

Annual Project Report

February 12, 2015

Basic Project Information

Project Titles:

China-Ghana South-South Cooperation on Renewable Energy Technology Transfer;

and

China-Zambia South-South Cooperation on Renewable Energy Technology Transfer

Project Duration	4 year (2014-2018)
Reporting Period	2014
Total Approved Project Budget	Total budget: USD 5,344,400 USD 2,720,000 for the China-Ghana RETT USD 2,624,400 for the China-Zambia RETT
Participating UN agencies	UNDP China
Implementing Partners/ National collaborating agencies	China: Administration Center for China Agenda 21 (ACCA21), Ministry of Science and Technology Ghana: Energy Commission Zambia: Ministry of Mines, Energy and Water Development
International collaborating agencies	UNDP Ghana, UNDP Zambia
Cost-sharing third parties	The Royal Danish Government
UNDP Contact officer	Zhang Weidong
Project website	N.A.

Executive Summary

Following the signing of the project document in August in China and September in Ghana and Zambia, the work on this project in 2014 covered preparation for the full implementation, including signing off the Project Document, setting up of the Project Steering Committee (PSC) and the Project Management Unit (PMU) and the recruitment of PMU staff, design of Terms of Reference (TOR) for the consultancy services.

Given the complexity for implementation of the Project, a regular communication system, having two regular conference calls a month via Skype, has been set up and maintained between the parties involved, including UNDP China, ACCA21 (the PMU) in China, UNDP Ghana, Energy Commission and the PMU in Ghana while within UNDP China, ACCA21, UNDP Zambia, Ministry of Mines, Energy and Water Development in Zambia respectively.

Key milestone events under the project in 2014 include:

- ✓ Signing of both project document in China
- ✓ Signing in Ghana
- ✓ Signing in Zambia
- ✓ PMOs in Ghana and China established
- ✓ South-South Cooperation Center within ACCA21 of MOST established
- ✓ Project Inception workshop in China
- ✓ Regular conference calls between Ghana and China and Zambia and China established

This report covers the work progress of inception period from August 19 - December 12, 2014.

1. Background

Development Context

In 2011 the United Nations Secretary-General launched the Sustainable Energy for All (SE4All) initiative, which aims at 1) Ensure universal access to modern energy services, 2) Double the rate of improvement in energy efficiency and 3) Double the share of renewable energy in the global energy mix by 2030.

Ghana is one of the 10 fast track countries under the SE4ALL Initiative and it has influenced the energy sector targets defined by the Government of Ghana: 1) Universal access to electricity by 2020, 2) Increase share of renewable energy by 10% in 2020 and 3) 50% of the population having access to liquid petroleum gas (LPG) by 2015. Zambia on the other hand has just recently started its engagement with the SE4ALL

Although energy access in Ghana is high compared to regional standards, there is a high disparity between urban and rural areas, and expanding current levels of energy generation is not expected to solve energy poverty, particularly in rural areas. Thus developing clean, secure, and sustainable energy sources to meet growing energy demand is a key energy challenge for Ghana and in this connection access to energy technologies is a critical requirement.

Early efforts to increase energy efficiency as well as the contribution of renewable energy to Ghana's energy mix show considerable progress, however, there are several gaps including: 1) a lack of a clear regulatory framework and a lack of regulatory and planning capacity of the main government institutions; 2) poor business development capacity; 3) lack of service providers for renewable energy projects; 4) inadequate use and leverage of technical and research institutions; and 5) cultural constraints – e.g. many rural communities still regard renewable energy an inferior forms of energy.

The above mentioned issues are echoed in Zambia where only 23% of the country's population has access to electricity, and where the disparity between urban dwellers and the rural population access to energy is striking (50 % and 3% respectively). Zambia' Rural Electrification Master Plan (REMP) calls for 50% of rural households to be electrified by 2030. This however will still render large parts of rural Zambia non-connected to the national grid, and here renewable energy in connection with

off-grid and mini-grid approaches, will offer the most promising potential solution to address, not only the energy access concern, but also related concerns associated with the lack of energy access such as 1) deprivation of education opportunities; 2) lack of access to business opportunities; 3) low agricultural productivity; 4) poor health care; and 5) Deforestation and degradation due to use of wood and charcoal for fuel - issues which are just as relevant for Ghana.

In the last 60 years China has experienced unprecedented economic growth. The country has undergone a deep structural transformation, creating significant levels of employment and translating GDP growth into tangible improvements in living conditions of its people.

Diversification of energy resources, especially transitioning to renewables, is a critical aspect of China's continued development, where investments in renewable energies have grown with an average of 80% per annum since 2004. Overall, the generation of electricity from renewable energies has increased from nearly 0% of the total energy produced in 1993 to 0.3 % in 2013. Considering the sheer scale of China, this nominally small increase has made China a global leader in several sectors of green technology production:

- China's small hydropower capacity is roughly equal to all small hydro capacity in the rest of the world combined. Hydro energy accounts for 17.4% of China's energy mix in 2012.
- In 2010 China's Solar Photovoltaic (PV) companies held 50% of the global market and nine of the fifteen top solar PV panel manufactures worldwide is located in China.
- China's installed solar water heating capacity alone accounts for 80% of global installations and China is the world's leading manufacturer of solar water heaters.

In connection with above, the cooperation between China and countries in Africa, including Ghana and Zambia, is part of the general foreign assistance provided by China, which among others is guided by general agreements and declarations made in connection with the China-Africa Cooperation Forum or Forum on China-Africa Cooperation (FOCAC). At the fifth Ministerial Conference of the Forum on China-Africa Cooperation (FOCAC) in Beijing in July 2012 the Ministers of Foreign Affairs and the Ministers of Economic Cooperation of China and 50 African countries formulated and adopted the *Beijing Action Plan* of the Fifth Ministerial Conference of the Forum on China-Africa Cooperation (2013-2015) together with the Chairperson of the African Union (AU). The Beijing action plan underlines 2 key areas for future cooperation i.e. *4.6 Energy and resource cooperation and 5.6 Climate Change and Environmental Protection*

As part of Denmark's focus on South-South Cooperation, to enable coherent cooperation between China and countries in Africa, in particular around the promotion of the UN's Sustainable Energy for All (SE4ALL) initiative, UNDP China has been funded to develop two projects, one with Zambia and one with Ghana. Both aim to ensure a more holistic transfer of renewable energy technologies from China to Africa.

Project Objectives and Strategy

Ghana

The project addresses Ghana's need to increase universal energy access. The project aims to effect off-grid community-based electrification, increase the share of renewable energy and promote the productive uses of energy. – At the same time, the project supports broader socio-economic and environmental objectives, most notably poverty reduction through employment generation as well as action on climate change mitigation.

The project will create an enabling environment - in Ghana for absorbing new technology and in China for providing it appropriately. The project also promotes the production of renewable energy technologies in Ghana with a strong focus on private sector development and inclusion.

Zambia

The project will include support to address regulatory impediments for promoting renewable energy in Zambia, development of financing options for renewable energy, establishment of demonstration and testing facilities to showcase renewable energy technologies and building capacity, and direct financing of a pilot project for rural electrification in Zambia to highlight the opportunities for rural development through technology transfer and South-South Cooperation. The project will involve a wide range of stakeholders from the private sector to research institutions and create communities of practice in the sphere of renewable energy in Zambia and China that will support project implementation and continued cooperation beyond the project.

The proposal is consistent with Zambia's national energy policy and, by seeking to address rural electrification, supports the achievement of the goals set out in Zambia's Rural Electrification Master Plan, which sets critical development goals that have been prioritized by the Zambian government. The project will also contribute to implementation of Zambia's Sixth National Development Plan (SNDP), its Vision 2030, the United Nations Sustainable Energy for All Initiative and the Zambia UN Development Assistance Framework Outcome 4; to provide support for systems and skills development in carbon financing, and skills to promote energy saving, and renewable energy. The project also follows the priorities set in UNDP China's MoU with the Chinese government on South -South Cooperation.

China

As China has made significant progress in rural electrification using renewable energy technologies, the Chinese experience is particularly relevant for Ghana and Zambia, and the project will facilitate the access to Chinese renewable energy technologies and policy experience while promoting a new method of strategic South-South Cooperation between China and Ghana/Zambia to address Ghana's and Zambia's renewable energy technology gaps.

In China, the project will support the review and updating of South-South Cooperation policies and guidelines. While China has extensive experience in cooperating with African countries, South-South Cooperation however is still a relatively new phenomenon with significant gaps. Thus, the project contributes to

solid capacity building, enabling China to engage more systematically in South-South Cooperation.

The planned support will not transfer hardware per se, but focus on the institutional framework and capacity required to make the local absorption of renewable energy technologies effective.

To do so, the project will help formulate innovative South-South cooperation approaches to enhance sustainable green investment and business in Ghana and Zambia. To facilitate this process, the project will also address key outstanding capacity gaps for China to engage in strategic South-South Cooperation through the facilitation of stakeholder coordination, training of key stakeholders engaged in South-South Cooperation and support to production of surveys, reviews and reports to bring out key parts of China's development experience in the renewable energy field to inform and inspire Ghana's and Zambia's policy process.

The present project is collaboration between Ministry of Energy and the Energy Commission in Ghana, Ministry of Mines, Energy and Water Development in Zambia, the Ministry of Science and Technology in China, and the UNDP Country Offices in Beijing, Accra and Lusaka.

Project Management Units will be set up within these institutions to manage project activities according to the National Execution Mechanism, a standard UNDP approach. Project Steering Committees chaired by national authorities with participation of relevant partners, donors and UNDP will provide strategic guidance to project implementation. UNDP China, UNDP Ghana and UNDP Zambia will provide substantial implementation, procurement and administration support and technical expertise. The project will take four years to implement.

2. Key Results

Project Outcomes

Following the signing of the Project Document, the preparation work began with setting up the PSC, MPU and development of the Work Plan and TORs for the consultancy services. Although the project has not reached full implementation, positive development for ensuring project outcomes has been, including institutional arrangements for the implementation of the project has been in place including setting up the PSC, PMU and recruitment of PMU staff.

A regular communication system among the partners in China, Ghana and Zambia has been set up to ensure effective and timely coordination.

From the initial stage of the project implementation, the project has had very high visibility at both UNDP HQ level and the country office level since this project is very much in line with UN Secretary General's Sustainable Energy for All Initiative (SE4ALL) and UNDP's Strategic Plan while the project fits well with China's South-South Cooperation and Ghana's SE4ALL and Zambia's rural electrification programme.

Activities and Outputs

Key events etc. under the project in 2014 include:

- ✓ Signing of both project document in China
 - ✓ Signing in Ghana
 - ✓ Signing in Zambia
 - ✓ PMOs in Ghana and China established
 - ✓ South-South Cooperation Center within ACCA21 of MOST established
 - ✓ Project Inception workshop in China
 - ✓ Regular conference calls between Ghana and China and Zambia and China established
- The joint signing of the Project Documents of the two projects on the 19th of August 2014 was held at the UN compound in Beijing was attended by Mr. Xu Haoliang, Director of UNDP Regional Bureau for Asia and the Pacific, Mr. Friis Arne Petersen, Ambassador of Denmark, Mr. Anani Demuyakor, Ambassador of Ghana, Ms. Getrude Kasuba Mwape, Ambassador of Zambia, Mr. Peng Sizhen, Deputy Director-General of representative of China's Ministry of Science and Technology (MOST), Mr. Alain Noudehou, UN Resident Coordinator and UNDP Resident Representative and Mr. Christophe Bahuet, Country Director of UNDP China. The prominent attendance clearly demonstrated the importance that UNDP and the respective countries places on these two projects.
- Following the signing of the Project Documents in China, a very successful signing ceremony for the China-Ghana South-South Cooperation project was completed on the 8th of September 2014 at the UNDP Ghana Office. Representative witnessing the signing of the document included the Deputy Minister of Energy and Petroleum, UNDP Ghana Resident Representative and Country Director, the Board Chairman and the Executive Secretary of the Energy Commission, the Ambassador and the Economic/Commercial Counsellor of China, the Head of Cooperation at the Embassy of Denmark, and the Head of the UN System Unit at the Ministry of Finance.
- In Zambia, the project document was signed on 15th of September and that the official launch of the project took place yesterday 22nd September 2014. The launch was at University of Zambia (one of the demonstration centers) and was attended by the Chinese Embassy representative, Ministry of Mines, Energy and Water Development Permanent Secretary, Director of Energy, UN Resident Coordinator in Zambia, University of Zambia Vice Chancellor among many others.
- The PMU in China has been set up with Mr. Peng Sizhen, Deputy Director-General of ACCA21, as National Project Director (NPD), Mr. Zhang Jiutian as Project Manager (PM), Dr. Zhang Xian as Project Focal Point and Project Coordinator, and Ms. Liu Rongxia, Project Coordinator. The project assistants are being recruited and hopefully would be on board prior to the middle of February 2015. In addition the PMO in China will also support the under the project established South-South Cooperation Center within ACCA21 of MOST

- For Ghana, PMU staff, include one project management and one project assistant for the PMU in Ghana, have been in place following UNDP's procurement procedure
- For Zambia, a temporary PMU has been established as Dept . of Energy has appointed 2 of its staff members to be dedicated to the project. The PMU is not fully functional as recruitment of project staff (project Manager, Assistant, driver) is underway . Shortlisting and interview will be completed by end of February and they are expected on board around the end March or beginning April 2015. Project activities will be started before arrival of the project staff so as to gain time, thanks to the dedicated staff support from the Department of Energy. 4) The Inception Workshop to be held after the project manager is on board
- The detailed Work Plans with detailed project budget from 2015-2018 have been developed by the PMU in China, Ghana and Zambia.
- An effective communication mechanism with Chinese, Ghanaian and Zambian and UNDP partners including both email and verbal communication on regular basis; all the partners agreed to have a regular dialogue on a biweekly basis from December 8.
- The Inception Workshop/1st PSC Meeting was held on 15th Dec in Beijing. UNDP, representatives from Denmark, Zambia, Ghana embassy, key Chinese ministries such as Ministry of Science and Technology (MOST), National Development and Reform Commission (NDRC), Ministry of Commerce, Ministry of Agriculture, etc., attended the meeting, along with representatives of Chinese potential technology providers.
- The meeting event was chaired by Dr. Zhang Jiutian, Chief of Global Environment Division, ACCA21 with participation from Mr. Cai Zhiping, DDG of International Cooperation Department, the Ministry of Science and Technology (MOST), Mr. Peng Sizhen, DDG of ACCA21, Ms. Huang Wenhong, Division Chief of NDRC, Mr. Carsten Germer, UNDP China Assistant Country Director, Mr. Mads Thuesen Lunde from the Danish Embassy, Mr. Bonaventure Mulenga from the Zambia embassy and over 30 other technical and policy experts from major institutions and universities in China.
- The PSC members reviewed the project design and approved the project management structure and the two-year work plans (for the Chinese components of the two projects).

Although not part of the annual reporting it should be mentioned that the PSC formulation in Ghana is in the process with Ministry of Finance approved the initial formulation plan and member agencies are in the process of approval and a 1st PSC meeting will be held in February 2015. For Zambia, 11 institutions identified, almost all accepted the invitation for joining the PSC. The 1st PSC meeting planned on 13th

of Feb. Both the Danish Counselor and Chinese Embassies will be invited to participate in the PSC meeting.

Sustainability

As the project has just started it is too early to speculate of the long term sustainability of the project and project interventions. However the projects have been designed to ensure long-term sustainability as it is very much in line with UN Secretary General's Sustainable Energy for All Initiative (SE4ALL) and UNDP's Strategic Plan while the project fits well with China's South-South Cooperation and Ghana's SE4ALL programme and Government plans in Zambia.

With setting up of PSC, the sustainability of the project is even more secured since the key ministries in both China, Ghana and Zambia are involved for taking up the best practices and lessons learned from the project.

A South-South Cooperation Center within ACCA21 of MOST has been set up by ACCA21 to support the implementation of the project, along with the PMU

Partnership Effectiveness

As the project has just started it is too early to speculate of the effectiveness of the partnerships. However If the formulation phase is anything to judge by then the core members of the partnership has shown their determination and ability to cooperate and coordinate.

Through the project formulation stage, an effective partnership for the project has been set up with involvement of the key ministries in both China and Ghana, along with the Chinese Embassy in Ghana, the Ghanaian Embassy in China, the Royal Danish Embassy in China, and UNDP Country Office in China, Ghana and Zambia. In the Inception Workshop held on Dec 15, 2014, renewable energy technology providers were invited to join in the project, including China Renewable Energy Society (CRES), China's Cook Stove Alliance, International Small Hydro Power Center, Biomass Institute of MOA, and Guangzhou Energy Research Institute of Chinese Academy of Sciences.

In receiving visitors from Ghana in March/April and from Zambia in April 2014, a group of private sector companies who represents the advanced development of technologies in renewable energy were visited, including biomass gasification, biogas, solar PV, small hydro and wind power.

In addition to UNDP' network and China Aid programme, MOST, where the PMU and ACCA21 are housed, has a platform for technology transfer and exchanges for addressing climate change with developing countries for years. On the platform, a huge list of private sector in renewable energy could be possible partners for setting up demonstration or future scaling up in Ghana and Zambia.

Cross-Cutting Issues

The project is addressing Ghana's access to renewable energy and Zambia's rural electrification goals. At the same time, the project supports broader socio-economic and environmental objectives, most notably poverty reduction through employment generation as well as action on climate change mitigation in Ghana while developing

China's capacities in south-south cooperation.

Since it supports poverty reduction through employment generation, women and children in rural Ghana and Zambia will be benefited in general.

Anti-corruption measures are in place following UNDP procurement procedures.

3. Project Management and Oversight

Monitoring and Evaluation

As the project is in the start up phase few monitoring and evaluation activities has been done. So far only inception reports from the Chinese sub projects has been prepared as well as this annual report. However in 2015 the full set of reporting will enter into effect.

Risk management

Given the complexity of the project implementation with involvement of diverse partners, a main risk for the project could be lack of/not sufficient communication that prevents the partners from giving input on the right level and quality, or having enough planning period to provide the experts needed for a certain activity. A timely and effective communication with project partners will prevent the above from happening.

To ensure a regular and effective communication between the partners, a regular Skype communication mechanism has been in place, through which project partners are having regular dialogues to update on the progress of the project.

In addition to the issue of communication the PMOs and UNDP will keep a close eye of the project identified risks to ensure that these risks do not materializes. At this point in time the risk levels for all identified risks remains as they were at project signing.

Communication and advocacy

The "Ghana and Zambia" projects are becoming increasingly important initiatives and are slowly becoming 'household' names.

In addition to this as UNDP China is one of the front runners in undertaking South-South Cooperation work (within the UNDP System) the "Ghana and Zambia" projects receive their fair share of attention and are regularly mentioned in internal as well as external meetings of the Executive Office in UNDP's Head Quarters in New York.

One of the results of this is among others, high level meeting between UNDP Administrator Helen Clark and, now previous, Danish Minister for Development, Christian Friis Back, where Denmark reaffirmed its continued support to the final projects.

As this initiative is still in the early phase of implementation its full potential has naturally not been utilized. However, the full project could be utilized as a platform for an extensive outreach not only related to highlighting on the ground project

achievements which will be news worthy in their own right, but the collaboration mechanism and country to country assistance and engagement will also be an issue which can and should be highly publicized as it is very innovative for all parties concerned – and because of this it has the potential to opening new doors. In this regard Danish and Chinese representation in the project steering committees could be the “door knob” in this regard.

The “Ghana and Zambia” projects are mentioned in the UNDP publication “*The New UNDP-China Partnership for South-South and Global Issues (2012 Highlights)*” http://www.undp.org.cn/%5Cdownloads%5Cpublications_2012%5CSSC%20Highlights%20brochure%202012.pdf, and in the recent version of this brochure about to be published

In the wake of the mission to Ghana two stories were placed on the UNDP web-page *Mission to Ghana another important step in the right direction* <http://www.undp.org.cn/modules.php?op=modload&name=News&file=article&catid=14&topic=11&sid=44956&mode=thread&order=0&thold=0> and *UNDP mission to Ghana finds encouraging examples during school visit* <http://www.undp.org.cn/modules.php?op=modload&name=News&file=article&catid=14&topic=11&sid=44955&mode=thread&order=0&thold=0>).

Following the joint signing of the Project Documents of the two projects on the 19th of August, news released was placed on UNDP web-page: <http://www.cn.undp.org/content/china/en/home/presscenter/pressreleases/2014/08/agreement-signed-for-south-south-cooperation/>

Following the signing of the Project Documents in China, a very successful signing ceremony for the China-Ghana South-South Cooperation project was completed on the 8th of September at the UNDP Ghana Office. The event was widely covered by the press. <http://www.gh.undp.org/content/ghana/en/home/presscenter/articles/2014/09/08/undp-and-gog-launch-initiative-to-facilitate-technology-transfer-from-china-to-ghana/#>

In Zambia, the project document was signed on 15th of September and that the official launch of the project took place yesterday 22nd September 2014. Below is the link to the press statement that was released reflecting the project and the statements that were made during the occasion: <http://www.zm.undp.org/content/zambia/en/home/presscenter/pressreleases/2014/09/23/landmark-project-launched-to-promote-renewable-energy-technology-transfer-from-china-to-zambia-/>

UNDP China has also produced a shorter article describing the project ad process: New Ways of working Trilaterally with China and Africa, which has been widely disseminated to both the Foreign Ministry and to UNDP Globally in particular at highest level. UNDP China has received great feedback to this article also showing that the two projects are new in nature and that the approach developed truly mark a new way of working for the UN as well as the Governments involved.

4. Financial Management

Following the signing of the project document, project activities were mainly related to preparation work for full implementation of the project, such as setting up the PSC, PMU and development of TORs. So far no expenses have been charged to the project budgets.

5. Management recommendations

A regular communication system, having two regular conference calls each month via Skype, has been set up and maintained between the parties involved, including UNDP China, ACCA21 (the PMU) in China, UNDP Ghana, Energy Commission and the PMU in Ghana, UNDP Zambia, Ministry of Mines, Energy and Water Development in Zambia. Given the complexity for implementation of the Project, the regular communication system using Skype should be maintained throughout the life time of the project.

Given the complexity of implementing the project with parallel activities in China, Ghana and Zambia and with involvement of many partners in both China, Ghana and Zambia, a possible no-cost extension should be anticipated.

To make the two projects contribute to the global efforts in addressing climate change and promoting South-South Cooperation, these two South-South cooperation projects between China and countries in Africa could link with The Climate Technology Center Network (CTCN) of UNFCCC for guidance, which will contribute to research and application on financing mechanism in the process of project implementation.

6. Annexes

6.1 Outline of the China-Ghana South-South Cooperation in Renewable Energy Transfer

The submitted proposal for the full size project in **Ghana** is to address Ghana's need to increase the universal energy access by effectuating off-grid community-based electrification, increasing the share of renewable energy, and promoting the productive uses of energy - hereby also supporting broader socio-economic and environmental objectives, most notably poverty reduction through employment generation and supporting action on climate change mitigation. The project will do so by creating an enabling environment - in Ghana for absorbing new technology and in China for providing it appropriately.

The project also promotes the production of renewable energy technologies in Ghana with a strong focus on private sector development and inclusion. In **China**, the project will support the review and updating of South-South Cooperation policies and guidelines and build solid capacity for China to engage more systematically in South-South Cooperation in order to support Ghana's national development goals and priorities for poverty reduction and provision of energy.

The Overall Objective is:

To contribute to climate change mitigation and reduce poverty by increasing access to renewable energy solutions through enhanced investment and production of Renewable Energy Technologies (RET) in Ghana, within the framework of South-South Cooperation between Ghana and China.

This objective will be achieved through the implementation of the following four **Outcomes:**

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*

The project aims to facilitate the development and transfer of renewable energy technologies from China to Ghana along with the support required to make the technologies effective, including training and capacity building, transfer of know-how and best practices. The project will operate both at the upstream level (supporting the creation of an enabling environment for technology transfer) and downstream level (actual transfer and demonstration of technologies with potential up-scaling by the private sector).

SIMPLIFIED RESULTS MATRIX

OUTPUTS	ACTIVITY RESULTS
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 Result 1.1.1: Review Chinese and Ghanaian RE policies and strategies to identify capacity building gaps and solutions to address them Activity Results 1.1.2: Draft and submit to Parliament the Renewable Energy Master Plan (REMP) Activity Results 1.1.3: Launch and disseminate the REMP
Output 1.2: Barriers to effective transfer of Renewable Energy Technologies removed.	Activity Results 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 Results 1.2.2: Develop a roadmap to remove or reduce barriers to effective RETT in Ghana
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 Result 2.1.1: Selection and adaptation of appropriate RETs to be transferred Activity Result 2.1.2: 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 Result 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 Results 2.2.3: Develop business models to support private sector involvement and public – private partnerships in RETT in Ghana
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 Result 3.1.1: Map, update and share China’s experience and approaches to technology selection and transfer Activity Result 3.1.2: Organize exchange visits to share knowledge on the Chinese and Ghanaian contexts and build foundations for technology transfers Activity Result 3.1.3 Share knowledge and establish knowledge networks on Renewable Energy
Output 3.2 Mechanisms for promoting RETT from	Activity Result 3.2.1: Develop roadmap for Renewable Energy Technology Transfer from China

China to Ghana established	to Ghana Activity Result 3.2.2: Seek institutional financing to support technology transfer from China to Ghana Activity Result 3.2.3: Set up a Chinese stakeholders alliance for China – Ghana RETT Activity Result 3.2.4: Conduct training of Chinese stakeholders in relation to RETT Activity Result 3.2.5: Support Ghana’s adoption capacity for Renewable Energy Technology Transfer
Outcome 4: Project management and coordination structures established	
Output 4.1 Project management established	Activity Result 4.1.1: Set up PMUs in Ghana and China Activity Result 4.1.2: Set up PSCs in Ghana and China Activity Result 4.1.3: Support project implementation

BUDGET OVERVIEW

CHINA-GHANA SOUTH-SOUTH COOPERATION ON RENEWABLE ENERGY TECHNOLOGY TRANSFER					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL
Outcome 1	185.000	110.000	60.000	50.000	405.000
Outcome 2	71.000	575.000	295.000	95.000	1.036.000
Outcome 3	135.000	252.000	252.000	72.000	711.000
Outcome 4	75.500	108.000	78.000	105.019	366.519
Overheads – General Management Service (GMS)	37.320	83.600	54.800	25.762	201.481
TOTAL	503.820	1.128.600	739.800	347.781	2.720.000

6.2 Outline of China-Zambia South-South Cooperation in Renewable Energy Transfer

The Zambia project is to address Zambia's need to increase the universal energy access by effectuating off-grid community-based electrification, increasing the share of renewable energy, and promoting the productive uses of energy - hereby also supporting broader socio-economic and environmental objectives, most notably poverty reduction through employment generation and supporting action on climate change mitigation. The project will do so by creating an enabling environment - in Zambia for absorbing new technology and in China for providing it appropriately.

Zambia has the second largest potential for solar power in the world, currently virtually unused, and an abundance of rivers and water resources in the rural areas. Building on this potential, focusing on solar- and hydro power, identified as the most appropriate renewable energy technologies for Zambia and consistent with the Chinese development experience, the project's **overall objective** is: *To improve energy access and living conditions in rural Zambia through South-South Cooperation.*

It seeks to achieve this by contributing directly to the achievement of Zambia's rural electrification goals of 50% of rural areas electrified by 2030. By supporting the government's efforts in achieving this goal, the project increases the likelihood of success in promoting policy/legal reform and removal of market barriers necessary to accomplish broader rural electrification.

The project has two **specific objectives**:

1. ***To promote electrification of rural communities in Zambia.*** The project will focus on communities that are located far from the power grid and thus will require off-grid solutions. For rural electrification, the project will concentrate specifically on mini- or micro-grid and off-grid solutions. The focus on rural electrification is specifically intended to address the part of the Zambian population that is missing out on development opportunities, and to enhance their livelihood in several areas through the provision of electricity.

2. ***To strengthen China's capacity for South-South Cooperation.*** Through supporting the creation of a South-South unit within the Chinese Ministry of Science and Technology, and facilitating direct Chinese support for rural electrification in Zambia, the project will contribute significantly to building Chinese capacity for engaging in mutually beneficial South-South cooperation based on clear analysis and responding to local conditions.

The project seeks to achieve three **strategic outcomes**;

1. Strengthening of the enabling environment for the transfer and use of priority renewable technologies in Zambia
2. Removing market barriers to the adoption of renewable technologies for the rural poor in Zambia, and
3. Strengthening of Chinese capacity for South – South Cooperation on renewable energies.

SIMPLIFIED RESULTS MATRIX

OUTPUTS	ACTIVITY RESULTS
Outcome 1: The enabling environment for the transfer and use of priority renewable technologies in Zambia strengthened	
Output 1.1 Improved policies, legislation and standards for the transfer and use of project technologies for rural electrification	Activity Result 1.1.1: Conduct review of the implementation of policies and legislation for rural electrification using off-grid technologies Activity Result 1.1.2: Convene working group meetings to review implementation of policies and legislation to address gaps and develop and finalize policies for rural electrification using off-grid technologies Activity Result 1.1.3: Build capacity of government officials and other stakeholders to implement policy reforms and programs identified in Activity Result 1.1.2.
Output 1.2 Financial mechanism for RETs established	Activity Result 1.2.1: Review opportunities for additional financing for the Development Bank of Zambia to fund its Renewable Energy Fund Activity Result 1.2.2: Develop options for a renewable energy technologies equipment financing for rural electrification to support private sector and/or government rural electrification initiatives Activity Result 1.2.3: Develop a value chain strategy for driving down cost of technology that can support private sector and government actors
Outcome 2: Reduced barriers to the adoption of renewable technologies for the rural poor in Zambia	
Output 2.1 Priority technologies tested and demonstrated at dedicated testing and training center and community of practice established	Activity Result 2.1.1: Creation of a demonstration, testing and training facilities for priority technologies Activity Result 2.1.2: Facilities to receive, exhibit and demonstrate equipment and publish performance results via web
Output 2.2 Institutional and technological capacity among stakeholders built	Activity Result 2.2.1: Facilities to conduct periodic training on renewable energy technology and practice, and make its facilities available for third parties to conduct training Activity Result 2.2.2: Support one renewable energy rural electrification project
Outcome 3: China has increased capacity to implement South-South Cooperation projects in relation to RET transfer	
Output 3.1: Chinese	Activity Result 3.1.1: Map, update and share

OUTPUTS	ACTIVITY RESULTS
stakeholders have increased understanding of the Zambian context and knowledge exchange with Zambian stakeholders initiated	China's approaches to technology selection and transfer Activity Result 3.1.2: Organize visit by Chinese stakeholders to Zambia to learn about Zambia's RET sector, policies, market and cultural barriers Activity Result 3.1.3: Share and disseminate knowledge on mission findings and project achievements
Output 3.2 A Chinese Centre for South-South Cooperation within the Ministry of Science and Technology supported	Activity Result 3.2.1: Establish vision and mission of the SSC Centre Activity Result 3.2.2: Set up alliance of Chinese stakeholders involved in RE to engage in projects bringing down the cost of Technology Transfer Activity 3.2.3: Develop training materials on South – South Cooperation and Renewable Energy Technologies Activity Result 3.2.4: Conduct training of Chinese stakeholders South – South Cooperation and Renewable Energy Technologies Activity Result 3.2.5: Support the Renewable Energy Technology platform
Outcome 4: Project organization and coordination structures established	
Output 4.1: Project Management Structures established	Activity Result 4.1.1: Set up PMU in Zambia Activity Result 4.1.2: Set up PMU in China Activity Result 4.1.3: Set up Project Steering Committees
Output 4.2 Project Coordination Structures established	Activity Result 4.2.1: Create project coordination and management structure Activity Result 4.2.2: Convene stakeholder group meetings

BUDGET OVERVIEW

ZAMBIA-CHINA COOPERATION ON CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT					
	YEAR 1	YEAR 2	YEAR 3	YEAR 4	TOTAL
Outcome 1	18,000	63,150	17,000	0	98,150
Outcome 2	44,500	960,750	3,000	3,000	1,011,250
Outcome 3	380,350	383,250	51,250	51,250	866,100
Outcome 4	128,000	135,500	96,500	94,500	454,500
Overheads – General	45,668	123,412	13,420	11,900	194,400

Management Service (GMS)					
TOTAL	616,518	1,666,062	181,170	160,650	2,624,400