etc. Furthermore, the need to consider the SREP as a programmatic approach was strongly highlighted as a key feature of the SREP. Since the requirements of the Sub-Committee are in line with the needs identified in Mali, the GoM has decided to focus part of its investment plan activities on these aspects.
3. In order to better manage these activities, a Program Strategic Coordination Mechanism will be created that will be managed by the National Directorate of Energy and composed of four main components: (i) Strategic Coordination among the three proposed investment projects, (ii) Knowledge Management and Lessons Sharing, (iii) Monitoring and Evaluation, and (iv) Capacity Building (in coordination with projects capacity building activities). Besides, some specific activities will be dedicated to mobilization of additional resources in order to scale-up RE investments in the medium term.

Objective and Proposed Transformation

4. The objective of the Program Strategic Coordination is to increase efficiency for scaling-up RE in Mali, and to ensure that the three proposed investment projects do not operate as separate entities outside the programmatic approach defined by the Government in the light of existing national policies and strategies. That includes several specific objectives such as:
 - Ensure that all projects activities are in line with national policy orientations and strategies and are consistent with SREP guidelines;
 - Promote efficient knowledge management and exchange of best practices (information sharing and lessons learning activities) between projects and with other African countries,
 - Strengthen the monitoring and evaluation system already existing in the energy sector in order to contribute to improving SREP's impacts;
 - Ensure a favourable environment for the rapid expansion of renewable energies, that is, promote a crosscutting approach aimed at building the capacities of all the stakeholders and review elements of the legal, regulatory and institutional framework to encourage private investments;
 - Ensure that SREP activities and investments can be sustained beyond the SREP by improving the capacity of the national stakeholders (especially the private operators), raising more financing, and developing more sustainable and appropriate financing instruments;
 - Make the SREP known in order to raise additional funds and foster the large-scale replication of activities (countrywide and in the sub-region);
 - Ensure that SREP projects are designed and implemented with a view to produce transformational impact and the expected catalytic outcomes in terms of development based on low GHG emissions.

5. The activities built into the Strategic Coordination Mechanism are a key contribution to the transformation of the sector since they will clarify and consolidate the necessary environment for the rapid and efficient implementation of the proposed investments. They should also help to spur and facilitate additional investments in the coming years.

Implementation Readiness

6. The Program Strategic Coordination will be developed in conjunction with the three projects to ensure improved efficiency and complementarity between the programmatic level and the projects level. The institutional, policy and strategic framework will allow for these activities to be prepared in 2012. Some consultancy activities have already started to provide further information for the two components related to capacity building (component 4) and knowledge management (component 2). Additional work will be carried out related to monitoring and evaluation in the coming months (to define baselines, indicators, etc.). The preparation of the Program Strategic Coordination is expected to be done during 2012 for the project to be active early 2013.

Rationale for SREP Financing

7. During the preparation phase of the SREP Investment Plan, the consultations and analytical work carried out showed that many activities needed to be undertaken in order to strengthen the following: monitoring and evaluation in the energy sector, energy planning, capacity building for private sector operators, knowledge management and dissemination of best practices, improvement of the regulatory and strategic framework, etc. These activities are needed to improve the enabling environment in which the projects will be implemented. For such “soft” activities, grant financing is obviously more appropriate than concessional financing. In addition, for some of these activities (monitoring and evaluation, lessons sharing, etc.), the SREP Sub-Committee has some specific requirements (mandatory indicators, specific reporting, etc. as mentioned in the SREP Guidelines) which justify that SREP funding is used to contribute to the implementation of such activities.

Results Indicators

8. The proposed key results indicators include:
 - Number and type of knowledge assets (ex. publications, studies, knowledge sharing platforms, learning briefs, etc.);
 - Number of non-SREP countries that replicate the SREP approach (ex. investment documents citing Malian project experience);
 - Evidence of use of knowledge assets (by energy programs/projects/micro projects);
 - Leverage factor of SREP funding (amount of financing from other sources);
 - Adoption of and implementation of low carbon energy development plans;
 - Enactment of policies, laws and regulations for renewable energy.

Financing Plan

9. The contribution requested to SREP is USD 1.5 million out of USD 4 million. Co-financing is being mobilized by the GoM and other sources of funding such as development partners and trust funds. The SREP funding will be allocated to the components of this Technical Assistance project that are more specifically focused on SREP requirements such as programmatic monitoring and evaluation, and information sharing/knowledge management to support replication of best practices in the sub-region.

Table 1: Tentative Financing Plan (in USD)

Description	Total Cost	GoM	SREP	Other Dev. Partners, Trust Funds, etc.
Component 1: Strategic Coordination	500 000	500 000	0	0
Component 2: Information Sharing and Lessons Learning, Communication	1 500 000	150 000	650 000	700 000
Component 3: Monitoring and Evaluation	500 000	50 000	450 000	0
Component 4: Capacity-building	1 500 000	300 000	400 000	800 000
Total	4 000 000	1 000 000	1 500 000	1 500 000

Preparation Timetable

10. The Program Strategic Coordination is expected to be established in conjunction with the three projects; the Strategic Coordination Mechanism should be up and running before the three projects start in order to ensure that the implementation structure of the SREP Program is in place when the projects' implementation begins.

Table 2: Estimated Project Implementation Timetable

Description	1S 2012	2S 2012	1S 2013	2S 2013	1S 2014	2S 2014	1S 2015	2S 2015
Project Preparation								
Submission to the Board								
Implementation								
Fund raising								

**MDB Request for Payment for
Project Implementation Services (MPIS)**

SCALING UP RENEWABLE ENERGY PROGRAM IN LOW-INCOME COUNTRIES			
MDB Request for Payment of Implementation Services Costs			
1. Country/Region:	Mali/Africa	2. CIF Project ID#:	(Trustee will assign ID)
3. Project Title:	SREP-Mali Program Strategic Coordination		
4. Request for project funding (USDmill.):	At time of country program submission (tentative): USD 1,5 million (SREP allocation only)	At time of project approval:	
5. Estimated costs for MDB project implementation services (USDmill.):	Initial estimate - at time of Country program submission: USD 300.000	MDB: AfDB	
	Final estimate - at time of project approval:	Date: February 16, 2012	
6. Request for payment of MDB Implementation Services Costs (USD.mill.):	<input type="checkbox"/> First tranche: USD 150.000 <input type="checkbox"/> Second tranche: USD 150.000		
7. Project/program financing category:	a - Investment financing - additional to ongoing MDB project <input type="checkbox"/> b - Investment financing - blended with proposed MDB project <input type="checkbox"/> c - Investment financing - stand-alone <input type="checkbox"/> d - Capacity building - stand alone <input checked="" type="checkbox"/>		
8. Expected project duration (no. of years):	5 up to end of the SREP Program		
9. Explanation of final estimate of MDB costs for implementation services:	<i>If final estimate in 5 above exceeds the relevant benchmark range, explain the exceptional circumstances and reasons:</i>		
10. Justification for proposed stand-alone financing in cases of above 7 c or d: This small technical assistance/capacity building project will be co-financed by the Government and some other partners (ECREEE, Trust Funds, etc.).			

Annex 1: Terms of Reference related to the preparatory activities of Project 1

TORs have been submitted to the SREP Sub-Committee members only.

Annex 2: Terms of Reference related to the preparatory activities of Project 3

TORs have been submitted to the SREP Sub-Committee members only.