



CHINA-GHANA SOUTH-SOUTH COOPERATION ON RENEWABLE ENERGY TECHNOLOGY TRANSFER

RE FAIR

10th – 12th October, 2017

Accra International Conference Centre

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PRESENTATION OUTLINE

- Project Summary
- Project Outcomes
- Management Arrangement
- 2017 Work Plan
- Project Challenges, Lessons and Recommendations

Project Title	China-Ghana Renewable Energy Technology Transfer (RETT) Project
Sector	Renewable Energy, South-South Cooperation
Location	Ghana, China
Executing Agency	United Nations Development Program (Ghana and China)
Implementing Partners	1) Ghana Energy Commission under Ministry of Power 2) China ACCA 21 under Ministry of Science and Technology
Project Duration	4 Years
Project Budget	2,720,000.00 USD
Source of Funding	DANIDA

PROJECT SUMMARY

Project Summary

As part of Denmark's focus on South-South Cooperation, to enable coherent cooperation between China and countries in Africa, UNDP China has been funded to develop the project in collaboration with the Energy Commission in Ghana, the Ministry of Science and Technology in China and the UNDP Country Offices in Accra and Beijing.

The project is facilitating exchange of expertise and technology between China and Ghana, thereby building on China's unique development experience.

- Funding from Danish Government: 2,720,000 USD (including 1,764,000 USD for Ghana; 956,000 USD for China)
- Start date: September 2014
End date: December 2018

PROJECT OUTCOME

This objective for be achieved through the implementation of the following four:

Outcomes and Results:

1. Ghana has an enabling environment in place for the transfer, production and regulation of the use of Renewable Energy Technologies in Ghana.
2. Access to and use of relevant Renewable Energy Technologies (RETs) increased in Ghana
3. China's has strengthened capacity for South-South Cooperation in relation to RET transfer
4. Project management and coordination structures established

OUTCOME 1:

OUTPUTS

ACTIVITIES

Outcome 1: Ghana has an enabling environment in place for the transfer, production and regulation of the use of Renewable Energy Technologies in Ghana.

Output 1.1: Strategy and policies for enhanced use, regulation and promotion of RET in Ghana in place.

Activity 1.1.1: Review Chinese and Ghanaian RE policies and strategies to identify capacity building gaps and solutions to address them

Activity 1.1.2: Draft and submit to Parliament the Renewable Energy Master Plan (REMP)

Activity 1.1.3: Launch and disseminate the REMP

Output 1.2: Barriers to effective transfer of Renewable Energy Technologies removed.

Activity 1.2.1: Conduct in depth analysis of regulatory, technical, social and other barriers in Ghana and China currently hindering effective and widespread absorption of RET.

Activity 1.2.2: Develop a roadmap to remove or reduce barriers to effective RETT in Ghana

OUTCOME 2:

OUTPUTS

ACTIVITIES

Outcome 2: Access to and use of relevant Renewable Energy Technologies (RETs) increased in Ghana.

Output 2.1: Appropriateness of selected technologies (either biogas, improved cook stoves, solar PV, biogas power generation and mini hydro) for transfer demonstrated.

Activity 2.1.1: Selection and adaptation of appropriate RETs to be transferred

Activity 2.1.2: Setting up of facilities to receive, test, demonstrate and exhibit equipment and publish performance results

Output 2.2 Increased use of Renewable Energy Technologies in Ghana supported through capacity building and financing mechanisms

Activity 2.2.1: Support to training facilities within existing institutions for increased capacity building on RETs

Activity Results 2.2.2: Develop institutional financing mechanisms to up-scale RETT in Ghana

Activity 2.2.3: Develop business models to support private sector involvement and public – private partnerships in RETT in Ghana

OUTCOME 3:

OUTPUTS

ACTIVITIES

Outcome 3: China's has strengthened capacity for South-South Cooperation in relation to RET transfer

Output3.1: Knowledge base and China – Ghana networks for South-South Cooperation on technology transfers created

Activity 3.1.1: Map, update and share China's experience and approaches to technology selection and transfer

Activity 3.1.2: Organize exchange visits to share knowledge on the Chinese and Ghanaian contexts and build foundations for technology transfers

Activity 3.1.3 Share knowledge and establish knowledge networks on Renewable Energy

Output 3.2: Mechanisms for promoting RETT from China to Ghana established

Activity 3.2.1: Develop roadmap for Renewable Energy Technology Transfer from China to Ghana

Activity 3.2.2: Seek institutional financing to support technology transfer from China to Ghana

Activity 3.2.3: Set up a Chinese stakeholders alliance for China – Ghana RETT

Activity 3.2.4: Conduct training of Chinese stakeholders in relation to RETT

Activity 3.2.5: Support Ghana's adoption capacity for Renewable Energy Technology Transfer

OUTCOME 4:

OUTPUTS

ACTIVITIES

Outcome 4: Project management and coordination structures established

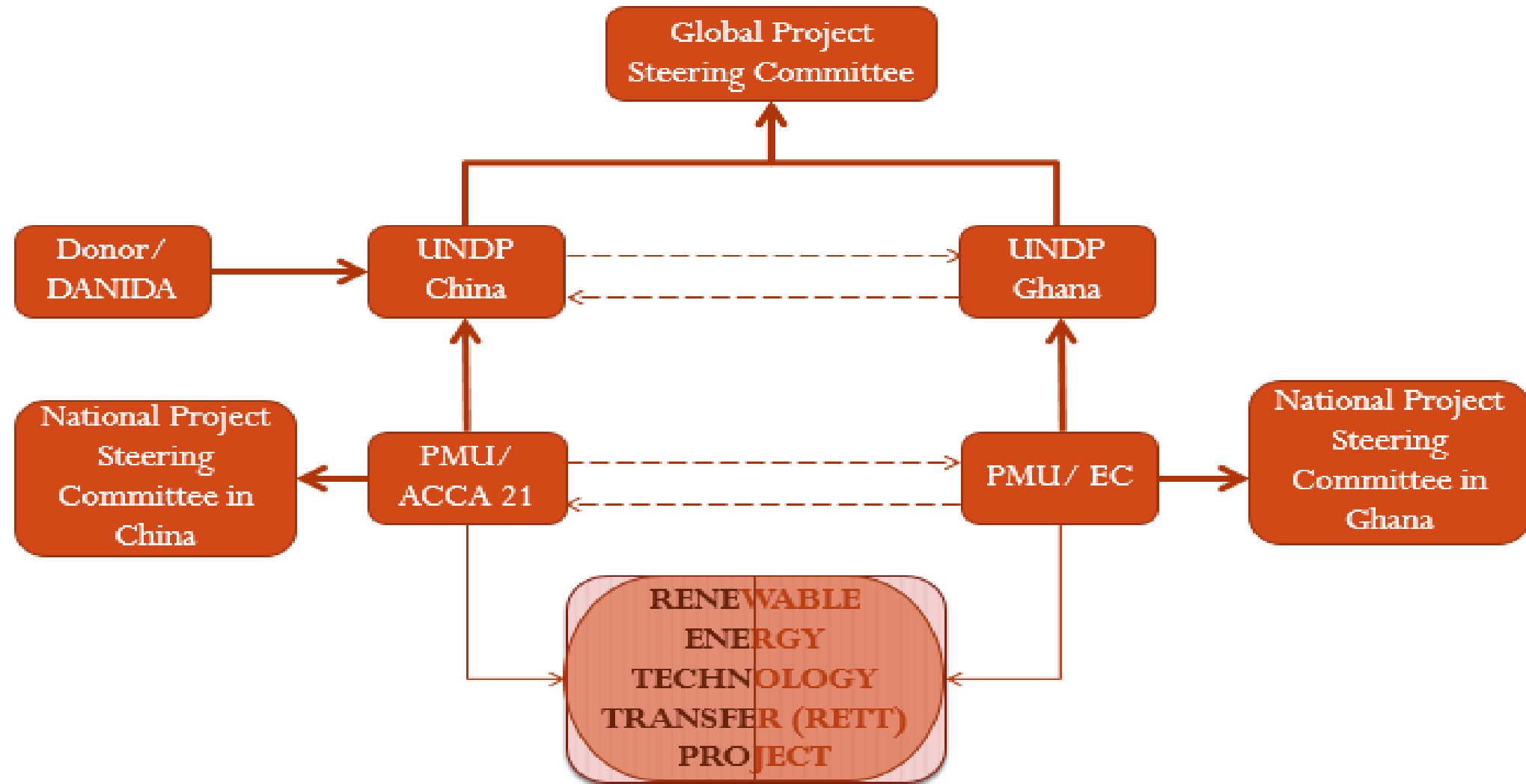
Output 4.1 Project management structures established

Activity 4.1.1: Set up PMUs in Ghana and China

Activity 4.1.2: Set up PSCs in Ghana and China

Activity 4.1.3: Support project implementation

MANAGEMENT ARRANGMENT





**PROGRESS REPORT:
KEY RESULTS FROM 2015 - 2017**



RENEWABLE ENERGY MASTER PLAN

OUTCOME 1: OUTPUT 1.1: STRATEGY AND POLICIES FOR ENHANCE USE, REGULATION AND PROMOTION OF RET IN GHANA IN PLACE

What was done:

Development of REMP

- REMP developed based on Ghana's National RE Strategies



OUTCOME 1: OUTPUT 1.1: STRATEGY AND POLICIES FOR ENHANCE USE, REGULATION AND PROMOTION OF RET IN GHANA IN PLACE

What was done: Review of REMP

- Multi-stakeholder consultation for REMP review



OBJECTIVES OF REMP

The specific objectives of the REMP are to:

- Set clear targets for the development of the various renewable energy resources in Ghana
- Define actions and strategies to be undertaken to achieve the targets
- Prioritise the renewable energy technologies
- Propose sustainable financing models, incentives and support systems
- Define institutional roles for the implementation of the masterplan
- Identify risks and mitigation measures for ensuring sustainability.

The process is being financed by DANIDA under the China-Ghana Renewable Energy Technology Transfer (RETT) project.

APPROACH

The Renewable Energy Masterplan for Ghana is developed by a taskforce comprising Ministry of Power, Energy Commission, the National Development Planning Commission and Energy Center.

The taskforce conducted an extensive desk and field study of past and on-going renewable energy initiatives and programmes to identify success factors and implementation gaps or failures and how gaps identified could be addressed to ensure sustainability of interventions. The taskforce consulted with a wide range of stakeholders (both local and international) throughout the process.

Renewable Energy Masterplans of other countries such as China were reviewed and lessons learnt were considered in the development of this masterplan.



OUTCOME 1: OUTPUT 1.1: STRATEGY AND POLICIES FOR ENHANCE USE, REGULATION AND PROMOTION OF RET IN GHANA IN PLACE

What was done:

Development of REMP

- 2-day and 3-day (June) taskforce meeting to review draft report and incorporate feedback
- Core Group met in April and May to review REMP and incorporate feedback.
- Focused group meeting for feedback: think tanks; and views from Spanish Embassy, AFD, USAID/WA KOICA. GIZ and IFC.
- 2-day Stakeholder workshop for feedback from wider forum; presentations, recommendations, comments, and discussions



OUTCOME 1: OUTPUT 1.1: STRATEGY AND POLICIES FOR ENHANCE USE, REGULATION AND PROMOTION OF RET IN GHANA IN PLACE

- the Executive Secretary, the Director Renewables of the Energy Commission and the Project Coordinator travel to China to obtain feedback on the REMP from Chinese experts.



BARRIERS TO RE TECHNOLOGY TRANSFER

OUTCOME 1: OUTPUT 1.2: BARRIERS TO EFFECTIVE TRANSFER OF RENEWABLE ENERGY TECHNOLOGIES REMOVED

What was done: Identification to barriers to RET Transfer

- Desk review and surveys on barriers to RET transfers



OUTCOME 1: OUTPUT 1.2: BARRIERS TO EFFECTIVE TRANSFER OF RENEWABLE ENERGY TECHNOLOGIES REMOVED

What was done: Identification to barriers to RET Transfer

- Report of Barriers to RET Transfer

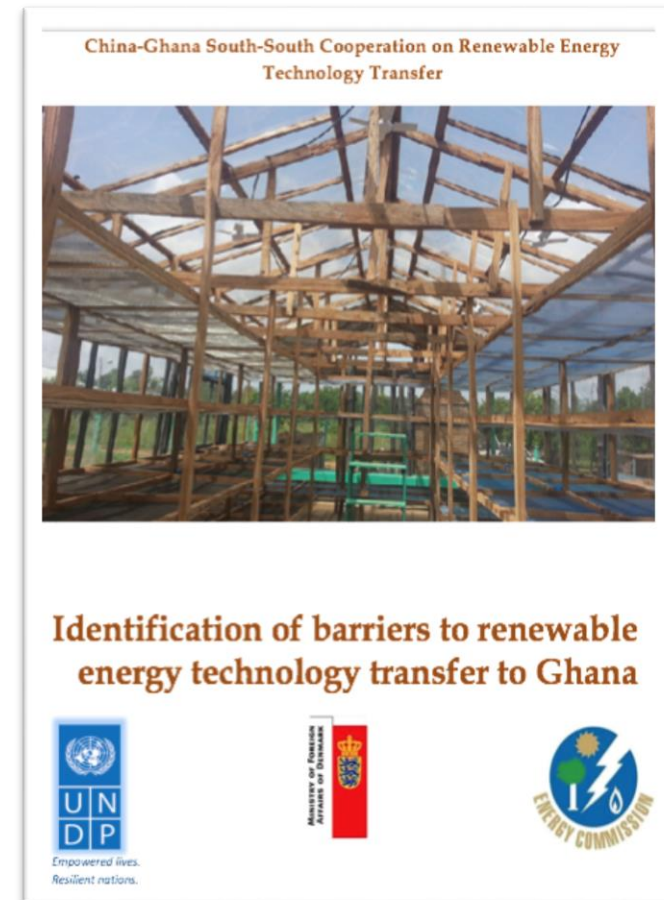


IDENTIFIED BARRIERS AND MITIGATION ACTION

Barriers	Mitigation actions
Political	<ol style="list-style-type: none">Expedite the development of RE master planOperationalize the RE fund under RE lawDevelop national programmes on prioritised RETsDevelop/adopt standards, codes and labels for biogas plants, SWH, solar dryers, wind mills and other RETs.
Economic	<ol style="list-style-type: none">Provide financial support for RET investment in prioritised sectors
Technical	<ol style="list-style-type: none">Strengthen existing training facilitiesBuild capacity of researchers and trainers in RETsConduct capacity building programmes for entrepreneurs and local enterprisesArrange networks and partnerships for local enterprises with counterparts in other countries
Socio-cultural	<ol style="list-style-type: none">Run cost benefit campaign on the use of RE productsInclude RETs in technology catalogue

PROVIDING CLARITY IN A COMPLEX ENVIRONMENT

- Comprehensive report produced
- Findings fed into development of REMP



<http://www.energycom.gov.gh/index.php/renewables/renewable-energy-technology-transfer-project>



POLICY REVIEW AND GAP ANALYSIS

OUTCOME 1: OUTPUT 1.2: BARRIERS TO EFFECTIVE TRANSFER OF RENEWABLE ENERGY TECHNOLOGIES REMOVED

What was done: RE policies reviewed; gaps and solutions identified

- Workshops/ seminars conducted to identify solution to address identified gaps



OUTCOME 1: OUTPUT 1.2: BARRIERS TO EFFECTIVE TRANSFER OF RENEWABLE ENERGY TECHNOLOGIES REMOVED

What was done: Development and Launch of Roadmap

- Engagement of stakeholders to launch the Identified strategies and solutions to remove barriers

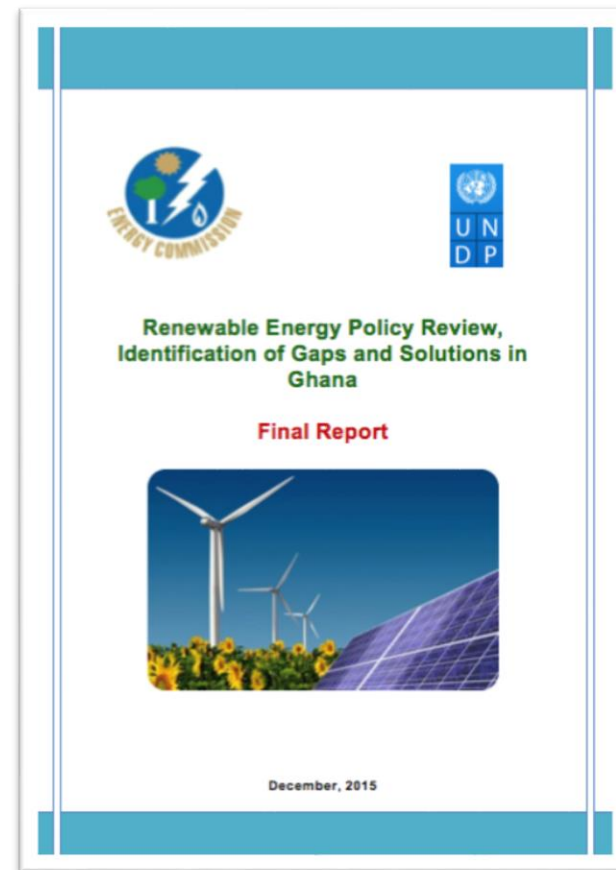
OUTPUT


Utilized some of the key findings in the development of a Masterplan for Renewable Energy

Report has been published on the Energy Commission Website:

<http://www.energycom.gov.gh/renewables/renewable-energy-technology-transfer-project>

Hardcopies to be printed before the end of year





RE TECHNOLOGY SELECTION AND DEMONSTRATION PROJECT IDENTIFICATION

OUTCOME 2: OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (BIOGAS, IMPROVED COOK STOVES, SOLAR AND WIND POWER, AND MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Development of selection criteria for RE technologies

- Engagement of consultants and contractual services



OUTCOME 2: OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (BIOGAS, IMPROVED COOK STOVES, SOLAR AND WIND POWER, AND MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Review of selected technologies and adaptation to Ghana's requirements

- ACCA2A conducts mission trips to Ghana?



OUTCOME 2 – OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (EITHER BIOGAS, IMPROVED COOK STOVES, SOLAR PV, BIOGAS POWER GENERATION OR MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Baseline Survey

- The PMU visited a number of RE installations to document their contribution to the energy sector;
- 20MW BXC project site,
- Halo Solar Manufacturing Company
- , Solar pumping installations in the Northern region
- Improved cook stove for institutions.
- Baseline survey finalized



OUTCOME 2 – OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (EITHER BIOGAS, IMPROVED COOK STOVES, SOLAR PV, BIOGAS POWER GENERATION OR MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done:

Seminars

- Workshop for solar pumping by Deng Ghana, Ltd.; 2-acre farm utilizing solar for drip irrigation
- Meeting on cook stoves; RETT to utilize the work done by GACC
- Technical Committee meeting to support project development at BPA

Consultancies

- TOR for business model developed, published for proposals, proposals reviewed and contract awarded



OUTCOME 2: OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (BIOGAS, IMPROVED COOK STOVES, SOLAR AND WIND POWER, AND MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Pre-feasibility studies in selected demonstration facilities

- Engagement of local consultants



OUTCOME 2 – OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (EITHER BIOGAS, IMPROVED COOK STOVES, SOLAR PV, BIOGAS POWER GENERATION OR MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Field visits

- Tsatasdu minihydro project: site suitable for demonstration; commitment secured
- Biogas: waste treatment and power generation in Western, Easter and Ashanti regions; pig farms, poultry farms, artisanal oil mills and Juaben Oil Mill
- Visit to BlueSkies and Pinora to assess potential for biogas generation; willing to explore
- Improved cookstoves: authorities of schools eager to cooperate
- Solar energy: Subinja Irrigation cut off for energy debt; GIDA confirmed collaboration



OUTCOME 2: OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (BIOGAS, IMPROVED COOK STOVES, SOLAR AND WIND POWER, AND MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Stakeholder discussions o business model development in Ghana

- Engagement of local consultants
- B2B workshops for Ghanaian and Chinese counterparts



OUTCOME 2 – OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (EITHER BIOGAS, IMPROVED COOK STOVES, SOLAR PV, BIOGAS POWER GENERATION OR MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done:

- **Workshop with research organization to discuss pre-feasibility studies and refine report;**
- **Compiled list of Chinese technologies and developed criteria for transfer**
- **([http://energycom.gov.gh/files/Catalogue%20\(Other%20Technologies\).pdf](http://energycom.gov.gh/files/Catalogue%20(Other%20Technologies).pdf))**
- **Presentations forwarded to ACCA21 for feedback**



OUTCOME 2 – OUTPUT 2.1: APPROPRIATENESS OF SELECTED TECHNOLOGIES (EITHER BIOGAS, IMPROVED COOK STOVES, SOLAR PV, BIOGAS POWER GENERATION OR MINI HYDRO) FOR TRANSFER DEMONSTRATED.

What was done: Demonstration Project

- Visit to China to plan implementation of demo projects and meet technology developers in April
- In June, PMU linked BPA to INSHP to discuss project development;

OUTCOME 2: OUTPUT 2.2: INCREASED USE OF RENEWABLE ENERGY TECHNOLOGIES IN GHANA SUPPORTED THROUGH CAPACITY BUILDING AND FINANCING MECHANISMS

What was done: Provision of testing and demonstration equipment

- Engagement of contractual services

OUTCOME 4 – OUTPUT 4.1: PROJECT MANAGEMENT STRUCTURES ESTABLISHED AND IMPLEMENTATION SUPPORTED

What was done:

UN Resident Coordinator Visit

- The UNDP together with the Energy Commission hosted the UN Resident Coordinator, and UNDP Resident Representative Nicolas Rosellini and the Deputy Country Director of China, Niels Knudsen.
- To engage with project partners to learn from their experience with south-south cooperation and receive updates on the RETT Project.
- Visited a solar irrigation project in the Northern Region which was supported by UNDP in 2014 and a mini-grid solar/wind facility at an Island Community close to Ada.

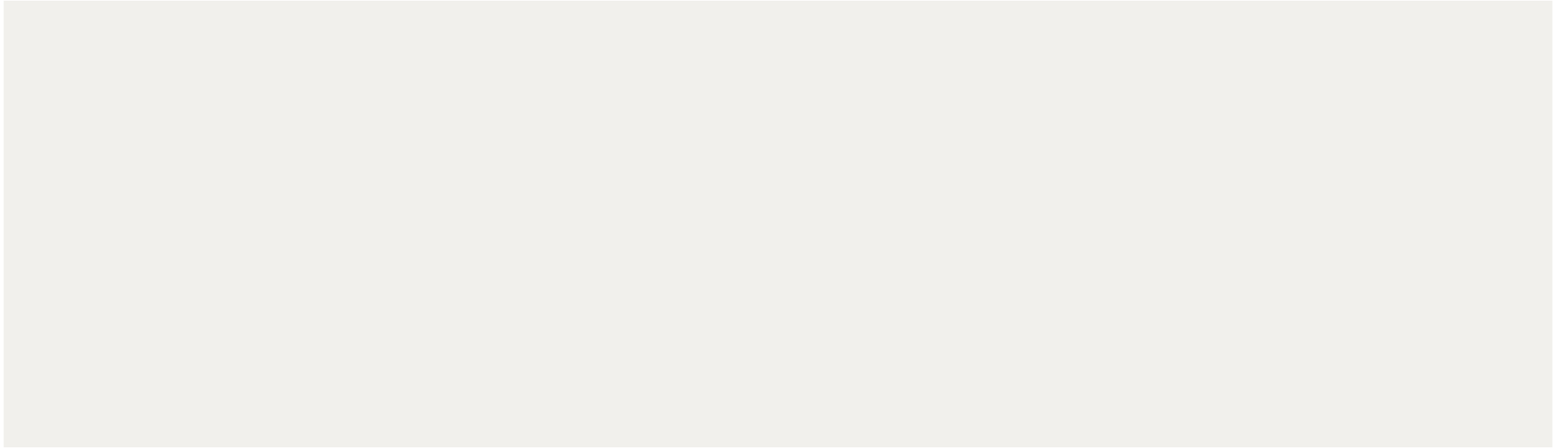
2nd Global Steering Committee Meeting

- teleconferencing in May with China and Zambia on project progress and discussion of concerns

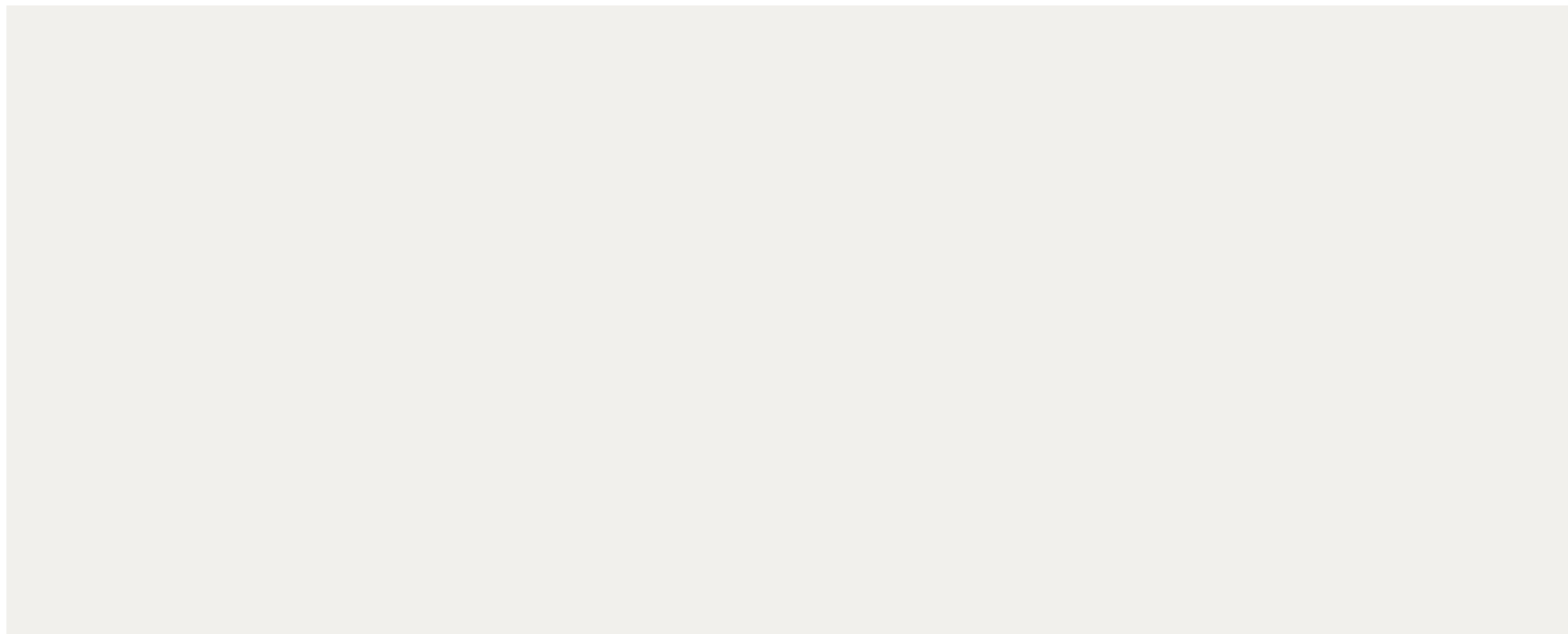
2017 WORK PLAN

Output	Activities	Estimated Budget (USD)
Outcome 1: Ghana has an enabling environment in place for the transfer, production and regulation of the use of Renewable Energy Technologies in Ghana.		
Output 1.1	Activity Results 1.1.2: Draft and submit to Parliament the Renewable Energy Master Plan (REMP)	57,000
	Activity Result 1.1.3: Launch and disseminate the REMP	58,000
Output 1.2	Activity Result 1.2.2: Develop a roadmap or reduce barriers to effective RETT in Ghana	9,000
		124,000
Outcome 2: Access to and use of relevant Renewable Energy Technologies (RETs) increased in Ghana.		
Output 2.1	Activity Result 2.1.2: Facilities to receive, test, demonstrate and exhibit equipment and publish performance results	441,050
	Activity Result 2.2.1: Support to training facilities within existing institutions for increased capacity building on RETs	60,000
	Activity Result 2.2.3: Develop business models to support private sector involvement and public-private partnerships in RETT in Ghana	90,000
		591,050
Outcome 4: Project management and coordination structures established		
	Activity Result 4.1.1: Set up PMUs in both Ghana and China	5,000
Output 4.1	Activity Result 4.1.2: Set up PSCs for Ghana -China project	5,000
	Activity Result 4.1.3: Support project implementation	68,000
		78,000
TOTAL 2017 BUDGET		788,050

PROJECT IMPLEMENTATION CHALLENGES



LESSONS LEARNED AND OPPORTUNITIES





RECOMMENDATIONS AND PROPOSED ACTIONS



**THANK YOU FOR YOUR ATTENTION
QUESTION TIME**