GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

Naoko Ishii
CEO and Chairperson

March 03, 2016

Dear Council Member,

The UNDP as the Implementing Agency for the project entitled: ***China: Enabling Solid State Lighting Market Transformation and Promotion of Light Emitting Diode Lighting,*** has submitted the attached proposed project document for CEO endorsement prior to final Agency approval of the project document in accordance with the UNDP procedures.

The Secretariat has reviewed the project document. It is consistent with the project concept approved by the Council in March 2014 and the proposed project remains consistent with the Instrument and GEF policies and procedures. The attached explanation prepared by the UNDP satisfactorily details how Council's comments and those of the STAP have been addressed.

We have today posted the proposed project document on the GEF website at www.TheGEF.org for your information. We would welcome any comments you may wish to provide by March 31, 2016 before I endorse the project. You may send your comments to gcoordination@TheGEF.org .

If you do not have access to the Web, you may request the local field office of UNDP or the World Bank to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Naoko Ishii
Chief Executive Officer and Chairperson

Attachment: GEFSEC Project Review Document
Copy to: Country Operational Focal Point, GEF Agencies, STAP, Trustee

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REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND:GEF Trust Fund

For more information about GEF, visit TheGEF.org

PART I: PROJECT IDENTIFICATION

Project Title: ENABLING SOLID STATE LIGHTING MARKET TRANSFORMATION & PROMOTION OF LIGHT EMITTING DIODE LIGHTING (SSLED) PROJECT			
Country(ies):	China, Peoples Republic	GEF Project ID:[1]	5669
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5120
Other Executing Partner(s):	In China – National Development and Reform Commission (NDRC)	Submission Date: Resubmission Date:	5 February 2016 29 February 2016
GEF Focal Area (s):	Climate Change	Project Duration(Months)	36
Name of parent program (if applicable): • For SFM/REDD+☐	N.A.	Agency Fee ($):	593,056

A. FOCAL AREA STRATEGY FRAMEWORK[2]:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Co-financing ($)
CCM-2	Appropriate policy, legal and regulatory frameworks adopted and enforced	• Energy efficiency policy and regulation in place • Investment mobilized • Energy savings achieved	GEFTF	2,497,100	9,500,000
	Sustainable financing and delivery mechanisms established and operational		GEFTF	3,745,594	16,955,000
		Total Project Cost		6,242,694	26,455,000

B. PROJECT FRAMEWORK

Project Objective: Facilitation of the enhanced production and widespread application of quality solid state lighting (SSL) products in China						
Project Component	**Grant Type**	**Expected Outcomes**	**Expected Outputs**	**Trust Fund**	**Grant Amount ($)**	**Confirmed Co-financing ($)**
Component 1: SSL Market Development Enhancements	TA	Enabling of enhanced and strategic SSL technology and market developments based on comprehensively assessed and documented up-to-date status of the SSL industry and market in China	• Completed Comprehensive SSL Industry and Market Survey • Established and operational SSL Industry Database • Established and operational SSL Technology Information Exchange Service • Established and operational SSL Applications Service Industry Accreditation System • Completed SSL manufacturer rating scheme		449,500	1,200,000

[1]Project ID number will be assigned by GEFSEC.

[2]Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.

Component 2: SSL Market Transformation Policies and Mechanisms	TA	Facilitation of support and incentives in the local production of quality SSL products, and in the application of SSL products compliant with established quality and energy performance standards.	• Completed research study on Energy Saving Lamp Policies and Regulations • Approved and implemented SSL Industry Development Plans • Enforced Policy and Regulatory Frameworks for Supporting the SSL Industry • Established and operational SSL financing scheme • Established and operational SSL Manufacturers Accreditation Scheme • Completed technical assistance program for local SSL products manufacturers in the design and manufacture of quality standards compliant SSL products		1,072,600	4,000,000
Component 3: SSL Application Demonstration	Inv	Increased penetration rate of SSL products especially in the residential sector in China	• Completed demonstrations on SSL product manufacturing and SSL product lighting applications in 50 cities/towns in 30 provinces. ▪ *Estimated total number of SSL products involved in demonstrations = 714,000 units* ▪ *Total collective capacity of SSL products in demonstrations = 5 MW (@ 7W/lamp)*		3,000,000	14,000,000
	TA		• Completed report on the demonstration scheme results evaluation and dissemination		171,123	800,000
			• Documented sustainable follow-up program design for financially supporting the SSL technology innovations, and the production of new SSL products and their applications		200,000	1,200,000
Component 4: Strengthening of SSL Quality Assurance Capabilities	TA	Enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets	• Completed study on SSL Quality and Energy Performance Standards • Documentation of identified Potential Improvements in SSL Products • Documentation on completed research and development on SSL Product Improvements • Established and enforced China Standards for SSL Products • Completed capacity building on the application of SSL Product Standards • Established and operational SSL Product Testing and Certification System • Completed assessment on the impacts of the SSL product standards implementation	GEFTF	1,052,200	4,005,000
				Sub-Total	5,945,423	25,205,000

Project Management Cost[3]	GEFTF	297,271	1,250,000
Total Project Costs		6,242,694	26,455,000

C. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Sources of Co-financing	Name of Co-financier(Source)	Type of Co-financing	Co-financing Amount ($)
National Government	National Development & Reform Commission (NDRC）	Grant	23,000,000
		In-kind	2,300,000
Others	China Solid State Lighting Alliance (CSA)	Grant	300,000
Others	National Lighting Test Center (NLTC)	Grant	380,000
Others	China Association of Lighting Industry(CALI)	Grant	250,000
GEF Agency	United Nations Development Programme (UNDP)	Grant	225,000
Total Co-financing			26,455,000

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY: N.A.

In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table.

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Grant Amount ($)	Co-financing ($)	Project Total, ($)
International Consultants	372,000	916,000	1,288,000
National/Local Consultants	268,500	2,400,000	2,668,500

F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No.

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF

Expected Outputs		Rational for Change in PIF Outputs/Activities in the ProDoc
GEF-Approved PIF	Project Document	
Component 2: SSL Market Transformation Policies and Mechanisms 5 Outputs (Outputs 2.1 to 2.5)	Component 2: SSL Market Transformation Policies and Mechanisms Additional Output Output 2.6: Completed technical assistance program for local SSL products manufacturers in the design and manufacture of quality standards compliant SSL products	As part of the facilitation of support and incentives for the local production of quality SSL products, the original idea that was envisioned is to demonstrate the actual application (on a demonstration basis) of improvements/modifications in the SSL production lines of selected SSL lamp manufacturers to facilitate the production of improved energy efficient design of SSL products. The change (addition) as agreed by consensus among the project design team and project stakeholders, is the implementation of one-on-one technical assistance to selected local lighting product manufacturers on the improved design (for quality and energy performance) of SSL products and for more energy efficient and

[3]Same as footnote #3.

Expected Outputs		Rational for Change in PIF Outputs/Activities in the ProDoc
GEF-Approved PIF	Project Document	
		cost-effective SSL product manufacturing. This will enhance the technical knowledge and skills of the local lighting product manufacturers in the design (quality and energy performance) and production of SSLs
National Government Co-financing – (Grant) US$ 18 M	National Government Co-financing – (Grant) US$ 23 M; (in-kind) US$ 2.3 M	NDRC assumed also the US$ 5 M cash co-financing from the provincial government that will be involved in the demos/pilots on the production and application of quality and energy efficient LED lighting products. The SSL production, promotion and quality testing facilities owned by the provincial government will be used for some of the demo and quality testing capacity building activities.
China Solid State Lighting Alliance Industry (CSA) Co-financing – (Grant) US$ 0.225M	China Solid State Lighting Alliance Industry (CSA) Co-financing – (Grant) US$ 0.3 M[4]	Committed co-financing was increased by a third compared to the estimated amount in the PIF for supporting some of the demos, and in SSL market modeling.
Standardization Administration of China Co-financing - (Grant) US$ 0.3 M	National Lighting Test Center (NLTC) Co-financing – (Grant) US$ 0.38 M	NLTC replaced SAC and committed co-financing that is slightly more than a quarter of the estimated amount in the PIF, for standards development and SSL product quality testing activities.
Other Related Institutions Co-financing – (Grant) US$ 0.5 M	China Association of Lighting Industry (CALI) Co-financing – (Grant) US$ 0.25 M.	The quoted amount in the PIF is an indicative estimate. CALI has committed grant co-financing but is expected to leverage more during the demo implementation.
Overall co-financing = US$ 26.250 M	Overall co-financing = US$ 26.455 M	Overall amount of co-financing is about the same as the estimated amount in the PIF.
All Other Items in GEF-approved PIF	Same as in GEF-approved PIF	

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc. N.A.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities. N.A.

A.3. GEF Agency's comparative advantage: N.A.

A.4. The baseline project and the problem that it seeks to address:

The SSL promotion initiatives in China that comprise the baseline projects for this GEF project include activities of the Enabling Solid State Lighting Market Transformation & Promotion program that the GoC and NECC and SAC/Other relevant organizations/UNDP are supporting. This program includes

[4] The legal entity and support organization of the CSA is the Beijing Solid State Lighting Science and Technology Promotion Center (BSSLSTPC).

major activities on improving the local SSL market development, development of policies and mechanisms to enable market transformation to SSL products, demonstrating SSL applications; and, developing and enforcing SSL quality standards. Some of these ongoing initiatives that are now subsumed into the GEF project include specific actions that are targeted on the promotion of the widespread production and application of quality standards compliant SSL products. These are now enhanced to include interventions that address certain specific aspects that are not originally addressed. The current status of some of these baseline projects are described as follows:

Program	Major Activities	Status and Accomplishments (as of 3Q 2015)
SSL Market Development Enhancements	Market Survey of LED Enterprise Operating Performance	Ongoing. Market Survey conducted. Survey response rate is lower than 10%.
	China LED Products Import and Export Data Analysis	Ongoing. Completed analysis on the export data within the 1st semester of 2015. Detailed export product catalog preparation is ongoing
	Established and operational SSL Technology Information Exchange Service	China-led.net has released the requirement messages on LED technology and lighting products. Initiated promotional campaign. Follow-up promotion process needs to be strengthened.
	Road Map of SSL Industry	Planned activity yet to be implemented. Initial preparatory work has been done.
SSL Market Transformation Policies and Mechanisms	SSL Manufacturers Accreditation Scheme	Implementation of the "Top-Runner" component of this major activity started.
	Energy Conservation Transformation Project, including Green Lighting Project, Universal support technologies mature LED lighting products	Completed 5 LED applications demonstrations in 2014. Follow-up information dissemination, education and promotion activities are ongoing.
	Project to Benefit People with Energy Saving Product (including: Financial subsidies to promote the work of LED products)	Ongoing financial subsidy program for 2015. Financial subsidies for 2 million pieces of LED lamps completed each year.
SSL Application Demonstration	Energy-saving technology industrialization demonstration projects	Ongoing. The SSL demonstrations on LED lamp multi-applications have been started. Plans to be prepared for demos on improved LED industry development, manufacturing, systems integration and technical capacity
	China SSL Industry Exhibition and Forum	This activity is currently ongoing. Stated in November 2015.
	Demonstration Project for Commercialization of Energy Saving Technology	Ongoing. The SSL demonstrations on LED lamp multi-applications have been started.
Strengthening of SSL Quality Assurance Capabilities	Assessment report on the impacts of the SSL product standards implementation.	Planned activity yet to be implemented. Some initial preparatory work has been done.
	Research on identified Potential Improvements in SSL Products	Planned activity yet to be implemented. Some initial preparatory work has been done.
	Development of National Standards for SSL Products	Ongoing. About 40 national SSL standards have been formulated (covering energy level, quality, terms, etc.), some issued. Plans for enhancement and alignment with international standards.
	Energy Saving Certification of SSL Products	Ongoing. Certification schemes for some SSL products have been developed. The follow-up promotion and socialization process needs to be strengthened.

A. 5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental

<u>benefits</u> (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The GEF support for this project will enhance the realization of the potential significant global environmental benefit in terms of CO2 emissions reduction from China's electric power generation sector with the widespread application of quality-compliant SSL products in the country. The project endeavors to eliminate the barriers that prevents the target consumers (particularly in the residential sector) from confidently using SSL products, and local lighting product manufacturers from producing high quality and high performance SSL products. This will result in improving the penetration rate of SSL products in the country, and improving the country's success in promoting energy efficiency as an effective policy and institutional instrument for achieving the country's GHG emission reduction targets. Currently, there is a wide range of SSL product manufacturing companies in China, most of them are small-to-medium enterprises. The product range varies in size and applications, prices, as well as in quality and performance. The current low level of acceptance by the residential sector of the SSL technology is due to the fact that most of the current programs are focused on large applications in industrial and commercial establishments. Those that are targeting the residential sector are quite limited in scope. This project has been designed to build on the growing success of the initiatives of the government and private sector in improving the quality and energy performance of locally made SSL products, as well as from lessons learned from previous and ongoing GEF-supported projects on energy saving lamps (ESLs), to ensure that the magnitude of national development benefits (energy savings) and global environmental benefits (CO_2 emission reduction) will become more significant. The GEF funds that are made available for this project have been allocated for incremental activities that will improve the ongoing and planned baseline projects/activities in China in the area of SSL technology development and applications, for expanding the energy saving and CO_2 emission reduction opportunities through the interventions that will assist the local SSL industry in improving SSL product quality and performance, as well as expanding SSL production and sales. The GEF support will be for the development and implementation of the much needed policy and regulatory regimes that will support further transformation of the local lighting industry through the improved/increased production and use of SSL products, as part of the country's overall efforts to promote the widespread use of ESLs. These funds will also be for developing and implementing SSL quality and energy performance standards, capacity building to improve local skills in SSL product design and manufacturing in compliance with a national SSL product standards, as well as in improving the penetration rate of SSL products. These incremental activities will help further facilitate the achievement of the potential energy savings in lighting systems in the country. In this regard, the GEF support will ultimately help achieving significant GHG emission reduction from the operation of lighting systems in the commercial, industrial, public and residential sectors in China.

Without the GEF financial assistance, it is difficult to achieve in the short run the expected outputs in the project. Current obstacles, if unchanged, will make it almost impossible for China to achieve its 12th FYP target 20% penetration rate of SSL products in the domestic lighting market. The design of the project targets the achievement by end of project (in 2018) of a 28% market share for quality standards compliant LED general lighting products. This would be a remarkable increase from the baseline 8% market share (end 2014), as compared to only 18.5% if there is no GEF project.

With the implementation of the project, it is expected that the market share of quality and EE standards compliant SSL (general lighting) products in China will reach at least 28% by 2018. The expected incremental electricity savings from this project is about 937.2 GWh by end-of-project, with an associated CO2 emission reduction is about 850.4 ktons. Considering the average 3 years lifetime of each of the SSL products that will be installed and used during the project, the total lifetime direct energy savings would be about 1,986.7 GWh and the CO2 emission reduction would be about 1,802.7 ktons.

A.6. Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks: N.A.

A.7. Coordination with other relevant GEF financed initiatives

The proposed project is in line with the GEF-5 Climate Change Strategic Objective: Removal of barriers to energy conservation and energy efficiency. The facilitation of the widespread local production and utilization of SSL products will contribute to the reduction of greenhouse gas emissions from China's power generation sector. The project will focus on eliminating all the barriers in the promotion of SSL products and promoting the wide application of high-quality products. During project implementation, coordination will be done with other ongoing GEF-funded projects on energy efficiency in China, particularly those targeting energy efficient lighting. Since the UNDP-GEF PILESLAMP project is already completed, the relevant GEF-funded project on the promotion of high-efficiency lighting products, is the UNEP-GEF En.Lighten Project. This global project that includes China and other developing countries focuses on the acceleration of the global commercialization and market transformation of efficient lighting technologies by working at global level and providing technical support to developing countries[5]. The project implementing partner (i.e., NECC on behalf of the NDRC) will coordinate with the implementers of this UNEP-GEF global project in the implementation of the project activities. The proposed GEF project also serves as an important supplement to this on-going global project in energy efficient lighting. Moreover, once the UNEP/UNDP-GEF global Leapfrogging for Energy Efficiency Program (United for Efficiency) is already CEO endorsed, the project implementing partner will explore with the implementers of that global program (particularly those working on LED lighting activities) how the implementation of the project activities can be coordinated to maximize opportunities for synergy and complementarity.

The implementation of the proposed project will also be closely coordinated with the ongoing and planned activities of the Chinese Government in accelerating the process of SSL market transformation. Valuable experience and lessons learned from such activities would be useful in the implementation, and in the management of the implementation of the project activities. Obviously, the project implementation will be coordinated with the project partners and co-financers, particularly in ensuring synergy in the conduct of activities, as well as in the reporting of project results. The project will be implemented in close collaboration with the UNDP-GEF energy, infrastructure, transport and technology teams from the UNDP Bangkok Regional Hub. The UNDP Beijing Office will coordinate with the project management office, and provide oversight of the project implementation through its presence in the consultation and review meetings.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1. Describe how the stakeholders will be engaged in project implementation.

For this GEF-funded project, the UNDP is the GEF implementing agency. As per the UNDP's "National Implementation Modality", the NDRC is the designated project implementing partner, and will be responsible for the implementation of the project activities based on agreed annual work plans (AWPs). As implementing partner, the NDRC designated on its behalf the National Energy Conservation Center (NECC) as the project executing agency, to carry out the project activities. The NECC will establish a project management office (PMO) that will oversee the management of the project implementation. For

[5] The target set and indicated in China's 12th 5 Year Plan regarding the penetration rate of SSL (20% by 2016) is in line with the China En.Lighten program activities on transitioning to EE lighting in the residential, commercial, industrial and public sectors. That target is in line with the projected shares of the various types of ESLs in China after transition. Work on the SSL standards will be in coordination with En.Lighten program partner in China which is the National Lighting Test Center, which is authorized as a national testing institution by the State Bureau of Quality and Technical Supervision and is also designated as testing center for China Compulsory Certification and China Quality Certification.

the project implementation, the following is the summary of the roles and responsibilities of the various project stakeholders that will be involved in the implementation of the project activities:

Stakeholder		Roles and Responsibilities during Project Implementation
Government Agency	National Development & Reform Commission	Responsible for coordination with MOF and UNDP and contact with local authorities of provinces where there is an existing SSL industry; Project management and financial management
	Ministry of Finance	Support the co-financed demonstration and the SSL product financing scheme activities
	Ministry of Science and Technology	Support research and development to improve SSL quality and technology, and technical integration of demonstration project
	Ministry of Housing and Urban-Rural Development	Provide advice and support in the formulation and implementation of project-proposed green lighting policy in cities
	Ministry of Transportation	Provide advice and support in the formulation and implementation of project-proposed green lighting policy in the transportation sector
	Ministry of Industry and Information Technology	Provide advice and support in the formulation and implementation of project-proposed green lighting policy in industries
	National Government Offices Administration	Provide advice and support in the formulation and implementation of green lighting policy in government offices
	Standardization Administration of the People's Republic of China	Provide technical advice and support in the design and development of standards for the quality and energy performance of SSL products
	National Energy Conservation Center	Oversee on behalf of the NDRC the management of the implementation of project activities and provision of technical support and capacity development to the project management office (PMO)
	Local governments and energy centers	Support the design and implementation of the pilots and demonstrations that will be carried out under the project.
Non-Government Organization	Industry organization	Assist in the design and implementation of the SSL products application demonstrations; Collect information on the various applications of SSL products.
Technical Organization	Design institutes, standard, test and quality and certification organizations.	Assist in the development of standards and implementation of testing and quality certification, and provide information related to R&D on SSL production
Lighting products manufacturer, retailer, and consumers	SSL product manufacturers and lighting system designers	Active participation in the financing and implementation of the demonstrations
	SSL product manufacturers hosting demonstrations	Commitments to completing demos and sharing information on demo results, and for scaling up/replication of demos
	SSL product distributors/retailers and consumers	Participation in project activities, particularly in the impact studies and market surveys
	Energy Service Companies (ESCOs)	Participation in demo activities; Supporting the SSL system applications
UNDP	Beijing Office	Provide technical advice and project management coordination in the project implementation.

B.2. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The SSLED Project will facilitate the realization of energy savings in lighting through improving the quality and energy performance of locally manufactured SSL lighting products and promoting their widespread application in the various energy end-use sectors. Apart from energy conserving, SSL products are mercury-free lighting devices, and would therefore not be detrimental to the natural environment when disposed-off after their useful lives. SSL products have rich colors without infrared and ultraviolet radiations, so they can provide more healthy and comfortable living environment. These products match renewable energy power supply systems and therefore allows for green lighting in areas without electricity such as in Western China. The downstream of the SSL industry chain is typically labor intensive industry. This proposed project will involve the demonstration of improved SSL product manufacturing systems that will also provide potential employment for women because most of the SSL product assembly work are more suitable for women. SSL can also help reduce indoor air conditioning, and indirectly reduce investments on additional power generation and distribution systems. The successful implementation of the proposed GEF project is expected to bring the following prominent benefits:

- Enhancement of the development of small and medium-sized SSL production enterprises;
- Improvement of the low-carbon and sustainable development of Chinese cities and towns;
- Facilitation of the provision of high quality energy efficient lighting system in rural areas
- Improved employment level of Chinese women, which will be made possible through the implementation of professional training and skills enhancement under the project;
- Contribution to the worldwide efforts on energy conservation and GHG emission reduction (considering the fact that China is the largest lighting products producer and exporter in the world).

B.3. Explain how cost-effectiveness is reflected in the project design:

The GEF project will enhance the current efforts in China to promote the widespread application of quality standards compliant SSL products in the country. The project will facilitate the transformation of the current local SSL industry in China from one that is still comprised of manufacturers that produce sub-standard SSL products, and also help increase the penetration of SSL products in the major energy consuming sectors of the country, particularly the residential sector. The barriers that are currently preventing the achievement of these outcomes will be addressed in the project, eliminating them and ensuring that these will not recur through the establishment of supportive policy/regulatory and institutional frameworks, incentive mechanisms, quality certification mechanisms, technical assistance through demonstrations/pilots, and capacity building.

The expected incremental electricity savings from this project is about 937.2 GWh by end-of-project, and the associated CO_2 emission reduction is about 850.4 ktons. The estimated total lifetime direct energy savings would be about 1,986.7 GWh and the CO_2 emission reduction would be about 1,802.7 ktons. Based on these estimated incremental lifetime CO2 emissions reduction, the approximate unit abatement cost (UAC) is about US$ 3.46/ton CO2 (i.e., GEF$ per ton CO2), which is lower than the average US$ 5.63/ton CO2 based on the CBEEX (Beijing Carbon Exchange).

C. DESCRIBE THE BUDGETED PLAN:

The continuous monitoring and evaluation of all project activities, even after completion of the project period, will bring sustainability of the project with desired benefits in the long run. All evaluation reports will be uploaded to the project website for widespread dissemination. A formal Monitoring and

Evaluation (M&E) Plan will be developed and implemented in the full-scale project to track the activities and contributions of the activities by all the project partners, in terms of both in-cash and in-kind contributions as detailed in the co-financing letters. These findings will be reported on in the project's two in-depth independent reviews. As the implementing agency for this proposed project, UNDP will allocate at total of US$ 99,000 for supporting full size project implementation and for plan.

M&E Activity	Responsible Party	Budget $	Time
Kick-off meeting and report	• Project Manager • UNDP China, UNDP GEF	10,000	Within 2 months after the Project is started
Measurement methodology for verification of project outcome	UNDP GEF RTA The Project Manager shall supervise employment of relevant institutions and assign specific duties to team members.	To be determined during the inception phase	Inception, middle-term and final of the Project, and annually (if necessary)
Measurement methodology for validation of project outputs and implementation	• Project Manager • Project team	To be determined during development of annual work plans	Before the annual APR/PIR and determining the annual work plan
ARR/PIR	• Project Manager and project team • UNDP country office • UNDP RTA	None	Annually
Regular situation/progress report	• Project Manager and project team	None	Quarterly
Middle-term evaluation	• Project Manager and project team • UNDP country office • UNDP RCU • External expert consultant(s)	40,000	Middle-term of project enforcement
Final evaluation	• Project Manager and project team • UNDP country office • UNDP RCU • External expert consultant(s)	40,000	At least three months before the end of project implementation
Project final report	• Project Manager and project team • UNDP country office • Local expert consultant(s)	0	At least three months before the end of the Project
Audit	• UNDP country office • Project Manager and project team	3,000 per year	Annually
Visits on site	• UNDP country office • UNDP RCU (if applicable) • Government representatives	Paid from IA fees and operational budget	Annually
Total Cost		US$ 99,000	

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S):

NAME	POSITION	MINISTRY	DATE
Jiande Ye	GEF Operational Focal Point	International Dept., Ministry of Finance	15 Aug 2013

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	DATE	Project Contact Person	Telephone	Email Address
Adriana Dinu UNDP-GEF Executive Coordinator		29 February 2016	Manuel L. Soriano Sr. Tech Advisor Energy & Climate Change	+66-2-3049100 Ext 2720	manuel.soriano@undp.org

ANNEX A: PROJECT RESULTS FRAMEWORK

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:
Country Programme Outcome Indicators:
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): 1. Mainstreaming environment and energy OR 2. Catalyzing environmental finance OR 3. Promote climate change adaptation OR4. Expanding access to environmental and energy services for the poor.
Applicable GEF Strategic Objective and Program: GEF-5 CCM Strategic Program SP2: promote market transformation for energy efficiency in industry and the building sectors Climate change (energy efficiency)
Applicable GEF Expected Outcomes: Appropriate policy, legal and regulatory frameworks adopted and enforced; Sustainable financing and delivery mechanisms established and operational
Applicable GEF Outcome Indicators: Energy efficiency policy and regulation in place; Investment mobilized; Energy savings achieved

Strategy	Objectively Verifiable Indicators			Source of Verification	Critical Risks
	Indicator	Baseline	Target (End-of Project)		
Project Objective: Facilitation of the enhanced production and widespread application of quality solid state lighting (SSL) products in China	• Annual direct energy savings in China (GWh) • Annual direct CO_2 emissions reduced in China (kilotons) • No. of new jobs available in the ESL industry • No. of women employed in new jobs in the ESL industry	•158 •143 • 0 • 0	• 937.2 • 850.4 •1000 •200	• Progress reports on the demonstrations • Project monitoring and evaluation reports • Project Final Report • Survey Report	• Stable economic growth in China will be sustained
Outcome 1 *Enabling of enhanced and strategic SSL technology and market developments based on comprehensively assessed and documented up-to-date status of the SSL industry and market in China*	• Value of quality standards compliant SSL products produced in China (billion RMB) • Export value of quality standards compliant SSL products produced in China (billion USD)	• 58.6 • 5.4	•184 •13.8	• Annual reports on China SSL industry • Annual export reports on China SSL products	

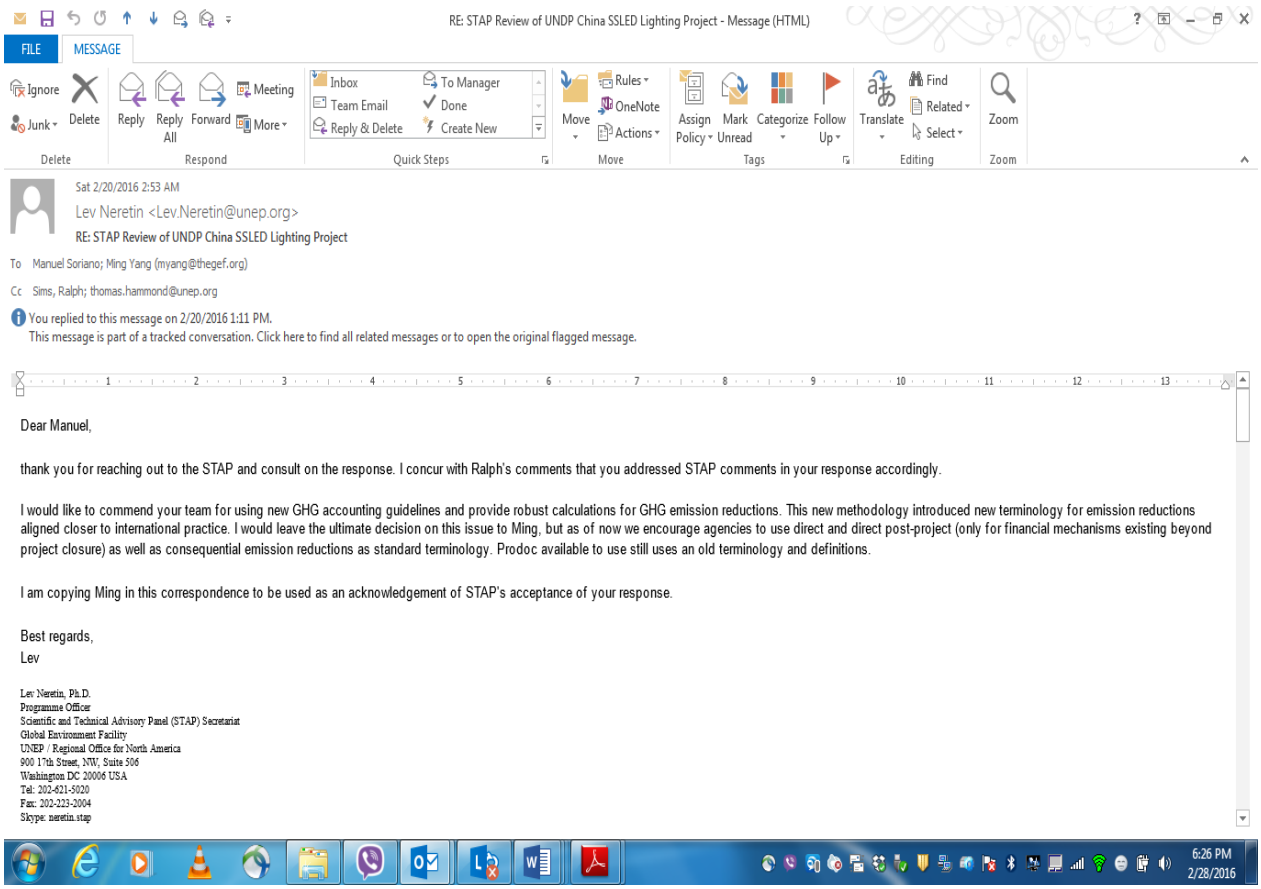
Outcome2 *Facilitation of support and incentives in the local production of quality SSL products, and in the application of SSL products compliant with established quality and energy performance standards.*	• No. of policy recommendations adopted and enforced by relevant government agency departments • Percentage of lighting products in the domestic lighting market that are quality standards compliant SSL products	• 3 •50%	• 6 •70%	• Documents on the recommendations referred in related policy • Monitoring reports on SSL product quality	• Sustained support of Chinese government for SSL industry
Outcome 3 *Increased penetration rate of SSL products especially in the residential sector in China*	• Market share of qualified SSL products in general lighting market in China	•8.2%	•28%	• Market research reports on the SSL market	• Demonstration projects can be completed as scheduled
Outcome 4 *Enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets*	• No. of SSL quality and energy efficiency certificates issued by state-certified institutions • No. of local SSL manufacturers that are complying to the new EE standard/label for SSL products	•1200 • 0	•1500 •100	• Records of the issuance of certificates of energy efficiency and quality	• The government strengthen the supervision of SSL market continuously

ANNEX B: RESPONSES TO PROJECT REVIEWS

Response to GEFSec Comments (12 February 2016)

Comments and Responses	Reference
7. At CEO endorsement: Has co-financing been confirmed?	
Comment: *Not at this time. At the PIF stage, all co-financing amounts were in cash or grant. But in the CEO ER, a number of co-financing amounts became in-kind. Specifically, the UNDP co-financing letter does not show in cash. Please provide another letter.* *The National Lighting Test Center (NLTC) co-financing ($380,000) is in cash as shown in the CEO ER but in in-kind as shown in the co-financing letter. Please ask the Center to revise the letter.* *For the China Solid State Lighting Alliance (CSA) co-financing ($300,000), the name of the co-financier and the amount of grant in the CEO ER are not consistent with the letter. (The letter shows the following organization: Beijing Solid State Lighting Science and Technology Promotion Center.) Please provide a new letter.* **Response**: The project proponents acknowledge the non-clarity and some inadvertent mistakes in the classification of the committed co-financings in their respective co-financing letters. These has now been rectified and the new co-financing letters have been re-issued and included in Annex 2 of the Project Document. Also the explanations to the changes in the names of the co-financers, the classification of co-financing, and in the estimated co-financing amounts in the PIF have been provided in the revised CEO Endorsement Request (CER) Document.	CER Doc: Part I, Secs. A, B & C. Part II, Sec. A ProDoc: Annex 2
23. Has the Agency adequately responded to comments from: STAP?	
Comment: *Not completed at this time. See the comments from the STAP: GEF. Agency should discuss the issues with STAP to clarify them and possible solutions. Please provide evidence (emails or letters) showing that STAP has reviewed the CEO ER and cleared the issues raised in the PIF stage.* **Response**: The responses to the STAP comments on the PIF were shared with the responsible STAP reviewer. He commented that the STAP comments were adequately addressed in the responses provided.	Annex 1 (of this document)
24. Is PIF clearance/approval being recommended?	
Comment: *Not at this time. Please address comments in Boxes 17 and 23.* **Response**: The remaining comments have already been addressed and relevant changes are now reflected in the revised Project Document and CER Document. Looking forward to the CEO endorsement of this project.	

ANNEX 1: Acceptance of Responses to STAP Comments – by STAP Reviewer



RE: STAP Review of UNDP China SSLED Lighting Project - Message (HTML)

FILE MESSAGE

Ignore Junk Delete Reply Reply All Forward Meeting More Delete Respond Inbox Team Email Reply & Delete To Manager Done Create New Quick Steps Move Rules OneNote Actions Move Assign Policy Mark Unread Categorize Follow Up Tags Translate Find Related Select Editing Zoom Zoom

Sat 2/20/2016 2:53 AM

Lev Neretin <Lev.Neretin@unep.org>

RE: STAP Review of UNDP China SSLED Lighting Project

To Manuel Soriano; Ming Yang (myang@thegef.org)

Cc Sims, Ralph; thomas.hammond@unep.org

You replied to this message on 2/20/2016 1:11 PM.
This message is part of a tracked conversation. Click here to find all related messages or to open the original flagged message.

Dear Manuel,

thank you for reaching out to the STAP and consult on the response. I concur with Ralph's comments that you addressed STAP comments in your response accordingly.

I would like to commend your team for using new GHG accounting guidelines and provide robust calculations for GHG emission reductions. This new methodology introduced new terminology for emission reductions aligned closer to international practice. I would leave the ultimate decision on this issue to Ming, but as of now we encourage agencies to use direct and direct post-project (only for financial mechanisms existing beyond project closure) as well as consequential emission reductions as standard terminology. Prodoc available to use still uses an old terminology and definitions.

I am copying Ming in this correspondence to be used as an acknowledgement of STAP's acceptance of your response.

Best regards,
Lev

Lev Neretin, Ph.D.
Programme Officer
Scientific and Technical Advisory Panel (STAP) Secretariat
Global Environment Facility
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6:26 PM
2/28/2016

STAP SCREENING OF THE PIF (7 January 2014**)**

Comment & Response
Comment : 1. *Baseline: STAP has formed the impression that certain parts of this proposal were written some time ago and could have become outdated. It is very difficult to ascertain whether the China SSL industry remains in "its fledgling stage". A 2012 report by the consultancy McKinsey "Lighting the way: Perspectives on the Global Lighting Market" estimates the total LED market in China at 10 billion Euro or about 20% of the world's value, forecasted to increase to almost one-third by 2015. China's LED lighting market revenue is expected to double from $3.1 billion to $7.4 billion in 2017, according to Lux Research. The LED lighting market in China is expected to double in size from 9.6 percent to 18 percent of all lighting used in the next four years. The growth will be spurred by falling prices, increased policy support and energy goals by government with China phasing out all incandescent lamps by 2016. This factor has already resulted in the domestic LED penetration rate of close to 12%, which is much higher than the 3% cited in the proposal. This relatively high LED penetration is driven by non-residential applications, but residential ones are picking up too.* **Response**: Presently, China's SSL industry is relatively large in scale, has a good base and covers nearly all the relevant elements of the SSL value chain. Especially in recent years, national investment in this industry grew rapidly. SSL technology and application in China have developed very fast making

Comment & Response

China one of the fast developing countries for SSL in the world. From on a CSA Research, in 2014, China's SSL industry output was estimated at CNY 350 billion with an annual growth rate of about 30%, and the domestic market share (domestic sales quantity of LED general lighting products/total domestic sales quantity of general lighting products) of general LED lighting products reached 16.4% (Quality-compliant LED product: 8%)[6].

However, the SSL industry China is faced with many challenges, foremost of which is low quality SSL products. This problem is a result of a number of shortcomings such as: limited number of reliable manufacturers of LED devices; relatively weak quality standards and lack of quality testing methods; too many small scale enterprises with weak innovation capability, let alone technical capacity in the area of SSL technologies; over-investment by local governments for SSL products manufacturing that produced low quality SSL products; lack of quality regulations and reliable market surveillance methods to remove/prevent bad quality SSL products entering into the market; etc. While China may have achieved a lot in the past decade in SSL technology development and implementation, the challenges are huge. Much more effort is needed to make SSL as a sustainable industry in the country, and realize the potential energy saving and GHG emission reductions from the widespread application of SSLs in lighting systems[7].

To sum up, the main factor affecting the market penetration of SSL in China is the product quality[8]. Despite the increase in production of Chinese LED lamps, outside China, many countries like US, India, do not see Chinese products as good quality products. Chinese LED lamps do not have good reputation in other countries. Large buyers warn that the low-priced LEDs and LED lights produced by the Chinese manufacturers usually burn out after less than a year. The Chinese producers should work on this worsening reputation for quality, as this may hurt them in the long run. According to industry experts, the Chinese manufacturers are still using outdated machinery and equipment, which is a major cause for low quality of LEDs and LED products[9]. While Lux Research has forecast China's LED lighting market revenue to double from $3.1 billion to $7.4 billion in 2017, a new Lux Research report stated that faulty and hazardous LED products some of them imported from China have sullied LEDs reputation, and are triggering a reaction from authorities around the world. One comment from that report says that most Chinese suppliers, (90-

[6] During the first half of 2014, China's LED industry kept up high growth rates, a trend extended from 2013. Industry insiders have reached a consensus that LED lighting demands will propel this trend well into 2016. (http://www.ledinside.com/intelligence/2014/7/ledinside_top_four_challenges_in_the_chinese_led_industry)
China has become one of the largest manufacturing base and consumer market worldwide. http://www.ledinside.com/intelligence/2014/7/ledinside_top_four_challenges_in_the_chinese_led_industry. According to data compiled by Hong Kong Trade Development Council (HKTDC) lighting products manufactured in China was up 10.7% YoY to RMB 418.5 billion (US $65.86 billion) in 2014. (http://www.ledinside.com/news/2015/11/highlights_of_chinese_led_lighting_regional_markets_and_brands_in_2015).

[7] After experiencing fall to the bottom and price slump in LED during 2012-2013, quite a few LED enterprises have been forced to go bankrupt or retreat from the industry. However, those that still struggled on the manufacturing front have reduced their capacity. Even worse, so many companies have aborted their capacity expansion plans, which is particularly true of the upstream sectors. Price reduction stimulates the market and capacity cuts stabilizes the price. The LED industry improved greatly in the first half of 2014, which soon came to an end. The market rise propelled enterprises to operate in full capacity, and even the enterprises that had been closed down resumed their capacity. But in the second half of 2014, the LED market plummeted and will very likely continue to worsen in 2015. http://www.prnewswire.com/news-releases/global-and-china-led-industry-report-2014-2015-300107001.html
In 2013, it was forecast that 1 in 5 Chinese LED lighting companies may fail as falling prices and oversupply batter an industry that Beijing bankrolled to try to build an energy-efficient future. About 4,000 companies in China are producing LEDs, tempted by tax breaks, subsidies and offers of cheap land for factories. Since then, these companies have been locked in intense competition that has halved prices over the past three years.

[8] Beijing has set a target for LEDs to account for 30 percent of the domestic general lighting market by 2015, more than triple the current level. That would cut annual coal use by 35 million tons, according to official estimates. But domestic demand is weak. Despite subsidies and the promise of reduced power bills over time, Chinese households have been slow to switch to LEDs because they are still much more expensive to buy than conventional lights. Quality issues have also hurt consumer confidence. http://www.reuters.com/article/2013/02/08/us-china-led-idUSBRE91701H20130208

[9] http://bizled.co.in/china-has-largest-led-market/

Comment & Response
95% in most industries, are unable to manufacture items in compliance. Just because a company can assemble LED lights doesn't mean they actually know anything about the product[10].
Comment: ***2.*** *Similarly, statements in the proposal that the promotion of SSL technologies in China "are limited, resulting in a somewhat "free-for-all" approach in the development of the local SSL industry and market" have to be probably revised. It seems there has been substantial research in the recent several years on the size and potential of the LED market in China and it is difficult to see what particularly new information will be received in the proposed market that the proposal surveys* **Response**: Depending from the information source, the number of LED manufacturers (lighting devices and other LED products) can vary from a low 4,000 (which seems to be only those that are officially registered) to a high 10,000 (in just one city alone). Alibaba (www.alibaba.com) lists 4,300 LED suppliers. Motivated by the economic gains in the production and sales (export) of LED products, many entrepreneurial Chinese (small-to-medium enterprises) are making LED products. Industry experts indicate that this is a typical problem associated with China, i.e., *"whenever a new industry is introduced, a huge swarm of speculators will descend upon it and quickly turn it upside down."* Many of these entrepreneurial people set up simple workshops. Many have setup workshops by renting a factory, acquiring a few soldering irons, and procuring all other required components in places where bigger manufacturers and retailers are found. Simple LED assembly can even be conducted from home. To sell their products, these small enterprises have engaged in a vicious price cut cycle. They try to lower costs, while remaining profitable at the same time. As a result these manufacturers have shifted their attention to lowering costs either by purchasing low-priced components, or in some cases omitting certain manufacturing procedures. There are now several thousand businesses in China producing LED components, many of which are uneconomic small companies that – in some cases – barely make a profit at all. As China's headlong growth slows slightly, though, the smallest are steadily being picked off. To properly manage the Chinese SSL industry, and to control the quality of locally manufactured LED lamps (and other LED products) that are produced in the country, would require knowing who and where these manufacturers are. A comprehensive survey of the national SSL industry is necessary. This is because there is currently no reliable and accurate set of SSL industry and market data in China. According to CSA, given the lack of comprehensive industry data monitoring and analysis system, the environmental, social and economic impacts of the SSL industry have not really been fully understood. As in any industry, it is essential to have a reliable data monitoring and analysis system for the local SSL industry in China (including the associated value chain). Currently, the available data are from various statistics gathered and published by various sources (e.g., local SSL industry groups). Without the first hand, reliable and timely information at national level, it is hard for both the national and provincial governments to formulate and enforce appropriate policies to address the specific needs of this industry. There is urgent need to come up with a unified/integrated monitoring and analysis system for the industry, and to make the information available to the public.
Comment: *3. STAP would like to see more careful and systematic than analysis presented in the proposal including the barriers for penetration of LED technology into the residential sector. In addition, although mercury free, careful analysis of the possible hazards from disposal of the old SSL and LED lights should be addressed together with the options for recycling or materials* **Response**:

[10] http://luxreview.com/article/2015/02/cheap-leds-buyer-beware.

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Based on information from the industry experts, the following are further explanations of the low level of market penetration of LED products in the residential sector:

- Price is a decisive factor in the residential lighting market in China. Indeed, consumer price sensitivity in this market is extremely high. Consumers still hesitate to purchase products with a higher price compared to available lighting device like CFLs and FLs. While it is known that China is a manufacturing hub for the world's leading lighting products, the lighting products made in China are of varying quality, with a large disparity between product prices. LED products are not only more expensive but also of sub-standard quality. One reason for such low compliance rates is attributed to the current keen price competition in the LED lighting market which forced some manufacturers into using sub-standard materials to reduce production costs.

- The residential LED lighting market uses the same retail channels as traditional lighting: supermarkets, convenience stores and hardware stores. Only with a mastery of the retail channels can a sales team negotiate favorable prices with retail operators. However, these retail channels lack the technical and marketing capacities to promote the applications of LED products. This has affected the popularization and promotion of LED products to residential consumers.

- The adage "to see is to believe" applies very much to the Chinese consumers. With very limited previous successful application models, the suitable utilization of LED products for different various lighting requirements have to be further enhanced. Hence, the advantages and benefits of using LED products are not yet really fully demonstrated particularly in the residential sector where bulk of the consumers have been targeted to make up bulk of the prospective users of these energy saving lamp types.

- The non-use of LED products by building designers and energy management companies because of the relatively higher cost and the non-guaranteed quality of the locally made lighting products.

The project also includes activities focusing on SSL product compliance requirements in line with applicable photobiological safety standards (e.g., CIE S009-2002: Photobiological Safety of Lamps and Lamp Systems), as well as the safe disposal of waste SSL products, and anticipated CFL and FL wastes that will be replaced by SSLs.

Comment:

4. *No details are provided of the differences between technologies of initial costs, life, energy use and quality of lighting for various applications. Efficient lighting is more complex than simply replacing one light bulb type with another lower wattage type, but this does not come across in the proposal. The set of quality and performance standards will possibly cover this issue.*

Response:

At present, the efficacy of industrial SSLs is up to 160 lm/W, and the average efficacy of LED lamps is more than 75lm/W. Incandescent lamp, CFL and LED lamps share the same percentage in full life circle energy consumption, i.e., more than 90% at service stage, less than 1% at manufacturing and transportation stage. In 2011, the energy consumption of an incandescent lamp was nearly 4 times of that of LED lamp. With the progress made in LED lighting technology, it is expected that the full life cycle energy consumption of an incandescent lamp in 2015 will be 8.6 times of that of a LED lamp, and the energy consumption of CFL will be about 2.2 times of that of a LED lamp.

Comparison of Lighting Efficiency of Main LED Lighting Products and Traditional Lighting Products in 2014

Comment & Response

LED Lighting Products	Lighting Efficacy (lm/W)	Traditional Lighting Products	Lighting Efficacy (lm/W)
LED bulb	75	CFL/halogen lamp/incandescent lamp	65/20/15
LED spotlight	75	Halogen tungsten lamp	20
LED tube lamp(luminary)	100	T8 fluorescent tube	80
LED down lamp(luminary)	80	CFL	65
LED street lamp/tunnel lamp(luminary)	110	High pressure sodium lamp(light source)	110

Comparison of Full Life Circle Energy Consumptions of Three Light Sources
Unit: MJ/20M lumen-hours

Life Cycle Stages	Incandescent Lamp	CFL	LED Lamp (2011)	LED Lamp (Expectation by 2015)
Production of raw materials	42.2	170	87.3	58.5
LED packaging	-	-	256	73.0
Subtotal of manufacture	42.2	170	343	132
Logistics	0.27	1.57	2.71	1.69
Use	15,100	3,780	3,540	1,630
Total energy consumption of each lighting service	15,142	3,952	3,886	1,764

The demonstration activities on the application of various SSL products focuses on the fact that the use of the more energy efficient SSLs is not simply for replacing one lamp type with another lower wattage type. This will definitely be considered in the SSL application demonstrations, whereby the quality and energy performance features of SSLs have to be in accordance with the lighting demand and application.

Comment:

5. *GHG Emission Reduction Estimates - The estimated 10 TWh of electricity savings and 9 Mt CO_2 reductions are not detailed, but would require an electricity emissions factor of around 900g/kWh which is correct for China. The additional 430M LEDs to produce the 10 TWh/yr of electricity savings equates to around 23 kWh savings a year per LED displacing, presumably, an incandescent light bulb. This in turn assumes the LED is turned on for around 250-300 hours per year on average. The abatement cost of US$0.17/t CO_2 for GEF funding is closer to US$ 4.2/tCO_2 for the total project funding though much of this can be spread over a longer period than the 3 year life of the project. The resulting indirect emissions could be highly significant given the global export potential of these technologies. Very low wattage systems will also enable lighting to reach the remote rural communities in many developing countries currently without electricity as smaller and cheaper solar PV generation and storage systems will be needed. Confirmation of what assumptions were actually used in the estimations would be useful and GHG calculations verified in the project document. In assessing GHG emission of the proposed interventions, STAP recommends using recently developed methodology for the GEF EE projects, particularly its standards and labelling model (available at: http://www.stapgef.org/revised-methodology-for-calculating-greenhouse-gas-benefits-of-gef-energy-efficiency-projects-version-1-0/).*

Response:

The initial estimates of the potential electricity savings and corresponding CO2 emission reductions during the project conceptualization (PIF) stage is based on the assumed number of demonstrations that are envisioned to be implemented during the project. In such demonstrations, the utilization of SSLs as replacement to existing traditional lamps, or as alternative to new lighting applications is the main basis for the potential electricity savings and CO2 emission reduction from

Comment & Response
China's power generation sector. During the project design and preparation stage, the project design team was able to determine the various applications to be considered for demonstration, including the demonstration of SSL product design and production, piloting of SSL application policies, and a financing scheme for SSL product purchase and use. The number of SSLs involved are more than that anticipated in the PIF, and the energy savings is based on the comparative energy consumption of SSL with that of the originally planned lamp types that include incandescent lamps, CFLs, halogen tungsten lamps, fluorescent lamps, grille and ceiling lamps, and high vapor sodium lamps (for traffic and street lighting applications); and in various forms such as bulb, tube, spotlight, downlight, flat light, and street lamp. The energy savings is derived from the difference between the efficacies of SSLs and that of the comparative traditional lamps at a given illumination level and annual operating hours (based on the application). The details of the estimation of CO2 emission reductions is presented in Annex III of the Project Document. It presents the details of the energy savings and GHG emission reductions that are directly attributable to this project, as well as the range of consequential CO2 emissions that the project is expected to realize. The estimation is based on the GEF prescribed methodology, and includes the incremental direct CO2 emission reduction by end-of-project, incremental lifetime CO2 emission reduction, and the potential range of incremental consequential CO2 emission reductions. The calculated CO2 emissions are based on a CO2 emission factor of 0.9074 tCO2/MWh, which is an average of the grid emission factors of the 6 regional grids of the country. Based on these estimated incremental lifetime CO2 emissions reduction, the resulting approximate unit abatement cost (UAC) is about US$ 3.46/ton CO2 (i.e., GEF$ per ton CO2), which is lower than the average US$ 5.63/ton CO2 based on the China Beijing Environmental Exchange (CBEEX)[11]. **Comment** : 6. *Proposal states that there is no fully developed and established standard set of SSL testing, quality control and certification system in China and in the world. This is difficult to accept. The China Compulsory Certification mark is one example. Similarly, the absence of the main certification institution in China, CNCA (Certification and Accreditation Administration) and the China Quality Certification Centre (CQC) as designated by CNCA to process CCC mark applications and defining the products that need CCC among project stakeholders would require some explanation.* **Response**: The issue with regards to SSL standards in China is that these do not apply with the present variety of SSL products that are being produced in the country. There is no fully developed and established standard set of SSL testing, quality control and certification system, which has led to the production of various SSL products of various performance and quality. Other stakeholders (lighting product manufacturers, academia, research and development institutions, and regional governments) are working on their own "standards" separately, lacking of integrated and joint effort from all relevant key players. Different SSL manufacturing consortia in the country have also come up with their own initiatives to set the SSL lighting standards[12]. China issued new LED lighting standards in 2014, which also classified performance and safety in four grades for all LED lighting products. However, one should note that the IEC (International Electrotechnical Commission) LED lighting standards adopted in Europe and North America are

[11] Hubei Carbon Exchange is at US$ 4.05/ton CO2 (October 2015)

[12] For example: Shenzhen LED Standards Alliance, China conducted a study to determine the non-economic benefits of standards developed by the Shenzhen LED Standards Alliance (LSA) for the LED lighting industry. http://www.iso.org/iso/home/standards/benefitsofstandards/benefits-detail.htm?emid=681

Comment & Response
not compulsory specifications in China. If the locally manufactured SSL products are to become more competitive in China and internationally in terms of product quality, performance, and cost, the quality and energy performance standards should also be in line with the international standards (e.g., IEC, CIE). Since China's LED luminaire energy efficiency standards lacks sufficient research and development process, the country should strengthen cooperation with other countries such as those in the EU or U.S.A. The proposed GEF project includes activities that would help facilitate such cooperation. China should also make use of international energy efficiency standards as a reference to formulate lighting efficiency standards. The project will, with the Chinese government's guidance, assist selected local SSL product manufacturing companies, on a demonstration basis, the design and production of SSL products in compliance with product quality, volume, and safety standards. The local SSL manufacturers will be encouraged to improve their product quality and actively participate in forming new standards, especially new products. As stated in a recent article from LEDinside, the aim is for local SSL manufacturers to innovate, and research new standards to aid the country's transition from "Manufactured in China" to "Created in China." http://www.ledinside.com/news/2015/11/comparison_between_lighting_energy_efficiency_standards_in_us_europe_and_china

GEF Council Recommendations to be addressed at the CEO Endorsement Stage

Germany

Comment & Response
Comment : 7. *Update the basic data as required by the STAP and verify validity of the intervention logic as well as of the incremental cost reasoning.* **Response**: While the project proponents believe that based on the information at hand from various reliable sources (*apart from those unverified information from the internet – according to the project proponents*), they have rechecked the sources of information that were used as bases for the proposed interventions and in coming up with the activities (incremental and subsumed baseline) for this project.
Comment: 8. *The Chinese SSL production is stated to be one of the leading in the world with more than 6,000 SSL related companies and more than 20,000 related patents. Knowing this, why is support by the GEF required?* **Response**: Considering the stated project objective, the scope is both on improving the production and utilization of quality SSL products in China. The problem at present is the different qualities of SSL products manufactured locally by an unregulated local SSL industry in the country. More than 10,000 LED producers (many are SMEs) and only a few of them are able to export. Not a single company in China makes it to the top 10 global LED lamp companies. The relatively poor quality of locally made LED lamps is the main reason why the target penetration rate in the country's residential is not achieved. In general, the quality of most of the locally produced SSL products is suspect. Because of that, households generally do not use them, and are more than happy with CFLs and some rural households are still using incandescent lamps. Lighting system designers and installers/contractors generally do not recommend the use of SSL/LED lamps because of the quality issue.

Comment & Response
If the quality of SSL product is improved through improvements in the manufacturing process, then such products can be available for both domestic and export markets. To enable this, the identified barriers that the GEF can help remove will be addressed in the proposed project.
Comment: 9. *The benefit of project component 3 "demonstration plants" remains unclear. With the total market of SSL consisting of 120,000,000 SSLs annually, the benefit of supporting the production of 714,000 SSLs annually remains unclear.* **Response**: Based on investigations carried out to confirm the barriers that were considered during the project conceptualization, the two main issues are: (1) Quality of locally manufactured SSL products; and, (2) Lack of knowledge in the public/institutional and residential sectors on the application of SSL products. Note that the main focus of the country's target LED penetration rate is the residential sector consumers. The cost of LED lamps is not directly the issue. The cost becomes an issue when the quality of the product is low. People would pay for a higher price if the product quality (e.g., burning hours) is for real. They won't pay for a high price item whose quality and reliability are uncertain.
Comment: 10. *The proposed project is assumed to contribute to CCM2 "Promote market transformation for energy efficiency in industry and the building sector." However, it remains unclear of what the expected market transformation consist. Is the expansion of the market considered to be market transformation?* **Response**: During the time the project was conceptualized (as presented in the GEF-approved PIF) in 2012, the LED penetration rate in the Chinese residential sector was 3% (LED general lighting products). The target penetration rate was 20%, which was also the one stated in the 12th FYP. With the baseline efforts that the country was doing and intending to do back in 2012, the expected improvement penetration rate was from 3% to only up to 16%. The proposed project (as stated in the PIF) will facilitate the incremental 4% to achieve the target 20%. During the project design and preparation period (PPG phase) in 2014-2015, it was found out that the market penetration rate of quality and EE standards-compliant LED lighting products has already improved to 8% (by end 2014). However, even with this improved baseline penetration rate, if the current obstacles remained unchanged, it will be almost impossible for China to achieve the target 20% penetration rate in the domestic lighting market. With the proposed GEF project, the target is the achievement by end of project (in 2018) of a 28% market share for quality and EE standards compliant LED general lighting products. This 28% market share would be a remarkable increase from the current 8% level, as compared to reaching only 18.5% market share if there is no GEF project. The real market transformation that the project endeavors to achieve is characterized by the widespread use of quality LED lamps in the residential sector. In the end, this will also lead to the expansion of the local lighting market, but for quality LED lamps.
Comment: *11.The analysis of barriers should be strengthened:* • *It is unclear how barrier 1 ("Lack of Systematic Analysis on Status of SSL Industry and Applications") is linked to CCM2 (market transformation). The mere collection of data does not induce a market transformation. Is the lack of data really a barrier, and if so in which sense? In this regard, the benefit of project component 1 remains unclear.* ***Response***:

Comment & Response

Currently, there is no GOC agency that is responsible for the SSL industry. The various SSL manufacturers in the country adopt different methods and tools for accounting their respective production volumes and sales data[13].

As in any industry, it is essential to have a reliable market data monitoring and analysis system for the local SSL industry to come up first hand, reliable and timely information at national level that can be used for formulating and enforcing appropriate policies to address the specific needs of the SSL industry. In this regard, the proposed project will include Component 1, which is for enabling strategic SSL technology and market developments in China. Under this component, several systems that will facilitate market transformation to quality and EE standards-compliant LED products include officially established and operational: (a) SSL Industry Database; (b) SSL Technology Information Exchange Service; (c) SSL Applications Service Industry Accreditation System; and, (d) SSL manufacturer rating scheme. Based on discussions with stakeholders (particularly the local SSL product manufacturers), these are the major systems, among others, that should be in place to in place to encourage them to venture into the local manufacturing of quality and EE standards-compliant LEF lighting products, which eventually will lead to market transformation in the local lighting market.

- *It is unclear if the baseline analysis laid down to the identification of barrier 3 ("Lack of SSL guidelines for production") actually corresponds to reality. If 50% of SSL products are already exported today, and are primarily exported to markets with high quality standards such as the European or the US American market, the presumed lack of quality standards for SSL products is questionable.*

Response:
Relying on general information derived from publicly available sources (e.g., internet) would share the same opinion that there is already substantial progress made in quality improvements in the SSL industry in China. However, hearing the views and concerns of the project proponents (NDRC, China Solid State Lighting Alliance, Standards Administration of China, International SSL Alliance), and reading articles in the China Daily News like "EU and U.S. Technological Barriers Besiege China LED Lighting Exports Again", the problem that this project intends to address becomes clearer. The reported booming SSL industry is mainly in terms of SSL product exports (mainly those consigned to foreign buyers that have to comply with quality requirements), and does not include those that are low quality products that are sold domestically, and in some cases illegally sold across borders to ASEAN countries. The low quality of SSL products in the local market is one of the main causes of consumer avoidance of using such lighting products.

- *In regards to barrier 4 as well as in regards to project component 4, Germany refers to the STAP comments on Chinese verification entities and the existence of SSL testing standards.*

Response:
The STAP comment on SSL testing standards have been noted and adequately responded to. The project design has considered these accordingly and activities related to SSL testing standards are described in the Project Document.

- *In line with the argumentation of the STAP, the emission reduction calculation should be based on a proven methodology, and assumptions should be made public. Herein, the minimum consideration period should be as long as the expected (technical) lifetime of SSLs.*

[13] Problems regarding the industry data includes: (1) No single category or classification code for the SSL industry in the Chinese statistical system; (2) No specific custom code for SSL products; (3) Lots of discrepancies between the production and sales data about the China SSL industry issued by the China Solid State Lighting Alliance and other LED manufacturing organizations/consortia; (4) Available data are from various statistics gathered and published by various sources, which do not even have common definitions of terminologies used; and, (5) No unified/integrated M&E system for the industry, which can also make the information available to the public.

Comment & Response

Furthermore, the baseline should adequately include the plan of the Chinese Government to phase out incandescent light bulbs by 2016.

Response:
Agree. Proven methodologies for GHG emission reduction from EE lighting systems have been used, and for consistency with other GEF EE projects, the GEF prescribed methodology for CO2 emission reduction estimation was used. The phase out of incandescent lamps in the country has been considered as among the baseline activities of the project.

- *In regards to project component 4 ("Established and enforced China Standards for SSL Products", "Established and operational SSL Product Testing and Certification System"), it is unclear if these elements could also be integrated into existing activities such as PILESLAMP or En.lighten.*

Response:
The proposed SSL project will coordinate and to the maximum extent possible integrate with the standards-related activities of PILESLAMP and En.Lighten. Work on the SSL standards will be in coordination with En.Lighten program partner in China, which is the National Lighting Test Center. That is the authorized national testing institution by the State Bureau of Quality and Technical Supervision and is also designated as testing center for China Compulsory Certification and China Quality Certification.

- *Special attention should be paid to a clear analysis of leakage effects. Exporting SSLs does not necessarily reduce emissions compared to the baseline situation.*

Response:
Agree. This will be taken into consideration along with the selection of the most appropriate methodology for the quantification of GHG emission reductions from EE lighting systems. The approach to address leakage will be determined during project implementation particularly in the identification of sites for the demo activities. In regards exported SSLs that may not necessarily reduce emissions compared to the baseline situation – since the baseline that is considered in this project is the one in China, it may not be possible to ascertain the impacts elsewhere. Actually, to be conservative, the GHG emission reduction that are accounted for in this project are only those in the country and does not include those from other countries where the Chinese-made quality-compliant SSL products are exported.

Comment :
12. For the assumed project scenario, it remains unclear if the number of 430 million SSLs considers the export rate of 50% and if respective leakage effects are considered (Chinese products could replace more efficient products from elsewhere).

Response:
The 430 million SSLs is meant just for the local market so that the target 20% penetration rate will be realized. The exports are in general those that are specially manufactured (following client quality specifications) and consigned to foreign buyers

The leakage effects are considered in the demonstration areas where estimates of the number of demo SSLs may be distributed/sold to customers outside of the demo area. The approach to address this will be determined during project implementation but may consider measures such as limiting participating retailers, or selecting those that are surrounded by certain percentage of the population in the demo area to minimize potential leakage. In regards locally made SSLs used in demos potentially replacing more efficient lamps that were source from elsewhere, it would be incumbent to the project team (and its partners) to properly determine the baseline situation in each demo area, and this will be done in Activity 3.1.1.

China: Enabling Solid State Lighting Market Transformation & Promotion of Light Emitting Diode (LED) Lighting

Response to GEFSec Comments (22 January 2014)

Comments and Responses	Reference
7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed?	
Comment: *Not at this time. Please also put the following numbers in the relevant places in Table B on pages 1 and 2:* *The estimated total number of SSL products: 714,000units; Total capacity: 5 MW (at 7W/lamp); and, Demonstration sites: 50 cities/towns in 30 provinces* **Response**: The suggested additional data on the demonstrations are now reflected in the revised PIF.	PIF: Part I, Sec. B, p. 2
24. Is PIF clearance/approval being recommended?	
Comment: *Not at this time. Please address comments in Box 7.* **Response**: The remaining comment has already been addressed and relevant changes are now reflected in the revised PIF. Looking forward to the PIF clearance and CEO approval of this proposed project.	

China: Enabling Solid State Lighting Market Transformation & Promotion of Light Emitting Diode (LED) Lighting

Response to GEFSec Comments (9 January 2014)

Comments and Responses	Reference
6. Is (are) the baseline project(s),including problem(s) that the baseline project(s) seek/s to address, sufficiently described and based on sound data and assumptions?	
Comment: *Please provide data source and justification for the following scenario assumptions: In the baseline scenario: 1. Solid State Lighting products has a market penetration rate of 3% (page 4) in 2012; 2. In the Incremental Reasoning scenario and the Alternative Scenario: the products have penetration rates of 7% and 16% or 20% (pages 8 and 14).* **Response**: The 3% market penetration rate in residential sector is derived from the report *Low Consumer Awareness To Be Main Obstacle for Chinese LED Lighting Market* by the LEDinside, which is the research division of the global market intelligence organization TrendForce. According to this report, while LED technology has been embraced by China's commercial and public lighting sectors, as of 2012 the penetration rate for residential lighting has not been as high, with LED residential lighting accounting only for 1% of the local LED market. The report also forecast that the % penetration rate in the residential sector will increase gradually to 3% in 2013, 8% in 2014 and 15% in 2015.	PIF: Part II, Page 4, Footnote 7

<table>
<tr><td>The 16% penetration rate[14] in the residential sector is the project proponents' forecast (based on trend analysis of historical LED lamp production, sales and export data) and considering the current initiatives of the government and the fragmented local SSL industry (i.e., without the GEF intervention). The LED penetration rate in the residential sector is calculated based on data from the China Solid State Lighting Alliance (CSA), China Association of Lighting Industry, and the China Customs. The total production of LED lamps and total LED lamps exported are derived from the reported data from local LED manufacturers to CSA. The data on the total annual number of lamps sold in China are obtained from the local lighting product manufacturers in their reports to CALI. The total number of LED lamps exported is based on statistical data from the China Customs. The 20% penetration rate is also based on historical data trend analysis but taking into consideration enhanced enabling conditions that will be established and facilitated by the proposed GEF project. We are not sure where the 7% in the comment came from since there's no mention of 7% penetration rate in the PIF. A more detailed study will be carried out during the PPG stage to confirm or enhance these forecast % penetration rates of LED lighting products in the Chinese residential sector.</td><td>PIF: Part II, Page 9, Footnotes 9 and 10</td></tr>
<tr><td colspan="2">7. Are the components, outcomes and outputs in the project framework (Table B) clear, sound and appropriately detailed?</td></tr>
<tr><td><u>Comment</u>:
Not at this time. Component 3 (INV) on page 2, there are three expected outputs. Only the first output is related to capital investment (INV) for tangible assets. Please split the$3,372,100 (GEF $) and $16,000,000(Co-financing $) and allocate them onto the three individual outputs.

<u>Response</u>:
The proposed reallocation per output is shown below and is now reflected in the revised Project Framework

<table>
<tr><th>Outputs</th><th>GEF($)</th><th>Co-financing($)</th></tr>
<tr><td>Completed demonstrations on SSL product manufacturing and SSL product lighting applications</td><td>3,000,000</td><td>14,000,000</td></tr>
<tr><td>Completed report on the demonstration scheme results evaluation and dissemination</td><td>172,100</td><td>800,000</td></tr>
<tr><td>Documented sustainable follow-up program design for financially supporting the SSL technology innovations, and the production of new SSL products and their applications</td><td>200,000</td><td>1,200,000</td></tr>
</table>
</td><td>PIF: Part I, Sec. B, Component 3, Page 2</td></tr>
<tr><td><u>Comment</u>:
1. Articulate the number of SSL products and the total MW capacity of the lamps to be demonstrated; and, 2. Indicate the number of venues tout these products for demonstration.

<u>Response</u>:
1) The estimated total number of SSL products that will be involved in the demonstrations is about 714,000units, with a collective total wattage rating of almost 5,000,000 or 5 MW (@ 7W/lamp)</td><td>PIF: Part II, Component 3, pp. 11-12</td></tr>
</table>

[14] The LED penetration rate is computed as follows: LED penetration rate (%)=LED_{Sale}/T_{Sale}
where: T_{Sale} = Total number of lamps (number of units) sold in China = Total number of LEDs lamps sold + Total number of all electrical lamps sold; LED_{Sale} = Total number of LED lamps (number of units) sold in China = Total production of LED lamps - Total LED lamps exported

2) The demonstrations will be carried out in about 50 cities/towns in 30 provinces in China	
Comment: *Furthermore, are there any national SSL Product Testing and Certification Centers in China? If not, some capital investment may be required to support the establishment of such a center. The current budget for investment (INV) seems not enough to develop a national testing center. Please consider reallocating some funds from Components 1, 2, and 4 to Component 3.* **Response**: There are currently 6 national SSL Product Testing and Certification Centers in China. Each of these centers employs different SSL product testing, quality assurance and certification systems. Each of these is working on their own "standards" and there are very few efforts to come up with an integrated system jointly with each other as well as with other relevant key players in the local SSL products industry. Because of this situation, the lack of uniform testing methods for SSL products and huge variations in the capabilities between different Centers and laboratories has resulted in non-uniformity between the testing results. The intention in Component 4 is not to invest part of the GEF funding for establishing another Center, but to improve the current SSL Energy Conservation Product Certification process in China particularly in improving the current limited technical knowhow for SSL quality inspection, which ultimately result in enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets.	PIF: Part II, Page 6, Last Para Component 4, pp. 12-13
8. (a) Are global environmental/adaptation benefits identified? (b)Is the description of the incremental/additional reasoning sound and appropriate?	
Comment: *Not at this time. Please see comments in Box. 6.* **Response**: Please refer to the responses provided to Question 6. The incremental increase in the penetration rate of LED lighting products (as compared to what China will be doing on its own), that will be facilitated by this proposed GEF project, is expected to bring about further increased usage of the energy efficient LED lighting products in the country. The additional electricity savings from the use of more LED lighting products in the country will translate to lesser fossil fuel consumption in power generation.	
10. Is the role of public participation, including CSOs, and indigenous peoples where relevant, identified and explicit means for their engagement explained?	
Comment: *Not Yet. Please address the role of public participation (lighting associations for example) and indicate if CSOs, women, and indigenous peoples are relevant to the project.* **Response**: The involvement of the public (i.e., general public in the residential and commercial sectors) in this project is both beneficiary and project partner. The realization of energy savings (and associated GHG emission reductions) will depend mainly on whether the consumers (i.e., general public) will make use of the energy efficient SSL/LED lighting products. Hence, they are the main targets in the promotional and awareness raising interventions that will be carried out in this project. Consumers that have understood and realized the benefits of using SSL/LED lighting products are also the ones who would most likely influence and entice others to consider these energy efficient lighting products. Organizations such as the CAS and CALI	PIF: Part II, Sec. A.2

and even international organizations like the International SSL Alliance (ISA) are also expected to participate in the provision of technical assistance in the capacity development activities of the project. The downstream activities along the SSL value chain are labor-intensive, and are viewed as something helpful for providing income generation opportunities in rural areas particularly for women. It should be noted that in the design and preparation of this project, adequate consideration shall be accorded to women and indigenous people if there are opportunities to involve them.

11. Does the project take into account potential major risks, including the consequences of climate change, and describes sufficient risk mitigation measures? (e.g., measures to enhance climate resilience)

Comment:
Not at this time. 1. On pages1 16-17, the last two rows are not rated with "Level of risk"; 2. Please take into account the following risks: (a) Failure of the market transformation policy and mechanism to facilitate supporting and incentivizing the local production of high quality; (b) Not enough capacity at testing centers to test the increasing amount of SSL products from market producers.

Response:
We now have indicated the level of risks to the listed risks that were inadvertently unrated. As to the suggested additional risk items, the following are the suggested corresponding mitigation actions:

PIF: Part II, Sec A-3, pp. 17-18

Risk	Level of Risk	Mitigation Actions
Failure of the market transformation policy and mechanism to facilitate supporting and incentivizing the local production of high quality SSL products	Low	Activities that will come up with the appropriate institutional framework and institutional capacity to enforce policies that are supportive of the manufacture, sale and applications of SSL products in the residential and commercial sectors will be designed and implemented under this proposed project. Adequate lobbying with the relevant GOC authorities will be done to ensure approval and strict enforcement of the formulated market transformation policies and mechanisms for the local SSL industry.
Not enough capacity at testing centers to test the increasing amount of SSL products from market producers.	Medium	The activity on the development of a standardized system for the inspection/testing and certification of the various SSL products that comply with the set SSL product quality and energy performance standards, and the associated capacity building on the implementation of such system will facilitate the proper testing and certification of SSL products in the market. Private testing laboratories can be accredited to take up the increased volume of SSL products to be tested once the testing procedures are standardized and simplified and the lab people of the SSL manufacturers become technically capable with the SS product testing.

13. Comment on the project's innovative aspects, sustainability, and potential for scaling up.	
Comment: *The Agency mixed together innovative aspects, sustainability, and potential for scaling up. Please use one paragraph to address each of the following areas: 1. Innovation, 2. Sustainability; and, 3 Potential for scaling up.*	
Response: The sub-section has been rewritten to describe separately the aspects of innovation, sustainability and scaling up.	PIF: Part II, Page 15
1. Innovation : This project is an attempt to initiate efforts to unify/integrate all the current separated and disjointed efforts of the various SSL manufacturers in China to establish a real local SSL industry. In so doing, the project will promote and facilitate the commercialization and widespread application of SSL products, increase its market share, boost the development of SMEs in this sector, enhance progress in related industries (particularly those making up the SSL value chain), as well as in the other applications of SSL technology such as liquid crystal display, automobile lights and new materials. In that regard, electricity savings and GHG emission reductions can be realized from the wide use of SSL products. Moreover, mercury-free SSL products that are used as light source will greatly lessen environmental pollution caused by waste CFLs that are not properly disposed. Apart from the higher energy savings that SSL products provide, these are generally rich in color, and IR-and-ultraviolet-free, and in that regard provide a comfortable and healthy lighting environment. Integrated with power supply system, SSL (i.e., using LED lamps) will make it possible to realize "green" lighting in some parts of rural China where electricity is still not available.	Para 1
2. Sustainability: The proposed project is essential for the local SSL industry development. The expected outputs that will be delivered are meant not only to provide the enabling conditions for cohesive efforts to sustain and guide the commercial development of the industry. The strategy to continuously facilitate the effectiveness of these enabling conditions involves their development, establishment and institutionalization, and in so doing also sustain them. For example, instruments that will be developed and produced by the project for enhancing the SSL market development, such as the SSL Industry Database; SSL Technology Information Exchange Service; SSL Applications Service Industry Accreditation System; and, SSL manufacturer rating scheme will help in sustaining these facilitative interventions even beyond the completion of this proposed project.	Para 2
3 Potential for scaling up: Several of the project interventions can be replicated in other regions of the country where the SSL product manufacturing is present to further enhance the efforts to promote the utilization of SSL products. Also, the planned demonstrations can be scaled up to involve more manufacturers, distributors and retailers of SSL products in the promotion efforts. Moreover, since this project will most likely be contributing to the realization of the objective of the ongoing global UNEP-GEF En.Lighten project, the potential for scale up of some of the interventions is there but beyond China since the country is a major global source of lighting products such as SSL/LED light products.	Para 3
16. Is the GEF funding and co-financing as indicated in Table B appropriate and adequate to achieve the expected outcomes and outputs?	
Comment: *The GEF funding and co-financing for INV in Table B may need to be increased. See comments in Box 7.*	

Response: Please refer to the revisions that have been made in response to the comment given in Question 7.	
24. Is PIF clearance/approval being recommended?	
Comment: *Not at this time. Please see comments in Boxes 6, 7, 8, 10, 11, 13, and 16.* **Response**: The project proponents have already made the required revisions (modifications & additions) based on the responses to the comments and recommendations of the GEFSec, and these are all reflected in the revised PIF. They look forward to the PIF clearance and CEO approval of this proposed project.	

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS[15]

A. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

PPG GRANT APPROVED AT PIF: US$ 150,000			
PROJECT PREPARATION ACTIVITIES IMPLEMENTED	***GEF/LDCF/SCCF/NPIF Amount ($)***		
	Budgeted Amount	***Amount Spent To date***	***Amount Committed***
1. Revalidate Barriers and Baseline Projects/Activities	40,000	39,104	896
2. Identification, evaluation and selection of demonstrations	35,000	35,000	0
3. Conduct of Logical Framework Analysis (LFA) with the project stakeholders	26,000	25,000	1,000
4. Detailed Design of Project Components & Activities	20,000	19,560	440
5. Establishment of institutional framework for project partners/co-financiers in the project implementation and to ensure close coordination with co-financed baseline activities	29,000	28,778	222
Total	**150,000**	**147,442**	**2,558**

Overall, the implementation of planned activities for the design, development and preparation of the SSLED project achieved the PPG exercise objective. The project development team that was created by the implementing partner, NDRC, carried out the PPG Exercise based on the agreed project initiation plan. Data and information that the team was able to gather and organize were used in the design of the various project activities. Information about the ongoing and planned programs of the national government, local governments investing in SSL product manufacturing, and that of the various SSL manufacturing industry associations/consortia were gathered, processed and analyzed to obtain a clear understanding of the current situation concerning the issues and concerns regarding the local SSL industry in China. Plans and programs of the national and the pertinent local governments on the local manufacture and promotion of the use of quality-compliant SSLs in the residential sector were also researched and reviewed. The discussions with the key stakeholders and project partners (mainly the local governments and SSL product manufacturers) have made possible the identification of relevant issues and barriers that need to be addressed and considered in the development and implementation of the SSLED project. The relevant SSL industry associations and SSL technology experts in the country were engaged in intensive discussions for the project development team to fully understand the nature and extent of these issues/barriers. The logical framework analysis (LFA) that was carried out by the team together with the stakeholders was mainly to verify and confirm the project results framework that was developed and presented during the PIF stage of the project development. Practically the LFA confirmed the previously defined project goal and objective, and expected outcomes. Discussions with the SSL product manufacturers, particularly regarding their technical capacity development needs, and other technological and business concerns became the basis of the demonstrations and specific technical assistance in various aspects of the design, manufacturing and application of quality-compliant SSL products. Consultations with the government institutions on quality standards were also carried out, for the design of the activities on the development of SSL quality and energy performance standards. The discussions with the stakeholders and project partners also resulted in getting commitments for the co-financing of the baseline activities that were subsumed into the project; the government's contribution to the funding of some of the incremental activities, as well as in the agreed project coordination

[15] If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

mechanisms and the project implementation arrangements. The outputs of the PPG exercise were used in the detailed design of the SSLED project components and activities.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

No reflows of funds are foreseen under this Project.

United Nations Development Programme
Country: CHINA
PROJECT DOCUMENT[1]

Project Description: Enabling Solid State Lighting Market Transformation & Promotion of Light Emitting Diode (LED) Lighting

UNDAF Outcomes: Main outcomes of UNDP strategic planning on environment and sustainable development:

Secondary Outcomes of UNDP strategic planning: Improve the quality of SSL, and promote the widespread application of SSL products in China
Expected CP outcomes: Apply and implement appropriate policies, laws, rules and regulations to establish and operate a sustainable financial and delivery mechanism
Expected CPAP outcomes: Establish energy efficiency policy and system, promote investment and financing for energy efficiency, improve the quality and output of SSL products and save the energy sources
Executing entity: National Development and Reform Commission of the PRC
Enforcement entity: National Energy Conservation Center of the PRC

Brief Description

This project aims to reduce energy consumption for lighting in China through the improvement of the quality and energy efficiency of lighting products and promoting their application to save electricity and reduce the greenhouse gas emission directly or consequentially. This will be facilitated through the improvement of the quality and energy performance of locally produced solid state lighting (SSL) products, and popularize and promote the widespread application of such lighting products in China. A carefully designed set of activities will be carried out under this Project to achieve the following outcomes: (1) Enabling of enhanced and strategic SSL technology and market developments based on comprehensively assessed and documented up-to-date status of the SSL industry and market in China; (2) Facilitation of support and incentives in the local production of quality SSL products, and in the application of SSL products compliant with established quality and energy performance standards; (3) Increased penetration rate of SSL products especially in the residential sector in China; and, (4) Enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets. The project is expected to bring about increased utilization of SSL products in lighting system applications in the country, which are expected to be energy saving, and consequently contribute to the country's global climate change mitigation targets.

1For UNDP supported GEF funded projects as this includes GEF-specific requirements.

Program Period: 36 months Atlas Award ID: 87736 Atlas Project ID: 94657 PIMS: 5120 Start Date: 1 February 2016 End Date: 28 February 2019 Management Arrangements: NIM	Total Resources Required: USD 32,697,694 Total Allocated Resources: USD 32,697,694 GEF: USD 6,242,694 Government: USD 25,300,000 UNDP: USD 225,000 Industrial Association: USD 930,000

Agreed by (Government): _____

Date/Month/Year:

Agreed by (Executing Entity/Implementing Partner): _____

Date/Month/Year:

Agreed by (UNDP): _____

Date/Month/Year:

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List of Acronyms

ACRONYM	MEANING
AQSIQ	General Administration of Quality Supervision, Inspection and Quarantine
APEC	The Asia-Pacific Economic Cooperation
BRICS	Brazil, Russia, India, China, South Africa
C&R	Commercial and Residential
CALI	China Association of Lighting Industry
CDM	Clean Development Mechanism
CFL	Compact Fluorescent Lamp
ICFL	Integrated Compact Fluorescent Lamp (i.e. including electronic ballast)
CHUEE	China Utility-Based Energy Efficiency
CICETE	China International Center for Economic and Technical Exchange
CIP	Cleaner Industrial Process
CNIS	China National Institute of Standards
CO2	Carbon Dioxide
CSC	China Standards Certification Center
CSA	China Solid State Lighting Alliance
CTA	Chief Technical Advisor
DSM	Demand Side Management
EE	Energy Efficiency
ELI	Efficient Lighting Initiative
EMCA	Energy Management Company Association
EOI	Expression of Interest
ERI	Energy Research Institute
ESL	Energy Saving Lamps
EUEEP	End-Use Energy Efficiency Project
FL	Linear Fluorescent Lamp
FSP	Full-Size Project Document
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GLIC	Green Lights Information Center
GLS	General Lighting Service
GOC	Government of China
GWh	Giga Watt Hours = 10^9 Wh
Hg	Mercury (chemical)
IFC	International Finance Corporation
IL	Incandescent Lamp
ISA	International SSL Alliance
kW	Kilowatt = 1000W
LED	Light Emitting Diode
LFA	Logical Framework Analysis
M&E	Monitoring and Evaluation
Mtons	Million Tons
MIIT	Ministry of Industry and Information Technology
MOF	Ministry of Finance
MOHURD	Ministry of Housing and Urban-Rural
MOST	Ministry of Science and Technology
MT	Metric Tons
MWh	Mega Watt Hours = 106 Wh
NDRC	National Development and Reform Commission
NECC	National Energy Conservation Center

NLTC	National Lighting Test Center
NPD	National Project Director
OLED	Organic Light Emitting Diode
PAC	Project Assurance Committee
PIF	GEF Project Identification Form
PILESLAMP	Phasing-out of Incandescent Lamps and Energy Saving Lamps Promotion
PMO	Project Management Office
PPP	Public Private Partnership
SAC	Standardization Administration of China
SSL	Solid State Lighting
TWh	Terra Watt Hours=1012 Wh
UNDP	United Nations Development Programme

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Ⅰ Situation Analysis

1. Context and Global Significance

1. Lighting is an important necessity for people, for society and for almost all human activities. It is also accounts fora significant portion of energy consumption both at the sectoral, national and global levels. Currently, global lighting energy consumption accounts for about 19%[2]of the global electricity consumption. This is equivalent to 8.9% of worldwide energy consumption and accounts for 0.63% of the global GDP. The popularization of green lighting technologies has become an effective option for countries all over the world to promote and realize energy savings and GHG emission reductions in tackling the global issue of climate change.

2. Mankind has been using electric lamps since the incandescent lamp was invented in 1879. With the progress of lighting technology, various kinds of new lighting devices have been developed to further enhance the quality of lighting but also improve lamp efficacy. The current electric lighting technologies that are available in China include: (a) thermal radiation lamps (e.g., incandescent lamps, halogen tungsten lamps); (b)gas-discharge lamps (e.g., fluorescent lamps, high pressure mercury lamps, high pressure sodium lamps, metal halide lamps); and, (c)solid state lamps (e.g., light emitting diode (LED) and organic light emitting diode (OLED) lamps[3].

3. Solid State Lighting (SSL) refers to the lighting devices made from semiconductor materials and organic materials. These have such advantages as low power consumption, long life, rich colors, as well as good applicability and controllability. Since heavy metal elements such as Hg are not added during the manufacturing of SSL products and with long life and high lamp efficiency, these are becoming popular application products in the area of green lighting. SSL technology is recognized worldwide. In 2014, three inventors of blue LED were awarded the Nobel Prize in Physics, which brought the SSL into the public view, and also represented the highest recognition of the development and energy conservation value of the SSL industry.

4. SSL has tremendous energy saving potentials. The maximum theoretical lamp efficacy of LED lamps is 370 lm/W[4]. At present, the typical efficacy of LED lamps is more than 75lm/W. Incandescent lamp, CFL and LED lamp share the same life cycle energy consumption percentage, i.e., more than 90% at service stage, and less than 1% at manufacturing and transportation stage. In 2011, the energy consumption of an incandescent lamp is nearly 4 times of that of a LED lamp (based on the same illumination level). With the technical progress for LED, it is expected that the life cycle energy consumption of incandescent lamp in 2015 will be 8.6 times of that of a LED lamp, and the energy consumption of CFL will be about 2.2 times[5] of that of an LED lamp.

Table 1: Comparison of Lighting Efficiency of Main LED Lighting Products and Traditional Lighting Products in 2014[6]

LED Lighting Products	Lighting Efficiency (lm/W)	Traditional Lighting Products	Lighting Efficiency (lm/W)
LED bulb	75	CFL/halogen lamp/incandescent	65/20/15

[2]Data source: Sandia National Laboratory of DOE of the USA, 2007.

[3] Data source: Disciplinary Development Report on Lighting Science and Technology 2012-2013, CAST, CIES, 2014.

[4]Data source: Disciplinary Development Report on Lighting Science and Technology 2012-2013, CAST, CIES, 2014.

[5]Data source: Life-Cycle Assessment of Energy and Environmental Impacts of LED Lighting Products, DOE, 2012.

[6]Data source: CSA Research, 2014.

		lamp	
LED spotlight	75	Halogen tungsten lamp	20
LED tube lamp	100	T8 fluorescent tube	80
LED down lamp	80	CFL	65
LED street lamp/tunnel lamp	110	High pressure sodium lamp(light source)	110

Table 2: Comparison of Life Circle Energy Consumptions of Three Light Sources[7]
Unit: MJ/20M lumen-hours

Life Cycle Stages	Incandescent Lamp	CFL	LED Bulb (2011)	LED Bulb (Expected by 2015)
Production of raw materials	42.2	170	87.3	58.5
LED packaging	-	-	256	73.0
Subtotal of manufacture	42.2	170	343	132
Logistics	0.27	1.57	2.71	1.69
Use	15,100	3,780	3,540	1,630
Total energy consumption of each lighting service	15,142	3,952	3,886	1,764

5. Under the influence of the need to save energy and compliance with environmental protection regulations, countries all over the world have begun to use more energy efficient lighting products, as well as issue orders/regulations to restrict or ban the use of less efficient lighting products such as the incandescent lamp. Since 2014, some countries have banned the use of incandescent lamps. For example, since 1 January 2014, incandescent lamps above 40W have been banned for sales in the USA; and, China prohibited the selling or importing of incandescent lamps above 60W[8] for use in general lighting starting 1 October 2014. It can be expected that the global lighting demand will continue to increase in the future, and the use of more energy efficient lighting products and systems (i.e., green lighting) will be among the typical interventions countries will carry out in contributing to the worldwide effort to save energy and deal with the issue of climate change.

6. The SSL industry in China has been growing at a rapid pace. With the technical progress and increased market demand, the scale of global SSL market is constantly expanding, as the technical breakthrough exceeds expectation and products are updated rapidly. The forms and business models of lighting industry will experience earthshaking changes in the future.

7. China has become the biggest energy consumer in the world. Suppose the energy consumption per GDP of every five years reduces by 20% continuously, the energy consumption of China after 2019 will account for more than 30% of the world's total energy consumption. At present, China tops the world in power generating capacity. The total power generating capacity of China in 2014 was 5.55T kWh, with a year-on-year growth of 3.6%.The country-wide electricity consumption is 5.52T kWh, with a year-on-year

[7]Data source: "Life-Cycle Assessment of Energy and Environmental Impacts of LED Lighting Products", DOE, 2012.
[8]Data source: Graph of Phase-out of Incandescent Lamps by Steps of China, NDRC, MOC, GAC, SAIC, AQSIQ, 2011.

growth of 3.8%[9].More than 80% of the electricity production in China is based on thermal power generation (mainly using coal), making the power generation industry an important source of carbon emission. The carbon emission of coal-fired power generation in China accounts for nearly half of the country's total carbon emission. Thus power generation not only causes large amount of coal consumption, but also becomes a major source of pollution (air, water and land).

8. In 2012, the lighting energy consumption of China accounted for 13.79%[10]of the total electricity consumption of the whole country. Since the Green Lighting Project was implemented in 1996, significant amounts of lighting energy saving has been achieved. The UNDP-GEF project on phasing out incandescent lamps and promoting the utilization of energy saving lamps implemented from 2009 to 2014 has pushed the country's efforts in the area of lighting energy savings into a new level, one that has brought more development opportunities for more energy efficient lighting technologies such as solid state lighting (SSL).

9. China is a major producer and consumer of lighting products (including SSL or LED products). The quality and energy efficiency of China's lighting products has made great contributions to the lighting power saving and greenhouse gas emission reduction of China and even the world. The volume of lighting products (all types) that were made in China in 2013 was about 18.8 billion pieces, ranking the country top in the world in lighting products production. The CFL production was about 5 billion, accounting for more than 70% of the world output[11]. The general LED lighting products production in 2014 was about 1.67 billion[12], with domestic sales of about 0.75 billion. The domestic market share (domestic sales quantity of LED general lighting products/total domestic sales quantity of general lighting products) of general LED lighting products reached 16.4%[13], 7 percentage point higher than the 8.9% in 2013.

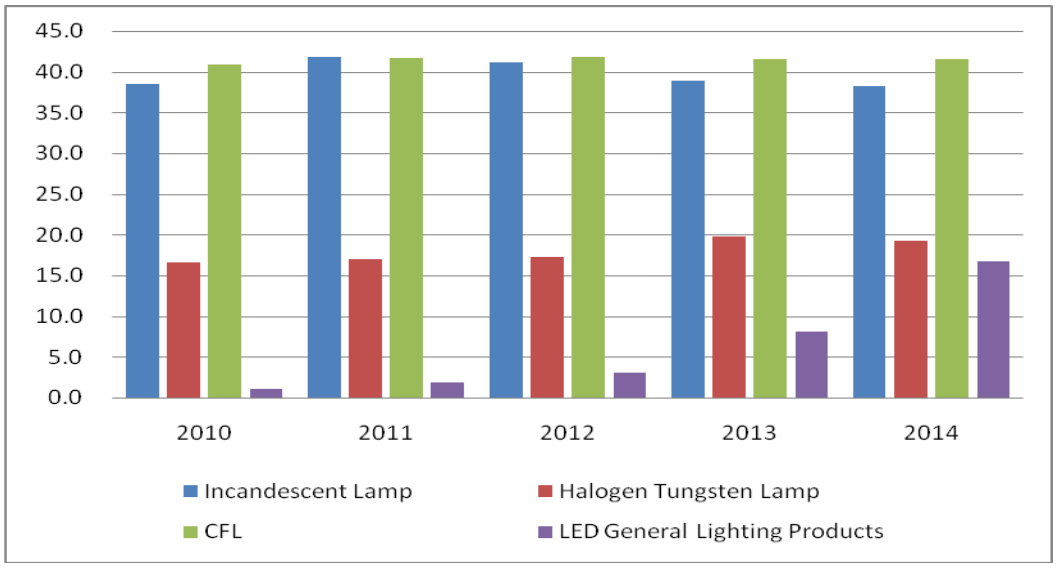


Fig. 1: Output of All Kinds of Lighting Products in China（Unit:100Million pcs）[14]

[9]Data source: National Analysis and Forecast Report on Power Supply and Demand in 2015, China CEC, 2015.

[10]Data source: Survey and Analysis Report on Chinese Lighting Market in 2012, CIES, Beijing Huatongren Commercial Information Co., Ltd. (ACMR), 2012.

[11]Data source: CALI, 2014.

[12]Data source: General LED lighting products refer to the indoor and outdoor functional lighting products, excluding the products for landscape lighting decoration, car lighting, etc. CSA Research, 2014

[13]Data source: Data and Development Situation of China's Semiconductor Lighting Industry in 2014, CSA Research.

[14]Data source: CIES, CSA Research, 2014.

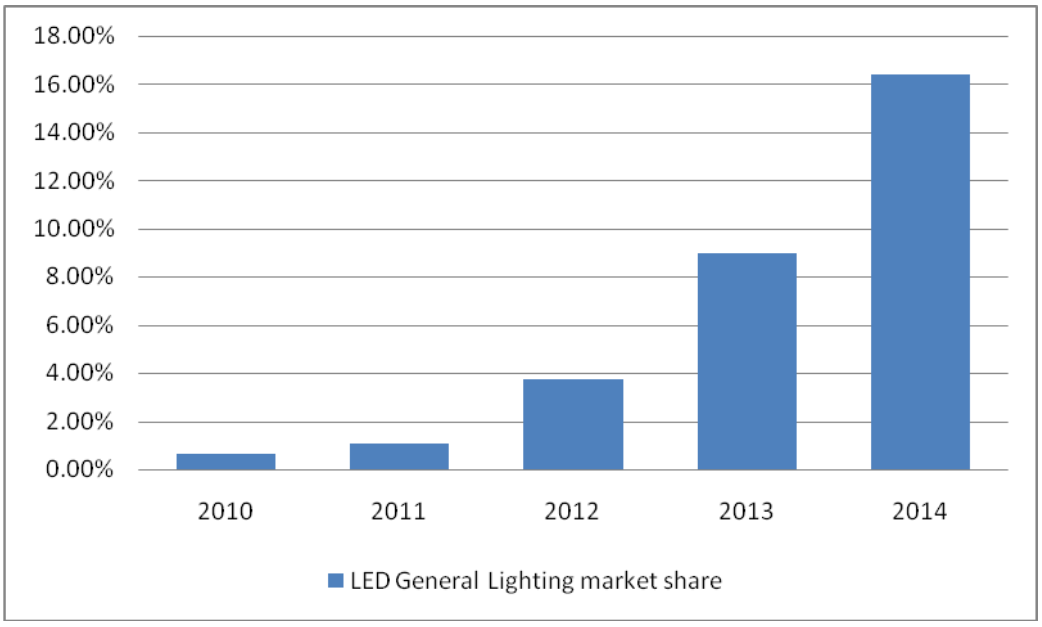


Fig. 2: Domestic Market Share of LED Lighting Products (Domestic Sales Volume)[15]

10. China has become a main exporter of LED lighting products in the world. At present, China's LED lighting products exports to three main markets in the world: European Union, United States of America, and Japan account for 50.2%[16] of its total exports. There are also new markets for Chinese-made LED products such as the BRICS countries, and those in the Middle East and Southeast Asia. The share of the locally produced LEDs in the country's export market in the BRICS countries has increased by 6.8%, Middle East by 2.1% and Southeast Asia by 1.3%. This type of information gives a general impression that there is already substantial progress made in quality improvements in the SSL industry in China. However, hearing the views and concerns of the local lighting industry (e.g., NDRC, China Solid State Lighting Alliance, Standards Administration of China, International SSL Alliance), and reading articles in the China Daily News like "EU and U.S. Technological Barriers Besiege China LED Lighting Exports Again", indicates there is something wrong in the industry. The often reported booming SSL products industry in the country is mainly in terms of SSL product exports (mainly those consigned to foreign buyers that have to comply with quality requirements), and does not include those that are low quality products that are sold domestically, and in some cases illegally sold across borders to other Asian countries. The low quality of SSL products in the local market is one of the main causes of consumer avoidance of using such lighting products. Thus it can be seen that the quality and output of China's LED lighting products production will be an important factor in the global popularization of high efficient lighting products.

11. The government-led SSL demonstration project has promoted the applications of SSL in, a series of application demonstrations during the Beijing Olympics, Shanghai World Expo, and in the recent APEC Summit held in Beijing. In addition, there was also the SSL application demonstration project by the three ministries including NDRC, MOST and MOF that promoted the technical innovation and large-scale application of SSL products. Such demonstrations also generated a wealth of experience in conducting market-oriented pilot demonstrations.

[15]Data source: Overview of the Data and Development of Solid State Lighting Industry in China in 2014, CSA Research.
[16]Data source: China Customs, CSA Research, 2014.

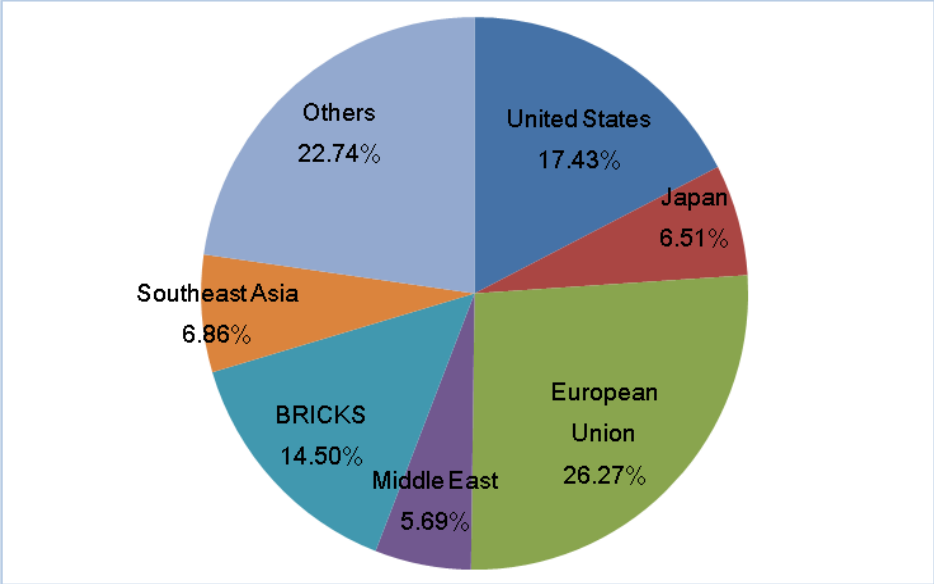


Fig. 3 Export Market Structure of China's LED Lighting Products in 2014

12. As a consequence of rapid urbanization, the rate of growth building construction in China has increased. This created a very significant market demand for lighting products. By 2019, up to 14 million people are expected to move into towns or cities, generating substantial potential market demand for green lighting products including LED lamps for lighting streets and public and residential buildings.

13. At the end of 2012, there were still 597 thousand families (or 2.527 million people) suffering from power shortage[17]. Characterized by low-voltage and direct current, the SSL is suitable for lighting as is or in combination with alternative energy sources (e.g., solar and other renewable energy resources, particularly in off-grid locations). The popularization of off-grid LED lighting system can improve the quality of life for people in remote areas that are currently without power supply.

14. SSL products manufacturing has become a major field for investments. In 2014, investments in China's SSL industry, was very significant. There were several applications for SSL manufacturing investments and the number of such projects reached more than 200, accounting for 74.6%[18]of the total investment projects. In addition, the large-scale mergers, acquisitions and reorganization of the lighting industry chain also brought good opportunities for foreign investments in SSL manufacturing. This however resulted in many of these new manufacturing entities producing so much SSL products, with qualities that are generally suspect. Low quality SSL products flooded the market, and almost 50% of the annual SSL product output were adjudged as of low quality.

15. The Chinese government has also incorporated SSL into the strategic merging industry as an important part. In recent years, several central government departments including NDRC, MOST, MIIT, MOHURD and AQSIQ have issued many policies measures, including Guidelines on SSL Energy Saving Industry Development, SSL Energy Saving Industry Planning and SSL Technology Development Planning, to promote the technical innovation and industrial development of SSL design and manufacturing.

[17]Data source: Promotion of Electric Power Construction of Areas without Power Supply by SGCC, China Power Network, 2013.

[18]Data source: Overview of the Data and Development of Solid State Lighting Industry in China in 2014, CSA Research.

16. Although China's SSL industry has made a remarkable progress, the improvement of the quality and energy performance of Chinese-made SSL products and popularization of the application of these products still face a lot of challenges although there are a lot of improvement opportunities, in contrast to the great market space and energy saving benefits. The main reasons for this include:

- Data gathering, investigation and analysis systems are still not well-established for the SSL industry. Hence, the timely availability of relevant information concerning the industry and technology developments cannot be followed closely; and the formulation, approval and enforcement of much needed policies cannot be effectively supported;
- Relevant support policy and regulatory framework systems such as technical innovation, quality improvement and application promotion for SSL products are inadequate to support the rapid development of the local SSL industry;
- There are very limited documented on-the-ground applications of SSL technologies that can be used as models or at least reference for the widespread promotion and use of SSL in lighting systems (new and retrofit); including market-oriented mechanisms for financing SSL initiatives. This contributes to the current status of SSL not being popular and consequently lower than expected penetration rates; and,
- Outdated system of SSL product certification characterized by not up to date SSL product standards (quality and energy performance), and non-established and non-enforced SSL application specifications and guidance. These led to the current inadequate system for controlling the quality of SSL products that are produced and sold within, and outside, the country.

In summary, the main problem that affects the widespread production and utilization of SSL in China is the low quality (durability and energy performance) of locally produced SSL products. All of the above barriers contribute to this core problem.

2. Barrier Analysis

17. The current state of affairs in the local SSL industry and market in China is the proliferation of locally made low quality SSL products and the rather low level of application of SSL in the country. This problem is caused by 4 main problems or barriers to the widespread domestic production and utilization SSL products in China. These main barriers are the following:

a) Lack of Systematic Analysis on Status of SSL Industry and Applications - The Chinese SSL industry is rapidly growing along with its associated value chain and broad applications. At the same time, the ongoing development work of various entities involved in the local SSL industry is opening up with different types of SSL products for different applications. Since there is currently no GOC agency that is specifically responsible for the industry, the various SSL manufacturers in the country adopt different methods and tools for accounting their respective production volumes and sales data. Moreover, there is no single category or classification code for the SSL industry in the Chinese statistical system, and there is also no specific custom code for SSL products. To date, there are lots of discrepancies between the production and sales data about the China SSL industry issued by the China Solid State Lighting Alliance or the other organizations and institutions[19]. In this regard, there are currently no reliable and accurate global SSL industrial and market data. The information from leading marketing and consultant companies are also not accurate, making the comparison of the SSL industries between different countries not reliable. In addition,

[19] Examples are LEDinside, the GSC (Guangdong Solid Lighting Industry Innovation Center), GGLED, etc. It is not uncommon that the SSL industry output in Guangdong Province as reported by GSC is sometimes more than the overall SSL industry output in China as reported by the CSA.

given the lack of comprehensive industry data monitoring and analysis system, the environmental, social and economic impacts of the SSL industry have not really been fully understood. As in any industry, it is essential to have a reliable data monitoring and analysis system for the local SSL industry, including that of the associated value chain. Currently, the available data are from various statistics gathered and published by various sources. These various sources do not even have common definitions of terminologies used. Without the first hand, reliable and timely information at national level, it is hard for both the national and provincial governments to formulate and enforce appropriate policies to address the specific needs of this industry. There is urgent need to come up with a unified/integrated monitoring and analysis system for the industry, and to make the information available to the public.

b) Absence of a Systematic Supporting Policy Framework on SSL Market Transformation – The Chinese SSL industry is one of the country's strategic emerging industries. While there is an officially mandated national government agency to administer it, there have been several government ministries, such as NDRC, MOST, and MIIT that have, in one way or another, carried out initiatives towards the development of this industry. Although several SSL-related policies have been issued, because of the lack of cross-ministerial synergy, these policies proved to be ineffective due to lack of appropriate institutional structure or mechanism. Moreover, these policies are not integrated. New business models, such as energy management service and other incentive mechanisms are not existent. Clear strategy and policies of balancing the SSL product development with that of other energy saving lamp types are not available. There is also misalignment of the development strategies and policies at the central government level with regional (province or city level) governments, causing non-sustainable investment.

c) Lack of Guidelines for SSL Products Application & Low Level of Social Awareness - The lack of technical guidelines on the applications of SSL products has affected their popularization and promotion. With very limited previous successful application models, the suitable utilization of SSL products for different various lighting requirements are yet to be clearly established. Although it is widely known that China produces a wide range of SSL products, the currently is still considered in the nascent stages of establishing the appropriate applications of these products. This is mainly due to the rather trial and error approach in the SSL product applications, which lead to poor system performance. In this regard, the advantages and benefits of using SSL products are not yet really fully demonstrated particularly in the residential sector where bulk of the consumers have been targeted to make up bulk of the prospective users of these energy saving lamp types. And this is among the main reasons for the rather lack of social awareness in the use of these products. Another reason is the non-use of these products by building designers and energy management companies because of the relatively higher cost and the non-guaranteed quality of the locally made lighting products. These has led to a lower than expected market share of SSL products, accounting for only3% of LED lighting.

d) Inadequate Standard SSL Testing, Quality Assurance and Certification System - There is currently some SSL standards that are in place in the country, but these are outdated and are not in sync with the present variety of SSL products that are being produced in the country. There is no fully developed and established standard set of SSL testing, quality control and certification system in the country. This has led to the production of various SSL products of various performance and quality. The present SSL products standards and testing method development lag far behind the SSL industry development. This significantly impacts on achieving a large scale market introduction of SSL products. The consequences are manifold: (i) huge variations in product quality; (ii) very long testing time for lumen-maintenance qualification; and, (iii) uncertainties in

product lifetime. For example, the lack of standardization in common interface for interchangeability between different SSL products has resulted in high cost and their inability for large-scale production. Traditional lighting product testing methods are not suitable, nor applicable for SSL products, due to their totally different failure modes, performance specifications and testing duration. Another factor that exacerbate the problem of inadequate standard SSL testing, quality assurance and certification system is the fact that the other stakeholders (lighting product manufacturers, academia, research and development institutions, and regional governments) are working on their own "standards" separately, lacking of integrated and joint effort from all relevant key players. In the international arena, different standardization bodies and like-minded manufacturing consortia have also come up with their own initiatives to set the SSL lighting standards. Furthermore, the lack of uniform testing methods for SSL products and huge variations in the capabilities between different lighting product laboratories have resulted in non-uniformity between the testing results. In addition, the current SSL Energy Conservation Product Certification process in China is hampered by limited technical knowledge in SSL product quality inspection. All of these have contributed to the rather chaotic situation in the country's SSL industry, particularly in regards to SSL product quality and pricing. For sure, such situation will not build the sought after confidence of the lighting product consumers.

18. These barriers should be addressed and removed to facilitate a sustainable SSL industry in China, that will not only generate revenues that will support local and national economic development but also speed up the large scale production and utilization of energy saving devices such as SSL products to realize potential of energy saving and pollution reduction.

3. Stakeholders Analysis

19. The stakeholders involved in the proposed project include national and local government agencies, non-governmental organizations as guilds and unions, technical organizations such as relevant appliance standards, testing and certification agencies, service agencies such as Energy Service Companies (ESCOs), and lighting system designers, lighting products manufacturers, retailers, bulk users and end consumers, etc.

- Government Agencies
  - National Development and Reform Commission (NDRC) will be responsible for coordination of the MOF and UNDP and contact with local governments where the SSL industry is located; project implementation management and accounting management;
  - Ministry of Science and Technology (MOST) will support research and development activities for improving SSL product quality and on the demonstration of integrated SSL technology applications;
  - Ministry of Housing and Urban-Rural Development (MOHURD) will be involved in the formulation and implementation of urban green lighting policy pilots or demonstrations;
  - Ministry of Transport of the PRC (MOT) will be involved in the formulation and implementation of green lighting policies for transport systems;
  - National Government Offices Administration (NGOA) will be involved in the formulation and implementation of green lighting policies for government buildings
  - Ministry of Industry and Information Technology of the PRC (MIIT) will be involved in the formulation and implementation of green lighting policies in industries;
  - Standardization Administration of the People's Republic of China (SAC) will be involved in the formulation and enforcement of national product and energy efficiency standards for SSL;
  - National Energy Conservation Center (NECC) will coordinate project planning and provide technology support and capacity development;

- Local government units will provide assistance in the implementation of the designed pilot/demonstration activities in their localities.

- Non-Government Organization
  - Relevant industry organizations (e.g., Solid State Lighting Alliance; China Association of Lighting Industry (CALI); and, International SSL Alliance (ISA) – China) – These will assist in the design and implementation of SSL products and application demonstrations; collect various information of the market application of SSL products, which include data/information about the local/national lighting (including intelligent lighting) market. These will provide information on the various SSL projects that have been carried out in China by the private sector, and other institutions, as well as potential interventions in removing barriers to the development of the local SSL industry and market.

- Technical Agencies (e.g., CNIS, CNCA, CQC, NLTC)
  - Technical research institutes will carry out the research on the technology to enhance the quality of the products and on the quality reliability test method;
  - Standard, test and certification agencies will assist to formulate and implement test and quality certification, etc.

- Lighting products manufacturers, energy service companies (ESCOs), lighting system service agencies, lighting products retailers, and consumers
  - Manufacturing enterprises and design units will participate in the demonstration project. These will be among the demonstration hosts on the production of SSL products, and will be involved in the design of the incremental technical assistance and capacity development activities of the project;
  - Consumer products marketing and sales entities (e.g., lighting product distributors, suppliers and retailers) will provide relevant information that will be considered in the formulation of the standards of SSL products; participate in SSL application technology training courses and promote the adoption of SSL application systems;
  - Energy Saving Company (ESCO) will apply and promote the widespread application of SSL in various lighting systems.

- United Nations Development Program (Beijing Office) will provide technical guidance and management assistance for the design and implementation of the Project.

4. Baseline Analysis

20. In line with its efforts to promote the production and utilization of energy saving lamps, China has also carried out and planned to carry out in the next 5 years initiatives to improve the quality of the products produced by the local SSL industry, as well as in promoting the widespread use of SSLs in the lighting energy end use sectors. In regards the lighting market transformation, some research have been launched to study and determine appropriate policies related to efficient lighting applications focusing on energy saving lighting products like CFLs and SSLs.

21. In terms of demonstration and promotion of the application of SSL, the MOST has launched "Thousands of Lights in Ten Cities" Project and launched SSL application pilot demonstration in more than 30 cities such as Tianjin and Harbin, etc. in 2009. The NDRC has initiated SSL application demonstration project and planned to launch 50 SSL application demonstration projects in 2010. These demonstration projects are essential in the promotion of the application of SSL products.

22. In terms of capacity for quality control of SSL products, the SSL industry is yet to catch up with the SSL quality assurance and certification systems established in developed countries.

Presently, there are about 25 SSL standards/norms in China. SSL quality testing techniques for SSL products have been constantly improved with trainings on new testing procedures and protocols. There are many lighting product testing laboratories in the country, but the testing procedures are not unified and quality control inspection capacity is inadequate.

23. The following summarizes the current programs/projects in China that address the abovementioned issues concerning the energy saving lamps promotion, in general, and the SSL industry, in particular, in the country. In some of these ongoing initiatives, specific actions are targeted also on SSL but would need additional support for certain specific aspects that are not currently being addressed, nor are expected to be tackled in the next 5 to 10 years.

24. In 2014, China's output of LED general lighting products was about 1.67 billion pieces and the sales volume reached about 0.75 billion pieces. The export volume was about 0.92 billion pieces and LED general lighting products accounted for about 16.4% of the country's lighting market share. The utilization of these annual volume of LED sold are expected to result to about 16 billion kWh saved annually, and CO_2 emission reduction of about 15 million tons in China. Considering the utilization of the exported LED products, that is expected to bring about annual energy savings of about 36 billion kWh and CO_2 emission reductions by about 33 million tons worldwide.

Baseline Project	Brief Description	Implementation Period	Owner or Implementer	Annual Budget, US$
SSL Market Development Enhancements (Component 1 baseline activities addressing systematic analysis of SSL industry and market development, and SSL products applications)	Market Survey of LED Enterprise Operating Performance	Ongoing since 2014	Government of China/ CSA, Related Institutions	100,000
	China LED Products Import and Export Data Analysis	Ongoing since 2013	Government of China/CSA	100,000
	Established and operational SSL Technology Information Exchange Service	Starting 2014	Government of China/ CSA, Related Institutions	100,000
	Road Map of SSL Industry	Starting 2014	Government of China/ CSA, Related Institutions	150,000
SSL Market Transformation Policies and Mechanisms(Component 2 baseline activities on the development of supporting policy framework on SSL market transformation)	SSL Manufacturers Accreditation Scheme	Ongoing since 2013	Government of China/ CSA, Related Institutions	100,000
	Energy Conservation Transformation Project, including Green Lighting Project, Universal support technologies mature LED lighting products in hotels, commercial buildings, roads, tunnels, airports and others	Ongoing since 2013	Government of China	1,200,000
	Project to Benefit People with Energy	Ongoing since 2012	Government of China	150,000

Baseline Project	Brief Description	Implementation Period	Owner or Implementer	Annual Budget, US$
	Saving Product (including: Financial subsidies to promote the work of LED products)			
SSL Application Demonstration (Component 3 baseline activities on demonstrating SSL applications and enhancing the awareness levels of the consumers on the benefits and economics of using SSL Products	Energy-saving technology industrialization demonstration projects (including: LED demonstration project, Improved LED industry development, manufacturing, systems integration and industrial capacity)	Ongoing since 2013	Government of China	1,200,000
	China SSL Industry Exhibition and Forum	Ongoing since 2003	Government of China/CSA	200,000
	Demonstration Project for Commercialization of Energy Saving Technology	Ongoing since 2011	Government of China	4,000,000
Strengthening of SSL Quality Assurance Capabilities (Component 4 baseline activities on research and development of SSL product testing procedures and quality assurance standards	Assessment report on the impacts of the SSL product standards implementation	Starting 2014	Government of China/ Related Institutions	175,000
	Research on identified Potential Improvements in SSL Products	Starting 2014	Government of China/ Related Institutions	200,000
	Development of National Standards for SSL Products	Ongoing since 2006	Government of China/ Standardization Administration of China / CSA	500,000
	Energy Saving Certification of SSL Products	Ongoing since 2012	Government of China/ Related Institutions	500,000

Business-as-Usual (Baseline Scenario)

25. With the ongoing and planned baseline projects/activities of the government and the local lighting products manufacturing industry, by 2018, the market shares of quality compliant LED general lighting products in China can only reach 18.5% (in 2014, the domestic market shares of qualified LED general lighting products was 8%, and that of the quality compliant LED products was supposed to be at 50%.) and the domestic sales volume of quality compliant LED products will only reach 1.4 billion.

Ⅱ Strategy

1. Project Justification and Policy Conformity

26. Developing the SSL industry, which produces and sells energy efficient products specifically the SSL products (i.e., LED lamps), is an effective action that is in line with Low-Carbon (LC) development, which is of great significance to promoting global energy savings and GHG emission reduction. It is something that contributes to the improvement and conservation of the natural environment. In that regard, the project is also consistent with the GEF's goal of supporting developing countries and economies in transition toward a low-carbon development path through the widespread application and practice of energy efficiency.

27. The proposed Energy Efficiency project is in line with one of the GEF-5 Climate Change Mitigation Strategy, which is on the promotion of market transformation for energy efficiency in industry and the building sectors (CCM-2).The project will focus on eliminating the identified barriers to the widespread application of SSL products in China. This is also is in line with the global UNEP-GEF En.Lighten program that aims at promoting the global high-efficiency lighting. In that regard, this project, will promote the transformation of global commercial market of high-efficiency lighting technologies and products and provide professional technical support for the developing countries. This will serve as an important supplement to the on-going UNEP-GEF En.Lighten program.

28. The proposed project is also in line with the Chinese Government's efforts and strategies to accelerate the process of SSL market transformation and promote achieving the goal of energy saving and emission reduction. Among the national policies and strategies that the project will conform to are the following:

- *The 12th Five-Year Plan for National Economic and Social Development of the People's Republic of China – This aims to establish a resource-saving and environment-friendly society; establish green and low carbon ideas, focus on energy saving and emission reduction, positively cope with the global climate change, strengthen resource saving and management, energetically develop circular economy and make more efforts to protect the environment; vigorously promote the energy saving and consumption reduction, the green consumption pattern and government green procurement; promote the advanced energy-saving technologies and products, accelerate the development and application of low-carbon technologies, and control the emissions of GHGs. The Plan targets that the energy consumption per GDP reduces 16% while the CO_2 emissions per GDP reduces 17%.*
- *Decision on Speeding up Cultivating and Developing Strategic Emerging Industries of the State Council – This aims at the development of 7 strategic industries, among which is the one focusing on energy saving technologies and new materials. The SSL industry falls within these 2 emerging industry categories.*
- *The Outline of the National Program for Long and Medium-Term Scientific and Technological Development (2006-2020) – This lists "the high-efficiency, energy-saving and long-life SSL products" as one of the first priority subjects (industrial energy saving) in the most important area (energy). SSL is in line with the direction of the scientific and technological development of China.*
- *The Opinions on Development of SSL Energy Saving Industry – This sets more specific goals and guidance for the development of SSL industry, noting to vigorously implement the green lighting project , make breakthroughs on key technologies and crossover on key points of the industry, cultivate and revitalize the SSL energy-saving industry in China, promote energy saving and emission reduction and steady and rapid economic development in the key areas including SSL technologies and equipment, lighting products and service system.*
- *The Special Plan for Long and Medium-Term Energy Saving in 2004 lists "lighting fixtures" into the key areas of energy saving and lists the "Green Lighting Project" as one of the Top 10 Key Projects of Energy Saving; while Energy Conservation Law requests to support the promotion*

and application of energy-saving lighting fixtures and other products via financial subsidies. In 2009, the Chinese Government set an goal of greenhouse gas emission control, that is, the emissions of CO2 per GDP in 2020 shall be 40~45% lower than that in 2005. The implementation of this Project is an effective way to implement such policies.

- *The Program for SSL Industry – This was issued by the 6 ministries and administrations in 2013 and defined the guiding concepts, basic principles and development goals in the 12th Five-Year Plan on the basis of in-depth research on the development situation of SSL and energy-saving industry.*
- *The Plan for the Building of National Independent Innovation Capacity in the 12th Five-Year Plan issued by the State Council in 2013 – This identified that the utilization of energy-saving lamps is among the key points in the innovation capacity building of the Chinese manufacturing industry and that SSL utilization is among the key points in the innovation capacity building of strategic emerging industries.*
- *The Opinions on Speeding up Developing Energy-Saving and Environment-Protection Industries issued by the State Council in 2013 – This defined the development goals in the next 3 years, including a more than 15% annual average growth rate of the production outputs of the energy-saving and environment-protection industry.*
- *The Plan for the Special Campaign of Energy-Saving and Emission Reduction Science and Technology in 2014-2015 issued by MOST and MIIT – This encouraged production of SSL products and other important energy-saving and emission-reduction technologies with definitive industrialization prospect.*
- *The Plan of Action for Energy Saving, Emission Reduction and Low-Carbon Development in 2014-2015 issued by the State Council in 2014 – This requires vigorous implementation of the improved programs on energy-saving technologies development, the energy efficiency leader, and SSL promotion and application.*

2. Country Eligibility

29. The Chinese Government signed the UN Framework Convention on Climate Change on January 5, 1993. China has completed and submitted its Second National Communications to the UNFCCC, which highlighted the promotion and utilization of energy saving devices, appliances and equipment are among the strategies adopted to contribute to the achievement of the country's target GHG emission reductions.

3. Country Drivenness

30. Stakeholder consultations have been held in conjunction with the logical framework analysis (LFA) exercise to obtain inputs/insights from LED manufacturers and other stakeholders regarding project-related issues, concerns, and barriers regarding promotion, application and commercialization of SSL products. The LFA exercise was the basis for the activities proposed to be carried out under the proposed SSLED Project, including project implementation and management arrangements.

4. Designing Principles and Strategic Considerations

31. The GEF fund support will facilitate the realization of a more robust and sustainable SSL industry in China. It will supplement the current and planned projects/programs of the government in SSL commercialization, thereby realizing the potential energy-savings and GHG emission-reductions from the use of SSL products for lighting in the various sectors of the economy, as well as open up opportunities for more energy conserving design and applications of LED lighting systems.

32. The proposed project intends to facilitate the realization of the potential CO_2 emission reductions (aside from the reduction in the emission of other air pollutants) by removing the identified barriers that prevents the realization of substantial GHG emission reductions that would contribute to the achievement of the country's climate change mitigation targets. These are barriers related to the widespread production and utilization of quality SSL

products in China. As in previous market transformation projects in the country, the strategy is to employ a combination of “technology push” and “market pull” activities to enhance the overall performance levels of locally produced SSL products by enabling the effective promotion and application of SSL production and application technologies and techniques.

33. Based on the LFA exercise that was carried out, the relevant project outcomes and outputs were identified. The principal theme in the project design strategy has been to emphasize tangible results with clear links towards the widespread production and utilization of quality (in terms of durability, energy performance) SSL products. A demonstration strategy is adopted in many key areas of the project, and central to the project will be the demonstrations on the more cost-effective production of high quality (i.e., at par with foreign-made) SSL products, the application of SSL products in various types of lighting systems, and the piloting of proposed policies that are new in China and will support the increased production and widespread application of high quality SSL products.

34. In the awareness enhancement area, more focused capacity development activities will be designed and carried out. Involving the lighting products distributors and retailers in the promotional efforts to enhance public awareness is employed. The enhancement of the technical capacity of people in the SSL industry in the area of product inspection, standard and certification of the SSL products in China, and the provision of technical support for the sustainable development of the SSL technologies and industry are part of the strategies that are applied in the design of this proposed project.

5. Alternative Scenario

35. The proposed GEF-funded project addresses the identified barriers that are hindering the enhanced production and widespread application of quality SSL products in China. It comprise of baseline and incremental activities that will enhance the outputs of the currently implemented and planned programs and activities in the country by the GOC, provincial governments and the local lighting products manufacturers in improving the quality and market share of energy saving lamps, in general, and SSL/LED products, in particular. These include, among others, activities on enhancing strategic research, creation and implementation of the SSL industry development roadmap (inclusive of the associated value chain components), formulation and enforcement of ESL and SSL market transformation support policies, establishment and enforcement of SSL products testing, quality assurance and certification system, exploring new business models to enhance the penetration rate of SSL products in the domestic market, improving technical innovation and products quality control capabilities, raising the social awareness and building authoritative public information services.

36. The designed barrier removal activities are expected to influence or bring about the realization of lighting energy savings and associated GHG emission reductions (from power plants producing electricity that is used for lighting) not only in China, but also in other countries where the Chinese-made SSL products are exported, sold and utilized. Considering the baseline scenario, by end 2018 the penetration rate of the quality standard compliant SSL products would only be 18.5% (from the 8% in 2014). Through the proposed project, an alternative scenario wherein the quality standards compliant SSL products penetration rate is higher at 28% can be realized. This modest 9.5 percentage point increase in penetration rate, when comparing the alternative scenario to the baseline scenario, translates to an additional of 10 million locally manufactured SSL products (that are of high-quality) into the market, mostly to the residential households. Hence, a direct consequence of this is an additional annual 937.2 GWh of electricity savings and 850.4 kilotons of CO_2 emission reduction.

37. During the project design/preparation stage (PPG exercise), it was estimated that the market shares of high quality SSL/LED general lighting products in China will increase by 9.5 percentage point by 2018 relative to 18.5% without the GEF funding assistance for the implementation of the proposed incremental activities (especially in indoor lighting). The market share of high quality SSL products is expected to increase from 50% (without this GEF project) to 70% (with this GEF project). The total incremental electricity savings from the utilization of these high quality SSL products is estimated to be about 937.2 GWh and the corresponding incremental CO_2 emission reduction would be about 850.4 kilotons throughout the implementation period of the this project[25].

38. It is expected that the total amount of electricity savings in China shall be more than 1,833 GWh and CO_2 emission shall be reduced by 1.664 million tons through the 3-year execution of the project[26]. When this GEF Project is completed (by end 2018), the target market share of 28% (from 8% in 2014) of high quality LED general lighting products in China is expected to be achieved. Without this GEF project the expected market share by end 2018 is only about 18.5%[27].

6. Project Goal, Objective, Outcomes and Output/Activities

39. **Project Goal:** The goal of this project is the reduction of GHG emissions in power generation in China. The GHG emission reduction is in terms of the avoided electricity generation (mainly from coal-fired power generation) due to electricity savings from the use of SSL systems in energy end-use sectors with lighting requirements. Energy savings in lighting will result in the reduction of electricity consumption and demand for lighting. Since, electricity is the most common form of energy used for lighting, the electricity savings translates to the reduction in electricity generation in China, and consequently reduced GHG emissions from the use of fossil fuel (mostly coal) in power generation. With this goal, this project is in line with GEF's goal of supporting developing countries and economies in transition toward a low-carbon development path through the widespread application and practice of energy efficiency.

40. **Project Objective**: The project objective is the facilitation of the enhanced production and widespread application of quality solid state lighting (SSL) products in China. This project objective will be achieved through the elimination of the barriers to the transformation of the Chinese lighting market to SSL. The barrier removal activities will be carried out under 4 project components that will: (a) define and strengthen the bases for SSL market development; (b) establish and enforce appropriate policies, rules and regulations, and mechanisms for SSL market transformation; (c) showcase the proper design, planning, financing and implementation of SSL product design, manufacturing and applications; and, (d) establish and enforce quality assurance standards for SSL products.

41. **Component 1: SSL Market Development Enhancements** -This project component will address the current concerns regarding the rather undefined SSL industry and market in China. The expected outcome is the enabling of strategic SSL technology and market developments based on comprehensively assessed and documented up-to-date status of the SSL industry and market in China. To realize this outcome, the following planned activities will be carried out under this component:

[25] Based on the GHG emission reduction estimates shown in Annex 3.

[26] According to the Program for SSL Industry issued jointly by six ministries and administrations of the PRC in 2013, LED functional lighting products will cover more than 20% of market shares.

[27] By reference to the growth of market shares for recent years, it is calculated that the market shares of LED general lighting in china will reach 40% in 2018with GEF fund.

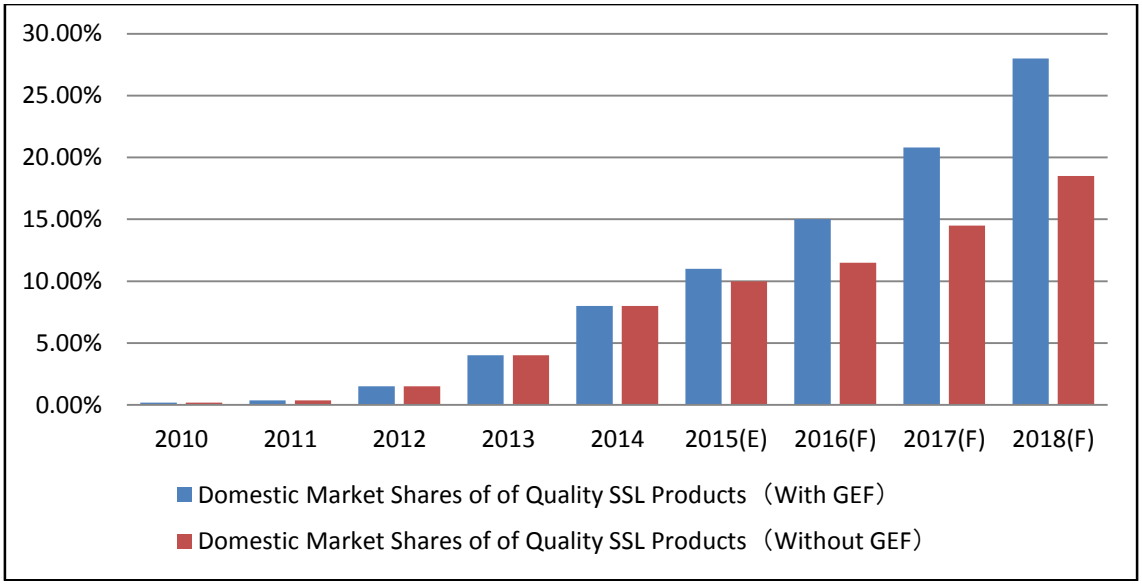


Fig. 4 Comparison for the Domestic Market Shares of Quality SSL Products with and without GEF Project

Output	Activities
Output 1.1: Completed Comprehensive SSL Industry and Market Survey	1. Conduct of a comprehensive survey of all registered SSL product manufacturers in the country (provincial government-owned enterprises, foreign-owned/licensed lighting product manufacturers, and private small-to-medium enterprises) covering all types of SSL products produced for general lighting purposes and for other applications. Existing organizations that also carry out their own surveys will also be consulted and where possible make use also of their statistical data.
	2. Design and establishment of the mechanisms for the data gathering work for the survey that will be used (and when necessary also updated) after the end of the project. Among the data that will be gathered and included in the database are SSL production volumes, sales, prices, market shares and exports and imports according to SSL product classification and application areas.
	3. Organization and conduct of a workshop for the lighting product manufacturers, distributors/retailers, and end users, to discuss and understand the current status of the industry, and the various actions that need to be done collectively to address the barriers/issues to increased production of high-quality (i.e., at least at par in durability and energy performance with foreign brand SSL products) and to the widespread application of quality SSL products in China.
	4. Preparation of the annual reports on the status and trends in the Chinese SSL industry and market. Among the major information in the annual reports are the following: (a) Annual production volume (billion pieces); (b) Annual value (billion RMB); and (c) Annual export value (billion RMB), of quality standards compliant SSL products produced in China.
Output 1.2: Established and Operational	1. Conduct of a promotional campaign to solicit the cooperation and support of various SSL industry organizations in the country, SSL product manufacturers and retailers, and other business entities

Output	Activities
SSL Industry Database	within the SSL industry chain on the creation, operationalization and maintenance of a unified SSL industry database system.
	2. Conduct of research/study on the requirements and appropriate procedures for data sourcing, data collection, categorization, processing, verification, and encoding, as well as data updating. Among the important market data/information to collect are the names and profiles of SSL product manufacturers (production capacity, types of SSL products produced, output value of products, and import and export volume/amount, domestic sales volume; types and number of users and typical applications, etc.). Also included are up to date SSL technologies development and applications in China and in other countries for use by SSL manufacturers in SSL lighting research and development.
	3. Design and development of a unified national SSL industry database. This is the SSL Industry Database System (SLIDS), which will include the profiles of all SSL product manufacturers who will be accredited by the government for the manufacture of SSL performance standards-compliant products for the domestic and foreign markets. The SLIDS shall be housed in one of the Non-Government Organization, which will be responsible for the operations and upkeep of the database.
	4. Consolidation of all available statistics for the purpose of coming out with a unified and integrated national database that will cover all SSL technology-, and market-related organizations in the country.
	5. Design and establishment of the mechanisms for the data gathering work not only within the country (i.e., among the current SSL technology-, and market-related organizations) but also in the international SSL market that will be used (and when necessary also updated) after the end of the project. This is part of the database maintenance.
	6. Promotion and advocacy for the institutionalization of the activity of monitoring both the local and foreign SSL market (prices, sales volume, and availability of the different types and brands of SSL products sold in the market and their corresponding market shares). Actions to ensure that this will become part of the regular activities of the relevant government agency to ensure sustainability of the process will be carried out.
	7. Development of SSL procurement guides using the information derived from the market monitoring activities, as well as the technical and energy performance specifications of the various SSL products in the market, for the purpose of enabling consumers to choose the appropriate SSL products.
	8. Design, preparation and conduct of the following events for the SSL industry: (a) Workshop to review the operation, performance of the SLIDS database; (b) Conference on the operationalization and maintenance of the SLIDS, and how SSL industry chain business entities as well as consumers can make use of publicly available information in SLIDS; and, (c) Special training for SSL industry on the utilization and maintenance of the SLIDS (including reporting procedures by member SSL product manufacturers).
Output 1.3: Established and	1. Preparation and publication of a White Paper on China SSL Technology and Industry Development (in Chinese and English) that

Output	Activities
Operational SSL Technology Information Exchange Service	include the propose information exchange service that will be operated and managed by one of the Non-Government Organizations.
	2. Conduct of an international workshop to present and promote the prepared white paper, and to get the cooperation and support of participating local and international SSL product manufacturers and suppliers, and SSL technology providers on the establishment and operationalization of an SSL Technology Information Exchange service. Arrangements regarding the data/information sharing and use, including requirements and terms and conditions will be discussed and agreed during the workshop. If necessary further discussion meetings (online) will be carried out to reach agreement.
	3. Design and development of a SSL technology information exchange (STIX) service program to be managed and operated by one of the Non-Government Organizations. This will be in line with the SLIDS development and operation.
	4. Conduct of analyses using the data/information in the SLIDS on various important issues, trends and developments in international and domestic SSL industries and SSL applications; forecast demand and application trends; SSL application socio-economic and environmental impacts; future potential technological and application advances, etc.
	5. Operationalization of the STIX services program – This program will enable sharing of latest SSL technology and market development information among SSL technology users and SSL product users in China and other SSL manufacturers in other countries with big SSL industries and markets.
	6. Organization and conduct of workshops to strengthen technical and information exchanges among domestic SSL enterprises, and between domestic and foreign SSL companies. These will be on the: (a) Review of the operation, performance and impacts of the STIX service to identify potential improvements; and, (b) Sustenance and improvement of the utilization and maintenance of the STIX service.
Output 1.4: Established and Operational SSL Applications Service Industry Accreditation System	1. Conduct of research study on existing applicable accreditation and certification systems for individual professionals and companies in China as well as in other countries. The research study shall also cover the development and implementation of evaluation and rating schemes for accredited/certified entities.
	2. Design of a suitable accreditation/certification scheme for lighting system service providers (e.g., lighting system designers, installers and consultants; engineering/architectural firms involved in lighting system design, etc.) taking into consideration local requirements and best practices both in China and in other countries. This includes also the design of an appropriate evaluation and rating scheme for the accredited/certified lighting system service providers.
	3. Promotion of the accreditation/certification scheme, and the evaluation and rating scheme, to both local and foreign lighting system service providers, including to relevant government agencies and authorities. The requirements and qualifications for entities applying for accreditation/certification shall be made known to them.
	4. Setting up of the approved accreditation/certification and evaluation and rating system for lighting system service providers in China that

Output	Activities
	are qualified to design and implement lighting system projects that will make use of SSL products and accessories.
	5. Implementation of the established and approved accreditation/certification and evaluation and rating systems for lighting system service providers. The operation of these systems will be regularly monitored and comments/recommendations from the accredited/certified entities will be gathered and used for improving (when necessary) them.
	6. Publication and dissemination of annual reports on the accredited/certified lighting system service providers and their rankings.
	7. Planning and conduct of capacity development events on the accreditation/certification scheme: (a) Workshop on the review of the operation, performance and impacts of the accreditation/certification scheme; (b) Special training for the lighting system service providers on the compliance to the requirements of the accreditation/certification scheme; and, (c) Capacity building sessions on advanced design, applications, installation and maintenance of SSL lighting systems.
Output 1:5:Completed and Operational SSL Product Manufacturer Support Program and Rating Scheme	1. Conduct review of previous experiences in China, and in other countries, on schemes that were designed and implemented mainly to encourage accredited/certified appliance and equipment manufacturers to market their products to rural areas of the country.
	2. Design of a promotion and incentive program for SSL manufacturers to produce quality SSL products for the domestic market in China, particularly the rural areas. Consultations dialogs with SSL product manufacturers and suppliers/retailers will be organized and conducted during the design of the program, and also to solicit their support and cooperation for the designed program.
	3. Design of a rating scheme for SSL product manufacturers that support the program. The scheme would be based on the magnitude of the electricity savings that the manufacturer has influenced to be realized through the documented sales of the SSL products that they have produced.
	4. Conduct of advocacy/promotional work to secure the approval of the program and the rating scheme by relevant government agencies/authorities.
	5. Establishment and operationalization of the approved programs on SSL product manufacturers' promotion and incentives, and rating scheme. The operation of these program and scheme will be regularly monitored and comments/recommendations from the accredited/certified entities will be gathered and used for improving (when necessary) them.
	6. Preparation and conduct of a workshop on the: (a) Review of the operation, performance and impacts of the program and rating scheme; and, (b) Follow-up actions on sustaining the operation of the program and scheme.

42. **Component 2: SSL Market Transformation Policies and Mechanisms**. This component of the SSLED Project will address the barriers related to SSL market transformation policies and mechanisms for SSL sustainable development. It will also address the lack of institutional mechanisms to implement SSL industry and market

supportive policies and regulations. The expected outcome from the outputs that will be delivered under this component is the facilitation of support and incentives to accredited SSL manufacturers in the local production of quality SSL products, and to lighting system professionals and SSL product distributors/retailers in the application of SSL products that are compliant with established quality and energy performance standards. To realize this outcome, this project component will comprise of the following planned activities:

Output	Activities
Output 2.1: Completed Research Report on Energy Saving Lamp Policies and Regulations	1. Conduct of a comprehensive research on applicable policies and regulations in support of the local manufacturing and applications of ESLs, in general, and SSL products, in particular, in China and in other countries. The specific items to be investigated are: (a) Policies and regulations on lighting market transformation to ESLs, and specifically to SSL products; (b) Challenges and constraints in the implementation of such policies and regulations; (c) Their impacts on enhancing the realization of target market shares, and increased production of ESLs, particularly SSL products; (d) Policies and regulations on the promotion of the increased utilization of ESLs, and specifically SSL products; (e) Difficulties and limitations in the implementation of such policies and regulations; and, (f) Their impacts in terms of magnitude of contribution to national energy saving and GHG emission reduction targets. Careful considerations shall be provided to the ongoing ESL-related projects in China, particularly the GEF-supported ESL projects such as PILESLAMP, and En.Lighten, to avoid duplication of efforts and suggested actions, but also to enhance potential synergies and complementarity.
	2. Publication of findings and recommendations of the research study and presentation of these in a workshop participated in by government policy and decision makers.
Output 2.2: Approved and Implemented SSL Industry Development Plans	1. Formulation of a roadmap for the local SSL industry and market that will focus on achieving the planned 28% penetration rate of SSL products (particularly in the residential sector) by the end 2018.
	2. Formulation of a medium term and a long term plan to implement the necessary actions to realize the set 28% target, and develop quality and standards-compliant SSL products for both the domestic and foreign markets, respectively. These will form part of the SSL industry's input to China's 13th Five Year Plan (13th FYP) preparation.
	3. Promotion of the road map and the medium-, and long-term plans, to the project stakeholders such as the SSL product producers, lighting system service providers, including to relevant government agencies and authorities. This will be done through a series of consultations to solicit comments and recommendations, and consolidate them for use in the revision of the drafts.
	4. Finalization of the road map and the SSL industry development plans utilizing the consolidated comments and recommendations provided by the project stakeholders. These will be presented to the stakeholders in a workshop to secure their agreement/approval.
	5. Implementation of the finalized road map and short- and medium-term development plans. The implementation and results of the road map and plans will be regularly monitored and comments/recommendations from the accredited/certified entities will be gathered and used for improving (when necessary) them.

Output	Activities
	6. Review of the road map and development plans implementation for purposes of (a) Determining the impacts of their implementation; (b) Forecasting of future SSL production trends and lighting energy consumption; and, (c) Development of follow-up actions that the SSL industry will recommend for the 14th FYP preparation.
Output 2.3: Enforced Policy and Regulatory Frameworks for Supporting the SSL Industry	1. Review of existing EE policies on lighting energy systems or "green lighting systems", and development of recommendations for potential policy revisions and new policies for supporting the development of the local SSL industry. The review will take into account results of the researches done in Activity 2.1.1.
	2. Revision of relevant existing policies on EE/green lighting systems, as well as formulation of new policies (e.g., on SSL product standards) based on the policy researches and SSL industry development planning works that will be carried out in coming up with the applicable mechanisms and incentives that will be in turn be supported by appropriate policies that will be formulated. The incentives and support mechanisms that will be considered will be based on the findings from the policy researches but may include: (a) fiscal incentives in the local production and export of locally made SSL products; (b) incentives for technical innovations in the SSL industry; and, (c) financing incentives.
	3. Presentation and promotion of the recommended policy revisions and new policies on EE/green lighting (e.g., SSL product manufacturing and application specifications and standards) to relevant government agencies/authorities, as well as the key players in the SSL industry. Follow-up advocacy/lobbying work with the relevant entities and authorities will be carried out until the proposed policy revisions and the recommended new policies are approved.
	4. Formulation of the supporting implementing rules and regulations (IRRs) based on the approved policies, and on the quality specifications and energy performance standards (that meets international acceptance) for locally produced SSL products.
	5. Finalization of the SSL policy framework based on the approved policies and IRRs. The SSL policy framework shall be presented and promoted to relevant government agencies and authorities, as well as the key players in the SSL industry.
	6. Implementation of necessary advocacy/lobbying work for the approval and enforcement of the SSL policy framework. The implementation and results of the policy framework implementation will be regularly monitored and comments/recommendations from the SSL industry players will be gathered and used for improving (when necessary) framework. Among the major impact that will be investigated is the market share of quality standards compliant SSL products.
	7. Organization and conduct of a workshop to review the impacts of the implementation of the policy framework, and to discuss and agree on recommendations for improving and making the policies and IRRs up to date.
Output 2.4: Established and Operational	1. Review of existing operational financing schemes of the GOC, local governments and the private sector (e.g., commercial banks, ESCOs) on the implementation of EE projects, purchase and

Output	Activities
SSL Financing Scheme	installation of EE appliances or equipment. The review will assess the feasibility of applying the same strategies and mechanics in coming up with financial assistance schemes for supporting the development of the local SSL industry. The review will also identify appropriate policies that will support the financing of ESL (specifically SSL products) manufacturing and utilization projects, and will take into account results of the researches done in Activity 2.1.1.
	2. Design of applicable financing schemes for SSL technology innovations (including those in the ESL industry chain), financing support applications with banks and financial institutions for SSL product quality improvements; and for SSL products promotion. This will involve designing the type and mechanics of the selected appropriate financing scheme. The potential schemes that can be considered include: (1) Financing scheme (e.g., soft loans) for SMEs for improving their SSL production lines and processes, for improved product quality and design, and for improved quality control systems; (2) Financing for incremental cost of using LED lighting (compared to other ESLs) in the implementation of lighting system projects (e.g., lamp replacement, lighting system retrofit) of building owners, and lighting system service companies; (3) Financing for SMEs for their R&D efforts to come up with high quality and performance SSL products; and, (4) Financial assistance schemes for LED lamp retailers, as well as for incentive programs such as rebates scheme for consumers for the purchase of SSL products (or for bulk purchase of SSL products).
	3. Development of an incentive scheme for SSL product retailers (including shops and E-business channels) that will be implemented by either the government (national/local) or interested banks/financial institutions. This includes the preparation of the business plan for the scheme implementation
	4. Establishment and operationalization of the selected financing scheme(s) by the government (national and local) and partner banks/financial institutions, including the ESL retailer incentive scheme. The operation of these schemes will be regularly monitored and comments/recommendations from the accredited/certified entities will be gathered and used for improving (when necessary) them.
	5. Conduct of campaigns (in partnership with the relevant government entity and participating banks/financial institutions) for the promotion of the established and operationalized financing scheme(s), and retailer incentive scheme.
	6. Planning and conduct of capacity development activities for ESL enterprises (manufacturers/suppliers) that are within the SME category on: (1) Designing, planning and implementing ESL/SSL application projects that are supported by financing schemes; and, (2) Financial feasibility analysis of ESL/SSL manufacturing and supply improvement projects.
Output 2.5: Established and Operational SSL Manufacturers	1. Conduct of research study on existing applicable accreditation and certification systems for SSL product manufacturers in China and in other countries. The study shall also cover the development and implementation of evaluation and rating schemes for accredited/certified SSL product manufacturer.

Output	Activities
Accreditation Scheme	2. Design of a suitable accreditation/certification scheme for SSL product manufacturers taking into account local requirements and best practices in China and in other countries. This includes also the design of an appropriate evaluation and rating scheme for the accredited/certified SSL product manufacturers.
	3. Promotion of the accreditation/certification scheme, and the evaluation and rating scheme, to both local and foreign SSL product manufacturers, including to relevant government agencies and authorities. The requirements and qualifications for SSL product manufacturers applying for accreditation/certification shall be made known to them.
	4. Establishment of the approved accreditation/certification and evaluation and rating system for SSL product manufacturers.
	5. Implementation of the established and approved accreditation/certification and evaluation and rating systems for SSL product manufacturers. The operation of these systems will be regularly monitored and comments/recommendations from the accredited/certified manufacturers will be gathered and used for improving (when necessary) them.
	6. Publication and dissemination of annual reports on the accredited/certified SSL product manufacturers and their rankings.
	7. Preparation and conduct of capacity development events on the accreditation/certification scheme: (a) Workshop on the review of the operation, performance and impacts of the scheme; (b) Special training for SSL product manufacturers (particularly SMEs) on the compliance to the requirements of the accreditation/certification scheme; and, (c) Capacity building sessions on advanced SSL product design and manufacturing technologies, approaches and strategies.
Output 2.6: Completed technical assistance program for local SSL products manufacturers in the design and manufacture of quality compliant SSL products	1. Selection of suitable local SSL manufacturers for assistance in design and manufacture of quality standards compliant SSL products. Evaluation of the technical capacity needs of each manufacturer.
	2. Development of action plan tailored to the technical capacity needs of each selected manufacturer for them to achieve enhanced levels of technical capacity in designing and producing quality standards compliant SSL products
	3. Conduct of individual technical assistance for local SSL product manufacturers in the design and manufacture of quality standards compliant SSL products. This is to help the manufacturers achieve targets in increased quality and energy performance as well as reduced cost of SSL products. The specific assistance will enable manufacturers to improve their own SSL product design and SSL production lines and processes. Foreign and local SSL experts will provide one-on-one mentoring on the various aspects of SSL product design and important stages of production. The manufacturers will be coached in optimization of the production process via improved operating strategy/conditions, system controls and associated software. Considerable attention will also be given in design guidance to safety issues. The technical assistance to the manufacturers will be carried out through company visits and conference calls.

Output	Activities
	4. Conduct of a series of workshops to address the needs of the entire local SSL industry in producing quality compliant SSL products that can meet global quality and energy performance standards. Subjects to be covered could include: (a) Global and local status of SSL product technology, policy, and market; (b) SSL product design, including luminaires and controls; (c) burning hours; (d) lamp efficacy; (e) illumination levels and quality; (f) production controls and associated software; (g) global and domestic sourcing of high quality and optimum cost SSL raw materials and components; and (h) safety of SSL product application.
	5. Evaluation of the impacts of one-on-one technical assistance program, and the capacity development program. This evaluation will gather information on whether these programs have significantly impacted the technical capacity of the local SSL industry. A recommended sustainable follow-up program will be developed for further enhancements of the technical capacity in the SSL industry.
	6. Publication and dissemination of information on improved SSL product design and production in China that were achieved through the SSLED Project. Two written reports (by mid-term and near end-of-project) on project's achievements in improved SSL product design and production and steps taken to reach those achievements.

Component 3: SSL Application Demonstration. This project component will focus on the demonstration of the following: (1) Production of quality SSL products that are compliant with set SSL quality and performance standards; and, (2) Application of SSL products in lighting systems in the public/institutional and residential sectors. The demonstrations shall showcase the socio-economics and environmental benefits of SSL technology applications. The expected outcome from this component is the increased penetration rate of SSL products especially in the residential sector in China. The following activities are planned to deliver the relevant outputs that will help realize this outcome:

Output	Activities
Output 3.1: Completed Demonstrations on SSL Product Manufacturing and SSL Product Lighting Applications	1. Review of the potential demo/pilot projects that were identified during the project preparation stage as to their financial and technical viability, the magnitude of energy savings and GHG emission reductions that can be realized, and the commitment of the owners/implementers to be the demo/pilot host. A set of criteria will be developed for use in the final selection of the demos/pilots and the demo/pilot host entities. The pre-feasibility analyses that were conducted during the project preparation phase will be reviewed to determine and verify project implementation requirements. Further feasibility assessments will be carried out by the demonstration hosts. It is recommended the demos/pilots be in conjunction with the government programs: "One Belt, One Road"[20], and the development plan for Yangtze River Belt. In this regard, the SSL product application demos/pilots shall be carried out in selected central government agency buildings, nursing homes, "Hope Primary Schools", large stadiums, transport infrastructure facilities, in 50

[20]This refers to the "Silk Road Economic Belt" and "21st Century Maritime Silk Road". It's an "Asia-Africa-Europe Infrastructure Plan", and covers the provinces in the west of China.

Output	Activities
	cities/towns including those located in high altitude and cold areas of the country. These demos/pilots will be a combination of indoor and outdoor SSL product applications in different end-use sectors and climate conditions. Where and when feasibly applicable (financially and technically), the demonstrations would include energy efficient lighting for public buildings, residential buildings, industrial lighting, traffic lighting, intelligent lighting systems[21] and applications that are in conjunction with the application of renewable energy sources. These demos/pilots shall showcase not only the energy saving features of SSL, but also its capability to provide high-quality lighting to meet different demands. The demos/pilots shall focus on innovative applications.
	2. Finalization of the line-up of confirmed SSL product manufacturing and application demos/pilots. About 3 to 5 SSL manufacturers will be selected for the SSL production demonstrations; and about 1 or 2 cities/towns each (total of 50) in 30 provinces will be selected for the SSL applications demonstrations in households, high-rise residential buildings, as well outdoor lighting applications (e.g., lighting of streets, public parks and open air sport arenas). One of the applications that will be demonstrated shall be in conjunction with the application of renewable energy applications (e.g., solar PV powered battery charging stations for energizing LED lanterns). The estimated total number of SSLs (baseline and incremental) that will be involved in the demonstrations is around 13,200,000 with a combined wattage of about 92,400,000 watts or 92.4 MW @ average 7W/lamp. The incremental number of SSLs for the demo is 714,000 with a combined wattage of 5,000,000 or 5 MW @ average 7W/lamp.
	3. Design of the demonstration schemes. This will involve carrying forward the existing feasibility studies for the identified demo/pilot projects to detailed technical design and engineering, budget cost calculation, design of ownership and management models, cost-benefit analysis, design of operation and maintenance concept, and assessment of financing aspects. It will also include the establishment of baseline data for each demo/pilot project such as the baseline lighting energy consumption of the relevant application. The operating performance targets for each demo/pilot project will also be established. This activity could be carried out in conjunction with the review/conduct of the feasibility analyses.
	4. Preparation and conduct of a seminar-workshop to promote the demonstration schemes. This activity will be for purposes of informing the stakeholders and in particular the SSL industry what these are all about, the objectives, and the expected results and impacts.
	5. Finalization of the design of demo/pilot projects. The demo/pilot hosts will be assisted (if requested) in the comprehensive technical and economic feasibility evaluations, and engineering design. Assistance will also be provided in the processing of financing applications of the demo/pilot hosts for the financing of the operation and maintenance of each demo/pilot site. This is for the host

[21]This refers to systems that involve intelligent control of lighting equipment via distributed wireless tele-measurement, tele-control and telecommunication control systems composed of computer, wireless data transmission, spread spectrum communication technology, computer intelligent information processing and energy saving electrical control system.

Output	Activities
	companies that are availing of the financing from banks/financial institutions for their SSL-related projects that will serve as demos/pilots for this GEF project.
	6. Implementation of the SSL product manufacturing and application demonstrations. Generally, the implementation will be carried out by the demo/pilot hosts with the support of the project team to ensure that all requirements for the successful implementation of the demos/pilots are in place. The demos/pilots shall also be in conjunction with the promotion of the SSL Product Standards in Component 4, inasmuch as the SSL products that will be used for the demos/pilots shall be those that are compliant with set China SSL product quality and energy performance standards, Each demo/pilot project will be regularly monitored by the host and the SSLED project personnel using a common M&E system that will be designed and employed for this purpose.
Output 3.2: Completed Report on the Demonstration Scheme Results Evaluation and Dissemination	1. Preparation of the project profiles (as case studies) of the SSL product manufacturing and application demonstrations/pilots that will be carried out. An inventory of the demo/pilot project results, which will also include similar and other SSL technology production and application projects that were implemented in other countries. Each project report will be summarized into project profiles (or case studies) following an agreed presentation format. These project profiles will be inputted into the SLIDS. The project profiles will be stored in a specific module of the SLIDS.
	2. Conduct of an overall performance evaluation of the demo/pilots projects, including the dissemination of the demonstration results and recommendations. Technical guidance materials (web-based and printed media) on specific SSL applications (apart from those that will be showcased) will also be prepared and disseminated. The results of the demonstrations will all be inputted in SLIDS.
	3. Organization and conduct of a workshop to discuss the results of the demo/pilot projects. The demo/pilot hosts will present their respective project highlighting the specific aspect of SSL technology involved, the scheme, the investment involved, results, energy savings achieved, actual project economics, estimated GHG emission reductions, and their respective recommendations for the SSL technology demonstration under the SSLED Project. The workshop will assess the overall performance of the demonstration program and will come up with recommendations to the Project Steering Committee concerning the relevance of such kind of programs to support the country's SSL industry.
	4. Documentation, publication and dissemination of the workshop proceedings for the purpose of influencing both the ESL industry and government policy/decision makers. This will also provide important opportunities for networking, for high level discussions, exposure to regional and possibly overseas expertise etc. The publication will also include information about the accomplishments of the project thus far, and work in progress. It will also include the detailed information on the results and evaluation of the impacts of the implemented demos/pilots. Among the impacts that will be tracked are the penetration rates of SSL products in the: (a) general lighting market; and, (b) residential lighting market, in China.

Output	Activities
Output 3.3: Documented Sustainable Follow-up Program Design for Financially Supporting SSL Technology Innovations, and Production of New SSL Products and their Applications	1. Evaluation of additional capacity development needs of the SSL industry taking into account the results and recommendations of the demos/pilots that were conducted, and other capacity building interventions that were carried out for the SSL product manufacturers and the lighting system service providers.
	2. Conduct of an assessment of the applicable SSL technology innovations both in the manufacturing and application aspects that should be further developed in the country for increasing SSL product exports and domestic SSL product applications.
	3. Based on the results of Activity 3.3.2, design a sustainable follow-up program for financially supporting the SSL technology innovations, and production of new SSL products and their applications.
	4. Preparation and conduct of seminar-workshop to: (a) Present and solicit support from the government (national/local) and the ESL industry in the approval and implementation of the developed sustainable follow-up program; and, (b) Introduce new innovative ESL product design, manufacturing and application to the ESL industry.

Component 4: Strengthening of SSL Quality Assurance Capabilities. This component of the SSLED project will address the barriers related to SSL product quality assurance and the need to improve the current quality and performance of locally made SSL products. The expected outputs from the planned activities that will comprise this project component are expected to contribute to the realization of enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets. These activities are listed and described below. The policy and regulatory aspects for the SSL product quality and energy performance standards will be addressed in Component 2. The formulation and development of the standards will be covered under this project component.

Output	Activities
Output 4.1: Completed Study on SSL Quality and Energy Performance Standards	1. Conduct of a comprehensive research on the quality (including durability and safety) and energy performance standards that various SSL-related organizations in China have developed and are recommending (including that from the GOC-mandated product standards and quality agencies).
	2. Assessment of applicable SSL product manufacturing and product standards (and testing procedures) used in other SSL manufacturing countries; and the application of currently imposed standards by countries that import China-made SSL products and accessories.
	3. Preparation of a report presenting the proposed potential SSL product manufacturing and product standards, including product testing procedures. The report also includes the SSL product compliance requirements in line with applicable photobiological safety standards[22], as well as those for the safe disposal of waste SSL products, and anticipated CFL and FL wastes that will be replaced by SSLs.

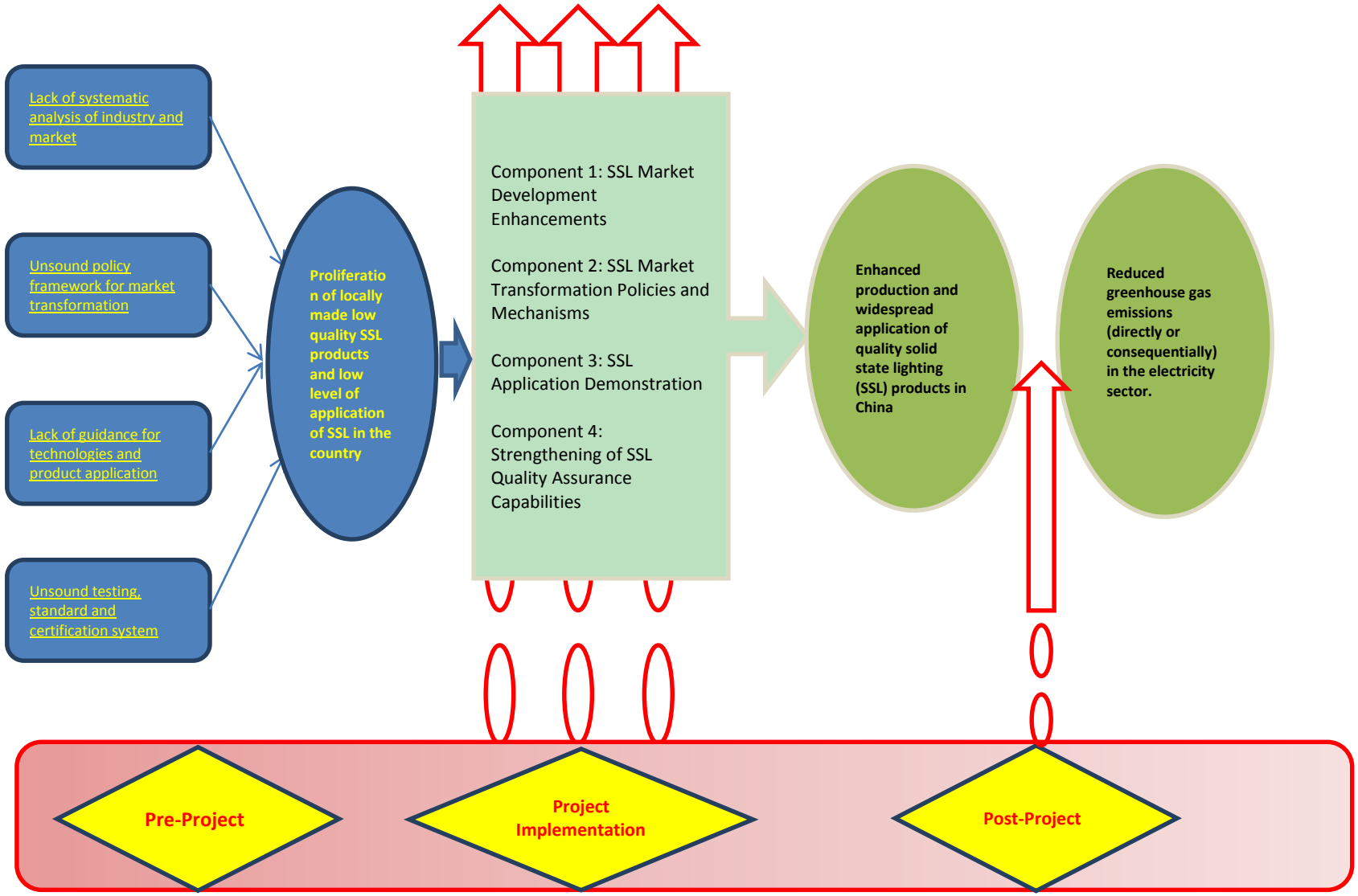
[22] This may include: CIE S009-2002: Photobiological Safety of Lamps and Lamp Systems; ANSI/IES RP27: Recommended Practice for Photobiological Safety for Lamps and Lamp Systems; IEC/EN 62471: Photobiological Safety of Lamps and Luminaires. Supporting guidance is provided in IEC/TR 62471-2 (2009) and IEC/TR 62778 (2012).

Output	Activities
	4. Organization and conduct of a workshop for the lighting product manufacturers, distributors/retailers, and end users, to discuss and understand the proposed standards and procedures.
	5. Preparation of the report on the workshop proceedings summarizing the comments and recommendations of the stakeholders.
Output 4.2: Documented Identified Potential Improvements in SSL Products	1. Conduct of quality and energy performance tests of representative samples of SSL products produced by various SSL manufacturers in the country. The cooperation and support of the selected SSL manufacturers are required not only for the SSL product testing but for subsequent applications of recommended improvements in the SSL product design and manufacturing.
	2. Assessment of the various SSL products used for general lighting that are produced in China. It will entail the assessment of the typical quality and energy performance parameters for SSL products used for general lighting service, including any specific parameter for certain general lighting applications.
	3. Assessment of the current SSL manufacturing technology, techniques and standard operating practices that are employed by the local lighting product manufacturers, in general, and by SSL product manufacturers, in particular. Operating requirements as well as operating limitations and problems will also be evaluated. The factors related to lamp production that affect the present quality levels and performances of the SSL products in the domestic market will also be determined.
	4. Identification of the potential improvements in the design, manufacture, and application of each type of SSL product. Recommendations for adopting identified improvements on SSL product design, manufacture and application will be prepared based on the assessments made.
Output 4.3:Documentation on Completed Research and Development on SSL Product Improvements	1. Conduct of specific R&D work on determining the specific requirements and methodologies for the application of the identified improvements in SSL product design, manufacturing and application.
	2. Assessment of the feasibility (technical and economic) of the identified SSL product improvements (design, production and application). The appropriate application of each improvement, as well as the resources and investments required will be evaluated.
	3. Development of the methodologies for implementation of each improvement that are established as technically and economically feasible. These will be for the manufacturing and application of SSL products.
	4. Development of a specific technical guidebook (based on the R&D work) for SSL product manufacturers on SSL product design, manufacturing and application improvements. The specific requirements (resources and investments) and methodologies for the application of the improvements are included in the guidebook.
	5. Design and conduct of a seminar-workshop for local SSL manufacturers and lighting system service providers (designers, installers, etc.) on the feasible improvements in the design, manufacturing and application of SSL products, including the specific requirements (resources and investments) and methodologies for the application of these improvements.

Output	Activities
Output 4.4: Established and Enforced Chinese Standards for SSL Products	1. Review current procedures in China as well as in other countries on the setting up and enforcing standards/codes for ESL products, in general, and SSL products, in particular. The objective is develop and set standards/codes for the local manufacture of SSL products (including guidance in the design/modification of production lines), and the product testing procedures, as well specifications for the various applications of SSL products.
	2. Development of unified set of quality and energy performance standards that will be implemented in China. The existing rather limited standards on SSLs will also be updated.
	3. Development of the associated testing procedures for compliance with the established SSL product standards will also be developed.
	4. Development of unified set of standards and specifications for the application of SSL products. This will include guidance on the proper design, installation and operation of lighting systems that will make use of SSL products.
Output 4.5: Completed Capacity Building Program on the Application of SSL Product Standards	1. Conduct of capacity needs assessment in the local SSL industry on various aspects of SSL product design, manufacturing and application. The capacity development program shall be designed based on the results and recommendations of the assessment.
	2. Design and development of capacity building programs for: (a) Educating and assisting local lamp manufacturers (particularly SSL product manufacturers) in complying with the set standards/codes for the manufacturing of SSL products; (2) Educating local lighting system service companies (designers, installers, maintenance) on the proper design and operation of lighting systems that make use of SSL products; and, (3) Enhancing the awareness of the energy consumers in the various energy end-use sectors on the benefits of the application of SSL systems, including the awareness about any significant photobiological safety concerns on the use of SSL products; and the proper disposal of waste SSL products, as well as lighting devices that are replaced with SSLs (e.g., Hg-containing CFLs).
	3. Implementation and evaluation of the capacity building programs. Post-training (after a year) evaluation will be carried out to determine the impacts of the programs, and an evaluation report will be prepared to be used in advising for future energy efficiency policy making.
Output 4.6: Established and Operational SSL Product Testing and Certification System	1. Review current procedures in China as well as in other countries on the setting up and enforcing product testing and certification system for ESLs, in general, and SSL products, in particular. The general idea is to develop and set a system for product testing (in line with the set quality and energy performance standards/codes) and product certification for locally manufactured SSL products.
	2. Development of the SSL product testing procedures (based on findings from the completed review in Activity 4.6.1), as well as specifications for the appropriate testing facilities for SSL products.
	3. Design and conduct of a SSL product testing pilot employing the developed test procedures. Results from the pilot shall be used in finalizing the recommended SSL product testing procedures, and testing facility specifications.

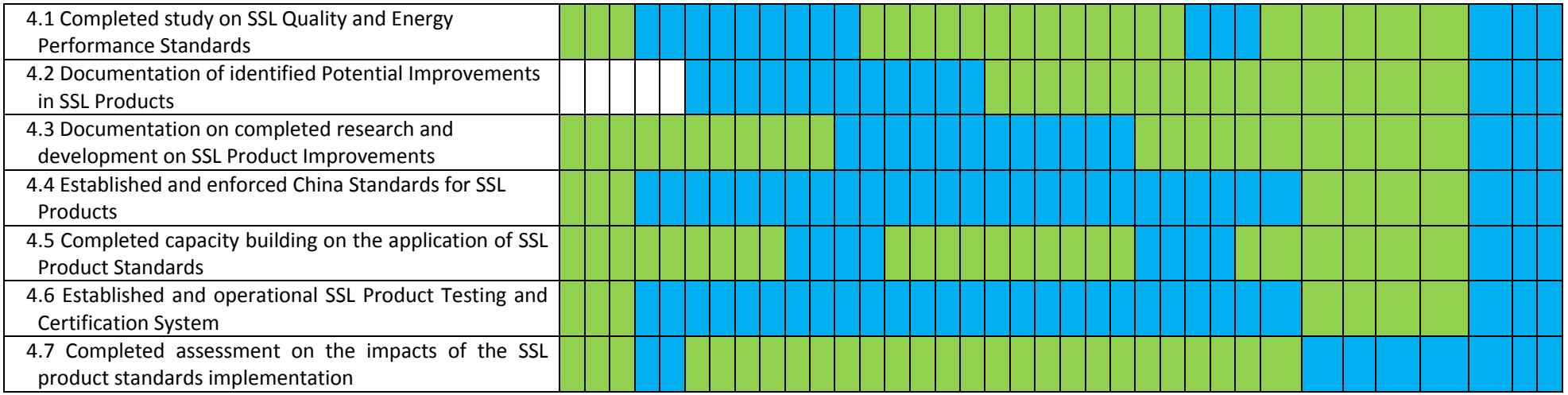
Output	Activities
	4. Design and development of a system for the inspection/testing and certification of the various SSL products that comply with the set SSL product quality and energy performance standards. The certified products will be labeled accordingly for sales purposes. The showcasing of the production and application of standards-compliant SSL products will be carried out under Component 3.
	5. Establishment and operationalization of the SSL Product Testing and Certification System. This include pre-establishment activities such as the presentation of the proposed system to SSL product manufacturers, and the advocacy/lobbying work that are necessary for soliciting the support and cooperation of the local SSL industry, and the approving national/local government agencies and authorities.
Output 4.7: Completed Assessment of the Impacts of the SSL Product Standards Implementation	1. Development of the monitoring & evaluation (M&E) procedures and plan for determining the impacts of the enforcement of the implementation of the SSL Product Standards, as well as the policy (and implementing rules and regulations). This will cover local SSL product manufacturers, and SSL product suppliers/retailers and users.
	2. Conduct the planned M&E activities (data gathering, processing, and verification). This will be done in specifically identified areas such as those where SSL product manufacturers are located, and areas where SSL promotional campaigns were carried out.
	3. Conduct of assessment of the impacts of the SSL product standards on the quality of local SSL products manufactured and sold in the country. The impact assessment shall also include the effectiveness of the relevant policies and IRRs.
	4. Preparation of the report on the impacts of the SSL product standards implementation. Among the impacts that will be investigated are the following: (a) SSL quality and energy efficiency certificates issued by state-certified institutions; and, (b) Local SSL manufacturers that are complying to the new EE standard/label for SSL products. This impact assessment will be supported by the M&E work that will be done in tracking the energy savings and CO2 emission reductions that are attributable to the SSLED Project.

Project Flow Chart



Project Implementation Schedule

Component	2015			2016												2017												2018									
1.Enhancing the basis for SSL market development																																					
1.1 Completed Comprehensive SSL Industry and Market Survey																																					
1.2 Established and operational SSL Industry Database																																					
1.3 Established and operational SSL Technology Information Exchange Service																																					
1.4 Established and operational SSL Applications Service Industry Accreditation System																																					
1.5 Completed SSL manufacturer rating scheme																																					
2.SSL Market Transformation Policies and Mechanisms																																					
2.1 Completed research study on Energy Saving Lamp Policies and Regulations																																					
2.2 Approved and implemented SSL Industry Development Plans																																					
2.3 Enforced Policy and Regulatory Frameworks for Supporting the SSL Industry																																					
2.4Established and operational SSL financing scheme																																					
2.5Established and operational SSL Manufacturers Accreditation Scheme																																					
3. SSL Application Demonstration																																					
3.1 Completed demonstrations on SSL product manufacturing and SSL product lighting applications in 50 cities/towns in 30 provinces.																																					
3.2 Completed report on the demonstration scheme results evaluation and dissemination																																					
3.3 Documented sustainable follow-up program design for financially supporting the SSL technology innovations, and the production of new SSL products and their applications																																					
4. Strengthening of SSL Quality Assurance Capabilities																																					


4.1 Completed study on SSL Quality and Energy Performance Standards
4.2 Documentation of identified Potential Improvements in SSL Products
4.3 Documentation on completed research and development on SSL Product Improvements
4.4 Established and enforced China Standards for SSL Products
4.5 Completed capacity building on the application of SSL Product Standards
4.6 Established and operational SSL Product Testing and Certification System
4.7 Completed assessment on the impacts of the SSL product standards implementation
Main activities
Intermittent activities

7. Key Indicators and Risks

43. The key performance indicators of the project are the following:

Indicator	Target
Annual direct energy savings in China by EOP (GWh)	937.2
Annual direct CO_2 emissions reduced in China by EOP (kilotons)	850.4
No. of new jobs available in the ESL industry by EOP	1,000
No. of women employed in new jobs in the ESL industry by EOP	200
Value of quality standards compliant SSL products produced in China by EOP (billion RMB)	184
Export value of quality standards compliant SSL products produced in China by EOP (billion USD)	13.8
No. of policy recommendations adopted and enforced by relevant government agency departments by EOP	6
Percentage of lighting products in the domestic lighting market that are quality standards compliant SSL products by EOP	70%
Market share of qualified SSL products in general lighting market in China by EOP	28%
No. of SSL quality and energy efficiency certificates issued by state-certified institutions by EOP	1,500
No. of local SSL manufacturers that are complying to the new EE standard/label for SSL products by EOP	100

Risks

44. In the implementation of project, there are several risks may impacted its objectives. It is necessary to adopt mitigation measures to the risks. The table below lists possible risks and mitigation measures:

Risk	Level of Risk	Mitigation Actions
Inefficient organization and coordination of stakeholders, such as government agencies, lighting system design companies, SSL producers, research institutions, experts and end users	Low	UNDP's implementing partner for this project, NDRC is experienced in implementing projects on energy savings, GHG emission reduction, and environmental protection. The establishment of a National Project Steering Committee, led by NDRC and participated in by government agencies (such as MOF, MOST, Ministry of Housing and Urban-Rural Development, Ministry of Transport, Ministry of Environmental Protection, and General Administration of Quality Supervision, Inspection and Quarantine), which are relevant to the promotion of ESLs (including SSL products), will ensure an effective coordination mechanism in the project planning and design and implementation, on the basis of past practices and experiences.
Failure to achieve timely and full distribution of co-financing and matching funds for project implementation	Low	The project development team, with the support of the NDRC will ensure that co-financing and matching fund guarantees (or at least the documented expression of interests) from the identified project partners will have been secured

		prior to launching of the project. Broad consultations with domestic financial institutions and communication with investors will be carried out during the project development stage to ensure the availability of the co-financing for the subsumed baseline activities.
Disbursements of funds by the government agencies for demonstration projects do not meet the scheduled dates	Medium	Identification of serious demonstration partners, setting-up of a realistic schedule and cost-sharing arrangements among responsible agencies during the project design stage.
Ineffective coordination in research contents and execution periods for the numerous inter-related sub-projects	Medium	Clear understanding of the requirements (timing and budget) for each of the planned activities will be ensured by the project development team during the project development stage. The team will also ensure that the project schedule will be synchronized with the implementation schedules of the project partners, particularly in regards to the implementation of the baseline activities. Securing firm commitments of responsible agencies during the project design stage.
Low level of participation from the SSL manufacturers	Low	Ensure involvement of the SSL manufacturers starting from the project design stage, dissemination of the latest information through right channels and identification of their needs and demand through continuous dialogue.
Low level of government support in the effective enforcement or proposed policies and regulations	Low	Incorporation of the necessary interventions for the formulation of the SSL support policies, including the accompanying implementing rules and regulations, as well improving the institutional arrangements for the enforcement of the proposed SSL standards/codes.
Continued use of CFLs will minimize the realization of benefits from SSL product applications	Low	The target 20% penetration rate is on the premise that CFLs will also be gradually replaced by SSL products. Close coordination with regional and global CFL initiatives (e.g., GEF-supported En.Lighten project) will be carried out concerning decisions and plans to keep an optimum balance of LED and CFL promotions and applications beyond the end-of-project.
Exporting countries impose more stringent technical and quality requirements of LED lamp exports from China	Medium	The policy work that will be done under the project will also focus on the establishment and enforcement of approved policies and implementing rules and regulations on the quality and energy performance standards that meets international acceptance (including those from the LED trade partners of China) for locally produced SSL products.
Failure of the market transformation policy and mechanism to facilitate supporting and incentivizing the local	Low	Activities that will come up with the appropriate institutional framework and institutional capacity to enforce policies that are supportive of the manufacture, sale and applications of SSL products in the residential and commercial

production of high quality SSL products		sectors will be designed and implemented under this proposed project. Adequate lobbying with the relevant GOC authorities will be done to ensure approval and strict enforcement of the formulated market transformation policies and mechanisms for the local SSL industry.
Not enough capacity at testing centers to test the increasing amount of SSL products from market producers.	Medium	The activity on the development of a standardized system for the inspection/testing and certification of the various SSL products that comply with the set SSL product quality and energy performance standards, and the associated capacity building on the implementation of such system will facilitate the proper testing and certification of SSL products in the market. Private testing laboratories can be accredited to take up the increased volume of SSL products to be tested once the testing procedures are standardized and simplified and the lab people of the SSL manufacturers become technically capable with the SS product testing.
Overall Risk Level	Low	

45. In the context of product shipment delays because of climate change related conditions in China, particularly in the major industrial hubs, one can say that climate change impacts may indirectly affect the Chinese SSL industry, like any industry for that matter. However, viewed from the perspective of climate change mitigation, the increasing awareness of people in China about the need to mitigate climate change through wise, efficient and effective use of energy could spur interest and motivation in using energy saving items, such as ESLs, in general, and LED lamps, in particular.

8. Cost Effectiveness

46. Considering the incremental increase (9.5 percentage points) in market share of SSL products (general lighting services) in the alternative scenario compared to that in the baseline scenario, it is estimated that about 937.2 GWh of cumulative incremental electricity savings (from the use of quality standards compliant Chinese-made SSL products that will be involved in the project) and a cumulative incremental CO_2 emission reduction of 850.4 ktons will be realized by end of project. This is a rather conservative estimate since the potential electricity savings, and the associated GHG emission reductions that are attributable to the utilization of exported Chinese made SSL products in other countries are not included in this.

47. Considering only the SSL products that are involved in the project, the total lifetime direct CO2 emission reductions that can be realized from the use of these lamps is about 1,802.7 ktons. Based on these estimated incremental lifetime CO_2 emissions reduction, the approximate unit abatement cost (UAC) is about US$ 3.46/ton CO_2 (i.e., GEF$ per ton CO_2), which is lower than the average US$ 5.63/ton CO_2 based on the CBEEX.

48. Apart from energy conserving, SSL products are mercury-free lighting devices, and would therefore not be detrimental to the natural environment when disposed-off after their useful lives. SSL products have rich colors without infrared and ultraviolet radiations, so they can provide more healthy and comfortable living environment. These products match renewable energy power supply systems and therefore allows for green lighting in areas without electricity such as in Western China. The downstream of the SSL industry chain is

typically labor intensive industry. This proposed project will involve the demonstration of improved SSL product manufacturing systems that will also provide potential employment for women because most of the SSL product assembly work are more suitable for women. SSL can also help reduce indoor air conditioning, and indirectly reduce investments on additional power generation and distribution systems.

49. The successful implementation of the proposed GEF project is expected to bring the following prominent benefits:

- Development of small and medium-sized SSL production enterprises;
- Boost low-carbon and sustainable development of Chinese cities and towns;
- Provide high quality energy efficient lighting system in rural areas;
- Improve employment level of Chinese women, which will be made possible through the implementation of professional training and skills enhancement under the project;
- Contribution to the worldwide efforts on energy conservation and GHG emission reduction (considering the fact that China is the largest lighting products producer in the world).

9. Sustainability and Scaling-up Potential

50. Innovation: This project is an attempt to initiate efforts to unify/integrate all the current separated and disjointed efforts of the various SSL manufacturers in China to establish a real local SSL industry, something that has not yet been done in China. And for that matter, such effort is regarded as innovative in regards to the promotion and facilitation of the commercialization and widespread application of SSL products, enhancing its market share, boosting the development of SMEs in this sector, enhancing progress in related industries (particularly those making up the SSL value chain), as well as in the other applications of SSL technology such as liquid crystal display, automobile lights and new materials. Through this innovative approach of establishing cohesiveness in the current local SSL industry will bring about the local production of quality SSL products that consumers will use more confidently thereby enhancing the penetration rate of such products particularly in the residential sector . The downstream activities along the SSL value chain are labor-intensive, and are viewed as something helpful for providing income generation opportunities in rural areas particularly for women. Since most of the lighting products (including ESLs like SSL products) are exported, the implementation of the proposed GEF project will bring more premium “green” and energy efficient light sources to the world, yielding distinct consequential benefits by virtue of their contribution to global energy savings and GHG emission reduction, and the improvement of lighting quality in such less developed regions as those in the African continent.

51. Sustainability: The proposed project is essential for the local SSL industry development. The expected outputs that will be delivered are meant not only to provide the enabling conditions for cohesive efforts to sustain and guide the commercial development of the industry. The strategy to continuously facilitate the effectiveness of these enabling conditions involves their development, establishment and institutionalization, and in so doing also sustain them. For example, instruments that will be developed and produced by the project for enhancing the SSL market development, such as the SSL Industry Database; SSL Technology Information Exchange Service; SSL Applications Service Industry Accreditation System; and, SSL manufacturer rating scheme will help in sustaining these facilitative interventions even beyond the completion of this proposed project. Component 3 of the project also includes the development of a sustainable follow-up program design for financially supporting the SSL technology innovations, and the production of new SSL products and their applications.

52. Scale-up Potential: Several of the project interventions can be replicated in other regions of the country where the SSL product manufacturing is present to further enhance the efforts to promote the utilization of SSL products. Also, the planned demonstrations can be scaled up to involve more manufacturers, distributors and retailers of SSL products in the promotion efforts. Moreover, since this project will most likely be contributing to the realization of the objective of the ongoing global UNEP-GEF En.Lighten project, the potential for scale up of some of the interventions is there particularly beyond China since the country is a major global source of lighting products such as SSL/LED light products.

Ⅲ Project Results Framework

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD:
Country Programme Outcome Indicators:
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): 1. Mainstreaming environment and energy OR 2. Catalyzing environmental finance OR 3. Promote climate change adaptation OR4. Expanding access to environmental and energy services for the poor.
Applicable GEF Strategic Objective and Program: GEF-5 CCM Strategic Program SP2: promote market transformation for energy efficiency in industry and the building sectors Climate change (energy efficiency)
Applicable GEF Expected Outcomes: Appropriate policy, legal and regulatory frameworks adopted and enforced; Sustainable financing and delivery mechanisms established and operational
Applicable GEF Outcome Indicators: Energy efficiency policy and regulation in place; Investment mobilized; Energy savings achieved

Strategy	Objectively Verifiable Indicators			Source of Verification	Critical Risks
	Indicator	Baseline	Target		
Project Objective: Facilitation of the enhanced production and widespread application of quality solid state lighting (SSL) products in China	• Annual direct energy savings in China by EOP (GWh) • Annual direct CO_2 emissions reduced in China by EOP (kilotons) • No. of new jobs available in the ESL industry by EOP • No. of women employed in new jobs in the ESL industry by EOP	•158 •143 • 0 • 0	• 937.2 • 850.4 •1000 •200	• Progress reports on the demonstrations • Project monitoring and evaluation reports • Project Final Report • Survey Report	• Stable economic growth in China will be sustained
Outcome 1 *Enabling of enhanced and strategic SSL technology and market developments based on comprehensively assessed and documented up-to-date*	• Value of quality standards compliant SSL products produced in China by EOP (billion RMB) • Export value of quality standards compliant SSL products produced in China by EOP (billion USD)	• 58.6 • 5.4	•184 •13.8	• Annual reports on China SSL industry • Annual export reports on China SSL products	

status of the SSL industry and market in China					
Outcome2 *Facilitation of support and incentives in the local production of quality SSL products, and in the application of SSL products compliant with established quality and energy performance standards.*	• No. of policy recommendations adopted and enforced by relevant government agency departments by EOP • Percentage of lighting products in the domestic lighting market that are quality standards compliant SSL products by EOP	• 3 •50%	• 6 •70%	• Documents on the recommendations referred in related policy • Monitoring reports on SSL product quality	• Sustained support of Chinese government for SSL industry
Outcome 3 *Increased penetration rate of SSL products especially in the residential sector in China*	• Market share of qualified SSL products in general lighting market in China by EOP	•8.2%	•28%	• Market research reports on the SSL market	• Demonstration projects can be completed as scheduled
Outcome 4 *Enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets*	• No. of SSL quality and energy efficiency certificates issued by state-certified institutions by EOP • No. of local SSL manufacturers that are complying to the new EE standard/label for SSL products by EOP	•1200 • 0	•1500 •100	• Records of the issuance of certificates of energy efficiency and quality	• The government strengthen the supervision of SSL market continuously

2. Total Budget and Work Plan

Award ID:	87736	Project ID(s):	94657
Award Title:		Country Name Project Title Enabling SSL Market Transformation & Promotion of Light Emitting Diode (LED) Lighting	
Business Unit:		CHN10	
Project Title:		Country Name Project Title: Enabling SSL Market Transformation & Promotion of Light Emitting Diode (LED) Lighting	
PIMS no.		5121	
Implementing Partner (Executing Agency)		National Development and Reforms Commission (NDRC)	

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
Component 1: SSL Market Development Enhancements									
Output 1.1: Completed Comprehensive SSL Industry and Market Survey	NECC	GEF	71300	Local Consultants	3,000	3,000	3,000	9,000	1
	NECC	GEF	71600	Travel	1,000	2,000	1,000	4,000	2
	NECC	GEF	74200	AV & Printing Production Cost	0	5000	5000	10,000	3
	NECC	GEF	74500	Miscellaneous Expenses	0	500	500	1,000	4
	NECC	GEF	72100	Contractual Services - Companies	16,000	20,000	21,300	57,300	5
	NECC	GEF	75700	Training/Workshop/Meetings	2200	2650	2650	7,500	6
	NECC	GEF	72500	Office Supplies Cost	500	500	1,000	2,000	7
	NECC	GEF	72400	Communication & AV Equipment	0	300	300	600	8
Sub-Total					***22,700***	***33,950***	***34,750***	***91,400***	
Output 1.2: Established and Operational	NECC	GEF	71200	International Consultants	4,500	10,500	0	15,000	9
	NECC	GEF	71300	Local Consultants	3,000	3,000	3,000	9,000	10
	NECC	GEF	71600	Travel	3,300	7,700	0	11,000	11
	NECC	GEF	74500	Miscellaneous Expenses	250	1,000	750	2,000	4

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
SSL Industry Database	NECC	GEF	72100	Contractual Services - Companies	15,000	24,000	10,350	49,350	12
	NECC	GEF	75700	Training/Workshop/Meetings	7,500	10,000	2,500	20,000	13
	NECC	GEF	72500	Office Supplies Cost	600	1,000	500	2,100	14
	NECC	GEF	72400	Communication & AV Equipment	1,000	500	500	2,000	15
Sub-Total					***35,150***	***57,700***	***17,600***	***110,450***	
Output 1.3: Established and Operational SSL Technology Information Exchange Service	NECC	GEF	71200	International Consultants	0	4,500	0	4,500	16
	NECC	GEF	71300	Local Consultants	0	4,500	0	4,500	17
	NECC	GEF	71600	Travel	0	8,000	2,000	10,000	18
	NECC	GEF	74500	Miscellaneous Expenses	0	600	600	1,200	4
	NECC	GEF	72100	Contractual Services - Companies	0	34,000	14,450	48,450	19
	NECC	GEF	75700	Training/Workshop/Meetings	0	10,000	5,000	15,000	20
	NECC	GEF	72500	Office Supplies Cost	0	600	600	1,200	21
	NECC	GEF	72400	Communication & AV Equipment	0	600	600	1,200	22
Sub-Total					***0***	***62,800***	***23,250***	***86,050***	
Output 1.4: Established and Operational SSL Applications Service Industry Accreditation System	NECC	GEF	71200	International Consultants	0	3,750	0	3,750	23
	NECC	GEF	71300	Local Consultants	0	3,750	0	3,750	24
	NECC	GEF	71600	Travel	0	6,500	2,000	8,500	25
	NECC	GEF	74500	Miscellaneous Expenses	0	1,000	500	1,500	4
	NECC	GEF	72100	Contractual Services - Companies	5,000	45,000	13,800	63,800	26
	NECC	GEF	75700	Training/Workshop/Meetings	0	7,500	7,500	15,000	27
	NECC	GEF	72500	Office Supplies Cost	0	1,500	1,000	2,500	28
	NECC	GEF	72400	Communication & AV Equipment	0	1,000	900	1,900	29

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
Sub-Total					***5,000***	***70,000***	***25,700***	***100,700***	
Output 1:5: Completed SSL Product Manufacturer Support Program and Rating Scheme	NECC	GEF	71300	Local Consultants	0	1,500	1,500	3,000	30
	NECC	GEF	71600	Travel	0	2,500	2,500	5,000	31
	NECC	GEF	74500	Miscellaneous Expenses	0	450	450	900	4
	NECC	GEF	72100	Contractual Services - Companies	0	30,000	9,400	39,400	32
	NECC	GEF	75700	Training/Workshop/Meetings	0	7,500	2,500	10,000	33
	NECC	GEF	72500	Office Supplies Cost	0	1,000	700	1,700	34
	NECC	GEF	72400	Communication & AV Equipment	0	500	400	900	35
Sub-Total					***0***	***43,450***	***17,450***	***60,900***	
Component 1 Total					**62,850**	**267,900**	**118,750**	**449,500**	
Component 2: SSL Market Transformation Policies and Mechanisms									
Output 2.1: Completed Research on Energy Saving Lamp Policies and Regulations	NECC	GEF	71200	International Consultants	20,000	17,500	0	37,500	36
	NECC	GEF	71300	Local Consultants	12,500	10,000	6,000	28,500	37
	NECC	GEF	71600	Travel	30,000	16,000	9,500	55,500	38
	NECC	GEF	74200	Audio Visual & Print Prod Costs	2,500	7,500	0	10,000	39
	NECC	GEF	74500	Miscellaneous Expenses	1,000	1,000		2,000	4
	NECC	GEF	75700	Training/Workshop/Meetings	5,000	20,000	10,000	35,000	40
	NECC	GEF	72500	Office Supplies Cost	1,800	1,800	1,800	5,400	41
	NECC	GEF	72400	Communication & AV Equipment	1000	500	500	2,000	42
Sub-Total					***73,800***	***74,300***	***27,800***	***175,900***	
Output 2.2: Approved and	NECC	GEF	71200	International Consultants	10,000	5,000	0	15,000	43
	NECC	GEF	71300	Local Consultants	8,000	5,000	2,000	15,000	44

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
implemented SSL Industry Development Plans	NECC	GEF	71600	Travel	12,000	10,000	4,000	26,000	45
	NECC	GEF	74500	Miscellaneous Expenses	1,000	500	500	2,000	4
	NECC	GEF	72100	Contractual Services - Companies	30,000	20,000	8,700	58,700	46
	NECC	GEF	75700	Training/Workshop/Meetings	2,500	5,000	2,500	10,000	47
	NECC	GEF	72500	Office Supplies Cost	1,000	500	500	2,000	48
	NECC	GEF	72400	Communication & AV Equipment	1,000	500	500	2,000	49
Sub-Total					***65,500***	***46,500***	***18,700***	***130,700***	
Output 2.3: Enforced Policy and Regulatory Frameworks for Supporting the SSL Industry	NECC	GEF	71200	International Consultants	10,000	10,000	2,500	22,500	50
	NECC	GEF	71300	Local Consultants	0	10,000	2,000	12,000	51
	NECC	GEF	71600	Travel	2,500	10,000	6,500	19,000	52
	NECC	GEF	74200	Audio Visual & Print Prod Costs		5,000	5,000	10,000	53
	NECC	GEF	74500	Miscellaneous Expenses	500	1,000	500	2,000	4
	NECC	GEF	72100	Contractual Services - Companies	15,050	65,000	19,700	99,750	54
	NECC	GEF	75700	Training/Workshop/Meetings	2,500	10,000	5,000	17,500	55
	NECC	GEF	72500	Office Supplies Cost	500	1,000	500	2,000	56
	NECC	GEF	72400	Communication & AV Equipment	500	1,000	500	2,000	57
Sub-Total					***31,550***	***113,000***	***42,200***	***186,750***	
Output 2.4: Established and Operational SSL Financing Scheme	NECC	GEF	71200	International Consultants	0	25,000	20,000	45,000	58
	NECC	GEF	71300	Local Consultants	2,000	8,000	5,000	15,000	59
	NECC	GEF	71600	Travel	1,000	10,000	7,500	18,500	60
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	7,500	2,500	10,000	61
	NECC	GEF	74500	Miscellaneous Expenses	500	1,000	500	2,000	4

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
	NECC	GEF	72100	Contractual Services - Companies	10,000	35,000	18,600	63,600	62
	NECC	GEF	75700	Training/Workshop/Meetings	5,000	5,000	5,000	15,000	63
	NECC	GEF	72500	Office Supplies Cost	500	1,000	500	2,000	64
	NECC	GEF	72400	Communication & AV Equipment	500	1,000	500	2,000	65
Sub-Total					***19,500***	***93,500***	***60,100***	***173,100***	
Output 2.5: Established and Operational SSL Manufacturers Accreditation Scheme	NECC	GEF	71200	International Consultants	10,000	20,000	7,500	37,500	66
	NECC	GEF	71300	Local Consultants	2,500	10,000	2,500	15,000	67
	NECC	GEF	71600	Travel	7,500	10,000	4,800	22,300	68
	NECC	GEF	74200	Audio Visual & Print Prod Costs	5,000	15,000	10,000	30,000	69
	NECC	GEF	74500	Miscellaneous Expenses	500	1,000	500	2,000	4
	NECC	GEF	72100	Contractual Services - Companies	10,000	30,000	15,350	55,350	70
	NECC	GEF	75700	Training/Workshop/Meetings	5,000	25,000	10,000	40,000	71
	NECC	GEF	72500	Office Supplies Cost	500	1,000	500	2,000	72
	NECC	GEF	72400	Communication & AV Equipment	500	1,000	500	2,000	73
Sub-Total					***41,500***	***113,000***	***51,650***	***206,150***	
Output 2.6: Completed TA program for local SSL products manufacturers in design and manufacture of quality	NECC	GEF	71200	International Consultants	10,000	45,000	8,750	63,750	74
	NECC	GEF	71300	Local Consultants	7,500	25,000	5,000	37,500	75
	NECC	GEF	71600	Travel	10,000	25,000	5,200	40,200	76
	NECC	GEF	74200	Audio Visual & Print Prod Costs	5,000	9,000	10,000	24,000	77
	NECC	GEF	74500	Miscellaneous Expenses	950	1,000	1,000	2,950	4
	NECC	GEF	75700	Training/Workshop/Meetings	5,000	10,000	10,000	25,000	78
	NECC	GEF	72500	Office Supplies Cost	1,000	1,000	1,000	3,000	79

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
compliant SSL products	NECC	GEF	72400	Communication & AV Equipment	1,000	2,000	500	3,500	80
Sub-Total					***40,450***	***118,000***	***41,450***	***199,900***	
Component 2 Total					**272,300**	**558,300**	**241,900**	**1,072,500**	
Component 3: SSL Application Demonstration									
Output 3.1: Completed Demonstrations on SSL Product Manufacturing and SSL Product Lighting Applications	NECC	GEF	71200	International Consultants	5,000	2,500	0	7,500	81
	NECC	GEF	71300	Local Consultants	4,000	2,000	0	6,000	82
	NECC	GEF	71600	Travel	12,500	20,000	22,000	54,500	83
	NECC	GEF	72200	Equipment & Furniture	900000	1100000	872,000	2,872,000	84
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	2,500	7,500	10,000	85
	NECC	GEF	74500	Miscellaneous Expenses	0	500	1,000	1,500	4
	NECC	GEF	72100	Contractual Services - Companies	35,000	35,000	39,150	109,150	86
	NECC	GEF	75700	Training/Workshop/Meetings	2,500	5,000	5,000	12,500	87
	NECC	GEF	72500	Office Supplies Cost	0	500	500	1,000	88
	NECC	GEF	72400	Communication & AV Equipment	0	1,000	273	1,273	89
Sub-Total					***959,000***	***1,169,000***	***947,423***	***3,075,423***	
Output 3.2: Completed Report on the Demonstration Scheme Results Evaluation and Dissemination	NECC	GEF	71200	International Consultants	0	5,000	10,000	15,000	90
	NECC	GEF	71300	Local Consultants	2,750	7,500	10,000	20,250	91
	NECC	GEF	71600	Travel	3,800	12,500	12,500	28,800	92
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	7,500	12,500	20,000	93
	NECC	GEF	74500	Miscellaneous Expenses	1,000	1,000	2,000	4,000	4
	NECC	GEF	75700	Training/Workshop/Meetings	5,000	20,000	25,000	50,000	94

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
	NECC	GEF	72500	Office Supplies Cost	1,000	1,000	2,000	4,000	95
	NECC	GEF	72400	Communication & AV Equipment	1,000	2,500	2,500	6,000	96
Sub-Total					***14,550***	***57,000***	***76,500***	***148,050***	
Output 3.3: Sustainable Follow-up Program Design of SSL Technology Innovations, and Production of New SSL Products and their Applications	NECC	GEF	71200	International Consultants	0	5,000	17,500	22,500	97
	NECC	GEF	71300	Local Consultants	0	2,000	11,500	13,500	98
	NECC	GEF	71600	Travel	0	2,000	7,300	9,300	99
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	3,000	10,000	13,000	100
	NECC	GEF	74500	Miscellaneous Expenses	0	3,000	3,000	6,000	4
	NECC	GEF	72100	Contractual Services - Companies	0	15,000	23,350	38,350	101
	NECC	GEF	75700	Training/Workshop/Meetings	0	15,000	22,500	37,500	102
	NECC	GEF	72500	Office Supplies Cost	0	1,500	1,500	3,000	103
	NECC	GEF	72400	Communication & AV Equipment	0	2000	2500	4,500	104
Sub-Total					***0***	***48,500***	***99,150***	***147,650***	
Component 3 Total					**973,550**	**1,274,500**	**1,123,073**	**3,371,123**	
Component 4 : Strengthening of SSL Quality Assurance Capabilities									
Output 4.1: Completed Research on SSL Quality and Energy Performance Standards	NECC	GEF	71200	International Consultants	0	10000	5000	15,000	105
	NECC	GEF	71300	Local Consultants	2,750	12,500	5,750	21,000	106
	NECC	GEF	71600	Travel	0	7,500	6,800	14,300	107
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	2,500	7,500	10,000	108
	NECC	GEF	74500	Miscellaneous Expenses	0	3,000	2,965	5,965	4

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
	NECC	GEF	72100	Contractual Services - Companies	0	20,000	26,150	46,150	109
	NECC	GEF	75700	Training/Workshop/Meetings	2,500	10,000	15,000	27,500	110
	NECC	GEF	72500	Office Supplies Cost	500	1,500	1,000	3,000	111
	NECC	GEF	72400	Communication & AV Equipment	500	1500	2000	4,000	112
Sub-Total					***6,250***	***68,500***	***72,165***	***146,915***	
Output 4.2: Documented Identified Potential Improvements in SSL Products	NECC	GEF	72100	Contractual Services - Companies	24,000	50,000	29,650	103,650	113
Sub-Total					***24,000***	***50,000***	***29,650***	***103,650***	
Output 4.3: Completed Research and Development on SSL Product Improvements	NECC	GEF	71200	International Consultants	0	7500	0	7,500	114
	NECC	GEF	71300	Local Consultants	0	4,000	2,000	6,000	115
	NECC	GEF	71600	Travel	0	3,000	2,000	5,000	116
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	5,000	5,000	10,000	117
	NECC	GEF	74500	Miscellaneous Expenses	0	1,000	1,500	2,500	4
	NECC	GEF	72100	Contractual Services - Companies	10,000	25,000	22,310	57,310	118
	NECC	GEF	75700	Training/Workshop/Meetings	0	10,000	15,000	25,000	119
	NECC	GEF	72500	Office Supplies Cost	0	500	500	1,000	120
	NECC	GEF	72400	Communication & AV Equipment	0	750	750	1,500	121
Sub-Total					***10,000***	***56,750***	***49,060***	***115,810***	
	NECC	GEF	71200	International Consultants	0	3,750	0	3,750	122

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
Output 4.4: Established and Enforced China Standards for SSL Products	NECC	GEF	71300	Local Consultants	0	2,500	3,500	6,000	123
	NECC	GEF	71600	Travel	0	500	1,500	2,000	124
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	0	1,000	1,000	125
	NECC	GEF	74500	Miscellaneous Expenses	0	500	2,000	2,500	4
	NECC	GEF	72100	Contractual Services - Companies	0	10,000	19,510	29,510	126
	NECC	GEF	75700	Training/Workshop/Meetings	0	2,500	2,500	5,000	127
	NECC	GEF	72500	Office Supplies Cost	0	500	500	1,000	128
	NECC	GEF	72400	Communication & AV Equipment	0	500	1000	1,500	129
Sub-Total					***0***	***20,750***	***31,510***	***52,260***	
Output 4.5: Completed Capacity Building Program on the Application of SSL Product Standards	NECC	GEF	71200	International Consultants	0	10,000	8,750	18,750	130
	NECC	GEF	71300	Local Consultants	1,000	8,000	4,500	13,500	131
	NECC	GEF	71600	Travel	0	5,500	4,000	9,500	132
	NECC	GEF	74200	Audio Visual & Print Prod Costs	0	3,000	3,000	6,000	133
	NECC	GEF	74500	Miscellaneous Expenses	500	2,000	2,500	5,000	4
	NECC	GEF	72100	Contractual Services - Companies	0	15,000	9,800	24,800	134
	NECC	GEF	75700	Training/Workshop/Meetings	0	10,000	10,000	20,000	135
	NECC	GEF	72500	Office Supplies Cost	250	1,000	750	2,000	136
	NECC	GEF	72400	Communication & AV Equipment	0	1500	1500	3,000	137
Sub-Total					***1,750***	***56,000***	***44,800***	***102,550***	
Output 4.6: Established and	NECC	GEF	71200	International Consultants	5000	10,000	3,750	18,750	138
	NECC	GEF	71300	Local Consultants	1,000	10,000	4,000	15,000	139
	NECC	GEF	71600	Travel	0	5,000	2,500	7,500	140

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
Operational SSL Product Testing and Certification System	NECC	GEF	72200	Equipment & Furniture	0	150,000	150,000	300,000	141
	NECC	GEF	74200	Audio Visual & Print Prod Costs		1,000	1,000	2,000	142
	NECC	GEF	74500	Miscellaneous Expenses	500	2,500	2,500	5,500	4
	NECC	GEF	72100	Contractual Services - Companies	0	20,000	16,705	36,705	143
	NECC	GEF	75700	Training/Workshop/Meetings	5,000	20,000	20,000	45,000	144
	NECC	GEF	72500	Office Supplies Cost	500	1,500	1,500	3,500	145
	NECC	GEF	72400	Communication & AV Equipment	1500	1500	1500	4,500	146
Sub-Total					***13,500***	***221,500***	***203,455***	***438,455***	
Output 4.7: Completed Assessment of the Impacts of the SSL Product Standards Implementation	NECC	GEF	71200	International Consultants	0	10,000	8,750	18,750	147
	NECC	GEF	71300	Local Consultants	0	10,000	5,000	15,000	148
	NECC	GEF	71600	Travel	0	5,000	3,000	8,000	149
	NECC	GEF	74500	Miscellaneous Expenses	0	2,500	2,500	5,000	4
	NECC	GEF	72100	Contractual Services - Companies	0	5,000	10,810	15,810	150
	NECC	GEF	75700	Training/Workshop/Meetings	0	10,000	15,000	25,000	151
	NECC	GEF	72500	Office Supplies Cost	0	1,000	1,000	2,000	152
	NECC	GEF	72400	Communication & AV Equipment	0	1500	1500	3,000	153
Sub-Total					***0***	***45,000***	***47,560***	***92,560***	
Component 4 Total					**55,500**	**518,500**	**478,200**	**1,052,200**	
GEF Sub-Total					**1,364,200**	**2,619,200**	**1,961,923**	**5,945,323**	
Project Management	NECC	GEF	71200	International Consultants	0	11250	11250	22,500	154
	NECC	GEF	71300	Local Consultants	57,500	57,500	57,500	172,500	155

Activity	Responsible Agency	Source of Fund	Budget Code	Description	Annual Expenses				Notes
					Year 1	Year 2	Year 3	Total	
	NECC	GEF	71600	Travel	5,300	6,500	6,500	18,300	156
	NECC	GEF	72200	Equipment & Furniture	5,000	2,500	0	7,500	157
	NECC	GEF	74200	Audio Visual & Print Prod Costs	750	250	1,000	2,000	158
	NECC	GEF	74500	Miscellaneous Expenses	4,500	4,200	4,000	12,700	4
	NECC	GEF	74100	Professional Services (Audit)	3,000	3,000	3,000	9,000	159
	NECC	GEF	75700	Training/Workshop/Meetings	10,000	5,000	10,000	25,000	160
	NECC	GEF	72500	Office Supplies Cost	5,800	5,800	5,905	17,505	161
	NECC	GEF	72400	Communication & AV Equipment	2,000	1,000	2,000	5,000	162
	PMO	GEF	74500	Direct Project Cost	5,266	0	0	5,266	163
Project Management Cost					**97,116**	**101,000**	**99,155**	**297,271**	
GEF Total					**1,461,316**	**2,720,200**	**2,061,078**	**6,242,594**	

Budget Notes:

Number	Description
1	LC Rate = US$ 100/day; 60 days (total) – for conduct of study, organization and conduct of workshop on China SSL industry and market status and trends.
2	Local Per diem Rate = US$ 100/day; 8 days (total); US$ 800/domestic trip; 4 person-legs – for LCs local travel related to conduct of study
3	US$ 100/print unit; 100 units – for documentation of study report and workshop proceedings
4	Estimated sundries, extraordinary expenses.
5	Sub-contract components: (1) Comprehensive market survey; and, (2) Design and establishment of survey data gathering mechanisms
6	3 days (total) workshop/training @ US$2,500 per workshop or training course – China SL industry and market status and trends
7	Estimated cost for office supplies related to the market survey work
8	Estimated communications cost for survey work
9	IC Rate = US$ 750/day; 20 days (total) – for design and establishment of data gathering mechanisms, development of SSL procurement guides, design and conduct of SLIDS conference, and design and conduct of SLIDS operation and maintenance training.

Number	Description
10	LC Rate = US$ 100/day; 60 days (total) – same purpose as ICs', plus design and conduct of SLIDS database operation and maintenance.
11	2 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 12 days (total); US$ 800/domestic trip; 6 person-legs – for IC international travel, and LCs local travel related to SLIDS database development, etc.
12	Sub-contract components: (1) Research/study on the database requirements and procedures; (2) Development of SLIDS; and, (3) Consolidation of statistics for SLIDS
13	8 days (total) workshop/training @ US$2,500 per workshop or training course – for SLIDS database operation and maintenance.
14	Estimated cost for office supplies related to the SLIDS development work
15	Estimated communications cost for statistical data gathering
16	IC Rate = US$ 750/day; 6 days (total) – for conduct of workshop on the STIX service program.
17	LC Rate = US$ 100/day; 30 days (total) – for preparation of white paper on China SSL Technology and Industry Development, organization and conduct of workshops on the operation and maintenance of the STIX program
18	2 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 10 days (total); US$ 800/domestic trip; 5 person-legs – for ICs' international travel, and LCs local travel related to STIX program development.
19	Sub-contract components: (1) Design and development of STIX service program; (2) SLIDS data analysis; and, (3) Operationalization of STIX
20	6 days (total) workshop/training @ US$2,500 per workshop or training course – for STIX program operation and maintenance.
21	Estimated cost for office supplies related to the STIX development and operationalization work
22	Estimated communications cost for STIX development work
23	IC Rate = US$ 750/day; 5 days (total) – for design of accreditation/certification scheme for lighting system service providers
24	LC Rate = US$ 100/day; 25 days (total) – for conduct of research, design, and promotion of the accreditation/certification scheme; design of training programs on compliance with scheme and capacity building on advanced SSL lighting system design, installation and maintenance.
25	1 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 12 days (total); US$ 800/domestic trip; 6 person-legs –for IC international travel, and LCs local travel related to the scheme research, design and promotion.
26	Sub-contract components: (1) Set-up and implementation of accreditation/certification, evaluation, and rating system; (2) Publication of accreditation/certification results, (3) Workshop on impacts of system
27	6 days (total) workshop/training @ US$2,500 per workshop or training course – for accreditation/certification scheme compliance and advanced SSL lighting system design.
28	Estimated cost for office supplies related to the accreditation/certification system development & implementation work
29	Estimated communications cost for accreditation/certification system implementation and impact evaluation work
30	LC Rate = US$ 100/day; 60 days (total) – for review schemes on marketing quality-compliant SSLs in rural areas, conduct of workshop on impact analysis of rating scheme, and follow-up plans for sustaining rating program.
31	Local Per diem Rate = US$ 100/day; 10 days (total); US$ 800/domestic trip; 5 person-legs – for LCs local travel related to review of marketing schemes and SSL product rating schemes
32	Sub-contract components: (1) Design of SSL manufacturer incentive program; (2) Design of SSL manufacturer rating scheme; (3) advocacy/promotional work for rating scheme approval; and, (4) Establishment and operationalization of program and scheme.

Number	Description
33	4 days (total) workshop/training @ US$2,500 per workshop or training course – for review of, and follow-up plan for, SSL product rating scheme
34	Estimated cost for office supplies related to SSL manufacturer incentives program work
35	Estimated communications cost for SSL manufacturer rating scheme work
36	IC Rate = US$ 750/day; 30 days (total) – for comprehensive research on policies and regulations on SSL production, marketing and applications, conduct of workshop for government policy and decision makers.
37	LC Rate = US$ 100/day; 50 days (total) – same as that of ICs (back-up and supplementary work)
38	3 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 15 days (total); US$ 800/domestic trip; 6 person-legs – for ICs' international travel, and LCs local travel related to policy/regulatory frameworks research and workshops
39	US$ 100/print unit; 100 units – for documentation of research work, and workshop proceedings
40	14 days (total) workshop/training @ US$2,500 per workshop or training course – for research meetings, and workshops on policy/regulatory frameworks on SSL production, marketing and applications.
41	Estimated cost for office supplies related to the SSL policy research and formulation work
42	Estimated communications cost for SSL policy research work
43	IC Rate = US$ 750/day; 40 days (total) – for work required on the implementation of finalized road maps; and medium-, and long-term plans, and on the review (impacts and forecasts) of the road map implementations
44	LC Rate = US$ 100/day; 150 days (total) – same as that of ICs (back-up and supplementary work)
45	6 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 60 days (total); US$ 800/domestic trip; 25 person-legs – for ICs' international travel and LCs local travel related to road map implementation and review.
46	Sub-contract components: (1) Formulation of SSL industry & market roadmap & medium and long term plans; (2) Promotion of roadmap and plans; and, (3) Finalization of roadmap and plans
47	6 days (total) workshop/training @ US$2,500 per workshop or training course – for workshops/meetings on the road map implementation reviews
48	Estimated cost for office supplies related to the SSL industry & market road map and medium & long terms planning work
49	Estimated communications cost for SSL industry & market road map and medium & long terms planning work
50	IC Rate = US$ 750/day; 30 days (total) – for review of, and recommendations for, existing policies on green lighting systems, and SSL policy work; design of workshop on the review of the policy framework implementation
51	LC Rate = US$ 100/day; 80 days (total) – same as that of ICs (back-up and supplementary work)
52	4 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 18 days (total); US$ 800/domestic trip; 9 person-legs – for ICs international travel, and LCs local travel related to the policy framework implementation review and workshop.
53	US$ 100/print unit; 100 units – for documentation of policy framework implementation review, and workshop proceedings
54	Sub-contract components: (1) Formulation and finalization of new policies & revision of existing ones, including the relevant IRRs on quality and energy performance of SSL products; (2) Promotion of policies; and, (3) Advocacy and lobbying work for approval and enforcement of policies
55	7 days (total) workshop/training @ US$2,500 per workshop or training course – on the results of policy framework implementation review
56	Estimated cost for office supplies related to the SSL policy research and formulation work

Number	Description
57	Estimated communications cost for SSL policy research work
58	IC Rate = US$ 750/day; 60 days (total) – for review of financial policies, and recommendation on financial schemes for the SSL industry and consumers; design and conduct of capacity development program on ESL/SSL application projects and ESL/SSL manufacturing system improvements.
59	LC Rate = US$ 100/day; 100 days (total) – same as that of ICs (back-up and supplementary work)
60	3 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 30 days (total); US$ 800/domestic trip; 10 person-legs – for ICs' international travel, and LCs local travel related for the financial policies and schemes review and development.
61	US$ 100/print unit; 1000 units – for documentation of financial policies and financing schemes, and workshop proceedings
62	Sub-contract components: (1) Design of financing schemes for SSL technology innovations; (2) Design of SSL retailer incentive scheme; and, (3) Promotion and operationalization of financing schemes.
63	5 days (total) workshop/training @ US$2,500 per workshop or training course – on capacity development on ESL/SSL applications and manufacturing improvements
64	Estimated cost for office supplies related to the financing schemes development work
65	Estimated communications cost for financing scheme development and promotion work
66	IC Rate = US$ 750/day; 50 days (total) – for research study on applicable accreditation/certification schemes for SSL product manufacturers; design of capacity development program on accreditation/certification scheme compliance and advance SSL product design and manufacturing, including workshop on the review of the impacts of the scheme.
67	LC Rate = US$ 100/day; 100 days (total) – same as that of ICs (back-up and supplementary work)
68	4 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 35 days (total); US$ 800/domestic trip; 11 person-legs – for ICs' international travel, and LCs local travel related to the research study, and consultations with SSL product manufacturers on the accreditation/certification scheme design
69	US$ 100/print unit; 300 units – for documentation of the research study, and the proceedings of consultation meetings and workshops.
70	Sub-contract components: (1) Design and promotion of SSL product manufacturer's accreditation/certification, evaluation and rating schemes for SSL product manufacturers; (2) Establishment and implementation of schemes; and, (3) Publication of scheme implementation results.
71	16 days (total) workshop/training @ US$2,500 per workshop or training course – on the review of operation and impacts of the accreditation/certification scheme for SSL product manufacturers
72	Estimated cost for office supplies related to SSL product manufacturer accreditation/certification scheme design and promotion work
73	Estimated communications cost for accreditation/certification, evaluation and rating scheme implementation work
74	IC Rate = US$ 750/day; 85 days (total) – for the conduct of one-on-one technical assistance to selected SSL product manufacturers on improved SSL product design and manufacturing; design of workshop on the technical requirements of SSL product manufacturers; evaluation of the one-on-one TA programs.
75	LC Rate = US$ 100/day; 250 days (total) – for back-up and supplementary work same as tasks of ICs, plus the selection of SSL product manufacturers for one-on-one TA program, and development of information materials on improved SSL product design and manufacturing
76	8 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 90 days (total); US$ 800/domestic trip; 14 person-legs –

Number	Description
	for ICs' international travel, and LCs local travel related to the one-on-one TA program.
77	US$ 100/print unit; 240 units – for documentation of each one-on-one TA work, and proceedings of trainings and workshops
78	10 days (total) workshop/training @ US$2,500 per workshop or training course – on the technical needs of SSL product manufacturers in producing quality standards compliant SSL products
79	Estimated cost for office supplies related to SSL product manufacturer one-on-one technical assistance work
80	Estimated communications cost for SSL product manufacturer one-on-one technical assistance work
81	IC Rate = US$ 750/day; 10 days (total) – for the review and feasibility analysis, and recommendation on the demonstrations that will be implemented.
82	LC Rate = US$ 100/day; 40 days (total) – same as that of the ICs (back-up and supplementary work)
83	1 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 120 days (total); US$ 800/domestic trip; 50 person-legs – for ICs' international travel, and LCs local travels related to the review, feasibility analysis and selection of demo hosts
84	SSL products for SSL application demos - Quantity 351,530 units (bulb, downlight, street lamp) @ average cost = US$ 8.17/piece
85	US$ 100/print unit; 100 units – for documentation of the demo project feasibility analyses
86	Sub-contract components: (1) Design of demo schemes; (2) Promotion of demo schemes; (3) Finalization of demo/pilot projects; and, (4) Implementation of SSL product manufacturing and application demos.
87	5 days (total) workshop/training @ US$2,500 per workshop or training course – for workshop/meetings on the feasibility analyses of the demonstrations and pilots
88	Estimated cost for office supplies related to SSL demo/pilot projects design and promotion work
89	Estimated communications cost for SSL demo/pilot projects implementation work
90	IC Rate = US$ 750/day; 20 days (total) – for overall performance evaluation of the demos; development of technical guidance materials on SSL product applications; design and conduct of demonstration program results and impacts.
91	LC Rate = US$ 100/day; 135 days (total) – back-up and supplementary work for same tasks of ICs, plus preparation of demo project profiles
92	2 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 46 days (total); US$ 800/domestic trip; 24 person-legs – for ICs' international travel and LCs local travels related to demo project performance analysis
93	US$ 100/print unit; 200 units – for documentation of demo project profiles, demo performance evaluation, and workshop proceedings
94	20 days (total) workshop/training @ US$2,500 per workshop or training course on the performance evaluation and impacts of the demonstrations
95	Estimated cost for office supplies related to SSL demo/pilot projects implementation evaluation work
96	Estimated communications cost for SSL demo/pilot projects implementation evaluation work
97	IC Rate = US$ 750/day; 30 days (total) – for evaluation of capacity development needs of SSL industry; assessment of applicable SSL technology innovations, and design of sustainable follow-up program on supporting SSL technology innovations and new SSL product manufacturing and applications.
98	LC Rate = US$ 100/day; 90 days (total) – back-up and supplementary work for same tasks of ICs
99	1 international round trips @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 20 days (total); US$ 800/domestic trip; 6 person-legs –

Number	Description
	for IC international travel, and LCs local travel related to the capacity needs assessment of the SSL industry
100	US$ 100/print unit; 90 units – for documentation of capacity needs assessments, and consultation meetings and workshop proceedings
101	Sub-contract components: (1) Seminar-workshop on (a) sustainable EE SSL follow-up program; (b) New ESL product design and production
102	15 days (total) workshop/training @ US$2,500 per workshop or training course – for consultation meetings and workshop
103	Estimated cost for office supplies related to EE SSL follow-up program promotion and new ESL product design and production work
104	Estimated communications cost for follow-up program promotion and new ESL product design and production
105	IC Rate = US$ 750/day; 20 days (total) – for comprehensive research on, and development of, quality, safety and energy performance standards and testing methods for locally made SSL products; design and conduct of workshop on the proposed standards for SSL products
106	LC Rate = US$ 100/day; 140 days (total) – back-up and supplementary work for same tasks as ICs, plus organization and conduct of the SSL standards workshop
107	2 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 45 days (total); US$ 800/domestic trip; 6 person-legs – for ICs' international travel, and LCs local travel related to the SSL product quality standards evaluation and development.
108	US$ 100/print unit; 100 units – for documentation of the standards development work, and workshop proceedings
109	Sub-contract components: (1) Assessment of SSL product manufacturing technologies and product standards; and, (2) Preparation of proposed standards and testing procedures
110	11 days (total) workshop/training @ US$2,500 per workshop or training course – on SSL product quality standards and compliance
111	Estimated cost for office supplies related to SSL product manufacturing and standards and testing methods development work
112	Estimated communications cost for SSL product manufacturing and standards and testing methods development
113	2 Sub-contracts: (1) Quality and energy performance testing of representative samples of locally produced SSL products; and, (2) Assessment of current SSL production technologies; and development of potential improvements in SSL product manufacturing.
114	IC Rate = US$ 750/day; 10 days (total) – for design and conduct of seminar-workshop on feasible improvements in the design, manufacturing and application of SSL products
115	LC Rate = US$ 100/day; 40 days (total) – same as that of ICs (back-up and supplementary work)
116	1 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 25 days (total); US$ 800/domestic trip; 0 person-legs – for IC international travel, and LC local travel
117	US$ 100/print unit; 100 units – for documentation of the seminar-workshop proceedings
118	Sub-contract components: (1) R&D work on, and feasibility analysis of, specific requirements and methods for improvements in SSL product design and production; Development of methodologies; and, (3) Development of specific technical guidebook.
119	10 days (total) workshop/training @ US$2,500 per workshop or training course –on feasible improvements in the design, production and application, including financing of quality standards-compliant SSL products
120	Estimated cost for office supplies related to R&D work and feasibility analyses of requirements for improvement of SSL product design and production
121	Estimated communications cost for R&D work and feasibility analyses of requirements for improvement of SSL product design and production
122	IC Rate = US$ 750/day; 5 days (total) – for review of, and recommendation for, procedures in setting up and enforcing standards/codes for

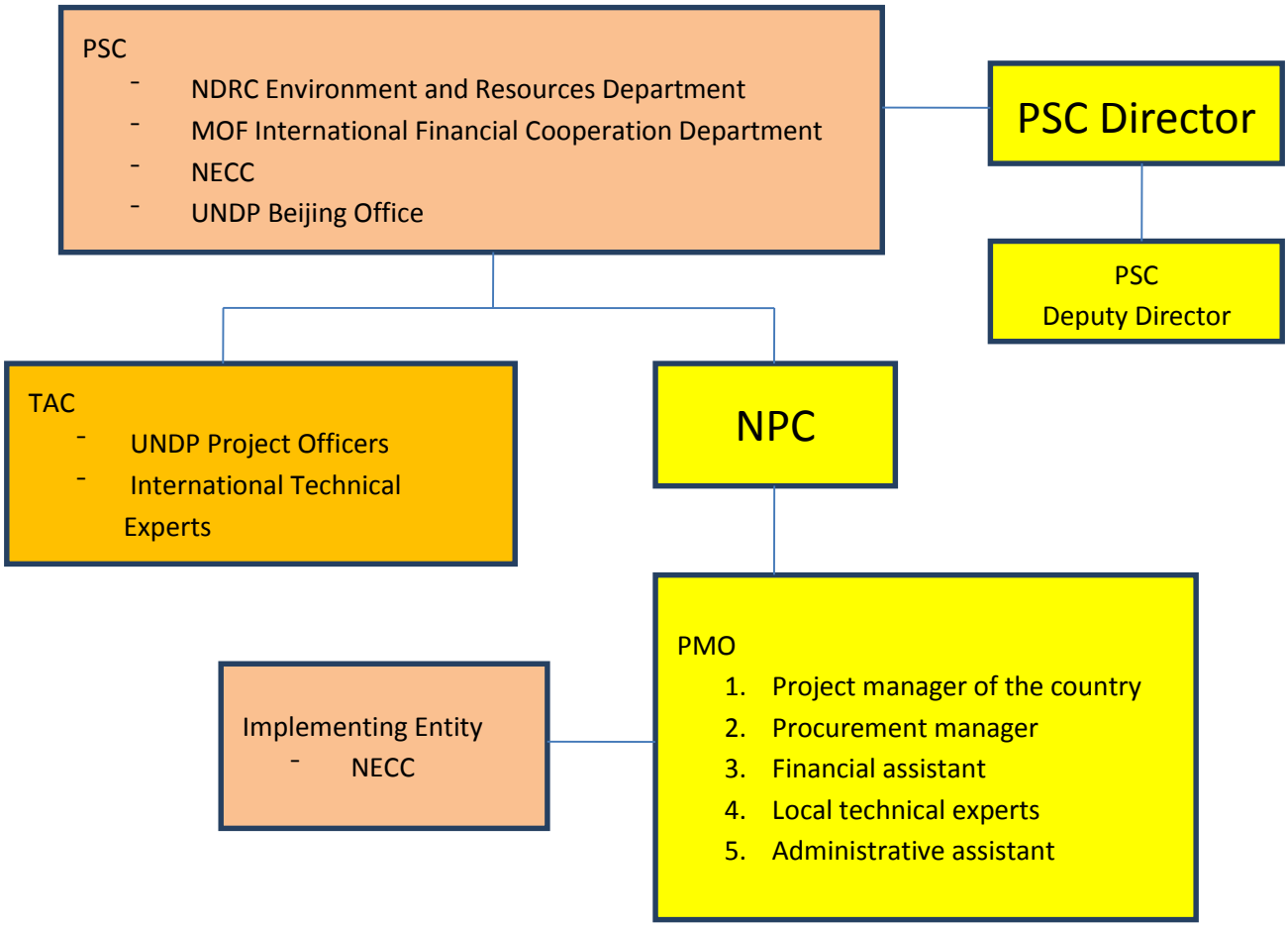
Number	Description
	ESL/SSL products, including development of technical guidance on testing procedures
123	LC Rate = US$ 100/day; 40 days (total) – same as that of ICs (back-up and supplementary work)
124	0 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 20 days (total); US$ 800/domestic trip; 0 person-legs – no travel involved, IC works home-base
125	US$ 100/print unit; 10 units – for documentation of recommended standards and codes, and technical guidance on testing procedures
126	Sub-contract components: (1) Development of unified set of SSL quality and energy performance standards; (2) Development of testing procedures; and, (3) Development of unities set of standards and specs for SSL applications.
127	2 days (total) workshop/training @ US$2,500 per workshop or training course – mainly for consultation meetings
128	Estimated cost for office supplies related to SSL quality and energy performance standards, and testing procedure development work
129	Estimated communications cost for SSL quality and energy performance standards, and testing procedure development
130	IC Rate = US$ 750/day; 25 days (total) – for conduct of capacity needs assessment of SSL product manufacturers in the design and manufacturing of quality standards-compliant SSL products; design and implementation of the suitable capacity development program
131	LC Rate = US$ 100/day; 90 days (total) – same as that of ICs (back-up and supplementary work)
132	2 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 45 days (total); US$ 800/domestic trip; 0 person-legs – for ICs' international travel, and LCs local travel related to the capacity needs assessment and development of capacity development program.
133	US$ 100/print unit; 60 units – for documentation of capacity needs assessment, and training materials production.
134	Sub-contract components: Design and development of capacity building programs on: (a) compliance with SSL products manufacturing standards; (2) Design and operation of SSL lighting systems; (3) applicable photobiological safety standards on the use of SSL products; and, (4) Application of SSL systems, including the proper disposal of waste SSL products.
135	8 days (total) workshop/training @ US$2,500 per workshop or training course – on the SSL product design and manufacturing capacity development program
136	Estimated cost for office supplies related to SSL capacity development program design and development work
137	Estimated communications cost for SSL capacity development program design and development work
138	IC Rate = US$ 750/day; 25 days (total) – for review of, and recommendation on, the procedures for the setting-up and enforcement of ESL testing and certification system; and design and establishment of SSL Product Testing and Certification System
139	LC Rate = US$ 100/day; 100 days (total) – same as that of ICs (back-up and supplementary work), advocacy/lobbying activities
140	2 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 25 days (total); US$ 800/domestic trip; 0 person-legs – for ICs' international travel, and LCs local travel related to the SSL product testing and certification system
141	SSL product testing equipment - Quantity 15 units @ US$ 20,000/unit – for the SSL product testing capacity development and applications
142	US$ 100/print unit; 20 units – for documentation of SSL product testing and certification system
143	Sub-contract components: Development of SSL product testing procedures; (2) Design and conduct of SSL product testing pilot; and (3) Design of inspection/testing system for SSL products
144	18 days (total) workshop/training @ US$2,500 per workshop or training course – for consultation meetings and workshop

Number	Description
145	Estimated cost for office supplies related to SSL product testing procedures development, and testing work
146	Estimated communications cost for SSL product testing procedures development and testing work
147	IC Rate = US$ 750/day; 25 days (total) – for development and implementation of M&E (including verification) procedures for the impacts and enforcement of SSL product standards
148	LC Rate = US$ 100/day; 80 days (total) – same as that of ICs (back-up and supplementary work)
149	2 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 30 days (total); US$ 800/domestic trip; 0 person-legs – for ICs' international travel, and LCs local travel related to the M&E development and implementation work.
150	Sub-contract components: (1) Assessment of impacts of SSL product standards; and, (2) Report on impacts of SSL product standards implementation
151	10 days (total) workshop/training @ US$2,500 per workshop or training course – mainly for consultation meetings and workshop.
152	Estimated cost for office supplies related to SSL product standards impact assessment work
153	Estimated communications cost for SSL product standards impact report preparation work
154	IC Rate = US$ 750/day; 30 days (total) – for mid-term and final evaluation of project
155	LC Rate = US$ 100/day; 70 days (total) – for mid-term and final evaluation of project; for PMO admin staff.
156	2 international round trip @ US$ 2500/round trip; Local Per diem Rate = US$ 100/day; 30 days (total); US$ 800/domestic trip; 8 person-legs
157	PMO equipment (e.g., personal computers and peripheral equipment/accessories) - Quantity = 5 @ US$ 1,5000/unit
158	Project management reporting @ US$ 100/print unit; 20 units
159	For project financial audit
160	Estimated cost of project management meetings
161	Estimated cost for office supplies related to project management and administrative work
162	Estimated communications cost for project management and administrative work
163	NDRC-UNDP agreed direct project cost (See Annex VII)

Ⅳ Management Arrangements

1. Project Institutional Framework

53. UNDP is the GEF implementing agency for this proposed GEF project, which will be executed as per UNDP's "National Implementation Modality" (NIM) by its implementing partner, which is the NDRC. The UNDP will be overseeing the implementation of this project by NDRC on behalf of the GEF. For its part, UNDP's implementing partner, NDRC, will execute and manage the implementation of the project activities. The NECC (as designated by the NDRC) will execute the project on behalf of the NDRC. The NDRC will appoint a Senior Officer to be the National Project Director, who will also head the Project Steering Committee (PSC) for integral management and instruction, including organizing and formulating annual work plan (AWP), achieving all outputs specified in the project document, reasonably and effectively utilizing the project funding. The director shall also ensure to keep close contact with each government departments and relevant agencies supporting the projects, and review reports and documents related to the project, and administrate all the tasks as required by the Chinese government and UNDP. NDRC will also nominate an official as contact person for communicating with members of PSC and PMO.



54. The National Project Coordinator (NPC) is appointed by the NDRC and provides direction to the PMO in the management of the implementation of the project.

55. Responsibilities of PAC: a) review the project progress and provide necessary instruction; b) review and approve annual work plan and budget; c) instruct effective implementation

of the project and promote coordination with UNDP policy and other activities; d) monitor and evaluate progress 2 years after project implementation. PAC shall at least hold one plenary session annually.

56. Responsibilities of UNDP: UNDP shall provide project oversight on behalf of the GEF, as well as project quality assurance. It will also provide technical guidance and management assistance for the implementation of the Project.

57. Responsibilities of NDRC: Energy Saving and Environmental Protection Department in NDRC shall organize the implementation of this Project, manage the project according to the UNDP executing procedure and relevant laws and regulations in China, and supervise the implementation. NDRC will work with MOF and other relevant departments to set up the Project Advisory Committee for coordination, supervision and management of key activities.

58. Responsibilities of NECC: NECC will support NDRC and China Office of UNDP to manage and implement this Project. NECC principals shall not only be a member of PAC, but also instruct director of the project office to manage the project. Apart from instructing the project operation, NECC shall also submit project progress report to the executive agency. NECC will also provide financial service for the project.

59. Responsibilities of PMO: under the instruction and supervision of PAC, PMO shall coordinate the daily works and manage the implementation all the activities of the project. It is responsible for the project activities monitoring, evaluation and reporting.

60. PMO and NPD shall ensure effective participation of stakeholders and operation of the project through regular meetings, and maintain close cooperation relationship with UNDP and GEF. For project stakeholders and their responsibilities, see the table below:

Stakeholder		**Roles and Responsibilities during Project Implementation**
Government Agency	National Development & Reform Commission	Responsible for coordination with MOF and UNDP and contact with local authorities of provinces where there is an existing SSL industry; Project management and financial management
	Ministry of Finance	Support the co-financed demonstration and the SSL product financing scheme activities
	Ministry of Science and Technology	Support research and development to improve SSL quality and technology, and technical integration of demonstration project
	Ministry of Housing and Urban-Rural Development	Provide advice and support in the formulation and implementation of project-proposed green lighting policy in cities
	Ministry of Transportation	Provide advice and support in the formulation and implementation of project-proposed green lighting policy in the transportation sector
	Ministry of Industry and Information Technology	Provide advice and support in the formulation and implementation of project-proposed green lighting policy in industries
	National Government Offices Administration	Provide advice and support in the formulation and implementation of green

		lighting policy in government offices
	Standardization Administration of the People's Republic of China	Provide technical advice and support in the design and development of standards for the quality and energy performance of SSL products
	National Energy Conservation Center	Oversee on behalf of the NDRC the management of the implementation of project activities and provision of technical support and capacity development to the project management office (PMO)
	Local governments and energy centers	Support the design and implementation of the pilots and demonstrations that will be carried out under the project.
Non-Government Organization	Industry organization	Assist in the design and implementation of the SSL products application demonstrations; Collect information on the various applications of SSL products.
Technical Organization	Design institutes, standard, test and quality and certification organizations.	Assist in the development of standards and implementation of testing and quality certification, and provide information related to R&D on SSL production
Lighting products manufacturer, retailer, and consumers	SSL product manufacturers and lighting system designers	Active participation in the financing and implementation of the demonstrations
	SSL product manufacturers hosting demonstrations	Commitments to completing demos and sharing information on demo results, and for scaling up/replication of demos
	SSL product distributors/retailers and consumers	Participation in project activities, particularly in the impact studies and market surveys
	Energy Service Companies (ESCOs)	Participation in demo activities; Supporting the SSL system applications
UNDP	Beijing Office	Provide technical advice and project management coordination in the project implementation.

2. General Arrangement

Coordination with other related projects

61. Currently, there is only one nationally-executed project in the field of green lighting in China - PILESLAMP, which is a UNDP-GEF funded project. The UNDP's implementing partner for this project is the NDRC. The actual project implementation period was 2009-2014, Although like PILESLAMP, the proposed project is a green endeavor, it has its own development stages, research orientation and goals. While PILESLAMP emphasizes on the transformation of incandescent lamp businesses to remove the hurdle for the application of ESLs, the proposed GEF funded project focuses on the removal of the current barriers that hinders the full blown development of the currently nascent local SSL industry, and the widespread application of SSL products in lighting systems in the energy consuming sectors of the country particularly the residential sector. The other green lighting project in the country, which is also GEF funded is the globally implemented En.Lighten project, which is on the promotion, acceleration and coordination of global efforts to push for efficient lighting. China is among the countries included in this project that seeks to accelerate the global commercialization and market transformation of

efficient lighting technologies by working at global level and providing technical support to developing countries.

62. The proposed GEF project will build on the UNDP-GEF PILESLAMP Project, and complement the ongoing UNEP-GEF En.Lighten global project. Lessons learned from these ongoing projects especially in negotiating partnerships, coordinating and managing multi-stakeholders, particularly in the private sector and the way forward in demonstrating the application of ESL (in this case SSL products) in lighting systems. During the project design, the project proponents will closely coordinate with key stakeholders in the private sector primarily the local lighting industry including the China Association of Lighting Industry (CALI), NDRC, MOST, MOF, industrial organizations and other institutions that are engaged in policy making and research and development on energy efficiency, in general, and ESL systems, in particular. The potentials of involving them in the implementation of some of the project activities will be explored and worked out during the project design. Furthermore, the project will also be developed in close cooperation with the UNDP-GEF Energy, Infrastructure, Transport and Technology Team based in the UNDP Bangkok Regional Hub in Bangkok. The UNDP country office in Beijing will be fully involved in the project development through its participation in the various stakeholder and co-financing consultation meetings and technical workshops during the project development phase, and in the multipartite review meetings. Consultations will also be done with UNDP-GEF, New York during the project development phase.

Audit arrangement

63. The Project Management Office will arrange the annual audit and provide the annual audit report to UNDP, according to relevant provisions by UNDP and Chinese government. Besides, this Project will also select qualified audit organizations and personnel for audit.

IPR and use of logos

64. Relevant disclosure document, publications and deliverables of this Project will be provided with GEF and UNDP logos as required by UNDP and GEF. Meanwhile, logos of this Project will also be used.

V Monitoring Framework and Evaluation

65. This Project will be monitored through monitoring and evaluation activities below. And for the budgets, see the table below:

Table 3: Work Plan and Budget for Evaluation

Monitoring and Evaluation Activity	Responsible Party	Budget $	Time
Kick-off meeting and report	■Project Manager ■ UNDP China, UNDP GEF	10,000	Within 2 months after the Project is started
Measurement methodology for verification of project outcome	■ UNDP GEF RTA/ The Project Manager shall supervise employment of relevant institutions and assign specific duties to team members.	To be determined during the inception phase	Inception, middle-term and final of the Project, and annually (if necessary)
Measurement	■Project Manager's	To be determined	Before the annual

methodology for validation of project outputs and implementation	supervision ■ Project team	during development of annual work plans	APR/PIR and determining the annual work plan
ARR/PIR	■ Project Manager and project team ■UNDP country office ■UNDP RTA ■ UNDP EEG	None	Annually
Regular situation/progress report	■ Project Manager and project team	None	Quarterly
Middle-term evaluation	■Project Manager and project team ■UNDP country office ■UNDP RCU ■ External expert consultant(s)	40,000	Middle-term of project enforcement
Final evaluation	■ Project Manager and project team ■UNDP country office ■ UNDP RCU ■ External expert consultant(s)	40,000	At least three months before the end of project implementation
Project final report	■ Project Manager and project team ■ UNDP country office ■ Local expert consultant(s)	0	At least three months before the end of the Project
Audit	■ UNDP country office ■ Project Manager and project team	3,000 per year	Annually
Visits on site	■ UNDP country office ■ UNDP RCU (if applicable) ■ Government representatives	Paid from IA fees and operational budget	Annually
Total Cost		US$ 99,000	

Project Inception

66. The kick-off meeting for the Project shall be held within 2 months after the Project is initiated. Representatives of the PSC and UNDP, technical advisers within the project organizational structure, and representatives of the major project stakeholders shall attend this meeting. The kick-off meeting is crucial for suggesting project responsibility consciousness and work plan of the first year. The following key problems shall be solved at this meeting:

- Help all partners to fully understand the Project and recognize their own responsibilities. Subdivide duties and clear responsibilities of the UNDP country office and RCU staff. Discuss the roles, functions and duties of the decision-making organization, including the reporting and communication mechanism and dispute processing mechanism. Discuss the project staff's TOR.

- Complete annual work plan of the first year.
- Provide detailed monitoring and evaluation framework. Complete monitoring and evaluation work plan and budgets.
- Discuss the financial report process and duties, as well as the annual audit arrangement.
- Plan the meetings of the PAC. The first PAC Meeting shall be held within 12 months after the kick-off meeting.

67. The project kick-off meeting report showing agreements and plans reached in the meeting is an important reference that shall be shared with every participant.

Reports (QPR)

68. QPR shall include the following:

- Monitoring for the quarterly progress with UNDP management platform
- Regular update for risk logs of new projects in ATLAS based on the initial risk analysis information submitted
- PPR reports produced based on the information recorded in the Atlas.
- Other available information in Atlas for monitoring problems and experience

Annual project review/Project implementation report (APR/PIR)

69. The APR/PIR during the previous reporting period (June 30 to July 1 of the following year) shall be prepared for monitoring the project progress. APR/PIR shall report at least the following contents:

- Project progress
- Project annual outputs
- Experience/good practice
- Annual work plan and expenditure report
- Risk and adaptive management
- Atlas quarterly progress report
- Relevant combination indicators

Regular Visit and Monitoring

70. The UNDP country office and UNDPRCU will implement project site visits according to the timeline set in the kick-off meeting/annual work plan, to get the latest project progress. Other members of the Project Steering Committee may also join this action. CO and RCU shall write the site visit report/BTOR, and send it to the project team and members of the Project Steering Committee.

Project Interim Evaluation

71. An independent interim evaluation shall be performed in the project middle-term. The interim evaluation includes the main evaluation as project progress, and has the identification for required improvement measures in case of need. The organization, relevant TOR and time of the interim evaluation will be determined after consulting related parties. The UNDP country office is responsible for preparing interim evaluation TOR.

Project Termination

72. The independent final evaluation shall be performed before the last project steering

committee meeting. The final evaluation will mainly evaluate the completion of the project's expected outcomes. The influence and sustainability of the project will be surveyed in the final evaluation, including contribution to the capacity building and global environmental benefits. UNDP country office is responsible for developing final evaluation TOR. The final evaluation shall provide recommendations for follow-up activities and acquire management's response. The relevant information shall be uploaded to the UNDP's PIMS.

Experience and Information Sharing

73. The project outcomes will be shared inside and outside the project area through the existing information sharing network and forum. The project team will identify and join the network/alliance related to the Project, and shall implement the Project by studying relevant experience and lessons. It will identify, analyze, and share their experiences and lessons.

Communication and Information Disclosure Requirements

74. Fully abide by the UNDP brand guideline. Such information may be obtained by visiting the URL http://intra.undp.org/coa/branding.shtml, and the specific guide on UNDP logo usage may be obtained through http://intra.undp.org/branding.shtml. In addition to other requirements, how to use the UNPD logo is also provided in the guide. In order to avoid questions, UNDP and GEF logos shall be used simultaneously. Both logos of GEF and UNDP may be obtained by accessing the corresponding URL.

75. Fully abide by the guideline related to GEF. GEF Guideline may be obtained by accessing:http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF°%20final_0.pdf. Brand policy and requirements of other institutions shall be complied if other institutions have provided co-funding for the Project.**http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF final_0.pdf**

VI Legal Context

76. The project file is composed of the file and the CPCA signed by the government and UNDP. All regulations in CPCA also apply to this file. As stated in clause III of SBAA, the executive agency is responsible for the safety of the personnel and property that belong to the executive agency. The executive agency shall:

- Give full consideration to the safety situation of host countries, make appropriate security plans and update them in due course;
- Give full consideration to all risks and obstacles related to the safety of the executive agency, fully implement security plans.

77. The UNDP reserves the right to examine the security plan and provide suggestions on modifying when necessary. Failing to maintain and implement the appropriate security plan will be regarded as a breach of this agreement.

78. The executive body agrees to take various reasonable measures to ensure that the UNDP fund will not be provided for individuals or organizations related to terrorism, while the list stated in the 1267 resolution of the UN Security Council won't be the receiver of any fund to the Project. This list may be obtained by logging in http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm. This regulation must be embodied on all the subcontracts or subcontract agreements under this project file.

Annexes

Annex Ⅰ: Risk Log

Project Title: Promoting Energy Efficient Electric Motors in Chinese Industries (PREMCI)	Project ID: 5669	Date:

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
1	Inefficient organization and coordination of stakeholders, such as government agencies, lighting system design companies, SSL producers, research institutions, experts and end users	2014-03-31	Political	P = 1 I = 2	UNDP's implementing partner for this project, NDRC is experienced in implementing projects on energy savings, GHG emission reduction, and environmental protection. The establishment of a National Project Steering Committee, led by NDRC and participated in by government agencies (such as MOF, MOST, Ministry of Housing and Urban-Rural Development, Ministry of Transport, Ministry of Environmental Protection, and General Administration of Quality Supervision, Inspection and Quarantine), which are relevant to the promotion of ESLs (including SSL products), will ensure an effective coordination mechanism in the project planning and design and implementation, on the basis of past practices and experiences.				
2	Failure to achieve timely and full distribution of co-financing and matching funds for project implementation	2014-03-31	Financial	P = 1 I = 2	The project development team, with the support of the NDRC will ensure that co-financing and matching fund guarantees (or at least the documented expression of interests) from the identified project partners will have been secured prior to launching of the project. Broad consultations with domestic financial institutions and communication with investors will be carried				

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
					out during the project development stage to ensure the availability of the co-financing for the subsumed baseline activities.				
3	Disbursements of funds by the government agencies for demonstration projects do not meet the scheduled dates	2014-03-31	Financial	P =1 I = 3	Identification of serious demonstration partners, setting-up of a realistic schedule and cost-sharing arrangements among responsible agencies during the project design stage.				
4	Ineffective coordination in research contents and execution periods for the numerous inter-related sub-projects.	2014-03-31	Technical	P =2 I = 3	Clear understanding of the requirements (timing and budget) for each of the planned activities will be ensured by the project development team during the project development stage. The team will also ensure that the project schedule will be synchronized with the implementation schedules of the project partners, particularly in regards to the implementation of the baseline activities. Securing firm commitments of responsible agencies during the project design stage.				
5	Low level of participation from the SSL manufacturers	2014-03-31	Technical	P =2 I = 1	Ensure involvement of the SSL manufacturers starting from the project design stage, dissemination of the latest information through right channels and identification of their needs and demand through continuous dialogue.				
6	Low level of government support in the effective enforcement or proposed policies and regulations	2014-03-31	Technical	P =2 I = 1	Incorporation of the necessary interventions for the formulation of the SSL support policies, including the accompanying implementing rules and regulations, as well improving the institutional arrangements for the enforcement of the proposed SSL standards/codes.				

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
7	Continued use of CFLs will minimize the realization of benefits from SSL product applications	2014-03-31	Technical	P =1 I = 2	The target 20% penetration rate is on the premise that CFLs will also be gradually replaced by SSL products. Close coordination with regional and global CFL initiatives (e.g., GEF-supported En.Lighten project) will be carried out concerning decisions and plans to keep an optimum balance of LED and CFL promotions and applications beyond the end-of-project.				
8	Exporting countries impose more stringent technical and quality requirements of LED lamp exports from China	2014-03-31	Technical	P =2 I = 3	The policy work that will be done under the project will also focus on the establishment and enforcement of approved policies and implementing rules and regulations on the quality and energy performance standards that meets international acceptance (including those from the LED trade partners of China) for locally produced SSL products.				
9	Failure of the market transformation policy and mechanism to facilitate supporting and incentivizing the local production of high quality SSL products	2014-03-31	Political	P =1 I = 2	Activities that will come up with the appropriate institutional framework and institutional capacity to enforce policies that are supportive of the manufacture, sale and applications of SSL products in the residential and commercial sectors will be designed and implemented under this proposed project. Adequate lobbying with the relevant GOC authorities will be done to ensure approval and strict enforcement of the formulated market transformation policies and mechanisms for the local SSL industry.				
10	Not enough capacity at testing centers to test the increasing amount of SSL products from	2014-03-31	Technical	P =2 I = 1	The activity on the development of a standardized system for the inspection/testing and certification of the various SSL products that comply with the set SSL product quality and energy performance standards, and the				

#	Description	Date Identified	Type	Impact & Probability	Countermeasures / Management Response	Owner	Submitted, updated by	Last Update	Status (compared with previous evaluation)
	market producers.				associated capacity building on the implementation of such system will facilitate the proper testing and certification of SSL products in the market. Private testing laboratories can be accredited to take up the increased volume of SSL products to be tested once the testing procedures are standardized and simplified and the lab people of the SSL manufacturers become technically capable with the SS product testing.				

Annex II: Letter of Co-Financing

Please refer to the attached file.

Annex III：Estimation of GHG Emission Reductions

The estimates of GHG emission reductions that are attributable to the project are based on the most recent version of the Calculation Guide for GEF Project Greenhouse Gas Emission Reduction, as well as the 2008 Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects.

1. Basic Assumptions

a. Annual growth rate of total sales volume of lighting products is 5%, based on the relevant statistics of actual sales volumes from 2008 – 2012.
b. Number of operational hours for quality standards compliant SSL products is different in different application area, as follow:

Application Area	Operating Hours (Daily)	Operating Hours (Annually)
Residential lighting	3	1095
Public buildings lighting	10	3650
Industrial lighting	10	3650
Traffic lighting	10	3650
	11	4015
	24	8760

3) Solid State Lamp wattages: SSL = 7W; Incandescent = 50W; Others = 13W
4) Replication factor for demonstrations/pilots = 4
5) Assumed CO_2 emission factor of 0.9074 tCO_2/MWh.

2. CO_2 Emissions Reduction Estimates

Direct CO_2 Emission Reductions

Within the project intervention period, there will be demonstration and replication activities for the production and applications of quality standards compliant SSL products. The tables below summarizes the estimated energy savings and CO2 emission reductions during a 3 year period, which is the duration of the SSLED Project, i.e., cumulative till end-of-project (EOP). The tables are for: (a) Baseline Scenario – considering the baseline demonstration and promotional activities that the government and the SSL lighting industry; (b) Alternative Scenario – considering the proposed SSLED project demonstration, promotional and enabling activities; and, (c) Incremental – highlighting the energy savings and CO2 emission reductions that are directly attributable to the SSLED Project.

Baseline Scenario:

Particulars	No. of SSL Products	Cumulative Electricity Savings (by EOP), MWh	Cumulative GHG Emission Reductions (by EOP), tons CO2
SSL Products Design & Manufacturing Demonstrations	-	-	-
SSL Products Design & Manufacturing Replications	-	-	-
SSL Products Applications Demonstrations	120,000	27,340.0	24,808.3
SSL Products Applications Replications	480,000	109,359.9	99,233.2
SSL Production & Applications Policy Pilots	-	-	-
SSL Production & Applications Policy Pilot Replications	-	-	-
SSL Products Financing Schemes	4,000,000	759,443.8	689,119.3
TOTAL	4,600,000	896,143.7	813,160.7

Alternative Scenario

Particulars	No. of SSL Products	Cumulative Electricity Savings (by EOP), MWh	Cumulative GHG Emission Reductions (by EOP), tons CO2
SSL Products Design & Manufacturing Demonstrations	20,000	2,734.0	2,480.8
SSL Products Design & Manufacturing Replications	80,000	10,936.0	9,923.3
SSL Products Applications Demonstrations	834,000	119,536.4	108,467.4
SSL Products Applications Replications	3,336,000	478,145.8	433,869.5
SSL Production & Applications Policy Pilots	10,000	1,367.0	1,240.4
SSL Production & Applications Policy Pilot Replications	40,000	5,468.0	4,961.7
SSL Products Financing Schemes	9,000,000	1,291,054.4	1,171,502.8
TOTAL	13,320,000	1,909,241.6	1,732,445.9

Incremental

Particulars	No. of SSL Products	Cumulative Electricity Savings (by EOP), MWh	Cumulative GHG Emission Reductions (by EOP), tons CO2
SSL Products Design & Manufacturing Demonstrations	20,000	2,734.0	2,480.8
SSL Products Design & Manufacturing Replications	80,000	10,936.0	9,923.3
SSL Products Applications Demonstrations	714,000	92,196.5	83,659.1
SSL Products Applications Replications	2,856,000	368,785.9	334,636.3
SSL Production & Applications Policy Pilots	10,000	1,367.0	1,240.4
SSL Production & Applications Policy Pilot Replications	40,000	5,468.0	4,961.7
SSL Products Financing Schemes	5,000,000	455,666.3	413,471.6
TOTAL	8,720,000	937,153.6	850,373.2

Direct CO_2 Emission Reductions (DER)

- **DER_{EOP}** = CO_2 emission reductions due to SSLED project intervention (cumulative by end-of-project) = 919,285 tons CO_2
- **$DER_{LIFETIME}$**

Particulars	Year 1	Year 2	Year 3	End-of-Project		End-of-Lifetime	
				Energy Savings, MWh	GHG ERs, Tons CO2	Energy Savings, MWh	GHG ERs, Tons CO2
A. Quality Standards Compliant SSL Products Production Demonstrations & Replications							
Demonstration (funded by GEF project)	5,000	6,000	9,000	2,734.0	2,480.8	4,556.7	4,134.7
Replication (directly assisted by GEF project)	20,000	24,000	36,000	10,936.0	9,923.3	18,226.7	16,538.9
B. Quality Standards Compliant SSL Products Application Demonstrations & Replications							
Demonstration (funded by GEF project)	100,000	300,000	314,000	92,196.5	83,659.1	162,672.9	147,609.3
Replication (directly assisted by the GEF project)	400,000	1,200,000	1,256,000	368,785.9	334,636.3	650,691.4	590,437.4
C. Quality Standards Compliant SSL Products Production & Application Policy Pilots							
Pilot (funded by GEF project)	2,500	3,000	4,500	1,367.0	1,240.4	2,278.3	2,067.4
Replications (directly assisted by the GEF project)	10,000	12,000	18,000	5,468.0	4,961.7	9,113.3	8,269.4
D. Financing Scheme for Quality Standards Compliant SSL Products Applications							
Target No. of SSL involved in financing scheme	0	1,000,000	4,000,000	455,666.3	413,471.6	1,139,165.7	1,033,678.9
TOTALS				**937,153.6**	**850,373.2**	**1,986,704.9**	**1,802,736.0**

$DER_{LIFETIME}$= CO_2 emission reductions from all SSL products used in the SSLED project up to their lifetime (3 years) = 1,802,736 tons CO_2

Direct Post-Project CO_2 Emission Reductions (DPPER)

During the course of the SSLED project implementation, there will be direct assistance provided to SSL manufacturers and users. These beneficiaries will implement their SSL initiatives and realized energy savings (and CO_2 emission reductions). However, not all of them are expected to implement their SSL initiatives during the life span of the SSLED project. Some may only do their SSL applications and realize CO_2 emission reductions (from the lighting energy savings) after the SSLED project completion. Such GHG emission reductions can still be attributed to the SSLED Project as part of Direct Post Project Emission Reductions (DPPER).

Also, if the financing schemes (e.g., subsidy, rebate, etc.) that are developed and implemented by the SSLED projects are continued after the completion of the SSLED projects, the energy saving and CO_2 emission reductions from the SSL initiatives that will be supported by such financing schemes can still be attributed to SSLED Project as part of DPPER. On the assumption that the Financing Scheme developed and implemented by the SSLED Project will continue. For each million SSLs, the lifetime CO_2 ERs would be about 206,736 tons. If the scheme will run for 3 years, the estimated lifetime CO2 ERs would be around 620,207 tons per million SSL products.

To be conservative, the estimation of the lifetime direct post project CO2 emission reductions will assume that the financing scheme will not continue, but other similar financing schemes will be developed and implemented by banks and financing institutions, or by the government. Hence, for the SSLED Project, the Lifetime Direct Post Project CO2 ERs is ZERO.

Lifetime DPPER = 0 tons CO_2

Consequential CO_2 Emission Reductions (CER)

Bottom-up Approach (BUA)

In estimating the Lifetime Consequential Emission Reductions using the bottom-up approach (CER_{BUA}), the sum of the Lifetime DER and Lifetime DPPER is multiplied by a replication factor (RF). As a market transformation and demonstration project, the GEF prescribed RF value is 3. In this case:

CER_{BUA} = (Lifetime DER + Lifetime DPPER) x 3 = (1,802,736 + 0) = 5,408,208 tons CO_2

Top-Down Approach

The 10-year influence period starts from the year after the SSLED completion.

Forecast total quality compliant SSLs sold during the 10-year influence period = 74,453,263

- Estimated Forecast Total Electricity Savings from using quality compliant SSLs during the 10 year influence period (ES_{TDA}) = 5,654.3 GWh
- Estimated Forecast Total CO_2 ERs from using SSLs during the 10 year influence period (ER_{TDA}) = 5,130,718tons CO_2

Considering the: (a) enabling environment that the SSLED project will create for the SSL industry; and, (b) total potential emissions reduction during the 10 year influence period, a causality factor = 0.8 is deemed appropriate.

CER_{TDA} = Lifetime Consequential CO_2Emission Reductions = ER_{TDA} * CF = 4,104,574tons CO_2

Summary of CO_2 Emission Reductions

CO_2 Emission Reduction Type	**Quantity, tCO_2**
End-of-Project Direct CO_2 Emission Reduction (DER_{EOP})	850,373
Lifetime Direct CO_2 Emission Reduction (DER_{TOTAL})	1,802,736
Lifetime Direct Post Project CO_2 Emission Reduction ($DPPER_{TOTAL}$)	0
Lifetime Consequential CO_2 Emission Reduction - BU Approach (CER_{BUA})	5,408,208
Lifetime Consequential CO_2 Emission Reduction - TD Approach (CER_{TDA})	4,104,574

Range of Lifetime Consequential CO_2 Emission Reduction: CER_{BUA}& CER_{TDA}: 4.1 – 5.4 billion tons

Annex IV: Annual Project Targets

Strategy	Objectively Verifiable Indicators			Annual Targets		
	Indicator Description	Baseline	Target	Year 1	Year 2	Year 3
Project Objective: Facilitation of the enhanced production and widespread application of quality solid state lighting (SSL) products in China	• Annual direct energy savings in China by EOP (GWh)	• 158	• 937.2	• 193	• 462	• 937.2
	• Annual direct CO_2 emissions reduced in China by EOP (kilotons)	• 143	• 850.4	• 175	• 419	• 850.4
	• No. of new jobs available in the ESL industry by EOP	• 0	• 1000	• 100	• 500	• 1000
	• No. of women employed in new jobs in the ESL industry by EOP	• 0	• 200	• 20	• 100	• 200
Outcome 1 *Enabling of enhanced and strategic SSL technology and market developments based on comprehensively assessed and documented up-to-date status of the SSL industry and market in China*	• The value of quality standards compliant SSL products produced in China by EOP (billion RMB)	• 117.1	• 184	• 110	• 142	• 184
	• The export value of quality standards compliant SSL products produced in China by EOP (billion USD)	• 5.4	• 13.8	• 8.9	• 11.2	• 13.8
Outcome2 *Facilitation of support and incentives in the local production of quality SSL products,*	• No. of policy recommendations adopted and enforced by relevant government agency departments by EOP	• 3	• 6	• 4	• 5	• 6

and in the application of SSL products compliant with established quality and energy performance standards	• Qualified rate of quality standards compliant SSL products by EOP	• 50%	• 70%	• 55%	• 60%	• 70%
Outcome 3 *Increased penetration rate of SSL products especially in the residential sector in China*	• Market share of qualified SSL products in general lighting market in China by EOP	• 8.2%	• 28%	• 15%	• 21%	• 28%
Outcome 4 *Enhanced quality and energy performance of locally produced SSL products both for the domestic and international markets*	• No. of SSL quality and energy efficiency certificates issued by state-certified institutions by EOP	• 1200	• 1500	• 1300	• 1400	• 1500
	• No. of local SSL manufacturers that are complying to the new EE standard/label for SSL products by EOP	• 0	• 100	• 10	• 50	• 100

Annex V: Terms of Reference for Project Staff and Consultants

1. National Project Manager (NPM)

a) Duties and Responsibilities: The post requires responsibility for implementation of the project, including mobilization of all project inputs, setup, implementation and maintenance of project's internal control arrangements, supervision of project staff, consultants and oversight of sub-contractors. The NPM will be the leader of the Project Team (PT) and shall liaise with the government, UNDP, and all stakeholders involved in the Project. S/he will be specifically responsible for (a) overall management of the project, (b) work closely with project stakeholders and ensure the project deliveries as per project document and work plan, (c) ensure technical coordination of the project and the work related to regulatory, institutional, financial and implementation aspects, (d) mobilize all project inputs in accordance with UNDP procedures and GEF principles, (e) finalize the ToR for the consultants and subcontractors and coordinate with relevant organizations for recruitment, procurement and contracting, (f) supervise and coordinate the work of all project staff, consultants and sub-contractors, (g) ensure proper management of funds consistent with UNDP requirements, and budget planning and control, (h) prepare and ensure timely submission of monthly reports, quarterly consolidated financial reports, quarterly consolidated progress reports, annual, mid-term and terminal reports, and other reports as may be required by UNDP; (i) submit the progress reports and key issue report to the PAC, (j) prepare quarterly and annual work plan, (k) arrange for audit of all project accounts for each fiscal year, and (l) undertake any activities that may be assigned by UNDP and PAC.

b) Qualifications and Experience: The suitable candidate for the post should have a minimum Master degree in Engineering, Management or Environment and profession qualifications with at least six (6) years professional experience. S/he should have extensive experience and technical ability to manage a large project and a good technical knowledge in the fields related to policy/regulation/standard, climate change, energy efficiency, and lighting sector. S/he must have effective interpersonal and negotiation skills and ability to effectively manage project teams, and international and local consultants. Excellent communication skills both in English and Chinese are essential. S/he must have good knowledge of international project implementation procedures and requirements.

2. Admin Assistant (AA)

a) Duties and Responsibilities: The post requires responsibility to provide overall administration services of the Project in support of the Project team such as processing payments, raising requisition, purchase order, projects logs etc. The AA will also perform (a) word processing, drafting routine letters/messages/reports, mailing (b) arrange travel, itinerary preparation for project related travels, (c) assist to arrange workshops/seminar/training programs and mailing, (d) work at reception desk and make appointments and schedule meeting, (e) assist in work-plan and budgeting, (f) photocopying, binding and filing, (g) maintenance of all office equipment and any other duties assigned by Project Manager.

b) Qualifications and Experience: The suitable candidate for the post should have at least a Bachelor degree. S/he should have at least 3 years relevant working experience. Computer proficiency in MS Office and other common software is a prerequisite. Knowledge of international project implementation procedures and requirements is preferable. Fluent both in written and spoken English and Chinese is required.

3. Project Accountant (ACC)

a) Duties and Responsibilities: The post requires responsibility for the provision of overall

financial services of the project such as processing payments, raising requisition, purchase order, projects logs etc. The ACC will also prepare work-plan budgets and Project expenditure and any other duties assigned by Project Manager.

b) Qualifications and Experience: The suitable candidate for the post should have at least a Bachelor degree. S/he should have at least 3 years relevant working experience. Computer proficiency in MS Office and other common software is a prerequisite. Basic knowledge in procurement and accounting systems is a basic requirement. Knowledge of international project implementation procedures and requirements is preferable. Fluent both in written and spoken English and Chinese is required.

4. Key Short-Term Consultants

Detailed TORs of the national and international consultants will be developed during the Project Inception period, by the NPM in consultation with UNDP and the implementing partners.

1) International Technical Specialist (ITS) for component 1 to 4:

- Provide management oversight for project and recommend actions that focus work plans on achieving key milestones in a timely manner;
- Recommend special expertise to be deployed on the Project to assist in its achievement of key milestones;
- Provide the interface between Project team and key specialist consultants, both domestic and international when appropriate.

2) International Policy Specialist (IPS) for component 1 to 2:

- Assess current policy, regulations, standards and specifications for LED;
- Evaluate development of LED industry and establish project baseline;
- Evaluate policy recommendations in the project outputs;
- Support pilot project and provide recommendations for promotion of pilot experiences.

3) Domestic LED Policy Specialist for component 2 to 4:

- Provide technical support for project team including the existing policy, laws and regulations, and standards for LED, and establish project baseline;
- Provide strategic suggestion on formulation of the related policy, standards and specifications;
- Evaluate the development of the related policy, standards and specifications and suggest on policy implementation and capacity building.

4) Domestic Capacity Building Advisor for component 4:

- Evaluate the competence of stakeholders, including central government, local government, implementing parties, sector organization, retailer, testing labs and certified institutions, and establish project baseline;
- Coordinate with project team to evaluate the training materials;
- Coordinate with project team to plan and implement the related seminars and training sessions;
- Coordinate with project team to evaluate the impact of the related seminars and training sessions.

5) Domestic LED Technical Specialist for component 1 to 3:

- Provide technical supports for project team, evaluate the competence of manufactures,

testing labs and certified institution and establish project baseline;
- Provide strategic opinions on LED technical development;
- Evaluate the production in demonstrative enterprises and improve the quality of LED products;
- Evaluate the test in labs and ensure the quality of the test results of products.

6) Domestic technical engineer for component 3:

- Provide technical consultation for pilot project's plan, design and implementation;
- Evaluate and supervise pilot project's construction and operation;
- Cooperate with project team to promote the pilot experience in a wider scope.

Annex VI: Description of Demonstrations

The demonstrations under the SSLED Project will be carried out in residential houses/buildings, central government offices, old people's home, hope primary school, large stadium, transportation infrastructures, intelligent housing estate and special environments such as smog area, high-altitude area and severe cold area. A total of 50 cities or towns will be selected based on the North Line A, North Line B, Middle Line and South Line of One Belt and One Road Plan to demonstrate the application of LED lighting in different location, different area and different climate conditions. The demonstrations will cover public building lighting, residential house lighting, industry lighting, transportation lighting, smart lighting and renewable energy. In addition, some innovative pilot projects of application will be planned, such as smart city lighting, sports venue lighting, medical and health lighting. These pilot projects can demonstrate to public that LED lighting will not only save energy but also provide quality lighting for different needs.

Residential housing lighting system demonstration

Based on the SSL market and manufacturers surveys that were done during the PPG exercise, the residence lighting demonstration has been designed for mostly lighting system retrofit and lamp replacement. The demonstration is based on the government LED demo program involving 175,000 different types of SSL products (see table below). Under the SSLED project, the demonstration for the manufacture and application of various types of SSL product types that are used in residential households will involve an incremental 5,182,400 SSL products, bulk of which will be through the financing scheme that will be developed and implemented under the project.

Demonstration energy saving Estimate Model								
Residential lighting							*365 days each year	
LED	Traditional lamp	The number (10000units)	Power of lamps(W)		Each LED energy saving(W)	Work time every day(H)	Energy saving each year (KWH)	Annual emission reductions (T)
			traditional lamps	LED lamps				
Bulb	Incandescent lamp	5.0	40	7	33	3	1806750	1639.44
	CFL	5.0	15	6	9	3	492750	447.12
Spotlight	Halogen tungsten lamp	5.0	22	6	16	3	891643	809.08
Tube	Fluorescent lamp	0.5	36	15	21	3	114975	104.33
Flat light	Grille lamp	1.0	72	47	25	3	277400	251.71
	Ceiling lamp	1.0	40	16	24	3	262800	237.76
SUM		**17.5**	**5150000**	**1637381**			**3846318**	**3489.44**

Public building lighting system demonstration

Based on the SSL market and manufacturers surveys that were carried out during the PPG exercise, the public lighting system demonstration has been designed to cover lighting systems in general public areas, government buildings, as well as sports and recreations venues. It involves the retrofit of existing lighting systems and replacement of lamps with SSL products. The demonstration is based on the government LED demo program involving 240,000 different types of SSL products (see table below). Under the SSLED project, the demonstration for the manufacture and application of various types of SSL product types that are used in public areas and buildings will involve an incremental 250,100 SSL products.

Demonstration energy saving Estimate Model								
Public buildings		*365 days each year						
LED	Traditional lamp	The number (10000units)	Power of lamps(W)		Each LED energy saving(W)	Work time every day(H)	Energy saving each year (KWH)	Annual emission reductions (T)
			traditional lamps	LED lamps				
Bulb	Incandescent lamp	1.0	40	7	33	10	1204500	1089.71
	CFL	1.0	15	6	9	10	328500	297.19
Spotlight	Halogen tungsten lamp	5.0	22	6	16	10	2972143	2688.90
Down lamp	CFL	4.0	25	13	12	10	1703333	1541.01
Tube	Fluorescent lamp	6.0	36	15	21	10	4599000	4160.72
Flat light	Grille lamp	4.0	72	47	25	10	3698667	3346.18
	Ceiling lamp	3.0	40	16	24	10	2628000	2377.55
Flood light	Halogen lamp	0.1	120	60	60	10	219000	198.13
SUM		**24.0**	**9010000**	**4255714**			**17134143**	**15699.39**

Industrial lighting system demonstration

The industry lighting demonstration is designed to feature mostly retrofits of existing lamps in industrial facilities replacing them with applicable SSL products. The demonstration is based on the government LED demo program involving 110,000 different types of SSL products (see table below). Under the SSLED project, the demonstration for the manufacture and application of various types of SSL product types that are used in industrial manufacturing facilities will involve an incremental 114,600 SSL products.

Demonstration energy saving Estimate Model								
Industrial lighting		*365 days each year						
LED	Traditional lamp	The number (10000units)	Power of lamps(W)		Each LED energy saving(W)	Work time every day(H)	Energy saving each year (KWH)	Annual emission reductions (T)
			traditional lamps	LED lamps				
Bulb	Incandescent lamp	0.5	40	7	33	10	602250	544.86
	CFL	0.5	15	6	9	10	164250	148.60
Down lamp	CFL	1.0	25	13	12	10	425833	385.25
Tube	Fluorescent lamp	5.0	36	15	21	10	3832500	3467.26
Flat light	Grille lamp	2.0	72	47	25	10	1849333	1673.09
	Ceiling lamp	2.0	40	16	24	10	1752000	1585.03
Mining lamp	Halogen lamp	0.1	450	250	200	10	730000	660.43
SUM		**11.0**	**5015000**	**2451667**			**8626167**	**8464.52**

Traffic lighting system application demonstration

The demonstration of the application of SSL products in traffic management (lighting) has been designed for street and tunnel lighting. The demonstration is based on the government LED demo program involving 80,000 different types of SSL products (see table below). Under the SSLED project, the demonstration for the manufacture and application of various types of SSL product types that are used in traffic lighting systems will involve an incremental 83,400 SSL products.

Demonstration energy saving Estimate Model								
Traffic lighting							*365 days each year	
LED	Traditional lamp	The number (10000units)	Power of lamps(W)		Each LED energy saving(W)	Work time every day(H)	Energy saving each year (KWH)	Annual emission reductions (T)
			traditional lamps	LED lamps				
Bulb	Incandescent lamp	0.1	40	7	33	10	120450	108.97
	CFL	0.1	15	6	9	10	32850	29.72
Down lamp	CFL	2.0	25	13	12	10	851667	770.50
Tube	Fluorescent lamp	2.0	36	15	21	10	1533000	1386.91
Flat light	Grille lamp	1.0	72	47	25	10	924667	836.55
	Ceiling lamp	1.0	40	16	24	10	876000	792.52
Street lamp	High voltage sodium lamp	1.3	250	140	110	11	5741450	5194.29
Tunnel light	High voltage sodium lamp	0.5	100	55	45	24	1971000	1783.16
SUM		**8.0**	**6145000**	**3301333**			**4338633**	**10902.62**

Intelligent lighting system demonstration

The demonstration on the application SSL products in what is presently termed as intelligent or smart lighting systems that aims for maximization energy savings of lighting on the premise of creating a comfortable and healthy lighting environment for people. It has been designed for showcasing improved lighting performance. The demonstration is based on the government LED demo program involving 104,000 different types of SSL products (see table below). Under the SSLED project, the demonstration for the manufacture and application of various types of SSL product types that will be used for intelligent lighting systems will involve an incremental 108,400 SSL products.

Demonstration energy saving Estimate Model								
Intelligent lighting		*1.2						*365 days each year
LED	Traditional lamp	The number (10000units)	Power of lamps(W)		Each LED energy saving(W)	Work time every day(H)	Energy saving each year (KWH)	Annual emission reductions (T)
			traditional lamps	LED lamps				
Bulb	Incandescent lamp	1.0	40	7	33	3	433620	392.30
	CFL	1.0	15	6	9	3	118260	106.99
Spotlight	Halogen tungsten lamp	2.0	22	6	16	10	1426629	1290.67
Down lamp	CFL	5.0	25	13	12	10	2555000	2311.51
Tube	Fluorescent lamp	1.0	36	15	21	10	919800	832.14
Flat light	Grille lamp	0.1	72	47	25	10	110960	100.39
	Ceiling lamp	0.1	40	16	24	3	31536	28.53
Street lamp	High voltage sodium lamp	0.1	250	140	110	11	529980	479.47
Tunnel light	High voltage sodium lamp	0.1	100	55	45	24	473040	427.96
SUM		**10.4**	**3062000**	**1318619**			**6598825**	**5969.96**

Renewable energy powered lighting system demonstration

The demonstration will be implemented in off-grid areas of the country where the energy (e.g., electricity) is supplied from RE resources. Based on the SSL market and manufacturers surveys that were carried out during the PPG exercise, the demonstration will focus on the applications of feasible SSL products in systems served by electricity produced from RE-based power generation systems. The demonstration is based on the government LED demo program involving 5,000 different types of SSL products (see table below). Under the SSLED project, the demonstration for the manufacture and application of various types of SSL product types that are used in off-grid areas (e.g., residences, buildings, streets) will involve an incremental 5,200 SSL products.

Demonstration energy saving Estimate Model								
renewable energy								*365 days each year
LED	Traditional lamp	The number (10000units)	Power of lamps(W)		Each LED energy saving(W)	Work time every day(H)	Energy saving each year (KWH)	Annual emission reductions (T)
			traditional lamps	LED lamps				
Street lamp	High voltage sodium lamp	0.5	250	0	250	11	5018750	4540.46
SUM		**0.5**	**1250000**	**0**			**5018750**	**4540.46**

Annex VII: Service Agreement between UNDP and NDRC

STANDARD LETTER OF AGREEMENT BETWEEN UNDP AND THE GOVERNMENT FOR THE PROVISION OF SUPPORT SERVICES

Dear Mr. He Bingguang

Director General of the Department of Resources Conservation and Environmental Protection, National Development and Reform Commission

1. Reference is made to consultations between officials of the National Development and Reform Commission (hereinafter referred to as "the NDRC") and officials of UNDP with respect to the provision of support services by the UNDP country office for nationally managed programmes and projects. UNDP and NDRC hereby agree that the UNDP country office may provide such support services at the request of NDRC through its institution designated in the relevant programme support document or project document, as described below.

2. The UNDP country office may provide support services for assistance with reporting requirements and direct payment. In providing such support services, the UNDP country office shall ensure that the capacity of the NDRC-designated institution is strengthened to enable it to carry out such activities directly. The costs incurred by the UNDP country office in providing such support services shall be recovered from the administrative budget of the office.

3. The UNDP country office may provide, at the request of the designated institution, the following support services for the activities of the programme/project:
(a) Identification and/or recruitment of project and programme personnel;
(b) Identification and facilitation of training activities;
(c) Procurement of goods and services;

4. The procurement of goods and services and the recruitment of project and programme personnel by the UNDP country office shall be in accordance with the UNDP regulations, rules, policies and procedures. Support services described in paragraph 3 above shall be detailed in an annex to the programme support document or project document, in the form provided in the Attachment hereto. If the requirements for support services by the country office change during the life of a programme or project, the annex to the programme support document or project document is revised with the mutual agreement of the UNDP resident representative and the designated institution.

5. The relevant provisions of the Standard Basic Assistance Agreement between the Government of China and the United Nations Development Programme in China signed on January 29 1979 (the "SBAA"), including the provisions on liability and privileges and immunities, shall apply to the provision of such support services. The Government shall retain overall responsibility for the nationally managed programme or project through its designated institution. The responsibility of the UNDP country office for the provision of the support services described herein shall be limited to the provision of such support services detailed in the annex to the programme support document or project document.

6. Any claim or dispute arising under or in connection with the provision of support services by the UNDP country office in accordance with this letter shall be handled pursuant to the relevant provisions of the SBAA.

7. The manner and method of cost-recovery by the UNDP country office in providing the support services described in paragraph 3 above shall be specified in the annex to the programme support document or project document.

8. The UNDP country office shall submit progress reports on the support services provided and shall report on the costs reimbursed in providing such services, as may be required.

9. Any modification of the present arrangements shall be effected by mutual written agreement of the parties hereto.

10. If you are in agreement with the provisions set forth above, please sign and return to this office two signed copies of this letter. Upon your signature, this letter shall constitute an agreement between your Government and UNDP on the terms and conditions for the provision of support services by the UNDP country office for nationally managed programmes and projects.

Yours sincerely,

Signed on behalf of UNDP
Mr. Patrick Haverman
Deputy Country Director

Date: _____

For the Government
Mr. He Bingguang

Director General of the Department of Resources Conservation and Environmental Protection, National Development and Reform Commission

Date: 2015.9.29

Attachment

DESCRIPTION OF UNDP COUNTRY OFFICE SUPPORT SERVICES

1. Reference is made to consultations between NDRC, the institution designated by the Government of China and officials of UNDP with respect to the provision of support services by the UNDP country office for the nationally managed programme: Enabling Solid State Lighting Market Transformation Promotion of Light Emitting Diode Lighting Between the Government of the People's Republic of China and United Nations Development Programme to enhance the production and widespread application of quality solid state lighting.

2. In accordance with the provisions of the letter of agreement and the programme project document, the UNDP country office shall provide support services for the Programme as described below.

3. Support services to be provided:

Support services (insert description)	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Recruiting 4 specialists	As per AWPs	As Per UPL	Estimated amount: US$ 5,265.60
2.			
3.			

4. Description of functions and responsibilities of the parties involved is as per the project document. UNDP country office will provide the services as stated above upon the request of the National Development and Reform Commission. The reimbursement of the UNDP support cost will be recorded as per transactions based on the established UNDP financial regulations and rules.

Annex VIII: Social and Environmental Screening

Project Information

Project Information	
1. Project Title	Enabling Solid State Lighting Market Transformation & Promotion of Light Emitting Diode (LED) Lighting
2. Project Number	5669
3. Location (Global/Region/Country)	China

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?
Briefly describe in the space below how the Project mainstreams the human-rights based approach
The market popularization of quality made SSL products that will facilitated through the proposed SSLED Project will promote employment (e.g., in new and accredited SSL manufacturing companies). Also, the applications downstream of the SSL industry value chain is also labor intensive, and would open prospects for new jobs if there will be increased manufacturing and utilization of SSL products. The project will also be designed and implemented with due consideration of human rights principles, through engagement of the concepts of equality in the dissemination of knowledge and sharing of benefits. *The project partners acknowledge human rights practices under international law and the application of human rights-related standards in the design and implementation of the project. The project is designed to enhance the availability, accessibility and quality of benefits and services for all relevant target groups including those that are potentially marginalized individuals and groups.*
Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment
The project is designed taking into account the need to promote gender equality; specifically to provide employment training for women, The training programs under the project will include activities that will promote the employment particularly for women in the SSL industry and in those that make up the value chain of the SSL industry. The project is expected to bring about employment for women in new jobs that will be created in the SSL industry in China.
Briefly describe in the space below how the Project mainstreams environmental sustainability
During the implementation of the project and for a long period after the completion of the project, the achievements of the project would boost the improvement of the quality of Chinese SSL products, promote market transformation and application and the development of the small and medium-sized enterprise of SSL, drive the transformation and upgrading of traditional lighting industry, improve the quality and energy efficiency of export products, and make great achievements in energy savings and emission reduction by the implementation of the project.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	***Impact and Probability (1-5)***	***Significance (Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Risk1: Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	I = 1 P=2	***Low***	The SSLED Project would bring about increased local production of LED lighting products and could provide opportunities for women to work in such field.	One of human development indicators of the project is the number of trained and employed women in new SSL manufacturing companies. By implementing professional job training in this industry, for both men and women will improve and promote gender equality and improve the lot of qualified and capable Chinese women in technical areas such as the SSL industry.
Risk2: Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or trans-boundary impacts?	I = 1 P=2	Low	This could happen in cases where increased use of LED lamps will lead to replacement and improper disposal of Hg containing CFLs.	SSL products are Hg-free lighting devices, and would therefore not be detrimental to the natural environment when disposed-off after their useful lives. The project will also see to it that actions are taken to ensure: (1) compliance with photobiological safety standards for SSL products; and, (2) the proper disposal of lamps replaced with SSLs.
	QUESTION 4: What is the overall Project risk categorization?			
	Select one (see SESP for guidance)			**Comments**
	Low Risk	☑		Strengthen communication with the government, manufacturers, project office and other agencies, to take preventive measures.

	Moderate Risk	☐	
	High Risk	☐	
	QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?		
	Check all that apply		**Comments**
	Principle 1: Human Rights	☐	
	Principle 2: Gender Equality and Women's Empowerment	☑	Gender equality and women's employment has been advocated by China, the project will raise the level of gender equality and women's employment.
	1. Biodiversity Conservation and Natural Resource Management	☐	
	2. Climate Change Mitigation and Adaptation	☐	
	3. Community Health, Safety and Working Conditions	☐	
	4. Cultural Heritage	☐	
	5. Displacement and Resettlement	☐	
	6. Indigenous Peoples	☐	
	7. Pollution Prevention and Resource Efficiency	☑	In cases where increased LED lamps use will lead to replacement and improper disposal of Hg containing CFLs

Final Sign Off

Signature	***Date***	***Description***
QA Assessor		UNDP staff member responsible for the Project, typically a UNDP Programme Officer. Final signature confirms they have "checked" to ensure that the SESP is adequately conducted.
QA Approver		UNDP senior manager, typically the UNDP Deputy Country Director (DCD), Country Director (CD), Deputy Resident Representative (DRR), or Resident Representative (RR). The QA Approver cannot also be the QA Assessor. Final signature confirms they have "cleared" the SESP prior to submittal to the PAC.
PAC Chair		UNDP chair of the PAC. In some cases PAC Chair may also be the QA Approver. Final signature confirms that the SESP was considered as part of the project appraisal and considered in recommendations of the PAC.

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	**No**
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups?[23]	**No**
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	**No**
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	**No**
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	**No**
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	**No**
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	**No**
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	**No**
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	**No**
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	**Yes**
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	**No**
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well-being.*	**No**
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural **Resource Management**		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats)and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	**No**
1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	No
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No

[23] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority.References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	No
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction.*	No
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse trans boundary or global environmental concerns?	No
1.11	Would the Project result in secondary or indirect development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area? *For example, a new road through forested lands will generate direct environmental and social impacts (e.g. felling of trees, earthworks, potential relocation of inhabitants). The new road may also facilitate encroachment on lands by illegal settlers or generate unplanned commercial development along the route, potentially in sensitive areas. These are indirect, secondary, or induced impacts that need to be considered. Also, if similar developments in the same forested area are planned, then cumulative impacts of multiple activities (even if not part of the same Project) need to be considered.*	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[24]greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	No
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	No
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	No
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities (e.g. collapse of buildings or infrastructure)?	No
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, and erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No
3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No

[24]In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?[25]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? *If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.*	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No
6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or trans boundary impacts?	Yes
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	No
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*.	No

[25] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No