Republic of Mali
Ministry of Energy and Water

Scaling Up Renewable Energy Program in Mali

(SREP-MALI – INVESTMENT PLAN)

Presentation to the SREP Sub-committee
1st November 2011

Overview of the Presentation

I. Country and Energy sector context

- ✓ Country context
- ✓ Strengths and achievements of the Energy/RE sector
- ✓ Constraints and challenges of the Energy/RE sector

II. The SREP-Mali Program

- ✓ The IP formulation and preparation process
- ✓ Program structure and its investment Projects
- ✓ Program implementation
- ✓ Next steps

Map No. 4231 UNITED NATIONS
October 2004

Department of Peacekeeping Operations
Cartographic Section

Counry context

- Mali covers an area of 1,241,248 km^2

- Malian population is estimated at **14.5 million people,** the majority (about 73%) living in rural areas

- **High demographic growth** (population doubling in 20 years) is a major concern for the country's future

- **Highly variability of the climate** : Projections target an acceleration of rise in average temperature as well as a decrease in the overall amount of rain

- Mali is among the **poorest countries in the world**: the GDP per capita is estimated at US$ 1,251/year

- The objective of the new *Growth and Poverty Reduction Strategy* is: "Make Mali an emerging country and an agricultural power with good quality of life for its population". To achieve this goal, the energy sector must be strongly developed, especially the RE sub-sector.

Context of the Energy sector

Achievements of the Malian energy sector

POLICY ACHIEVEMENTS

The GoM's **vision and targets** have been formulated in key policy papers. These are:

- National Energy Policy
- National Strategy for the Development of Renewable Energy
- National Strategy for the Development of Biofuels
- National Energy Sector Policy Letter
- Framework for Rural Electrification

INSTITUTIONAL ACHIEVEMENTS

Mali has created and strengthened **a number of public institutions** that play key roles in the development of RE**:**

- National Energy Directorate (DNE)
- Mali Agency for Household Energy and Rural Electrification (AMADER)
- National Research Center for Solar and Renewable Energy (CNESOLER))
- National Agency for the Development of Biofuels (ANADEB)
- EDMsa
- Commission for Electricity and Water Regulations (CREE)

Context of the Energy sector

Achievements of the Malian energy sector (…)

TECHNOLOGICAL ACHIEVEMENTS

A number of technologies are being exploited with successful results (hydroelectricity , solar photovoltaic systems , hybrid systems, etc.)

ENERGY ACCESS EXPANSION ACHIEVEMENTS

Major results were achieved especially in the rural electrification program carried out by AMADER with the support of the Rural Electrification Fund are the following:

- ✓ About 62,282 off-grid connections
- ✓ About 632,960 new beneficiaries of electricity services
- ✓ About 840 public institutions, 191 schools and 151 health centers have been provided with off-grid electricity access

Over the past 5 years, the electricity access rate in rural areas went from 1% to 15%

Context of the Energy sector

Achievements of the Malian energy sector (…)

Mali's energy sector has many assets that will favour the development of RE:

- Existence of **core documents** governing the sector and subsector (policies and strategies)
- Opening of the energy sector to **private operators**
- Opening of the national electricity grid **to neighboring countries**
- Confirmed **political willingness** concerning for the development of the sector

The Government has also made significant progress **in sector reforms,** such as the restructuring of the national utility Energie Du Mali, and the opening of the electricity subsector to competition.

It thus contributes to **increase the effectiveness of the energy sector** as a whole and accelerates the withdrawal of the public sector from operations and expanding service coverage

Context of the Energy sector

Constraints and challenges of the Malian energy sector

- **High dependence on imported fossil fuel** (100% imported): imports are increasingly growing, because of the demands of a rapidly growing population and of economic growth

- **Pressure on biomass for energetic demand** (= 80% of total energy consumption), with connected problems related to health of rural population and overexploitation of natural resources

- **Weak electrification rates**, especially in rural areas (national rate: 27.1 %; 55% in urban areas and 15% in rural areas)

- **Regulatory framework needs to be completed for a full involvement of the private sector** in the RE sector

- **Impact of climate variability/change on electricity supply** (a situation that is likely to worsen in the future)

Context of the Energy sector

INSTITUTIONAL CONSTRAINTS

- Weak planning processes and coordination among agencies concerned with RE development
- Incomplete framework for public-private partnerships in the sector

ECONOMIC AND FINANCIAL CONSTRAINTS

- Weak national financial institutions
- High up-front cost of RE technologies
- Inadequate financial incentives to attract the private sector
- Weak mobilization of funds from international sources for larger scale RE development

TECHNICAL CONSTRAINTS

- Limited capacity of human resources in the sector (inadequate number and training)
- Limited technical studies and impact assessments focused on RE for electricity generation
- Weak systems for M&E, planning and knowledge management related to RE

SOCIAL CONSTRAINTS

- Without subsidy schemes, poverty of Malian rural households leads to difficult affordability, access and use of modern RE

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The SREP-Mali Program

The formulation of the SREP-Mali IP is the result of **a participatory and inclusive approach** including consultations with various stakeholders.

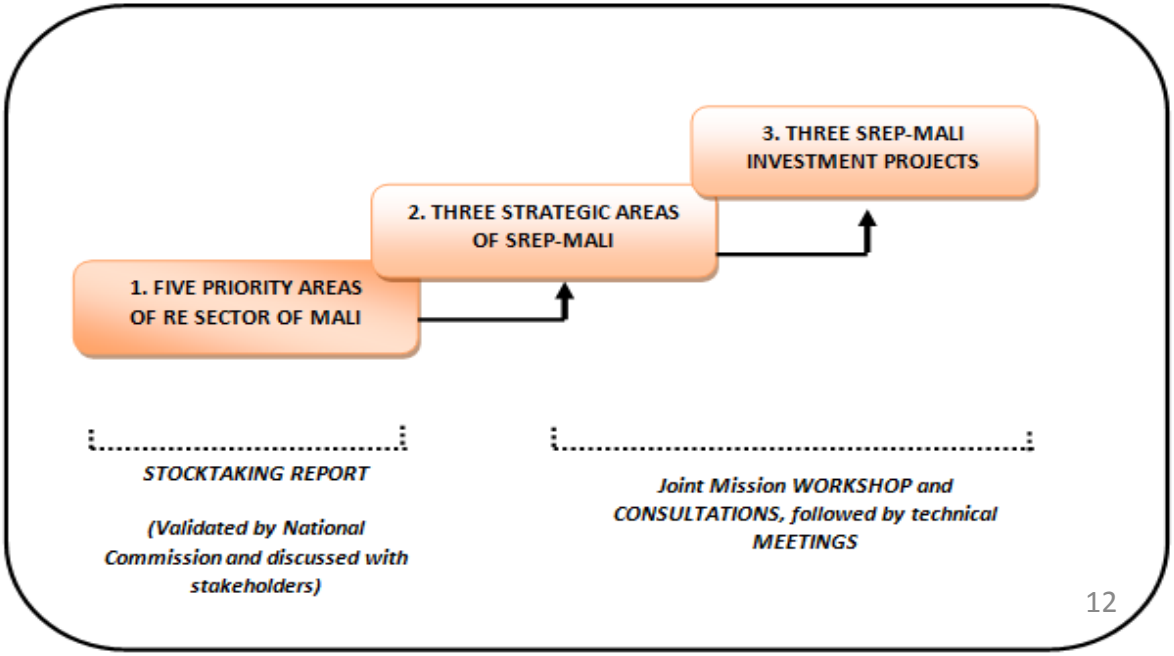
This process, made possible by the leadership of the Government of Mali, represented by the Ministry of Energy and Water (MEE),was based on:

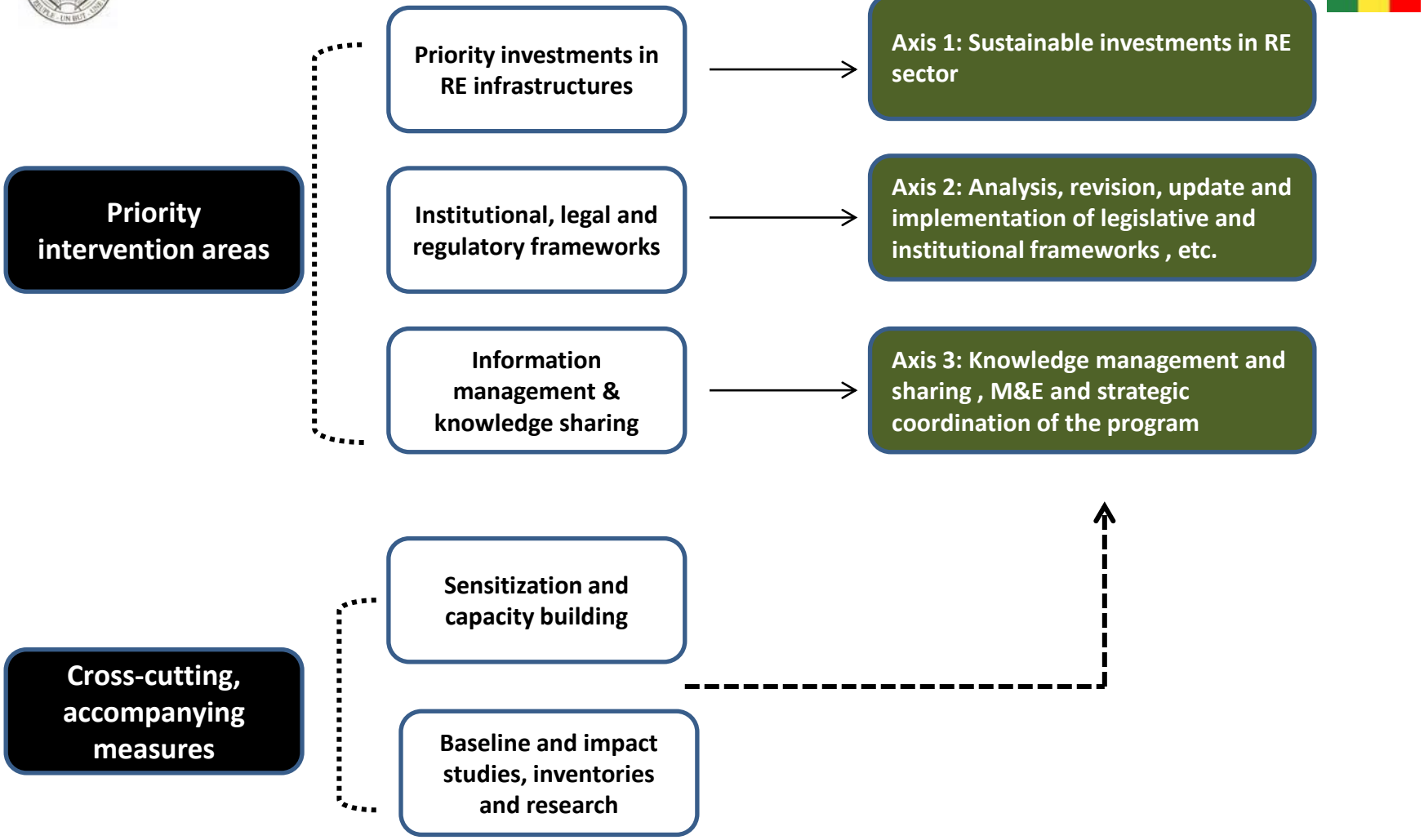
- The results of an **in-depth stocktaking exercise**
- The close **collaboration** between MEE and MDBs
- The conclusions and recommendations of the numerous national consultation **workshops** and different **meetings** with main national stakeholders
- The posting of all relevant documents on a dedicated **Website** (during the preparation phase of the IP)

The SREP-Mali Program

This participatory process led to the identification of:

- **5 priority areas for the energy sector** (particularly RE), to be considered as the pillars of the overall, long-term vision
- **3 SREP strategic axes**, aimed at translating the vision within the specific context and modalities of the SREP-Mali, in line with the National Strategy for the Development o
- **3 investment projects**




Priority intervention areas
Priority investments in RE infrastructures
Institutional, legal and regulatory frameworks
Information management & knowledge sharing
Axis 1: Sustainable investments in RE sector
Axis 2: Analysis, revision, update and implementation of legislative and institutional frameworks , etc.
Axis 3: Knowledge management and sharing , M&E and strategic coordination of the program
Cross-cutting, accompanying measures
Sensitization and capacity building
Baseline and impact studies, inventories and research
Strategic axes of SREP-Mali

The SREP-Mali Program

Objective of the SREP-Mali

The main objective of SREP-Mali is ***to develop renewable energies on a large scale, to effectively contribute to poverty reduction and sustainable development in Mali for the benefit of its population***.

This objective will be achieved through an **integrated approach** based on the comparative advantages of the stakeholders and with a focus on the role of the **private sector** through dynamic public-private partnerships.

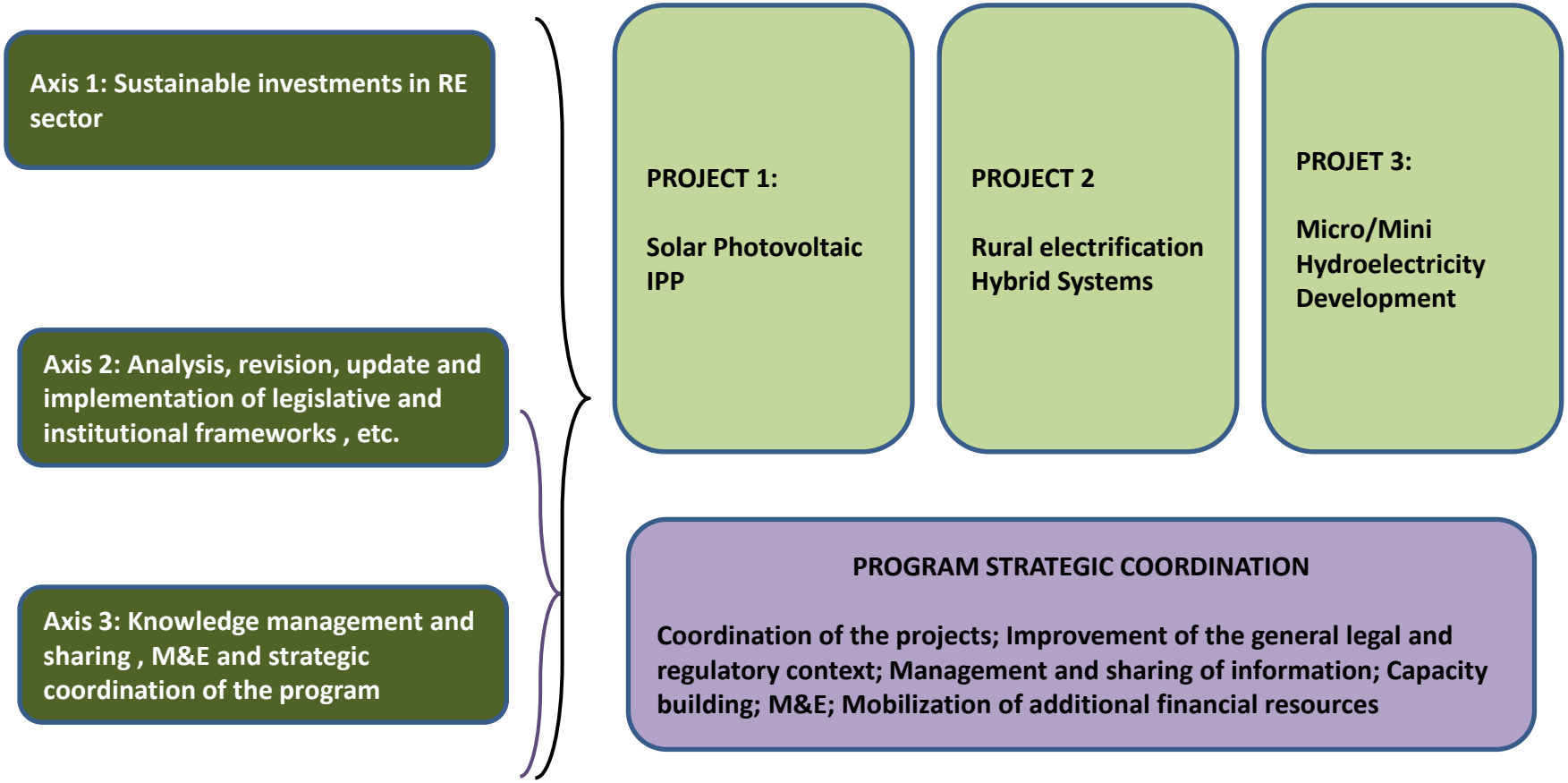
The SREP-Mali Program

Guiding principles for defining the investment projects

- Careful **choice of RE technologies** (depending on Malian context and potential)
- Repartition between **on-grid and off-grid** access to electricity (to improve equitable access to energy)
- Equitable repartition between **public and private sectors** (in light of their respective comparative advantages)
- Selection of **'soft' activities** to address major constraints and increase the transformational impact of proposed investments

The SREP-Mali Program

From strategic axes to investment projects



Project 1: Solar Photovoltaic IPP **Implemented by: Private Sector** **Co-financing: AfDB Private Sector and IFC**	**Budget: US$ 60 million (including US$ 12 million SREP)** **Additional Installed Capacity: 20MW**

The project will increase the contribution of renewable energy sources to the national sector. It will pave the way for the development of future public-private partnerships in the country. The project will be structured around two components:

- ***Investment***: Capital expenditures to implement an overall additional generation capacity of around 20MW (utility-scale) structured as an Independent Power Producer (IPP) in the field of solar energy, with a cost recovery tariff – maximization of capacity through solar photovoltaic technology.

- ***Capacity building and Project Management***:
  - Provision of technical assistance, mainly in the following areas: Bidding process, resource assessment, stakeholder consultations, legal corporate arrangements, access to carbon revenues, fiscal regime, and cooperation between Energie Du Mali and the National Agency for the Promotion of private Investments.
  - Ensuring the coordination of all the activities of the project, including activities to manage the Monitoring & Evaluation system and to manage/share information.

The SREP-Mali Program

Project 1: Expected Transformational Impacts

- Strengthening national capacities and the regulatory framework for a greater involvement of the private sector in RE
- Paving the way for the development of future IPPs in the country
- Promoting enabling environment for the development of solar photovoltaic

Project 2: Rural Electrification Hybrid Systems **Implemented by: AMADER (with CNESOLER and ANADEB)** **Co-financing: WB**	**Budget: USD 57.9 million (including USD 15.5 million SREP)** **Additional Installed Capacity: 4.5MW**

The objective of this project is to support the GoM's efforts to increase access of isolated low income populations to basic energy services. The project will contribute to increase the contribution of RE systems for electricity production and distribution in off-grid areas by an additional 4,5 MW, increase the number and capacity of large scale RE systems for electricity services (Solar PV and bio-fuel) in existing thermal and new mini-grid systems in rural areas.

The project will be structured around two components:

- ***Investment***:
  - Capital expenditures will, on one hand, increase renewable energy capacity in the existing isolated grids,
  - Gradually build new isolated RE hybrid systems (about 35 localities and energy service companies)
  - In addition, energy efficiency and demand side management measures, and individual solar systems, and modern lighting products will be promoted in some localities

- ***Capacity building and Project Management***
  - institutional strengthening of AMADER and its public-private partnerships
  - capacity building and training activities for rural populations, local private sector companies/initiatives and AMADER's partnership initiatives, including CNESOLER, ANADEB, Lighting Africa, and local micro-finance institutions to facilitate access to short and medium term loans

The SREP-Mali Program

Project 2: Expected Transformational Impacts

- Reduced costs of electricity generated in rural areas through a standardized approach to scale up hybrid RE systems
- Strengthening and expansion of the energy service portfolio of local private sector businesses in rural areas according to rural customer's needs and preferences, including energy efficiency, off grid solar lighting, operation and maintenance services, etc.
- Improved viability of existing fossil fuel mini grid systems in rural areas (reduced operation and maintenance services costs due to fuel savings, reduced environmental impacts)
- Promote job creation and productive energy uses in isolated rural areas through the combination of investments, technical assistance, capacity building and training

Project 3: Micro/Mini Hydro Development **Implemented by: DNE (with AMADER and EDM SA)** **Co-financing: AfDB**	**Budget: USD 136.5 million (including USD 10 million SREP)** **Additional Installed Capacity: 14.6MW**

The project will increase the share of renewable energy in the national system of electricity production and distribution with a focus on rural electrification through mini/micro hydroelectricity. Thus, it will contribute to meeting a growing demand for electricity in rural areas both for household consumption and for local productive activities (commerce, agriculture, etc.). The project will include two components:

- ***Investment:***
  - Construction of four micro-hydropower plants and their associated transmission/distribution lines
  - Construction of two mini-hydropower plants and their associated transmission/distribution lines
  - Feasibility studies for the construction of these facilities.

- ***Capacity building and Project Management :***
  - Strengthening an enabling environment conducive to the development of micro/mini-hydropower plants in Mali.
  - Building institutional, regulatory, technical and operational capacities of all participating stakeholders
  - Ensuring the coordination of all the activities of the project, including Monitoring & Evaluation activities.

The SREP-Mali Program

Project 3: Expected Transformational Impacts

- Improved access of rural populations to modern and affordable electricity services
- Impact on the economy of rural household and communities through the creation of productive activities
- Prevent substantial amount of GHG emissions
- Reduced health risks (especially for women and children) due to indoor air pollution and domestic accidents
- Improved livelihoods and improved irrigated agriculture
- Creation of jobs, both in the RE sector and through the creation of new businesses
- General socio-economic development in targeted localities with a focus on energy and gender aspects

Implementation

Program Institutional Architecture

The institutional framework will allow both the **overall coordination** of the program and the i**mplementation** of its investment projects

Steering committee

- The Steering Committee will ensure general strategic orientation, supervision and implementation of the program, and assess progress
- It will ensure that program implementation complies with SREP principles, in light of the National Energy Policy and in the context of the *National Strategy for the Development of Renewable Energy*

Consultative Committee

It will allow stakeholders to be better informed about program progress and to express their opinions / concerns about the program implementation modalities.

Coordination Unit

A Coordination Unit, located at the National Directorate of Energy, will be responsible for the general Program coordination. It will implement the decisions of the Steering Committee, especially related to knowledge sharing and communication, monitoring and evaluation, cross-cutting capacity building and fundraising.

Implementation

Role of the Private Sector

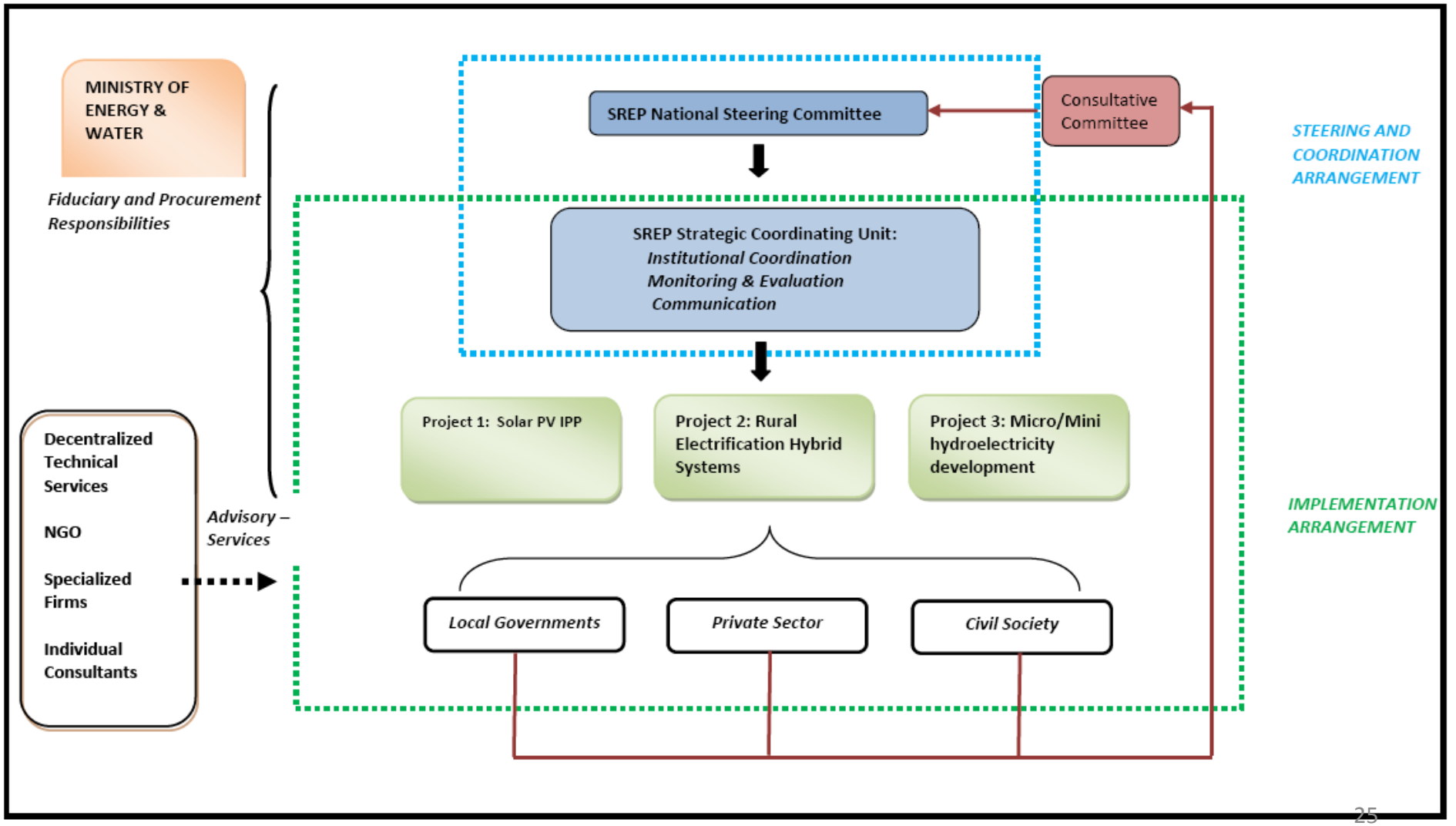
➢ **Project 1** will be fully implemented by a private sector operator, in accordance with the proposed structure.

➢ **Project 2** will be implemented through public-private partnerships between AMADER and private operators, according to the national rural electrification framework

➢ In the context of **Project 3**, the private sector will also play a key role in the construction and operation/maintenance of hydropower plants

A range of specific activities will be carried out to build the capacities of private operators (both within the framework of the 'capacity building' component of the projects and within the context of the Strategic coordination mechanism).

Implementation



Implementation

SREP-Mali Tentative Budget (first phase)

Project	GoM	SREP	AfDB	AfDB PS	WB	IFC	Private Sector	Other Sources	Total
Solar PV IPP	-	12.0	-	15.0	-	15.0	18.0	-	**60.0**
Hybrid Rural Electrification Project	3.1	15.5	-	-	16.2	-	5.0	16.2	**57.9**
Mini/Micro Hydro. Project	10.0	10.0	25.0	-	-	-	15.0	76.5	**136.5**
Strategic Coordination Unit	1.0	2.5	-	-	-	-	-	0.5	**4**
Total	**14.1**	**40.0**	**25.0**	**15.0**	**16.2**	**15.0**	**38.0**	**93.2**	**258.4**

Implementation

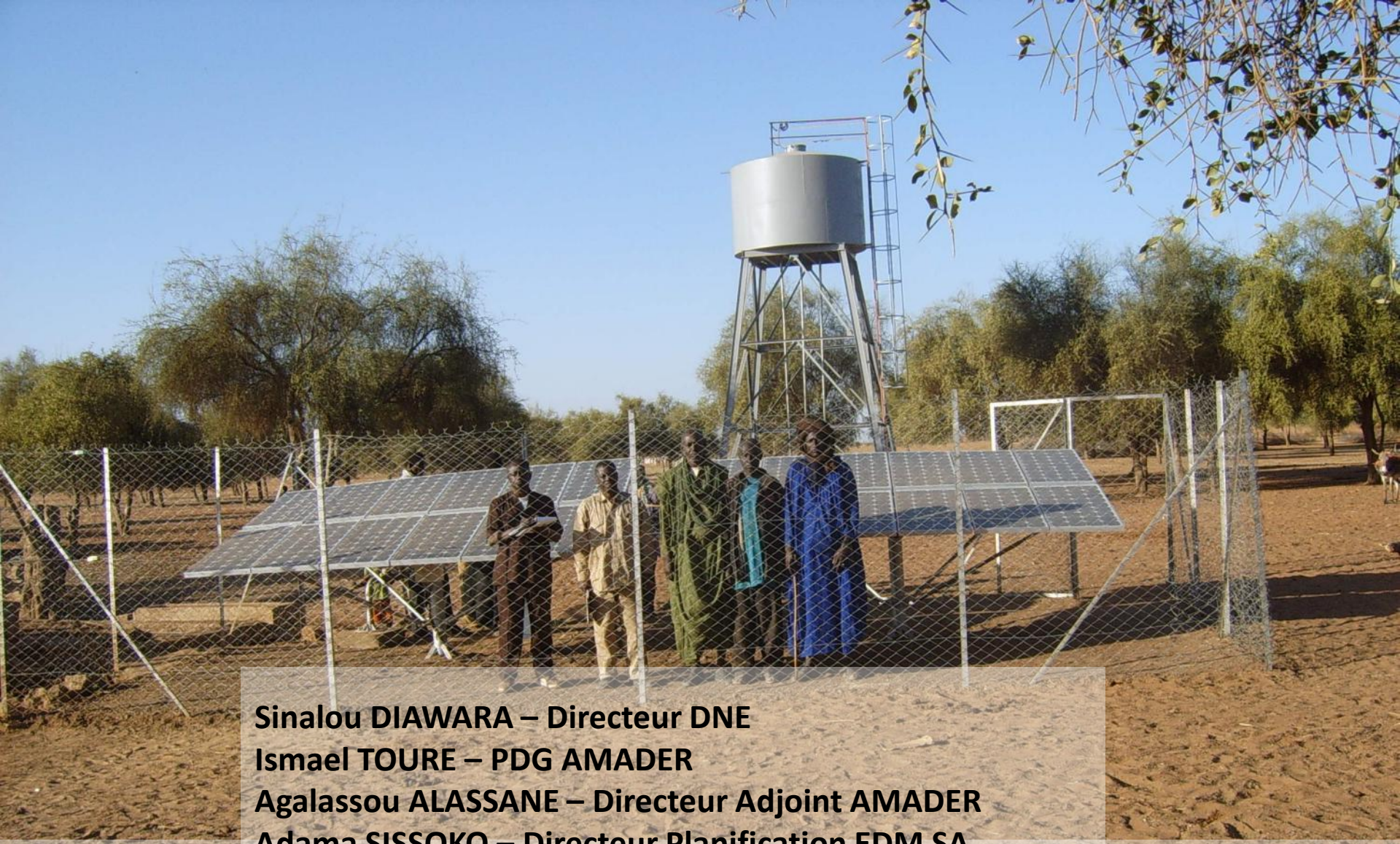
Some expected outcomes

- Increased electricity supply from RE → + 39.1MW
- Increased share of RE (%) in the production of EDM SA → 10% of electricity produced from RE
- Increased rural and urban population with access to RE (→ about 350,000 persons)
- Creation of jobs (for men and women) from massive RE adoption→ about 3,000 jobs (during the program)
- Implementation of M&E and knowledge management/sharing systems

Note : Challenges are posed by the range of indicators proposed by the SREP Guidelines

Next steps

Activities	Date	Lead
Hold regional consultations	Nov/Dec 2011	SREP National Commission
Hold specific meetings with private sector and national banking institutions	Nov/Dec 2011	SREP National Commission
Process the preparation grants and start the project preparation activities	Nov/Dec 2011	MDBs and executing agencies
Hold a round table for information and co-financing + ongoing fundraising	January 2012 – until end of 2012	SREP National Commission



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Thank you for your attention !

Implementation

Program Coordination Mechanism

Sub-Component	Major Activities
Sub-Component 1 : Overall program coordination	• Carry out the general coordination of SREP-Mali, by enhancing collaboration between all stakeholders; • Prepare the annual Program work plans, and support the preparation of the work plans of the projects; • Harmonize the approach with the national energy policy and the growth & poverty reduction strategy; • Ensure synergy between the three investment projects; • Initiate and organize crosscutting analytical work in support of various investment projects
Sub-Component 2: Knowledge sharing and communication	• Disseminate and communicate the results of SREP at local, regional, national and international level; • Support the management of all the knowledge acquired by the SREP Program • Ensure linkage with the CIF Admin. Unit and prepare regular reports on Program implementation for the SREP sub-committee; • Conduct targeted studies, organize consultative workshops and support dialogue spaces; • Participate in various fora organized by the CIF or other partners to share experience with other pilot countries.
Sub-Component 3: Monitoring and evaluation	• Operate the SREP monitoring/evaluation system and inform the various indicators of the log-frame; • Ensure the implementation of the Environmental and Social Management Master Plan and continuously assess the social, economic and environmental impacts of all Program activities • Harmonize the logical framework of the Malian SREP Program with the general logical framework of SREP/CIF to provide feedback to the CIF and facilitate information consolidation.
Sub-Component 4: Cross-cutting capacity building	• At institutional level: (i) support to the revision of the institutional framework of the RE sector and the mandate of national institutions (to ensure its consistency), and building their capacity (including carbon financing); (ii) support to the revision of arrangements (legal, legislative, regulatory, tariff, tax, etc.) governing the subsector; (iv) adaptation of RE technologies to the Malian context and deepening of studies in resource mapping; (v) support to the development of a strong planning system for the energy sector. • At the level of private operators: (i) support to technical managerial training (human and financial resources, administration, business plan development, marketing, environmental impact of investments, etc.; (ii) understanding of regulatory frameworks governing the subsector (legal, legislative, regulatory, etc.) • At the level of banking institutions: (i) needs assessment, (ii) development of specific lending products to renewable energy sources; (iii) sensitization and training of executives; etc.