INTERNATIONAL SUPPORT FOR DOMESTIC ACTION

Country Case Study on Ghana

by

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Presentation Format

1. Summary of phase 1:

- Objectives
- Policy Description
- Domestic Barriers and Drivers

2. Phase II

- Objectives
- Initial results: Phase II including highlights from Accra workshop
- International support for enhancing scale, scope and speed of implementation,

2.0 Summary of Policy Description

Overall Policy:

- Removing the barriers for RE development and build local capacity; Strategic National Energy Plan by ***Energy Commission***
- Enhance Energy Efficiency through DSM – ***Energy Foundation***

Examples:

- Achieve at least 10% RE in overall energy mix by 2020- ***overall policy (Ministry of Energy)***

- Increase thermal plant efficiency – ***Power Utility Company***

- Energy efficiency in energy intensive industries by ***Energy Foundation***
- Energy Audits
- Power factor enhancement projects

(d) Energy efficiency labelling and standards by ***Energy Foundation and Standards Board.***

(e) RE law Establish policy, legal and regulatory frameworks to promote grid-connected and off-grid systems- ***Energy Commission and Public Utilities Regulatory Commission (PURC)***

3.0a Summary of Domestic Barriers

(a) Policy Barriers:

- Lack of coherent and comprehensive policy.
- Absence of all-inclusive rural electrification policy
- Existing electricity structure is a barrier to grid-connected RE systems

(b) Absence of RE Legal and Regulatory framework:

- Lack of appropriate legal and regulatory frameworks, poor pricing framework
- Lack of basic regulations: Access pricing rules and pricing framework, technical standards
- Lack of knowledge on regulation of mini grids

(c) Financial:

- High up-front capital requirements, high interconnection costs, lack of financing structures for RE and EE projects
- Lack of access to long-term credit

3.0 Summary of domestic barriers – Cont'd.

(d) Market risk:

- For mini-grids, inability of rural customers to pay the tariff
- Lack of technical and business skills
- Inability to get community involvement for mini-grids

(e) Weak domestic capacity of local stakeholders

(f) Lack of appropriate technical standards for RE and EE systems

(g) Lack of information and stakeholder awareness

(h) Limited scope of operation of Energy Foundation, agency responsible for energy efficiency activities

3b. Domestic Drivers

- Creating an ***enabling domestic environment*** e.g. regulatory and legal frameworks, human and Institutional capacity building etc.
- Development of technology performance standards
- Need to develop innovative financing schemes
- Academics, policy makers, business community
- Public awareness and establishment of information centres

4.0 Actions and Mechanisms for International Support

(a) Technical Assistance:

(i) To ensure that the legal, policy and regulatory frameworks are not limited to only conventional energy sources.

(ii) Existing gap: lack of model Power Purchase Agreement for small RETs (<10MW)

(iii) Re-definition of country's rural electrification policy

(iv) Technical Standards

(b) Capacity Building: Human and Institutional

(i) Financial Institutions: Training in infrastructure project finance, project risk allocation, credit risk analysis, review of PPAs. etc.

(ii) Support to Apex Bank and participating **129 rural and community banks**

(iii) Support to the **private sector and the ESCOs** for business development.

(iv) Policy-makers and regulators

(v) Technical capacity of local entrepreneurs. Special technical training on installation and maintenance

4.0 Actions and Mechanisms – cont'd

(c) Financial Support to RE & EE.

- Taking advantage of Ghana's well-developed financial sector
- Currently: ***25 banks*** with a total of over ***300 branches country-wide.***
- Rural and community banks scheme: Apex Banks and participating rural banks

What then is the problem?

- Perceived riskiness of RE projects
- Unwillingness of banks to provide long-term loans for RE and EE projects
- Lack of experience and understanding in carrying out credit risk analysis, reviewing PPAs, infrastructure project finance etc.
- Inability of the private sector and ESCOs to present bankable projects
- Loan repayment periods not suitable

4.0 Actions and Mechanism Cont'd

(d) Bilateral policy implementation:

- IDA partial risk guarantee for large scale grid connected systems
- World Bank's Clean Technology Fund (CTF)
- Community Development Carbon Fund (CDCF) under CDM.
- Taking advantage of government's existing micro-financing scheme to support mini-grid and stand-alone systems
- Support for extension of existing ***15-20 months*** loans repayment period by rural banks, to at least ***5 years***.

(e) Innovation centre and centre of excellence idea:

- to bridge the gap between ***academic research and policy-making***
- Enhance technology "leapfrogging"
- Increase information dissemination
- Educate builders and architects on RE and EE concepts in new buildings

4.0 Actions and Mechanisms

(f) Stakeholder awareness and information dissemination on:

- Costs
- Benefits
- After-sales service opportunities
- Assistance to builders on EE in building design

(g) South-South and North-South cooperation; pilot projects-learning by doing; twinning arrangements etc.

5.0 Indicators to measure intermediate outcomes in the following areas, linked to barriers:

(a) Development of RE and Regulatory Framework

(b) Increased access to energy services

(c) Access to financing

(d) Number of RE and EE projects

(e) Outreach programmes

(f) Capacity building

6.0 Set of proposed indicators for intermediate outcomes

Objective	Intermediate Indicators
RE policy, legal and regulatory framework	•Policy for IPPs •Regulatory framework, model PPA, Access rules, tariff Structure for RE
Access to Energy Service	•Installed capacity (MW) of RE systems •Annual production (MWh) •Load Factor •Share of RE in total electricity generation mix •Number of RE projects
Access to financing	•Number of RE financed by government •Amount of commercial/private financing (US$) •Amount of bilateral or multilateral financing (US$)
Role of ESCOs	•Number of ESCOs, which assemble, sell, install and maintain RETs

6.0 Set of intermediate Indicators for Grid Connected Systems Cont'd

Objective	Intermediate Indicator
Outreach programmes	•Number of outreach programmes
Capacity building	•Number of programmes for technicians and engineers •Number of programmes for financing institutions, regulators and policy-makers
Private Sector Participation	•Number of private entrepreneurs in RE and EE.

7.0 Matrix for monitoring intermediate outcomes

Indicator	Baseline, 2008	2009 – 2013	Reporting Frequency	Agency Responsible
RE policy framework	Yes		Annual	Regulators, Ministry of Energy (MOE)
RE as part of rural electrif. policy	NIL		Annual	MOE
RE legal and Regulatory framework.	NIL		Annual	Energy Commission (EC)
Total installed capacity (MW)-Grid Connected	NIL		Annual	EC, MOE

7.0 Matrix of indicators for intermediate outcomes – cont'd

Indicators	Baseline 2008	2009 – 2013	Reporting Frequency	Agency Responsible
Number of grid - connected RE.	NIL		6 months	MOE, EC
Annual prod. (MWh) of grid -based RE	NIL		Annual	MOE, EC
% share of grid-conn. RE in generation mix	NIL		Annual	MOE, EC
Load Factor of grid-connected RE	NIL		Annual	EC, MOE

7.0 Matrix of indicators for intermediate outcomes – cont'd

Indicator	Baseline, 2008	2009 – 2013	Reporting Frequency	Agency Responsible
Number of mini and Pico hydro installed (< 10 MW)	NIL		Annual	MOE, EC
Number of biomass projects	NIL		Annual	MOE, EC
Total installed capacity (MW), off-grid – system: Mini-hydro Biomass Wind Solar PV	 NIL NIL NIL 220((KW)		 Annual	 EC, MOE
Number of ESCOs			6 months	Energy Foundation
Number of ESCO projects	5		6 months	Energy Foundation

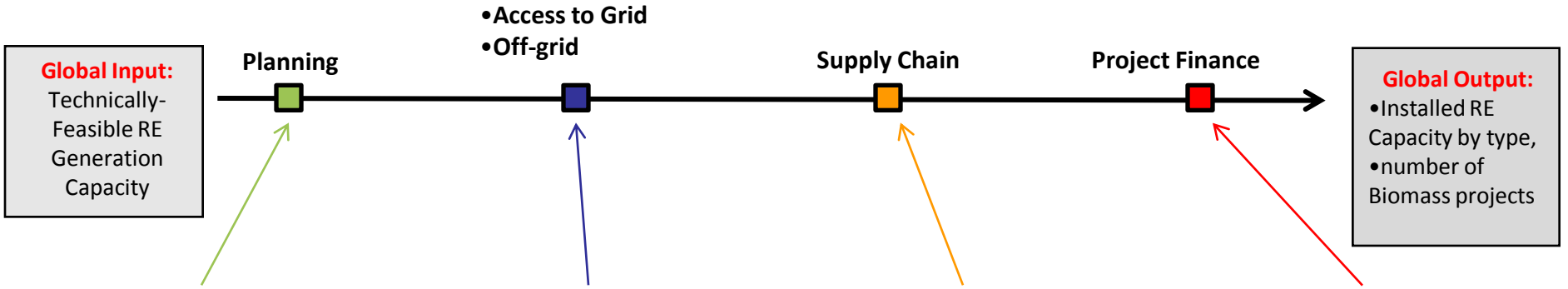
7.0 Matrix of indicators for intermediate outcomes – cont'd

Indicator	Baseline, 2008	2009 – 2013	Reporting Freq	Agency Respon.
No. of outreach programmes for RE and EE	NIL		6 months	MOE, EC, Energy Foundation
No. of staff in financing institutions trained in RE and EE	NIL		6 months	MOE, EC, Energy Foundation
No. of policy-makers and regulators trained	NIL		6 months	EC, PURC, MOE
No. of technicians and engineers trained	NIL		6 month	EC and Energy Foundation
No. of Private developers in RE and EE	NIL		Annual	MOE, Ministry of Finance

7.0 Matrix of indicators for intermediate outcomes

Indicator	Baseline, 2008	2009 – 2013	Report. Freq	Agency Resp.
Financing: •Govt. (US$) •Rural banks •Commercial/ private (US$) • Bilateral or multilateral (US$)	 NIL NIL NIL NIL			Ministry of Energy, Ministry of Finance, Central Bank.
Amt. of CO_2 reduction (tons)				Environmental Protection Agency (EPA), EC, EF.

Indicators along the Renewables Deployment Pipeline: Example from Ghana



Indicator	Agency Responsible
RE Policy framework?	Energy Commission (EC), Ministry of Energy (MOE)
RE as part of rural electrification policy?	MOE
RE legal and regulatory framework?	EC, PURC
Number of ESCOs	Energy Foundation
Number of ESCO projects	Energy Foundation

Indicator	Agency Responsible
Total installed capacity (MW) - grid connected, mini-grid.	EC, MOE
Number of grid-connected RE installations	EC, MOE
Annual capacity grid-connected RE (MWh)	EC, MOE
Average load factor of grid-connected RE	EC, MOE

Indicator	Agency Responsible
No. of outreach programmes for RE	EC, MOE, Energy Foundation
No. of staff in financing institutions trained in RE	EC, MOE, Energy Foundation
No. of policymakers/regulators trained in RE	EC, MOE, PURC
No. of technicians and engineers trained in RE	EC, Energy Foundation
No. of private developers in RE	MOE, Ministry of Finance

Indicator	Agency Responsible
Financing from government	MOE, Ministry of Finance, Central Bank
Financing from rural banks	MOE, Ministry of Finance, Central Bank
Financing from commercial / private institutions	MOE, Ministry of Finance, Central Bank
Bilateral or multilateral financing	MOE, Ministry of Finance, Central Bank

Acronyms: EC – Energy Commission
MOE – Ministry of Energy