

**MARKET TRANSFORMATION OF ENERGY  
EFFICIENCY BRICKS AND RURAL BUILDINGS  
(MTEBRB)**

**TERMINAL EVALUATION**

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# MARKET TRANSFORMATION OF ENERGY EFFICIENCY BRICKS AND RURAL BUILDINGS (MTEBRB)

## TERMINAL EVALUATION

PROJECT DATA		
<b>Title of UNDP Supported GEF Financed Project</b>	Market Transformation of Energy Efficiency Bricks and Rural Buildings (MTEBRB)	
<b>UNDP and GEF Project ID Numbers</b>	UNDP Project ID: 00059500 GEF Project ID: PIMS 3675	
<b>Evaluation Time Frame and Date of Evaluation Report</b>	Content	Time
	Meeting at the PMO	9 November 2016
	Ongoing data gathering and interviews as requested by the TE team	10 – 11 November 2016
	PPT Presentation of initial TE findings and recommendations	21 November 2016
	Validation of financial and other reporting information, additional analysis	21 November – 30 December 2016
	Submission of Draft TE	15 January 2017
<b>Region and Countries included in the Project</b>	Region: Asia Pacific Country: China	
<b>GEF Operational Program/Strategic Program</b>	GEF Strategic Program No. 1 , Promoting Energy Efficiency in Residential and Commercial Buildings (SP-1) Promoting Energy Efficiency (EE) in the Industrial Sector (SP-2) GEF Operational Program: 5: Removal of barriers to energy efficiency and energy conservation.	

<b>Implementing Partner and Other Project Partners</b>	UNDP China, MOA, NDRC, MOHURD , MEP, CICETE, management office from 9 provincial government, local banks from 9 provinces, EE brick manufactures, village administrators and villagers from 16 demonstration and 255 replication sites
<b>Date of Inception Workshop</b>	17 May 2010
<b>Original Closing Date</b>	30 June 2015
<b>Revised Closing Date</b>	December 2016
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# ACKNOWLEDGEMENT

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This Terminal Evaluation report sets out findings, conclusions, lessons learnt and recommendations for the **Market Transformation of Energy Efficiency Bricks and Rural Buildings (MTEBRB)**. The report is developed in compliance with the terms of reference for the assignment. The conclusions and recommendations set out in the following pages are solely those of the evaluators and are not binding on the project management and sponsors.

The authors would like to thank all who assisted in the Terminal Evaluation, particularly the PMU and UNDP China for providing technical and logistic support, and all the stakeholders who consented to be interviewed.

# ABBREVIATION & ACRONYMS

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BRESL	Barrier Removal to the Cost-Effective Development and Implementation of Energy Efficiency Standards and Labeling Project
C&R	Commercial & Residential
CICETE	China International Center for Economic and Technical Exchanges
CPC	Conservation Pollution Control
EE	Energy Efficiency
EOP	End of Project
GEF	Global Environment Facility
GHG	Greenhouse Gas
GOC	Government of China
LFA	Logical Framework Analysis
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MOA	Ministry of Agriculture
MOHURD	Ministry of Housing and Urban Rural Development
MTEBRB	Market Transformation of Energy Efficiency Bricks and Rural Buildings
NAB	National Association of Bricks
NDRC	Development and Reform Commission
NPD	National Project Director
PIESLAMP	Phasing-Out of Incandescent Lamps and Energy Saving Lamps Promotion Project
PMO	Project Management Office
PSC	Project Steering Committee
RFCCs	Rural Financial Credit Collectives
SNRC	Socialism New Rural Construction
TAC	Technical Advisory Committee

TAP	Technical Advisory Panel
TE	Terminal Evaluation
TOR	Terms of Reference
TVE	Township and Village Enterprises
UNDP	United Nations Development Program

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# EXECUTIVE SUMMARY

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<b>Goal of the Project</b>	Reduction of GHG emissions from brick manufacturing and the commercial & residential (C&R) buildings in Chinese rural areas
<b>Objective of the Project</b>	Removal of barriers that have persistently hindered the widespread development and application of EE bricks and EE buildings in rural China. The major focus of the project will involve addressing the key barriers (policy, technical, informational, and financial) that currently hinder the rural buildings market from adopting EE bricks and EE buildings. The project will also help the government to strengthen its capability to develop and implement EE bricks and EE buildings activities in a market environment. This project will address these barriers through a combination of training and capacity-building, learning by doing, and technical assistance activities.
<b>Major Components and Outcomes of the Project</b>	<p>The MTEBRB is composed of four major components and their major outcomes are as follows:</p> <ul style="list-style-type: none"> <li>• <b>Component 1: Information Dissemination and Awareness Enhancement</b> <ul style="list-style-type: none"> <li>○ Enhancing knowledge and access to technical and market information, particularly among local governments, rural residents, and builders in rural areas, on EE bricks and buildings</li> </ul> </li> <li>• <b>Component 2: Policy Development and Institutional Support</b> <ul style="list-style-type: none"> <li>○ Promulgation of, and compliance to, favorable policies that encourage manufacturing and utilization of EE bricks and the application of EE technologies and practices in the buildings sector in the country's rural areas</li> <li>○ Developing relevant policies and standards, including rural building energy codes, brick making emission standards, fuel usage policies in the brick sector, and the standardization of EE brick structural and thermal properties and qualities</li> </ul> </li> <li>• <b>Component 3: Finance Support &amp; Accessibility Improvement</b> <ul style="list-style-type: none"> <li>○ Enhancing availability of financial and institutional support for initiatives on EE brick production, and EE building technology applications</li> </ul> </li> <li>• <b>Component 4: Demonstration and Technology Support.</b> <ul style="list-style-type: none"> <li>○ Establishing a critical mass of demonstration projects that will provide detailed information on technical</li> </ul> </li> </ul>

	performance and operations, energy savings and environmental impacts to interested brick makers, rural building developers, residents, local financial institutions, and local governments.	
<b>Project Budget</b>	GEF Fund	USD 7,000,000
	Government of China Co-Financing	USD38,224,472
	Private Sector Co-Financing	USD 6,617,646
	Other Sources	
	<b>Total Committed Funds</b>	<b>USD 51,842,118</b>
	<b>Total Actual Funds Utilized</b>	<b>USD331,421,481</b>

## PROJECT DESCRIPTION

This project contributes to the reduction of GHG emissions through the transformation of the Chinese rural buildings market towards more energy-efficient building materials (mainly bricks) and technologies. It is in line with the GEF's climate change strategic programs on Promoting Energy Efficiency in Residential and Commercial Buildings (SP-1); and, Promoting Energy Efficiency (EE) in the Industrial Sector (SP-2). It is comprised of activities aimed at improving energy efficiency and promoting the widespread adoption of energy-efficient bricks, as well as energy efficient building technologies and practices in the building markets in rural China. The proposed project will positively respond and make great contribution to the strategy and policy of the Government of China concerning energy efficiency in rural areas through its close linkage with the new government campaign on "Building a New Socialist Countryside" and promoting the upgrade of brick products and production technology of rural brick plants and the application of EE buildings, promoting the sustainability of rural brick industry, improving the living standard of rural residents thus increasing energy efficiency in rural areas.

## SUMMARY OF CONCLUSION, RECOMMENDATIONS AND LESSONS

### CONCLUSION

In conclusion, the Terminal Evaluation team has determined that the MTEBRB design has remained relevant to the development context of China and the priorities of various stakeholders, including GOC, GEF, UNDP, and the EE bricks and rural EE buildings industry.

Moreover, the project has been efficiently implemented while engaging a large number of stakeholders as partners and sub-contractors. The ownership from all stakeholders has been demonstrated in exceeding committed co-financing by xxxx% and has led to effective implementation, resulting in over achievement of goals and component-level targets. Activities with significant impact include: development and promulgation of EE bricks and rural EE building standards and codes, mainstreaming project objectives in the programs and policies of central and local governments, facilitating access to

finance, and demonstration and replication of EE brick making and buildings. A supportive environment created by the GOC also facilitated the project and resulted in unintended positive impact of a variety of activities, e.g. availability of GOC funds for EE improvements in bricks and rural buildings and higher than intended replications. These activities have effectively transformed the local EE bricks and rural EE building industries in the targeted areas.

To capitalize on the evolving conducive policy environment, the project was granted a no cost extension of 18 months, thereby increasing the project duration from five years to 6.5 years. This translated into the project being delivered in 30% additional time.

## LESSONS LEARNED

Based on consultations with key stakeholders and the conclusions drawn by the TE team, key lessons learnt from the PEERAC project design and implementation experience are as follows:

- i. Market transformation can be achieved only through supply-demand linkages and through participatory multi-disciplinary, multi-agency, and multi-industry approach.
- ii. GOC funds not only provide significant leverage to limited GEF funds but also have implications for medium and long term commitment of the government for continuing and up-scaling the project activities.
- iii. Private sector enthusiasm for new and beneficial products can be elicited based on GOC commitments, thereby significantly improving the uptake of project activities.
- iv. Projects developed to provide pioneering response or solutions to issues need to allow room for flexibility in implementation, as such projects are based on a large number of assumptions which are eventually tested at the time of implementation.
- v. Considering the vast scale of the bricks and rural building sectors in China, the country has yet to achieve a significant or complete transformation nationwide. Moreover, socio-economic challenges associated with rural EE brick industry include the entrenched mindsets of rural brick makers and residents as well as their investment/buying capacity.

## RECOMMENDATIONS

Based on its conclusions and the lessons learnt, the evaluation team recommends the following actions:

### **I. Continuation / Up-scaling of the Project Activities**

Despite the significant achievements of the MTEBRB project, China as a nation has still a long way to achieve nation-wide market transformation of the EE bricks and rural EE buildings industries. It is therefore recommended that the activities of MTEBRB are adopted by a key GOC agency such as the

Wall Material Reform Office or the Rural Energy and Environment Agency, etc. to be continued and up-scaled before the project's achievements lose their momentum. Such activities should also be

In addition to utilizing the learnings from the project implementation, elements critical to nation-wide market transformation are:

- Continue strengthening the **implementation** capacity of the GOC;
- Linking to ongoing policy activities and build synergies with lucrative government programs;
- Linking to relevant projects such as the upcoming Green Township Development project; and
- Feasibility for different geographical **climate** regions based on cost-benefit competitiveness, future geographical priority, and differentiating Implementation roadmap (Unified planning, unified construction unified planning, self-construction, and self-planning and construction (sporadic), etc.)

## **II. Adapting to the Evolving EE Technologies and Needs**

EE technologies and concepts are constantly evolving as are the consumer needs. It will therefore be important for future activities to be compliant with the changing context so that China can achieve maximum benefit from investing in such efforts. In this regard, future project designs need to focus on the aspect of Green Building and not just EE building, pre-fabricated buildings or building equipment, modernized structures, and changing lifestyles in the rural areas due to continually improving economic statuses and changes in farming patterns, etc.

## **III. South-South Learning and Exchange**

As an emerging donor, the Government of China can play a critical role in disseminating the lessons learned from the MTEBRB project to improve the brick making and utilization industries in other developing countries, especially Asia. In this regard, the GOC can use the following avenues for collaboration:

- South-South cooperation through China-led projects
- Information sharing through key platforms such as the UN, GEF, AIIB, etc.
- UNDP regional and “one belt one road” initiative

## 1. INTRODUCTION

### 1.1. PURPOSE OF THE EVALUATION

In accordance with UNDP and GEF Monitoring and Evaluation policies and procedures, all full and medium-sized UNDP supported- GEF financed projects are required to undergo a terminal evaluation upon completion of implementation.

The **objectives of this Terminal Evaluation (TE)** seek to fulfill the following overarching objectives of the monitoring and evaluation of GEF projects:

- I. Promote accountability for the achievement of GEF objectives through the assessment of results, effectiveness, processes and performance of the partners involved in GEF activities; and
- II. Promote learning, feedback and knowledge sharing on results and lessons learned among the GEF and its partners, as basis for decision-making on policies, strategies, program management, and projects and to improve knowledge and performance.

### 1.2. SCOPE AND METHODOLOGY

The scope of this Terminal Evaluation (TE) covers the entire UNDP/GEF-funded project and its components as well as the co-financed components of the project.

The TE of the **MTEBRB** Project was carried out at the component level and project level. During the evaluation an assessment was made of the progress towards achievement of the project outcomes and outputs, the relevance of the various project outputs, and effectiveness and efficiency of the different activities undertaken to achieve the outputs. Moreover, the inputs were analyzed by assessing the contributions made by the UNDP and its implementing partners, the appropriateness and effectiveness of the partnership strategy utilized, and sustainability of the project's outcomes and outputs.

The consultant team carried out various activities to undertake the evaluation, including literature review, development of an inception report and evaluation tools, and meetings with project stakeholders. Details of these are provided below:

#### I. Development of Evaluation Tools

A detailed review of the related documents by the consultants facilitated the understanding of the multiple dynamics of this project. A complete list of documents reviewed during the course of the assignment is provided in Annex 1. Based on this review, the programmatic and geographic scope of the evaluation activities as well as samples for interviews and visits was determined.

KII guide sheets developed by the consultants were utilized during the course of interviews with the **MTEBRB** PMO staff, various key stakeholders, partners, and sub-contractors, etc. The draft KII guide sheets pertaining to the various project participants are attached in Annex 2.

Moreover, the proposed evaluation methodology, developed interview tools, and schedule of evaluation were shared with the UNDP and PMO in the form of an Inception Report.

## **II. Undertaking Country Mission and Field Visits**

The International Evaluator visited China from 08 November to 21 November 2016. During this time, the two National Evaluators and the International Evaluator worked together to undertake further document review, interviews, site visits, and analysis. The detailed mission schedule is presented in Annex 3.

The mission was kicked off with an introductory workshop on 9 November, attended by the evaluation team, PMO staff, and concerned representatives of UNDP China. Subsequently, during the in-country mission, interviews were held with key project stakeholders, participants, and beneficiaries.

Initially, to get an overview of the project's implementation mechanisms and associated challenges and opportunities, detailed meetings were held with the Project Management Office (PMO) staff responsible for overseeing the various Program outputs and activities. After this, key project stakeholders including subcontractors, stakeholders, and beneficiaries etc. were interviewed using the developed KII sheets. A complete list of stakeholders interviewed during the TE is presented in Annex 4.

## **III. Debriefing Presentation**

At the end of the mission in China, to present the findings of the TE, a de-briefing presentation was conducted on 21 November 2016 by the Evaluation team. The presentation was attended by the representatives of UNDP China and MTEBRB PMO staff.

### **1.3. STRUCTURE OF THE EVALUATION REPORT**

Led by the international evaluator, a Terminal Evaluation report is developed according to the outline provided in Annex 5. The evidence-based report consolidates and presents an analysis of the information gathered from literature review, interviews, discussions, and site visits. According to the outline recommended by the UNDP-GEF projects Evaluations Guidelines<sup>1</sup>, the report is divided into the following five main sections:

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<sup>1</sup> Project-Level Evaluation: Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects – UNDP Evaluation Office (2012)



1. Introduction
2. Project description and development context
3. Findings
  - 3.1. Project Design / Formulation
  - 3.2. Project Implementation
  - 3.3. Project Results
4. Conclusions, Recommendations & Lessons
5. Annexes

The report covers the criteria of relevance, effectiveness, efficiency, sustainability and impact. In addition, rating based on the obligatory rating scales is provided for (a) monitoring and evaluation (b) IA & EA execution (c) assessment of outcomes (d) sustainability. Moreover, the report includes an analysis of the Project Finance and Co-finance, Mainstreaming, and Impact. To assess project finances, the project cost and funding data is analyzed. Resultantly, planned and actual expenditures are presented and variances between the two is assessed and explained.

At the end of the report, Conclusions, Recommendations, and Lessons learnt from the project implementation experience are provided to inform future UNDP, GEF, and Government of China programming.

## 2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

China has currently ranked second all over the world in terms of energy output and consumption. Moreover, primary energy forms, i.e. fossil energy like coal and petroleum still dominate the overall energy supply in China, thus leading to severe environmental pollution domestically and globally and causing harm to public health. The rapidly growing Chinese economy and population have led to, among others, an increase in building construction and a high demand and production of bricks. In 2004, the energy consumed in the building sector accounted for nearly a half of the total national energy consumption. Currently, environmental problems caused due to energy consumption have become one of the most challenging issues facing the Government of China (GOC) and a highly concerned issue worldwide.

The GOC set up a strategic goal in the 11th Five-Year Plan of National Economic and Social Development, i.e. “Building a New Socialist Countryside”. In addition, the Communist Party of China (CPC) Central Committee and the State Council jointly issued a circular of “Suggestions on Promoting the Construction of a New Socialist Countryside” in 2006. Building a new socialist countryside is one of the most important tasks of the GOC and the whole society for now and a fairly long period of time to come. Along with the development of the newly initiated campaign, it will further spur the construction market in rural China. Under this circumstance, there is a great opportunity to provide the market with new types of bricks by upgrading brick-making technology and brick products that will not only possess the improved construction standards but also have physical insulating characteristics for enhancing energy efficiency by reducing the need for space heating. Thus, these bricks are called energy efficient (EE) bricks which are perforated and have relatively lower heat conductivity in contrast with the common traditional solid bricks.

The massive promotion and use of EE building materials in building or rebuilding houses to be energy efficient as a whole, will reduce significantly the energy used in the residential and commercial buildings. This new type of buildings is hereby referred to as EE buildings with the objective of reducing the greenhouse (GHG) emissions in the form of reduced carbon dioxide (CO<sub>2</sub>) from burning fuels. This technological innovation in conjunction with the transformation towards the use of EE bricks in EE buildings is also termed as market transformation into EE bricks. A successful market transformation can contribute significantly to the rational utilization rate of natural resources, the improvement of the environmental conditions, and the realization of the strategic goals of building a socialist countryside or the rural sector in China.

In this connection, the MOA, in collaboration with UNDP China, implemented a project with funding support from the GEF entitled “Market Transformation of Energy-Efficient Bricks and Rural Buildings” or the MTEBRB Project. By learning from national and international best practices and promoting widely the technology of EE bricks and EE buildings, the Project aimed to be instrumental in transforming the

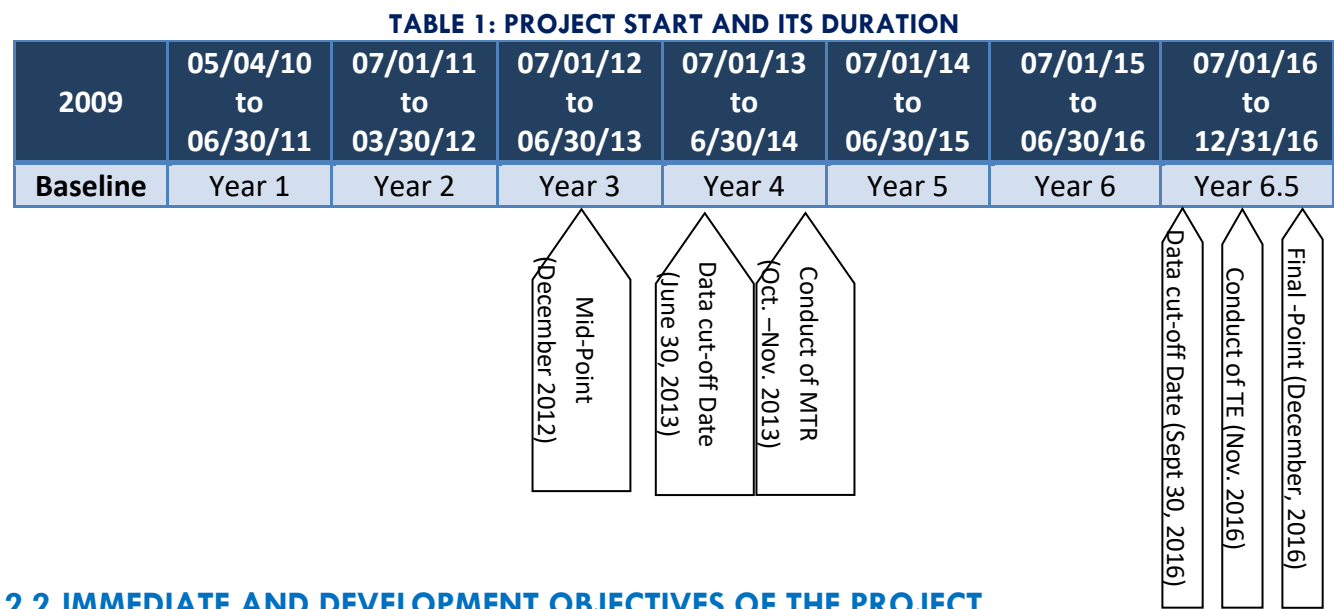
country’s energy efficient bricks market in both the supply and demand sides with specific focus on countryside or rural application.

### 2.1.PROJECT START AND DURATION

The Project Document (ProDoc) was officially signed on May 4, 2010 which marked the official commencement of the Project. For convenience in reporting to match the APR/PIR reporting periods, the period May 04, 2010 to June 30, 2011 was marked as Year 1 of the Project. The five-year MTEBRB Project was initially expected to be completed by May 2015 or nominally June 30, 2015 as end of Year 5. However, in 2014, the project was granted an extension of 18 months to capitalize on some of the positive policy changes in the country. The revised closing date for the MTEBRB was 30 December 2016.

The terminal evaluation was conducted in November 2016.For measuring the project impacts, the success indicators and reckoning of the project accomplishments are referred to the Baseline Year to be 2009 and using official data as of September 30, 2016.

A timeline showing the MTR and TE events is illustrated below:



### 2.2.IMMEDIATE AND DEVELOPMENT OBJECTIVES OF THE PROJECT

This project contributes to the reduction of GHG emissions through the transformation of the Chinese rural buildings market towards more energy-efficient building materials (mainly bricks) and technologies. It is in line with the GEF’s climate change strategic programs on Promoting Energy Efficiency in Residential and Commercial Buildings (SP-1); and, Promoting Energy Efficiency (EE) in the Industrial Sector (SP-2). It is comprised of activities aimed at improving energy efficiency and promoting the widespread adoption of energy-efficient bricks, as well as energy efficient building technologies and practices in the building markets in rural China.

The Project is expected to positively respond and make great contribution to the strategy and policy of the Government of China concerning energy efficiency in rural areas through its close linkage with the new government campaign on “Building a New Socialist Countryside”. At the same time, the project will promote the upgrading of brick products and production technology of rural brick plants and the application of EE brick in EE buildings, the sustainability of rural brick industry, the improvement of the living standard of rural residents while increasing energy efficiency in rural areas.

## 2.3.MAIN STAKEHOLDERS

In general, the stakeholders of the Project encompass organizations and groups involved in central and local rural wall material industry and rural residential building administration, which are two important components of the rural building supply chain. The mandates of these stakeholders are directly or indirectly linked to the outcomes of promoting energy efficiency in rural buildings and brick manufacture industry in the country.

The project’s mains stakeholders include the Ministry of Agriculture (MOA), National Development and Reform Commission (NDRC), Ministry of Housing and Urban-Rural Development (MOHURD), Ministry of Environmental Protection (MEP), National Standardization Commission (NSC), National Association of Bricks (NAB), China Academy of Building Research (CABR), provincial Wall Material Reform Offices (WMRO), and village administrators and villagers.

The project’s main stakeholders and their respective roles are described in Annex 6.

## 2.4.EXPECTED RESULTS

The anticipated energy savings and carbon dioxide emissions reductions associated with MTEBRB project is annual reduction of 118,476 ton/year in CO<sub>2</sub> emissions from rural brick production and from the C&R buildings in rural areas by end-of-project (EOP). All expected results are shown in Table2.

**TABLE 2: EXPECTED RESULTS OF MTEBRB PROJECT**

Project Goal	
<b><u>Annual Reduction</u></b> in <b><u>CO<sub>2</sub> emissions from rural brick production</u></b> and from the C&R buildings in rural areas by end-of-project (EOP)	118,476 ton/year
<b><u>Cumulative CO<sub>2</sub> emission reduction</u></b> in rural brick production and from the C&R buildings in rural areas by EOP	236,669 ton
Reduction in <b><u>total energy use</u></b> in rural building sector and in rural brick making industry by EOP	95,048 tce
Improvement in <b><u>energy efficiency in targeted rural buildings</u></b> by EOP	30%
improvement in energy efficiency in targeted rural brick makers by EOP	20%

<b><u>Share of EE brick products</u></b> in the targeted local rural building construction materials market by EOP	20%
Percent of rural buildings in the targeted local areas that are considered as <b><u>EE buildings</u></b> by EOP	20%

### 3. FINDINGS

Detailed findings of the MTEBRB Terminal Evaluation are presented in this section. The findings include an assessment of the MTEBRB Project Formulation and Design, Project Implementation Approach and modality, and Project Results.

The **goal of the MTEBRB project** is the reduction of GHG emissions from brick manufacturing and the C&R buildings in rural China. The Project intends to achieve this goal through the Removal of barriers that have persistently hindered the widespread development and application of EE Bricks and EE buildings in rural China.

The MTEBRB project is comprised of the following four components consisting of corresponding activities designed to achieve the project objectives.

**Component 1: Information Dissemination and Awareness** – This component intends to address the barriers related to the low level of awareness of local government, rural citizens, local brick makers, and local building practitioners of the effective application of EE bricks and EE building technologies in the buildings sector in China's rural areas. This component also addresses the lack of access to suitable information on such technologies and energy conserving practices. The primary outcome of this component is the enhanced knowledge and access to technical and market information, particularly among local governments, rural residents, and builders in rural areas, on EE bricks and buildings.

**Component 2: Policy Development and Institutional Support** – This component is designed to address the policy and regulatory barriers that currently prevent the widespread manufacturing of EE bricks in the rural areas, as well as in the application of EE bricks and EE technologies in rural buildings in China. The expected outcomes include the promulgation of, and compliance to, favorable policies that encourage manufacturing and utilization of EE bricks and the application of EE technologies and practices in the buildings sector in the country's rural areas.

**Component 3: Access to Finance** – This component is primarily aimed at addressing the lack of access to finance for, and uncertainties on the part of investors in supporting EE bricks manufacturing and EE building technology application initiatives in the rural areas in China. The expected outcome from this component is the enhanced availability of financial and institutional support for initiatives on EE brick production, and EE building technology applications.

**Component 4: Demonstration and Technology Support** - This component comprises activities to address the technical barriers that hinder: (a) brick makers in the rural areas in manufacturing EE bricks; and, (b) widespread application of EE technologies (e.g., utilization of EE bricks) in the design, construction and operation of rural buildings. The main intended outcome was the establishment of a

critical mass of demonstration projects to provide detailed information on technical performance and operations, energy savings and environmental impacts to interested brick makers, rural building developers, residents, local financial institutions, and local governments.

### **3.1.PROJECT FORMULATION& DESIGN**

The Project was conceptualized and designed by a project development team through a consultative and participative PDF A approach starting 2008 using a Logical Framework Analysis (LFA) under the guidance and supervision of a Project Development Expert. The project was designed based on the lessons learned from the successful implementation of the previous UNDP-GEF funded 'Energy Conservation Pollution Control of Township and Village Enterprises in China (TVE)' project. In addition, the project activities were based on extensive consultations held with important stakeholders, including relevant GOC agencies, the Chinese brick industry, and related research institutes, etc. Finally, the design was also informed by UNDP and GEF's experience of other Energy Efficiency projects in China and other parts of the world. This background coupled with comprehensive baseline research provided a solid foundation for the planned project activities.

The evaluation team concluded that the project design was detailed yet simple, comprehensive, appropriately flexible, in accordance with the implementation context of the time, and responsive to the issues that the project sought to address. Moreover, activities outlined in the design were coherent, replicable, sustainable, and cost effective.

In addition, specific GEF support for incremental activities and co-financing from the various stakeholders, including the GOC and private sector was specified in detail. Similarly, the implementation arrangements and responsibilities of the various stakeholders were outlined clearly in the project document. The project design has also provided a good mix of policy, finance, technology transfer, market-demand, and consumer awareness initiatives to achieve its goal and various objectives. In addition, the risks to various project components were explored in detail and mitigation strategies were provided accordingly.

However, the evaluation team observed certain key shortcomings in the project logframe/PPM design. For instance, activities detailed in the project document were not adequately reflected in the project logical framework (e.g. under Component 1, the logframe does not refer to the various key elements of the information network such as the Rural Buildings Sector Database or the Rural Buildings Sector Energy Reporting and Monitoring (RBERM) program otherwise outlined in detail under the project design). There is also an overlap of some indicators or activities across outcomes and outputs (e.g. Outputs 2.1 and 2.2 have the same or similar indicators). Moreover, there is a lack of consistency between the PPM, Monitoring Plan, and Annual Targets. For instance, the activity under output 1.3 'Number of completed promotion and advocacy program by EOP' is absent from the Monitoring Plan and Annual Targets.

The following paragraphs provide a detailed analysis of the project design:

### **3.1.1. STAKEHOLDER PARTICIPATION IN PROJECT DESIGN**

The evaluation team ascertained that the project was designed using a fact-based and participative approach. Stakeholders at various levels were extensively consulted at the time of project formulation, and stakeholders' financial commitments and buy-in was obtained at the design stage.

Key stakeholders such as GoC agencies and institutes, industry associations, research bodies, and other relevant stakeholders, etc. were consulted. The experiences and recommendations of consulted stakeholders informed targets for key project activities and stakeholder feedback was integrated into the project design and logical framework. For instance, the target for EE improvement in Rural Buildings was set in consultation with the China Academy for Building Research and the target for EE improvement in bricks was set in consultation with the China Building Material Test and Certification Group Xi'an Company. Accordingly, mutual trust and a sense of ownership has been inculcated in the project design from the very onset. An evidence of this are the confirmed co-financing commitments received at the project design stage from the MOA and some rural brick makers.

### **3.1.2. MANAGEMENT ARRANGEMENTS (PROJECT DESIGN)**

MTEBRB was designed to be a Nationally-Executed (NEX) by the Chinese Government. Key management arrangements outlined in the design included the role of Ministry of Agriculture (MOA) as the Implementing Partner (or Executing Agency) and a PMO responsible for day to day management of the project activities. Moreover, as the project is dispersed across a wide geographic area, the design stipulated for the establishment of local management teams at the provincial level. In addition, the design called for the establishment of a Technical Advisory Committee (PAC) with representation from various key stakeholders.

Moreover, the project document presented a detailed stakeholder involvement plan while specifying the role of each stakeholder. Similarly, an indicative list of partner categories has been outlined in the partnership strategy including potential partners at the central, provincial, and local levels, and linkages between MTEBRB and other related interventions in the Chinese E.E. sector have been encouraged. This partnership strategy is three-pronged, including: (a) international coordinating and implementation function; (b) national coordination and implementation function; and, (c) Technical and commercial function.

The evaluation team concluded that the project design provided a highly cost-effective approach, while incorporating inter-agency and inter-stakeholder collaboration and oversight at various levels of management. Moreover, the roles and responsibilities of the various stakeholders involved in the project's management have been clearly defined in the project design document.



### **3.1.3. REPLICATION APPROACH**

The MTEBRB project provided an innovative intervention strategy by encouraging innovations/development in Rural Bricks and Rural Buildings industries through cultivating consumer demand based on inter-industry linkages, financing options, and awareness. Replication has been assimilated in all four components of the project document. Key activities facilitating replication include information and awareness, policy, technology transfer, development of standards, and financing options.

In particular, the development of EE brick and building standards and codes; enhancing the capacity of local governments on enforcement of standards; mainstreaming the promotion of EE bricks and buildings into the action plans of various GOC entities at the central, provincial, and local levels; linking the project to the Socialism New Rural Construction (SNRC) a high priority GOC program; and demonstrating the effectiveness of EE bricks and buildings through demonstration and replication sites have been key measures facilitating replication in the medium and long terms.

Moreover, the design planned for the M&E of demonstration and replication activities. The data produced from these can be a source of reference for any subsequent projects or activities focused on the production of EE bricks and buildings.

### **3.1.4. LINKAGES WITH OTHER INTERVENTIONS IN THE SECTOR**

A distinguishing feature of the project design was linking the brick making (supply side) and rural building (demand side) sectors, generally two interrelated yet isolated sectors. Moreover, the project design facilitated automatic project linkages with other EE organizations and activities by including stakeholders that have the capacity for and crucial stake in promotion of rural EE bricks and buildings. Some of these stakeholders had already been effective and experienced partners of the earlier 'TVE Project'. Key institutional linkages include: working with the Ministry of Agriculture (MOA), the GOC agency as Implementing Partner (and Executing Agency) and the Ministry of Housing and Urban-Rural Development of China (MOHURD); partnerships with brick manufacturers and the China Brick and Tile Industry Association - representative associations of the Chinese brick making industry; and collaboration with the Rural Financial Credit Collectives (RFCCs) and the National Standardization Commission, etc.

### **3.1.5. ASSUMPTIONS AND RISKS**

Experiences from the previously completed UNDP-GEF Energy Conservation Pollution Control of Township and Village Enterprises in China (TVE project) were integrated in the project design in order to minimize potential project implementation risks. In general, the project design is cognizant of the major potential risks associated with implementation of the four components, including the effectiveness of

organizing and coordinating a large, complex project with key stakeholders; technical capacity of implementing partners; effective involvement of financial institutions in the project implementation; and, replication projects that do not match pilot projects' technical and EE performances. Accordingly, practical mitigation actions were listed for each of these risks, e.g. the establishment of a strong Project Steering Committee (PSC)<sup>2</sup>, local project steering committees<sup>3</sup>, a Technical Advisory Committee (TAC), the involvement of the Socialism New Rural Construction program, and carefully designed training and capacity building activities for replication, etc.

The design also stipulated for revision of these risks at the Inception Stage in accordance with the implementation realities during key stages. Similarly, to be responsive to the evolving needs, the design authorized the Project Steering Committee (PSC) to evaluate and approve any adjustments in the project approach during the implementation time frame.

### **3.1.6. UNDP COMPARATIVE ADVANTAGE**

The MTEBRB project is in line with the United Nations Development Assistance Framework (UNDAF) and Country Assistance Program for China. The UNDP has abundant experience of implementing GEF EE projects in the Asia region, e.g. the 'Green Brick' project in Bangladesh and in China, such as TVE, BRESL, PILESLAMP, and EUERP, etc. Similarly, the UNDP regional office has provided technical support to numerous EE and Climate Change projects in various countries across the region. This cumulative experience enabled the UNDP to provide technical support to the project formulation and input into the development of the logical framework, and monitoring of the project's activities, etc.

Moreover, based on this prior experience, the UNDP provided guidance for establishment of institutional coordination mechanisms to leverage the project activities through collaboration between public and private sectors.

In conclusion, the evaluation team found the process of project formulation and the project design to be ***Satisfactory***.

## **3.2. PROJECT IMPLEMENTATION**

This sub-section provides an overview and assessment of the project implementation, including management arrangements, partnership arrangements, adaptive management, finance, M&E, and partner collaboration on execution.

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<sup>2</sup> Consisting of key governmental authorities including MOF, MOHURD, MOFT and MEP, etc.

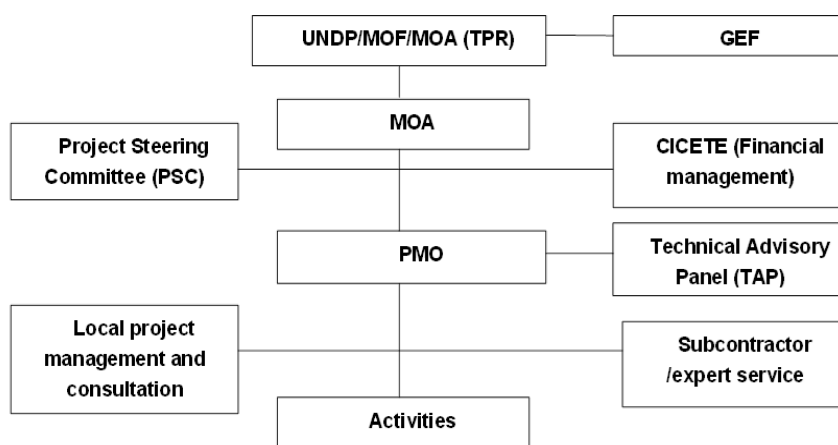
<sup>3</sup> To be led by local wall-material offices that are in charge of EE brick production and replication, or offices that are in charge of the "Building a New Socialist Countryside" campaign

### 3.2.1. UNDP AND IMPLEMENTING PARTNER IMPLEMENTATION/EXECUTION (\*) COORDINATION, AND OPERATIONAL ISSUES

The various stakeholders engaged in coordinated management of MTEBRB include the Project Steering Committee (PSC), Technical Advisory Committee (TAC), and MOA (PMO). The management structure of the MTEBRB project is presented in Figure1 below:

- i. **UNDP and GEF:** UNDP China has provided GEF oversight. In this capacity, UNDP has been responsible for coordination with PMO in overall M&E, organizing project reviews, providing support in the recruitment of international consultants, approving AWP and budgets, participating in some on-site visits to beneficiaries, and providing feedback to ensure that all reporting is carried out in line with standard UNDP-GEF procedures. The UNDP China office has persistently played its oversight role and has also been a member of the PSC.

Moreover, GEF has been considered as an invaluable resource by the Chinese government as a catalytic partner for EE development and mainstreaming through the facilitation of international knowledge exchange and provision of technical assistance.



**FIGURE 1: PROJECT MANAGEMENT STRUCTURE OF THE MTEBRB**

- ii. **MOA:** The Ministry of Agriculture (MOA) has contributed to project management as the Implementing Partner. In this role, the MOA has provided a National Project Director (NPD) who has been in charge of overall responsibilities of achievement of the project objectives, and planning, coordination, administration and financial management of the project. The MOA, through its various departments, has longstanding linkages with the key stakeholders of MTEBRB, including Building New Socialist Countryside and local government implementation etc. Thus, designating MOA as an important

Implementing Partner has leveraged both the user and production support components of the project.

- iii. **PMO:** Project Management Office (PMO) is responsible for supporting MOA and UNDP in managing and implementing MTEBRB. MOA is responsible for providing overall guidance and approval of all operational activities, as well as day-to-day management of all project activities. Key tasks performed by the PMO include preparation of annual work plans, procuring inputs, preparing monitoring reports, daily coordination and general project communications. The CICETE assisted PMO in fulfilling procurement procedures and signing procurement contract, etc.

While all the project activities were carried out through subcontracting, service authorization, and services provided by experts, the PMO was responsible for the activity design, TOR preparation, procurement, process management, results evaluation and acceptance. The PMO managed and coordinated the numerous stakeholders and activities under the project, including the UNDP, PSC and TAC, project Sub-Contractors, beneficiary companies and villages, and other stakeholders. The project's success can be partially attributed to this coordination role.

- iv. **PSC:** Chaired by the MOA-appointed NPD, a Project Steering Committee (PSC) was established at the onset of the project and comprised of representatives from key stakeholders, including UNDP China, MOA, National Development and Reform Commission (NDRC), National Association of Bricks (NAB), Academy of Building Research etc. Key activities performed by the PSC include: (a). Review of annual progress reports for necessary guidance; (b) Reviewing and approving any proposed changes in project activities; (c) Providing guidance on the effectiveness of MTEBRB implementation, and its linkages to corporate UNDP policy decisions, and other UNDP initiatives; and, (d) Monitoring and evaluating the implementation of MTEBRB towards the intended outputs. Since the start of the project, the PSC has met once a year and has convened a total of six times. A list of the PSC members and the meeting dates are presented in Annex 7.

The PSC is comprised of highly relevant stakeholders from a variety of specialized organizations in the Energy Efficient Brick industry and Rural Building design. The members presented a combination of technical knowledge and decision making authority within their respective organizations. As the goals and objectives of the MTEBRB project are aligned with their own organizational priorities, these stakeholders have a direct interest in the success of the project. Moreover, due to their exclusive involvement in energy efficient bricks and rural residential buildings, the member organizations have been well placed to guide the project planning and providing advice on prioritizing planned activities in relation to the ongoing policy and market context. In addition, the PSC has played a key oversight and monitoring function by reviewing progress of approved activities.

**v. TAP:** A Technical Advisory Panel (TAP) was established at the onset of the project. The main responsibility of the TAP has been to provide expert advice in the implementation of technical aspects of implementation of the various project components. For instance, some of the tasks performed by TAP include due diligence in selection of Sub-Contractors, input to the formulation of EE brick Standards, reviewing feasibility of major activities, and monitoring the Sub-Contractors' performance.

Members of the TAP have been high-level technical representatives from key stakeholders. The Committee's has met on a need-basis throughout the project's implementation. In addition to these meetings, TAP members have provided advice and inputs in the form of other planned and unplanned activities such as participation in visits, trainings, and informal interaction with other members or the PMO staff, etc. Annex 8 provides a list of the TAP members.

### **3.2.2. ADAPTIVE MANAGEMENT**

As the potential of EE bricks and buildings in the Chinese rural areas was relatively unexplored at the time of the project design, the MTEBRB project design had to be based on some key assumptions, hence leaving room for adaptive management. Moreover, the project management also kept modifying the implementation approach in order to benefit from the favorable changes in the national policy and socio-economic developments. Key aspects of adaptive management included the inclusion of new relevant entities, exploring alternative modes of financing, and local implementation arrangements.

For instance, the initial project design did not consider the potential of linkages with the Wall Material Reform Fund. However, the challenges faced during the implementation in the area of developing financial mechanisms led to the creative strategy of using this Fund. Similarly, the project has been linked to the newly established 'Beautiful Countryside' initiative, a GOC priority program that did not exist at the time of the project design. Moreover, as the private financial services industry was found reluctant to support the rural building industry, a number of financial institutions were involved using the Land Transfer Program angle instead. Such adaptive measures have already led to the significant overachievement of the replication sites, i.e. 255 replication sites against a design target of 60 sites. The linkages with and integration of the MTEBRB activities in such ongoing priority programs are also expected to significantly leverage the sustainable outreach of the project's outputs.

Moreover, membership of the project's Technical Advisory Committee (TAC) has been kept fluid so that the Committee could continue to stay relevant and responsive to the project's evolving needs. This way, new members could be added or old members discharged, as the need arose. Moreover, viewing the complexity of locally implementing the project across 23 provinces, the project also set up panels of experts at the provincial levels to provide technical advisory, a provision that was not included in the original project design.

Finally, the project design had stipulated a role for the rural ESCOs. However during the project inception it was determined that the involvement of ESCOs in the rural EE building and brick making is technically unfeasible. Accordingly, the PMO excluded ESCO-related activities from the implementation.

The TE team concludes that Adaptive Management has been practiced by the project management in a **Highly Satisfactory** manner. This has not only allowed the project to stay relevant but also helped amplify the project’s outreach, effectiveness, and potential sustainability.

**3.2.3. PARTNERSHIP ARRANGEMENTS**

Over the course of implementation, the project has partnered with various public and private stakeholders in the Chinese EE Bricks and Buildings industry. These include government agencies, industry associations, manufacturing enterprises, research institutes, and media outlets, etc. Some of the partner organizations or individuals were had also effectively partnered with the previous TVE project. Major partnership activities included awareness raising, policy development and standard setting, finance, establishment of demonstration and replication units, and M&E of project activities.

Numerous project activities were carried out through subcontracting. Resultantly, the PMO partnered with 59 public and private sub-contractors and research organizations by issuing 82 sub-contracts between 2010 and 2015, with a total value of USD 852,617. Annex 9 presents a year-wise distribution of the Sub-Contracts since the project’s inception in May 2010, with the first sub-contracts having been issued in October 2010.

The sub-contracts were issued following the GEF-UNDP procurement criteria. All the sub-contracts were issued to Chinese entities, some of which were also the project’s key stakeholders, e.g. the Wall Material Reform Office and the China Brick and Tile Industry Association. The Sub-contracts were implemented according to the TORs provided by the PMO and all sub-contracts were concluded on time. According to stakeholder views, of the sub-contractors, Wall Material Reform Office, REEA, the China Brick and Tile Industry Association, China Building Materials Test and Certification Group Ltd., Xi’an Company, China Academy of Building Research, and Center for Rural Social Undertakings were among the most substantial contributors to the project’s outcomes.

The PMO has held annual information sharing meetings between the local teams and subcontractors. These meets have facilitated the exchange of ideas for implementation and helped the project in resolving issues through consultations.

Table 3 shows the financial distribution of subcontracts across the four project components. Component 4 (Demonstration and Technology Support) comprised of the highest subcontracting expenditure (45.77%) as this activity involved a large number of engineering projects (16 demonstration projects and

255 replication projects) across 23 provinces. Alternatively, subcontracts under component 3 (Access to Finance) constituted the least amount of financial support. This is because activities under the component were used to leverage financing through other available lucrative sources, such as the Wall Material Reform Fund.

**TABLE 3: COMPONENT-WISE FINANCIAL DISTRIBUTION OF SUBCONTRACTS**

Component	Number of Subcontracts Issued	Total Amount (USD)	Percentage
1	15	133,295	15.63%
2	12	219,568	25.75%
3	18	109,519	12.85%
4	37	390,235	45.77%
<b>TOTAL</b>	<b>82</b>	<b>852,617</b>	<b>100.00%</b>

Moreover, MTEBRB partnered with approximately 400 brick makers through provision of trainings, finance, and M&E for the modification of their EE manufacturing processes. Similarly, 127 EE building sites/communities were partnered with for the construction of EE buildings in rural areas. These entities were contacted through existing networks such as the China Brick and Tile Industry Association and the local Wall Material Reform Offices, etc. As direct beneficiaries of the project, the participating EE brick makers and communities agreeing to the construction of EE buildings contributed to the project's success through their active participation and follow up on the project's activities.

Similarly, key public partner agencies included Wall Material Reform Office, Center of Rural Social Undertakings of MOA, and REEA. These agencies provided key policy and implementation guidance to the project. Particularly, the project activities proved to be an entry point to the rural buildings sector for the Wall Material Reform Office which had otherwise faced significant challenges in the rural areas. In exchange, the Wall Material Reform Office facilitated project delivery at central, provincial, and local levels and substantially aided the project progress and effectiveness.

The TE Team concluded that close collaboration between the various partners has been instrumental for the market transformation of the rural EE bricks and buildings industry achieved by the MTEBRB project. Additionally, the evaluation team determined that the project's partnership with numerous stakeholders was a measure of efficiency as synergies and long-term partnerships were developed to achieve project goals. As shown in other relevant sections, the sub-contracting also had significant impact on cost efficiency, effectiveness, and sustainability of project activities. Consequently, the project's partnership arrangements were ***Highly Satisfactory***.

### 3.2.4. MONITORING AND EVALUATION (M&E)

According to the project design, UNDP China, the MTEBRB PMO, and PSC have been assigned responsibilities of overall project M&E. In addition, the design provided a clear M&E plan and budget, including annual outcome level targets and a detailed M&E plan and budget for M&E activities.

The UNDP China's designated Program Manager has effectively provided periodic oversight in implementation, including prompting timely reporting, providing guidance about reporting to ensure that the progress is implemented in line with UNDP-GEF guidelines, and providing feedback on project planning accordingly. For instance UNDP CO representatives have been in regular attendance of the PSC meetings and also undertook periodic field monitoring visits. Moreover, the UNDP CO has also arranged the project's Medium Term Review (MTR) and this Terminal Evaluation (TE).

Similarly, the MTEBRB's PSC has effectively undertaken its M&E responsibilities, including the review and approval of AWP and Budgets (for endorsement to UNDP-GEF for the latter's final approval), providing guidance on the effectiveness of project implementation, and overall M&E of project implementation. For instance, some PSC members triangulated the project results with the data generated by their respective organizations. Similarly, course correction measures and recommendations for activities were provided by members based on information received from their own organizations.

At the functional level, the MTEBRB had a three tiered M&E with the following key components:

1. M&E of project activities and progress according to the established UNDP-GEF M&E Guidelines (Comprising of standard program and financial progress reports);
2. M&E of Demonstration and Replication construction projects; and
3. Assessment of Project impact on Energy Savings and GHG Emissions

The central PMO with support from the provincial-level project management teams and subcontractors has been responsible for monitoring the progress and reporting to the UNDP. At the activity level, different stakeholders were responsible for M&E. For instance, EE engineering quality supervision was delegated to the unit undertaking the local demonstration projects, e.g. the Wall Material Reform Office or the Agricultural Environmental Protection Resource Bureau, etc. The assessment of project impact on energy savings was subcontracted to two organizations, namely the China Building Material Test and Certification Group, X'ian for the rural EE brick production and China Academy of Building Research for rural EE buildings.

Key challenges associated with M&E included the large number of stakeholders and the M&E of EE improvements in rural buildings. As the local project management teams were based in different GOC agencies, at times it was difficult to consolidate project progress information that was outside the



standardized reporting formats used for regular project M&E. Moreover, the M&E of EE buildings was more complicated as compared to M&E of EE Bricks. In the absence of established local benchmarks for rural buildings, to assess the energy savings from EE buildings the subcontractor had to draw on common criteria of international energy-saving building assessment, the evaluation method of energy-saving buildings for Chinese cities, and the characteristics of rural EE buildings in China.

The evaluation team concluded that the MTEBRB project's M&E was multi-pronged, with the major elements being PMO's supervision and coordination; M&E and impact assessment of critical activities, the implementation approach adopted by PMO; and overall surveillance of outcomes by the PSC. Moreover, the PMO management has effectively coordinated and consolidated M&E data generated by a large number of stakeholders. Based on this conclusion, the TE team found the project's M&E to be **Satisfactory**.

### 3.2.5. PROJECT FINANCE

The MTEBRB project was designed to be funded by various sources, including USD 7,000,000 from GEF and USD 44,842,118 from the Chinese government, brick makers and other sources. Table 4 provides a break-up of the total allocated resources at project design phase.

**TABLE 4: MTEBRB TOTAL ALLOCATED RESOURCES**

Grant Fund	Committed (USD)	Percent Committed
GEF	7,000,000.00	13.37%
UNDP	0	-
Sub-Total Grant	7,000,000.00	13.37%
Co-Financing		
National Government	38,744,000	74.01%
Others	6,618,000	12.64%
Sub-Total Co-Financing	45,352,000	86.65%
<b>Total Budget</b>	<b>52,352,000</b>	<b>100.00%</b>

#### I. Utilization of GEF Funds

This sub-section provides details about the utilization of allocated GEF funds amounting to USD 6,559,631.

Table 5 shows the summary of the approved budget, actual expenditures and delivery rate of the project on a year-to-year basis.

**TABLE 5: MTEBRB GEF-GRANT FUND ANNUAL DELIVERY RATE**

	2010	2011	2012	2013	2014	2015	2016 (1/1 – 9/30)
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<b>Budget (USD)</b>	913,713	1,885,636	1,289,502	1,246,054	1,165,137	1,200,774	572,127
<b>Spent (USD)</b>	804,766	1,554,870	1,029,491	1,010,736	1,061,832	966,178	131,758
<b>Percent Delivery</b>	88.1%	82.5%	79.8%	81.1%	91.1%	80.5%	23.0%

The TE team found the project delivery rate to be marginally satisfactory, with delivery hovering around 80% for four of the six project years. The relatively low delivery rate is mostly due to the uncertainties related to the implementation of engineering projects reliant on permissions from the local government. The very low delivery of 23% in 2016 is related to the postponement of some activities to the project end, including the project closing workshop.

Table 6 presents the percentage expenditure on a per-component basis since the start of the project up to the 30 September, 2016.

**TABLE 6: LEVEL OF GEF-GRANT EXPENDITURE PER COMPONENT SINCE THE START OF THE PROJECT**

<b>GEF Outcome</b>	<b>Total Available Budget</b>	<b>Total Expenditure (2010 to 2016)</b>	<b>Percent Spent (2010 to 2016)</b>
Component 1	833,308	773,254	92.79%
Component 2	800,000	801,984.84	100.25%
Component 3	1,012,007	946,718.63	93.55%
Component 4	3,654,685	3,417,649.74	93.51%
Project Management	700,000	637,739	91.11%
<b>Grand Total</b>	<b>7,000,000</b>	<b>6,577,346</b>	<b>93.96%</b>

By end of 30 September, 2016, the project has utilized 93.96% of the GEF-fund. The PMO plans to spend the remaining funds before project closure in December 2016. It is worth noting that the MTEBRB project management has creatively spent the available GEF funds and surpassed the targets for key activities set in the project design, such as achieving a target of 425% replication sites.

CICETE is the designated financial manager of the project. In this capacity, CICETE tasked with tracking GEF contribution and assisting the MTEBRB project with financial reporting to the UNDP.

The evaluation team concluded that although the MTEBRB project's delivery rate was marginally satisfactory, timely disbursement of funds for activities and the utilization of limited GEF funds to surpass key targets resulted in a **Highly Satisfactory** fund management.

## **II. Co-Financing**

As seen in Table 7, according to the project design, co-financing accounted for 86.50% of total resources expected for the project in either cash or in-kind contributions from stakeholders, viz., the Government of China (73.73%) and private sector (12.76%). However, the total actual co-financing by the end of September 2016 has reached more than 7-fold (724.46%) of the commitments at project design. Resultantly, the total contribution from co-financing also jumped from 86.50% to 98.02% of the total expenditure.

**TABLE 7: COMMITTED VS. ACTUAL CO-FINANCING FROM DIFFERENT SOURCES**

Financing Source	Committed (USD)	Percent Committed	Actual Expenditure (USD)	Percent of Committed
National Government	38,224,472	73.73%	169,907,571	444.50%
Private Sector	6,617,646	12.76%	154,954,279	2341.53%
Others				
<b>Total Co-financing</b>	<b>44,842,118</b>	<b>86.50%</b>	<b>324,861,850</b>	<b>724.46%</b>
<b>Total Funds</b>	<b>51,842,118</b>	<b>100.00%</b>	<b>331,421,481</b>	<b>639.29%</b>

Co-financing has been tracked by the respective contributing organization and reported periodically to the PMO.

**a) Co-Financing by Government of China (GOC)**

The realization of committed inputs from the GoC on a per-component basis is provided in Table 8.

**TABLE 8: REALIZATION OF COMMITTED CO-FINANCE FROM GOVERNMENT OF CHINA (PER COMPONENT)**

Components	Planned (USD)	Actual Achievement (USD)	Percentage of Planned (%)
<b>Component 1</b>			
in-cash	150,000	288,355	192.24%
in-kind	5,114,570	8,128,752	158.93%
<b>Component 2</b>			
in-cash	150,000	186,892	124.59%
in-kind	2,890,392	3,559,820	123.16%
<b>Component 3</b>			
in-cash	41,250	1,657,363	4017.85%
in-kind	2,011,998	88,133,637	4380.40%
<b>Component 4</b>			
in-cash	0	0	0.00%
in-kind	26,901,156	63,225,479	235.03%
<b>Project Management</b>			

in-kind	965,106	3,285,190	340.40%
<b>Total</b>	<b>38,224,472</b>	<b>168,465,488</b>	<b>440.73%</b>

The overall co-finance provided by the GOC exceeded by 440.73% of the committed funding. The highest amount of Co-financing from GOC for Component 3 (4713.12% of the committed funds) resulted in financial support for EE Bricks and EE Housing, thereby leveraging other results, e.g. high replication. The GOC co-finance for this outcome primarily originated from the Wall Material Reform Fund for EE brick manufactures and from Socialist New Rural Building subsidy for construction of rural residential buildings.

### b) Co-Financing by Private Sector

Private sector stakeholders such as EE brick manufacturers and rural residents, etc. had committed a total of USD 6,617,646 to implementation of MTEBRB. However, as shown in Table 9, the actual contribution from private sector is USD 159,681,552, i.e. a remarkable 2,412.97% of the total committed.

**TABLE 9: REALIZATION OF COMMITTED CO-FINANCE FROM THE PRIVATE SECTOR (PER COMPONENT)**

Components	Commitment for Co-Financing (USD)	Actual Co-Financing (USD)	Percentage of Committed (%)
<b>Component 1</b>			
in-cash			
in-kind		4,727,273	
<b>Component 2</b>			
in-cash			
in-kind			
<b>Component 3</b>			
in-cash			
in-kind			
<b>Component 4</b>			
in-cash	6,617,646	154,954,279	2,341.53%
in-kind			
<b>Project Management</b>			
in-kind			
<b>Total</b>	<b>6,617,646</b>	<b>159,681,552</b>	<b>2,412.97%</b>

Component-wise, the private co-financing contribution to Component 3 stands at 2,341.53%. The larger share of the private sector contributions have come from the EE brick manufacturers who were involved in the project and rural residents who built new houses in the demonstration sites and promotion sites of MTEBRB project. The very high private co-financing is also a result of the exponentially higher (425% of target) number of replication projects delivered under the project.

However, as private sector co-financing has not been a part of the project audits, the TE team cannot make any conclusive judgments or estimates about the actual figures. However, the co-financing reported by the private sector being manifold of the committed levels is a testament to the positive project influence and high uptake by MTEBRB project.

**c) Summary of Co-financing**

In summary, Table 10 provides the status of realization of the committed co-financing from various stakeholders for the Project while detail of the same can be found in Annex 10. Total actual co-financing reached 731.78% of the total commitments made at the project design stage.

**TABLE 10: SUMMARY OF THE REALIZATION OF COMMITTED CO-FINANCING INPUTS FROM ALL SOURCES**

Components	Total Commitment for Co-Financing (USD)	Total Actual Co-Financing (USD)	Percentage of Actual
Component 1	5,264,570	13,144,380	249.68%
Component 2	3,040,392	3,746,712	123.23%
Component 3	2,053,248	89,791,000	4373.12%
Component 4	33,518,802	218,179,758	650.92%
Project Management	965,106	3,285,190	340.40%
<b>Total</b>	<b>44,842,118</b>	<b>328,147,040</b>	<b>731.78%</b>

Overall, the GEF funds have been utilized in a discerning manner and were complemented by significant contributions from the GOC, and private sector.

The TE team concluded that coordinated by the PMO, key project stakeholders including the UNDP, MOA, PMO, and PSC have played their role effectively. This is reflected in the open and smooth coordination and overall satisfaction of beneficiary manufacturers. Moreover, GEF funds have been utilized well, the actual co-financing has been significantly higher than committed, and the activities were continually adopted to the needs of the EE brick manufacture and residence in rural area. On the other hand, the project has experienced a low financial delivery rate. Overall, the evaluation team found the Implementing Partner management and implementation / execution coordination of the project to be *Satisfactory*.

Table 11 below provides an overview of the TE rating for various Implementation activities:

**TABLE 11: SUMMARY OF RATINGS OF ACCOMPLISHMENT IN ACHIEVING VARIOUS COMPONENTS' OUTCOMES**

Component	Rating
UNDP and Implementing Partner Implementation/Execution, Coordination, and Operational issues	S

Adaptive Management	HS
Partnership Arrangements	HS
Monitoring and Evaluation	S
Project Finance	HS
<b>Overall Rating of the Project on Achievement of Outputs</b>	<b>S</b>

### 3.3. PROJECT RESULTS

This section provides an overview of the overall project results and assessment of the relevance, effectiveness and efficiency, country ownership, mainstreaming, sustainability, and impact of the MTEBRB project. Moreover, evaluation ratings for overall results, effectiveness & efficiency, and sustainability are also provided.

#### 3.3.1. OVERALL RESULTS (ATTAINMENT OF OBJECTIVES)

The overall goal of the MTEBRB project is to promote energy efficiency and greenhouse gas (GHG) emission reduction in rural brick-making industry and residential/commercial building sector. To achieve this goal the activities were carried out related to the following four components:

- A. Component 1: Information dissemination and awareness enhancement
- B. Component 2: Policy Development and Institutional Support
- C. Component 3: Finance Support & Accessibility Improvement
- D. Component 4: Demonstration and Technology Support

Details of accomplishments under each component are provided below:

#### **A. Component 1: Information Dissemination and Awareness Enhancement**

To address the barriers related to the stakeholders' lack of awareness as well as access to relevant information which hinder the effective application of EE bricks and EE building technologies in rural China.

The accomplishments for component 1 along with the evaluation rating are provided in Annex 11.

According to the logical framework, Outcome 1 was to be accomplished through the following three outputs:

- *Output 1.1: Established and operational information dissemination network*
- *Output 1.2 : Developed and disseminated full package of multi-media products*
- *Output 1.3: Completed promotion and advocacy program*

The reported major activities and accomplishments against these outputs are as follows:

Details of these aspects are given below:

**i. Information Dissemination Network:** Under MTEBRB, two agencies were identified to develop and operate the network. Resultantly, three websites were established and are functional. These include the MTEBRB project website, and a website for EE Bricks and EE Buildings, each. Since the launch of the websites, about 110,000 stakeholders (11 times of the target of 10,000) have utilized the information exchange service and 111 on-line connections (vs. target of 76) have been established with the information exchange services each year. However, it is to be noted that most of these connections are related to internal access for participating project stakeholders.

**ii. Multi-Media Products:** During the implementation of MTEBRB, 29 multi-media product packages (vs. target of 5) and 4 sets of CDs and 3,000 copies (vs. target of 2 sets of CDs and 1,000 copies) were developed and disseminated; 4 films for EE brick and EE building technology and project achievements were developed and broadcast through local government closed circuit television, covering 600,000 CPC branches.

Moreover, 7 books and training materials were developed for different audiences. These books include project inception training material, training materials for finance, EE bricks production, rural EE building construction, books on project management and best practice, Guidance for the Construction of Rural EE Building, and Production and Application Technology of EE Bricks. Similarly, eight TV/radio programs (China National radio news, CCTV will be broadcast on Dec, Shaanxi TV, Zhejiang TV, Chengdu TV, Qinhuangdao TV, Hebei province and Other TVs on county level (vs. target of 1) were produced and broadcasted.

**iii. Promotion and Advocacy Program:** Under this activity the project covered 23 provinces, 133 counties, and 1,563 villages (vs. target of 10, 20 and 100, respectively). Moreover, 1,064 on-site visits (vs. target of 500) to demonstration and replication sites were undertaken and 39 promotional/advocacy workshops and conferences (vs. target of 6) were conducted. The typical activities included exhibitions, publications in relevant magazines and brochures, e.g. the 'Brick and Tile World Magazine', print promotional material such as the development of education posters and new year couplets, and public awareness through TV, radio, website, and community centers.

This multi-level strategy for advocacy, promotion, and educational programs has enabled the project to broadcast its message to 6.42 million people as compared to the original goal of 1 million.

## **B. Component 2: Policy Development and Institutional Support**

Project activities under this component were aimed at policy development and institutional support for EE brick and EE building in China.

The summary of accomplishments for component 2 along with the evaluation rating is provided in Annex 11. According to the logical framework, Outcome 2 was to be accomplished through the following two outputs:

- *Output 2.1: Formulated policies, and associated implementing rules on EE building materials production and utilization*
- *Output 2.2: Improved local governments policy enforcement capabilities and implemented action plans*

The reported major activities and accomplishments against these outputs are as follows:

**i. EE Bricks and EE Buildings Standards/Codes Development:** Before the implementation of MTEBRB, there was no standard and code on rural EE Bricks and EE building in China. This not only hampered the industry's progress but also severely restricted the promotion of EE bricks and EE buildings. To address this barrier, the PMO cooperated with noticeable research institutions such as the China Academy of Building Research and China Building Material Testing & Certification Group Xi'an Company Limited, etc., to develop a series of standards and codes on EE bricks and EE buildings.

At the beginning, only the national standard /code system were developed and issued under the project. However, it was soon realized that these standards/codes were insufficient without a product application specifications. Accordingly, the PMO collaborated with institutions to develop product application specifications in the Sichuan and Shaanxi Provinces in line with the developed EE brick product standards. This was followed by the development of technical specifications of Sintered Self-insulating Bricks and Heat-Insulation System of Block Walls in Sichuan province and Technical specification masonry structures DP-type fired perforated brick (DBJ61/T103-2015, Shaanxi) and Building Construction Special Atlas of DP-type Fired perforated brick (Shaanxi) by the Xiyan Wall Materials Reform office. Moreover, on the basis of local standards, technical specification for fired perforated block application was developed by the Chinese Brick & Tile Industry Association. Annex 12 presents a list of technical standards developed as a result of the project interventions.

**ii. Policy Recommendation:** To promote the market transformation of EE brick and EE building in rural areas, relevant policy research was carried out at the national and local levels and the corresponding management and technical policy recommendations were put forward. The survey, research, and assessment on policies of EE bricks and rural EE buildings were completed and policy recommendations were drafted. Policy research on promoting EE brick production and rural EE building application were



carried out on the basis of successful experience in pilot sites and recommendations were provided accordingly.

During the implementation of MTEBRB, 10 formulated national policies (vs. target of 1) were recommended and approved by the national government and 125 local governments (vs. target of 10) incorporated rural EE Building application and EE Brick production in their local development planning and action. In addition, 11 completed policy studies (vs. target of 1) were used in the policy formulation on EE building materials production. For example, study and proposals on macro-policies of rural green buildings policy and incentive mechanism were submitted to MOF in 2015. Based on the adjustment of the macro policies on EE buildings in China, workshop on insulating bricks with stuffing was organized. In addition, the PMO have participated in and promoted the formulation and revision of 11 policies related to EE brick and EE building in rural China. Some suggestions on EE bricks and EE buildings were brought into the outline of the Thirteenth Five-year Plan of China. At the provincial level, the reports on the development of EE bricks and EE buildings have been integrated into Action Plans of Local Government, especially, some local government have taken EE brick application and EE building construction in rural as the indicator of Beautiful Countryside construction. Annex 13 presents a list of national policies influenced by the project.

All in all, the project has well exceeded expectations regarding policy development and implementation. This has been made possible by the conducive socio-political environment to EE in Rural Areas, especially the priority awarded to this sector by the GOC and the resulting collaboration by the local governments.

### **C. Component 3: Financial Support & Accessibility Improvement**

This component is comprised of two sub-components: i) To complete and publicize financial and accounting assessment of rural EE brick makers and EE building developers; and ii) To develop and implement new business models for local banks/financial institutions to engage in rural EE brick and EE buildings projects. Under these sub-components, project activities were designed to address the lack of financial accessibility for rural EE bricks manufacturing and EE building application.

The summary of accomplishments for component 3 along with the evaluation rating is provided in Annex 11.

According to the logical framework, Outcome 3 was to be accomplished through the following two outputs:

- *Output 3.1: Completed Financial and Business Development Assessments for Rural Brick Makers and Building Developers; make public the assessment*

- *Output 3.2 Developed and implemented new business models for local banks/financial institutions to engage in project*

The reported major activities and accomplishments against these outputs are as follows:

**i. Financial Training:** In order to improve the financing capabilities of rural EE brick makers and developers, three training sessions were held. 245 brick makers, staff of financial institutes and project management staff (vs. target of 200) were trained in these sessions.

**ii. Financial Policies:** The project has undertaken research and provided policy recommendations to various GOC ministries and departments to provide financial support for the market transformation of the rural EE bricks and buildings industry. Most notably, in 2012, MTEBRB submitted a proposal to the MOF for provision of fiscal subsidies to rural EE brick-making and EE buildings. Accordingly, the MOF incorporated the rural EE wall materials production into the category of government fiscal and taxation preferential and started providing tax incentives to the production of EE bricks.

Other similar proposals were put forth to key agencies for provision of support to project activities through the Wall Material Reform Fund. These include the central office of the CPC Central Committee, China Center Policy Research Office, NPC Financial and Economic Committee, the budget committee of the National People's Congress, State Council Research Office, Development Research Centre of the State Council, and other government departments. Through these activities, the Wall Material Reform Fund was leveraged and integrated into MTEBRB project.

**iii. Information Exchange:** To facilitate the linkages between the EE bricks and buildings industry and potential financiers, the project held a series of information exchange events. These included the development of 10 financial and accounting reports and conducted 11 information exchange (vs. target of 5) and knowledge sharing programs, involving 288 local financial staff (vs. target of 100).

As a result of the activities under this component the project was successful in leveraging, 658.8 million RMB (vs. target of 50 million) into the rural EE building construction and brick production. Also, the project was mainstreamed into the planning and activities of both Central and Local government to some extent.

#### **D. Component 4: Demonstration and Technology Support**

This component involved three sub-components, which are demonstration of rural EE buildings and EE bricks production, development and dissemination of technical guidelines, and implementation of rural EE brick and EE building applications. Under these components, the project planned to address the

technical barriers that hinder EE bricks manufacturing in the rural areas and issues in design, and construction of rural EE buildings by making use of EE bricks.

The summary of accomplishments for component 4 along with the evaluation rating is provided in Annex 11.

According to the logical framework, Outcome 4 was to be accomplished through the following two outputs:

- *Output 4.1 Completed demonstration of rural EE buildings and EE bricks production*
- *Output 4.2 Developed and disseminated technical guidelines and templates to develop and implement rural EE brick and EE building applications*
- *Output 4.3 Constructed replication projects*

The reported major activities and accomplishments against these outputs are as follows:

**i. Demonstration of EE bricks Production:** The project started EE evaluations in 2014 by starting evaluation surveys at three demonstration brick making plants and delivered the Project Demonstration Plant Baseline Survey Assessment Report and Project Demonstration Plant Energy Efficiency Evaluation Report in September 2014. By the end of the project, 16 EE building and EE brick making projects were completed, including 9 demonstration brick mills and 7 demonstration Villages.

**ii. Development and Dissemination of Technical Guidelines:** During the implementation of MTEBRB, 19 feasibility study reports (vs. target of 17) were developed. These reports covered survey and assessment on EE brick production technology and application, surveys on the EE building models, etc. Meanwhile, the PMO compiled a series of training materials and guidelines, such as EE brick laying and masonry methods, M&E methodology of demonstration and replication of EE brick production and EE buildings, etc. Also, the PMO developed road-map to lead the development of EE brick and EE building industry. During the period of MTEBRB, 6 reports (vs. target of 2) on national and international best practices, lessons learnt on rural EE building and EE brick production were completed; 1 feasibility study of standardization of EE brick products were developed; 1 rural EE buildings database and report were developed; 7 information dissemination program (vs. target of 1) were conducted; 6 training materials (vs. target of 2) on EE brick making and EE building development in rural areas were developed; 11,734 persons (59 times of the target) were trained.

**iii. Development and Implementation of Rural EE Brick and EE Building Applications:** The project Implemented engineering projects in 23 (as compared to 8 planned). The commitment of GOC and active participation of local governments have resulted in significantly higher number of replications (actual

255 vs. planned 60). The project has also surpassed the planned EE improvement in building (actual 50% vs. planned 30%) and achieved the goal for EE improvement in brick makers (20%).

### 3.3.2. RELEVANCE

The project has contributed to the realization of the Millennium Development Goals (MDG), particularly MDGs 1, 7 and 8, whereby the program have the potential to contribute to the eradication of extreme poverty directly and indirectly and improved environmental sustainability of China's development path.

The MTEBRB proposed project is also in line with the GEF Strategic Program Nos. 1 & 2, the GEF alternative (i.e., MTEBRB) has led to reduction in energy use in both the rural brick production and building applications through a series of technical assistance and capacity building activities.

Currently, environmental problems caused due to energy consumption have become one of the most challenging issues facing the Government of China (GOC) and a highly concerned issue worldwide. Consequently, energy efficiency has been a key priority of the GOC since the 1990's. The 12<sup>th</sup> Five Year Plan of the GOC (2011-2015) specifically focuses on energy and climate change by setting the following goals<sup>4</sup>:

- A 16% reduction in energy intensity (energy consumption per unit of GDP)
- A 17% reduction in carbon intensity (carbon emissions per unit of GDP)

Moreover, the Energy and Environment unit of UNDP China in collaboration with the GEF has a tradition of assisting the GOC in its Energy Efficiency endeavors in the form of projects such as BRESL and TVE projects.

Consequently, the project's activities have been **relevant** to the organizational mandates of the key stakeholders such as GOC, GEF, and the UN system in China.

### 3.3.3. EFFECTIVENESS AND EFFICIENCY (\*)

MTEBRB project's efficiency was evaluated as a measure of utilization of resources, including time, personnel, and funds. Key aspects investigated for efficiency include UNDP Implementing Partner Execution and Coordination, Adaptive Management, Partnership Arrangements, Monitoring and Evaluation, and Project Finance.

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<sup>4</sup><http://www.c2es.org/international/key-country-policies/china/energy-climate-goals-twelfth-five-year-plan>

The Terminal Evaluation team assessed that the UNDP and MOA/PMO have closely coordinated the project's planning and implementation. Moreover, partnerships were developed with a wide array of organizations in the public and private sectors, including government agencies, brick makers, industry associations, research bodies, and academia, etc. Leveraging these partnerships, most project activities have been delivered by the subcontractors within the agreed timeframe and have been highly responsive to the development needs of the EE bricks and buildings in Rural China. Moreover, the project's finances have been managed efficiently as the project has over-achieved key targets within the stipulated budget and also successfully obtained **xx% higher** than committed co-financing from the GOC and **xx%** from the private sector, thereby leveraging the GEF contribution. Some key areas where the project has surpassed targets include the formulation, recommendation, and approval of 10 national policies (vs. target of 1) by the national government; incorporation of rural EE building application and EE brick production in their local development planning and action by 125 local governments (vs. target of 10); and reaching 6.42 million (vs. target of 1 million) people through the various advocacy, promotion, and educational programs.

In addition, the project and activity level M&E activities inculcated in the project design, e.g. progress monitoring and M&E of EE in brick making and rural buildings etc., have been duly undertaken. The project staffing has also been efficient with the PMO being operated by a limited number of staff and partnering with efficient subcontractors for the implementation of activities. However, the project faced an 18 month delay in implementation, as the initial closing date of June 2015 was extended to December 2016 with a no cost extension.

The project has been highly effective in resolving the challenges posed to the development of the rural EE bricks and buildings industry in China. This achievement can be attributed to the formation of linkages between the supply side (brick making) and demand side (rural buildings), facilitating the development and promulgation of national and local standards for rural EE brick making and buildings, demonstrating the production methods and positive results of EE bricks and buildings across 23 provinces, and mainstreaming EE bricks and buildings into the development policies and plans of central and various local governments thereby generating substantial sources of financing. It is also worth noting that the project has been instrumental in incorporating the EE bricks and buildings agenda into key ongoing GOC programs that did not otherwise consider this issue, e.g. the Wall Material Reform Office, the Beautiful Countryside initiative, and the Land Transfer Fund.

Overall, the TE team concluded that the MTEBRB project's Efficiency was ***Satisfactory***, while its Effectiveness was ***Highly Satisfactory***.

### **3.3.4. COUNTRY OWNERSHIP**

All the country-level stakeholders have demonstrated strong commitment and ownership of the MTEBRB project. In fact, a number of entities and individuals have stayed engaged with the project from the design stage until the project closure.

The GOC's ownership is demonstrated by the provision of high-level MOA staff for project management positions; the participation of senior representatives from various ministries in MTEBRB PSC, PMO, and local project management teams; higher than committed levels of co-financing; inclusion of EE bricks and buildings in key policies and programs, e.g. provision of tax incentives for EE brick makers, re-channeling of the Wall Material Reform Fund, and incorporation of EE bricks and rural EE buildings into the related national and provincial five year plans; and the promulgation standards developed for EE bricks and buildings.

Similarly, the private sector participation has ensured the project's successful outcomes in the form of switching to EE brick production and construction of EE buildings in rural areas. Key contributions from private sector include provision of higher than committed co-financing and conversion from solid clay bricks to the production of EE bricks and buildings and participation in project M&E of EE brick making. Moreover, rural residents contributed by participating in the planning, design, and building of rural EE buildings and participation in the M&E of EE buildings.

### **3.3.5. MAINSTREAMING AND SUSTAINABILITY (\*)**

Sustainability of project interventions has been inherent in the mainstreaming and replication potential incorporated into the project design. Certain project implementation practices, contributions, and outcomes have ensured sustainability in particular.

The GoC is committed to EE and sees EE Bricks and Rural EE Buildings as a very important component of EE and GHG reduction. The project's successful efforts on mainstreaming the promotion of EE bricks and rural EE buildings in key government policies and programs has made these issues actionable by the GOC in the medium and long terms. Moreover, the development of EE related policies, especially EE bricks and rural EE building standards coupled with the implementation capacity enhancement of local governments is another measure of sustainability. Similarly, the development and implementation of training, awareness-raising, demonstrations, and replications have set a good model for future replication and up-scaling of EE bricks and buildings in the Rural Areas.

Overall, the MTEBRB project has set a good example of transforming local markets for EE bricks and buildings and these experiences can be utilized by the GOC for further replication and up-scaling. However, to ensure long term replication and sustainability, it will be important to systematically

document the project’s approaches, methodologies, and outputs, e.g. training outlines, manuals, and methodologies, etc. and make them freely available to all potential individual and organizational stakeholders, including brick makers, researchers, academics, policy makers, and consumers, etc.

Considering the policy support, available financing options, and continual rise in consumer awareness, the TE team concludes that the outcomes of the MTEBRB project are ***Likely Sustainable***.

### 3.3.6. IMPACT

MTEBRB had a major impact on the EE brick manufacture industry, leading to the promoting of EE brick in rural areas where EE buildings are demonstrated and promoted. Moreover, the project acted as an invaluable platform for learning and exchange among different stakeholders, including EE brick manufactures, EE building designers, local Wall Material Reform Fund officials, local banks, and rural residents. Similarly, through various promotion activities the project aimed at raising the awareness of rural consumers.

The PMO had an effective system of M&E in place that not only tracked project progress but also worked with qualified subcontractor organizations to assess the achievement of outcome indicators on one hand and gauge the improvements in EE brick making and buildings on the other hand. Based on these assessments, key project achievements project are as follows:

- EE brick performance improved to 50% (as compared to the project goal of 30%) in targeted regions;
- EE brick share increased to 70% (vs. 20% target) in targeted regions;
- EE building penetration increased to 90% (vs. target of 20%) in targeted regions

Accordingly, the MTEBRB project resulted in cumulative CO<sub>2</sub> emission reduction of 1,614,491 tons by EOP, which is 682% of the original target.

Table 12 below provides a detailed overview of the project’s quantitative impact.

**TABLE 12: DETAILED OVERVIEW OF THE PROJECT'S QUANTITATIVE IMPACT**

GOAL	Target	Actual	Rate
<b>Annual Reduction in CO<sub>2</sub> emissions from rural brick production</b> and from the C&R buildings in rural areas by end-of-project (EOP)	118,476 ton/year	1,342,348 ton/year	1,133%
<b>Cumulative CO<sub>2</sub> emission reduction</b> in rural brick production and from the C&R buildings in rural areas by EOP	236,669 ton	1,614,491 ton	682%

Reduction in <b>total energy use</b> in rural building sector and in rural brick making industry by EOP	95,048 tce	648,390 tce	682%
Improvement in <b>energy efficiency in targeted rural buildings</b> by EOP	30%	50%	167%
improvement in energy efficiency in targeted rural brick makers by EOP	20%	20.07%	100%
<b>Share of EE brick products</b> in the targeted local rural building construction materials market by EOP	20%	70% of local rural building construction materials market; 30% of national rural building construction materials market	
Percent of rural buildings in the targeted local areas that are considered as <b>EE buildings</b> by EOPs	20%	90.58%	453%



## 4. CONCLUSIONS, RECOMMENDATIONS & LESSONS

### 4.1. CONCLUSION

In conclusion, the Terminal Evaluation team has determined that the MTEBRB design has remained relevant to the development context of China and the priorities of various stakeholders, including GOC, GEF, UNDP, and the EE bricks and rural EE buildings industry.

Moreover, the project has been efficiently implemented while engaging a large number of stakeholders as partners and sub-contractors. The ownership from all stakeholders has been demonstrated in exceeding committed co-financing by xxxx% and has led to effective implementation, resulting in over achievement of goals and component-level targets. Activities with significant impact include: development and promulgation of EE bricks and rural EE building standards and codes, mainstreaming project objectives in the programs and policies of central and local governments, facilitating access to finance, and demonstration and replication of EE brick making and buildings. A supportive environment created by the GOC also facilitated the project and resulted in unintended positive impact of a variety of activities, e.g. availability of GOC funds for EE improvements in bricks and rural buildings and higher than intended replications. These activities have effectively transformed the local EE bricks and rural EE building industries in the targeted areas.

To capitalize on the evolving conducive policy environment, the project was granted a no cost extension of 18 months, thereby increasing the project duration from five years to 6.5 years. This translated into the project being delivered in 30% additional time.

### 4.2. LESSONS LEARNED

Based on consultations with key stakeholders and the conclusions drawn by the TE team, key lessons learnt from the PEERAC project design and implementation experience are as follows:

- i. Market transformation can be achieved only through supply-demand linkages and through participatory multi-disciplinary, multi-agency, and multi-industry approach.
- ii. GOC funds not only provide significant leverage to limited GEF funds but also have implications for medium and long term commitment of the government for continuing and up-scaling the project activities.
- iii. Private sector enthusiasm for new and beneficial products can be elicited based on GOC commitments, thereby significantly improving the uptake of project activities.
- iv. Projects developed to provide pioneering response or solutions to issues need to allow room for flexibility in implementation, as such projects are based on a large number of assumptions which are eventually tested at the time of implementation.

- v. Considering the vast scale of the bricks and rural building sectors in China, the country has yet to achieve a significant or complete transformation nationwide. Moreover, socio-economic challenges associated with rural EE brick industry include the entrenched mindsets of rural brick makers and residents as well as their investment/buying capacity.

### 4.3. RECOMMENDATIONS

Based on its conclusions and the lessons learnt, the evaluation team recommends the following actions:

#### I. Continuation / Up-scaling of the Project Activities

Despite the significant achievements of the MTEBRB project, China as a nation has still a long way to achieve nation-wide market transformation of the EE bricks and rural EE buildings industries. It is therefore recommended that the activities of MTEBRB are adopted by a key GOC agency such as the Wall Material Reform Office or the Rural Energy and Environment Agency, etc. to be continued and up-scaled before the project's achievements lose their momentum. Such activities should also be

In addition to utilizing the learnings from the project implementation, elements critical to nation-wide market transformation are:

- Continue strengthening the **implementation** capacity of the GOC;
- Linking to ongoing policy activities and build synergies with lucrative government programs;
- Linking to relevant projects such as the upcoming Green Township Development project; and
- Feasibility for different geographical **climate** regions based on cost-benefit competitiveness, future geographical priority, and differentiating Implementation roadmap (Unified planning, unified construction unified planning, self-construction, and self-planning and construction (sporadic), etc.)

#### II. Adapting to the Evolving EE Technologies and Needs

EE technologies and concepts are constantly evolving as are the consumer needs. It will therefore be important for future activities to be compliant with the changing context so that China can achieve maximum benefit from investing in such efforts. In this regard, future project designs need to focus on the aspect of Green Building and not just EE building, pre-fabricated buildings or building equipment, modernized structures, and changing lifestyles in the rural areas due to continually improving economic statuses and changes in farming patterns, etc.

### **III. South-South Learning and Exchange**

As an emerging donor, the Government of China can play a critical role in disseminating the lessons learned from the MTEBRB project to improve the brick making and utilization industries in other developing countries, especially Asia. In this regard, the GOC can use the following avenues for collaboration:

- South-South cooperation through China-led projects
- Information sharing through key platforms such as the UN, GEF, AIIB, etc.
- UNDP regional and “one belt one road” initiative

# ANNEXES

1. Project Self-evaluation Report of MTEBRB Project (PMO)
2. Mid Term Review of MTEBRB Project
3. Final Report on Energy-Conserving Brick and Rural Energy-Saving Building Market Transformation Project (China Building Material Testing & Certification Group Xi'an Company Limited)
4. Final Report on Project Demonstration Plant Energy Efficiency Follow-Up Assessment (China Building Material Testing & Certification Group Xi'an Company Limited)
5. Analysis Report on Energy-saving Brick and Rural Construction Market Transformation Project and Replication Plants Energy Efficiency Evaluation and Cost-effectiveness (China Building Material Test & Certification Group Xi'an Co., Ltd.)
6. Tracking test evaluation report and cost effect analysis of Rural EE Building Demonstration and Replication Projects (China Academy of Building Research)
7. Debriefing & Highlights on TE Initial Findings for MTEBRB(TE Group)
8. Minutes of Inception Meeting (TE Group)
9. Annual Work Plan (2011-2015, PMO)
10. Minutes of the TE Meeting (TE Group)
11. UNDP Guidance for Conducting Terminal Evaluation of UNDP-Supported, GEF-Financed Projects
12. Inception Report (TE Group)
13. MTEBRB Project Document (UNDP, MOA)
14. Annual Project Progress Reports (APPR) 2011, 2012, 2013, 2014, and 2015 (MOA, MOF, UNDP)
15. MTEBRB PPM (PMO)
16. Subcontract List (MOA)

**KII/FGD WITH PMO****Date:****Name(s) of Staff:****Position(s) in Project:****Contact Info:****Name of Interviewer:****1. PROJECT DESIGN****i. When was the project developed and when did implementation start?**

- Year of Project Design: -----
  - Year of GEF Approval: -----
  - Year and Month of Implementation Start: -----
  - Year and Month of Mid-Term Review: -----
  - Year and Month of Project Closing (Planned) : Program Closing -----Administrative Closing -----
  - Year and Month of Project Closing (Revised): Program Closing -----Administrative Closing -----
1. Is there a particular definition of Rural Areas in China? If yes, did the project follow this definition when implementing or reporting results? If not, what other criteria was used?
  2. How effective is the project design on providing guidance for planning and implementation of different activities and outputs listed in the Logical Framework?
  3. Do the PMO and other stakeholders find the project PMP/Logframe goals and outcomes to be realistic, indicators to be SMART and outputs to be trackable?

**2. PROJECT MANAGEMENT****PMO**

1. How many staff work at the PMO and what is the respective function of each staff member?  
Please provide organogram of the PMO

2. Has the project faced any HR challenges, e.g. insufficient or under qualified staff, high turnover, non-availability on in country technical knowhow, etc.? If yes, how have these been resolved?
3. Has there been a turnover/change in personnel on key project positions, e.g. PMO Director, Dy. Director, NPD, etc? If yes, when, and how has this lack of continuity affected the project?
4. Have there been any delays in recruitment of key staff members (e.g. CTA, M&E Officer, etc.) /contractors, etc. If yes, what were the reasons?
5. How has this delayed hiring affected the project?

### Project Steering Committee (PSC)

6. Who are members of the PSC? How often has the PSC met? **Dates of PSC meetings**
7. What is the %age distribution of PSC members according to sector, i.e. public, private, international, NGOs, etc.
8. What important decisions have been taken by the PSC?
9. How has the PSC steered the project in the right direction?
10. How could the role of the PSC have been improved?
11. In addition to the National PMO and PSC, does the project also have local PMOs and PSCs?
12. If yes, how have this addition in the project hierarchy affected project implementation? Both positive and negative? For e.g. local level decision making or centralized decisions, etc.

### TAC

13. What is the role of the Technical Advisory Committee (TAC)? Who are the members of this team?
14. What important advice has been provided by the TAC? And how has the TAC contributed to the project's success?
15. How could the roles of TAC have been improved?

## 3. KEY PROJECT STAKEHOLDERS

1. Who are the key public sector stakeholders and what is the role of each?
2. Who are the key private sector stakeholders and what is the role of each?
3. Which particular stakeholders under each project outcome have been particularly active in ensuring the project's success? How?
4. Did any stakeholders not meet their commitments? If yes, who are they and what was the reason?

## UNDP and GEF Support in Implementation

5. What support has been provided by the UNDP to the project? E.g. linkages with international experts, etc.
6. What has been the role of the UNDP in monitoring and course correction?
7. How could the role of the UNDP have been improved? E.g. timely budget releases, simpler reporting formats, etc.
8. What support has been provided by the GEF Focal Point?

## Stakeholder Collaboration

9. How was local management (e.g. local and township governments), including the various administrative branches at local levels, local rural communities, and private sector involved in the project?
10. What were the advantages of including these organizations and entities in the project planning and implementation?
11. How has the project coordinated/collaborated with the **Socialism New Rural Construction (SNRC)**? What have been the advantages and challenges in collaborating with this program? E.g. synergies with the program's objective or limited capacity of the project to deal with such a large program, etc.
12. How has the project collaborated with some of the **other GEF UNDP EE programs** (EUEEP, BRESL, PILESLAMP, PEERAC, etc.) and with other development partner EE programs, e.g. WB, JICA, etc.
13. What have been some of the synergies or positive outcomes of these collaborations?
14. If the project has not collaborated with any of these projects/programs, what opportunities have been lost?
15. How has the collaboration between the various stakeholders leveraged the project performance?
16. What were key challenges faced by the PMO in facilitating the collaboration of such a large variety and number of stakeholders? How were some of these challenges mitigated?
17. How do the various stakeholders and partners interact to ensure communication and linkages between their respective activities? E.g. quarterly meetings arranged by the PMO or any other events, etc.

## 4. ADAPTIVE MANAGEMENT

1. During the time of implementation, have there been any changes in the project document? If yes, what were these changes? Were these changes incorporated in the project's logframe? What was the process of having these changes approved? E.g. approval from PSC, approval from GEF, etc. What challenges were faced by the project for making any changes in the project approach/logframe, etc.?



2. What were the major changes made in the work plan during the inception period (Ref. Inception Report)?
3. Have there been any significant delays in implementation of activities (delay of three months or more)? If yes, which activities were these and what caused the delays?
4. How did these delays affect the project's progress? What was the impact of activity delays on other components and activities? How were these problems mitigated?
5. Were the project target locations / provinces identified in the project changed during the implementation (e.g. change to Xinjiang from Henan as mentioned in the Inception Report)? If yes, why? And what was the process of identifying the new locations? How did this change affect the project meeting its goals and objectives?

## 5. SUB-CONTRACTOR ENGAGEMENT

1. What are the key sub-contracted activities under the project? When did each activity start and finish?

Sub-Contracted Activity	Organization	Start Date	End Date	Contract Value (USD)

2. Are there any outstanding activities in any of the sub-contracts?
3. What were the challenges in sub-contracting? E.g. availability of local expertise, cost, coordination, commitment and timely delivery by sub-contractors, etc.?
4. What was the process of sub-contractor selection? How did the project ensure transparency in selection of sub-contractors organizations?
5. Please provide TORs of each sub-contracted activity and 1 to 2 page write-up on the accomplishments and challenges of each sub-contracted activity

## 6. BENEFICIARY SELECTION AND PERFORMANCE

1. What was the process of manufacturers and demonstration/replication sites selection?
2. How did the project ensure transparency in selection of the above?
3. What was the ownership status of the selected beneficiaries for each activity? (i.e. public, private, joint venture, multi-national, etc.). Please provide a table
4. What is the %age market share of each assisted manufacturing company?
5. Did any manufacturers or beneficiaries default at any stage of the project implementation? How were such situations mitigated or resolved?

## 7. PERFORMANCE OF PROJECT COMPONENTS

### Information Network (RBSD, Website, RBERM)

1. How and when was the **Rural Buildings Sector Database (RBSD)**? What proportion of the rural areas in China does it cover? How is it populated? How is this tool promoted? Who can access this? (e.g. only project staff and participants or also the general public?). Will this remain relevant after the project closures? If yes, who will continue to update and manage it after the project end?
2. How and when was the **project website** developed? How is it populated? Are project progress and evaluations, etc. uploaded on the website? Is the website linked with other relevant websites? How is this tool promoted? Who can access this? (e.g. only project staff or general public)? Will this remain relevant after the project closures? If yes, who will continue to update and manage it after the project end?
3. How and when was the **Rural Buildings Sector Energy Reporting and Monitoring (RBERM)** program developed? How is it populated? How is this tool promoted? Who can access this? (e.g. only project staff or general public)? Will this remain relevant after the project closures? If yes, who will continue to update and manage it after the project end?
4. Was a full package of multi-media products developed? What did the package involve? How was it disseminated? How many people did it reach? What was the impact of the package?

### Policy Development

5. What major policies and regulations, etc. have been proposed and promulgated as a result of the MTEBRB project?
6. What is the status of implementation for the promulgated policies? And how have these policies and rules helped in achieving the project's goals and outcomes?
7. What are the challenges in implementation of these policies? How can these be resolved?

### Financial Services

8. What were some of the key outputs and outcomes of this activity? E.g. x% of brick sector in the rural areas now accessing this financing?
9. What have been the challenges in undertaking this activity? How were these issues resolved?
10. How has this activity facilitated the promotion and replication of EE brick manufacturing and building?

## Trainings

11. Has the training approach been reevaluated and implemented after the MTR's recommendation?<sup>5</sup>
12. What problems did the PMO face in the training program, e.g. selecting beneficiaries, identifying trainers, and delivery of trainings? E.g. lack of local trainers, high demand vs. low project capacity, limited training curriculum, etc. How were these resolved?
13. Please provide summarized overview of trainings: How many trainings were delivered under each outcome? What topics were the trainings delivered in? Duration of trainings? How many companies/individuals benefited? % representation of the industry, etc.

Training Topic	Organization Delivering Training	Dates of Training	Names of Companies	No. of Individuals Attending

14. Did the PMO undertake any Training impact assessments? If yes, what were the general results for each category of training? (i.e. the satisfaction level of the trainees and their employers)

## 8. BUDGET AND CO-FINANCING

1. Is the budget sufficient for the proposed activities? If no, what problems has the project faced regarding budget allocations? What efforts have been made to resolve some of these problems?
2. Were all the committed finances (GEF) and co-financing (GOC, Brick companies, etc.) delivered on time? If no, please provide details, e.g. reason for delay in provision of funds, impact of delayed funds on project progress and achievement of outcomes, etc.
3. What was the project's annual delivery rate for each year since project start? What were the reasons for low delivery in some of the years? How were these issues resolved?
4. How has the project utilized the budget for the ESCO activity that was cancelled?
5. Were all the key stakeholders, such as local governments and brick companies, etc. able to meet their co-financing requirements? If no, what was the reason and how did the lack of this financing affect the project?
6. If yes, was the co-financing equal to or more than the expectation in the project design? What was the reason for the low or high co-financing? E.g. change in GOC policy, change in bank policy, interest of consumers, etc.

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<sup>5</sup>The MTR reminds that as part of the ProDoc requirements, training should be conducted on the monitoring of the energy utilization performance of the rural buildings to be incorporated in the information networking activity for the relevant staff members of the authorities concerned (such as the MOA, NDRC, MOHURD, WMRO and their local branches) and the building owners that will include data collection system, energy performance evaluation, and dissemination of results.

7. How did the co-financing affect the project's success?
8. What is TVE II RCF?<sup>6</sup>
9. Have regular project financial audits been undertaken? Were these audits satisfactory? If not, what were the reasons and how were these issues resolved?

## 9. M&E AND REPORTING

1. Has the project developed an M&E framework? If yes, what are the main components of the M&E framework?
2. What was the process of developing and approval of this framework? If no, what were the reasons? E.g. lack of qualified personnel in the PMO, lack of funding, lack of initiative by project management, etc.
3. What are the major advantages of using this M&E system? E.g. support to promoting the project's successes, assistance with periodic reporting, etc.
4. What have been the major challenges in undertaking project M&E? How have these challenges been mitigated? E.g. lack of technical training, lack of funding for studies, lack of SMART indicators, etc.
5. The project design asks for an integrated M&E of the demonstration and replication sites. To what extent has the PMO effectively designed and implemented such a system? What are advantages of the system? What challenges have been faced in the development and implementation of the system and how were these mitigated?
6. How is the information network linked to the MOA's current rural energy and environmental network that is operational throughout rural China?
7. How is the **logframe** used for purposes of Planning, M&E, and Reporting? What problems have been faced by the PMO when reporting against the logframe?
8. Were any of the evaluation reports or results of surveys or impact assessments uploaded to the project website or any other public source?<sup>7</sup>
9. Did the project submit its reports on time? What problems were faced in reporting? How were these resolved?

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<sup>6</sup> The project has received USD 1 million from that project for the replication activities

<sup>7</sup> According to the prodoc, all evaluation reports will be uploaded to the project website for widespread dissemination.

## 10. IMPACT

1. Has the project undertaken any impact surveys? If yes, what are the major outcomes? E.g. Impact of the promotion and advocacy program, studies on effectiveness of implementation results of formulated policies and standards, etc.
2. Which of the project activities/components have had the highest impact? Why?
3. Which of the project activities/components have had the least impact? Why?
4. What problems were faced in assessing the impact? E.g. lack of an M&E system to assess impact, lack of cooperation of project stakeholders in reporting progress/impact, etc.
5. What is the project impact on goal and outcome? What methodology was used to assess this impact?
6. If the project has not been able to achieve these goal and outcome level indicators, what are the reasons for that?

## 11. SUSTAINABILITY

1. What have been the key measures of sustainability/replicability embedded in the project design and delivery?
2. Which outcomes/results of the project are particularly sustainable<sup>8</sup>? Why?
3. Which outcomes/results of the project are least sustainable? Why?
4. What are the major risks to the sustainability of the project's activities? E.g. lack of funding, high product cost, lack of technical capacity, etc.
5. What are the points/measures that leverage sustainability at this point? E.g. new govt. policy, increased market demand, etc?
6. How are the activities related to production or utilization of EE bricks being replicated and scaled up? E.g. continuation of trainings, availability of financing, etc.
7. Is there a follow up project planned, either at MOA or with any of the other sub-contractors/stakeholders, e.g. GEF/UNDP, etc.? If yes, how would this program be linked to MTEBRB? If no, what is the reason?

## 12. CONCLUSIONS AND RECOMMENDATIONS

1. In your opinion, what are some of the key achievements of the MTEBRB project?
2. In your opinion, what are some areas in which MTEBRB could have played a more active role but did not play?

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<sup>8</sup> According to the prodoc, the intention was to develop the network into an independent, commercially viable information service provided

3. What are the key lessons learned from the implementation of MTEBRB?
4. What are your recommendations to ensure sustainability of the MTEBRB's key activities?
5. What components/activities would you recommend for a similar program in the future?

## KII WITH INSTITUTIONAL STAKEHOLDERS (NPD, NPC, PMO DIRECTOR, CTA, GEF FP, PSC, UNDP, TAC)

**Date:** 10 Nov

**Name of Interviewee:** Ms. XuYanming  
**Title Industry Association**

**Organization Name:** China Brick and

**Title:** Executive Vice President

**Contact Info:**

**Name of Interviewer:** UZ and Liu Jie

### BACKGROUND

1. What particular role does your organization plays with the project?
2. In your opinion, what have been the key successes of the project?
3. In your opinion, what have been the key challenges faced by the project? E.g. large number of stakeholders, high cost technology, delays in implementation, limited project outreach, etc.
4. How could these challenges have been mitigated?

### PROJECT DESIGN & ADAPTIVE MANAGEMENT

1. In light of the rapid policy and technological changes in the EE industry, have the project design and logframe remained relevant over the course of the project?
2. If no, what key factors were irrelevant and how were these addressed during the course of implementation?

### RELEVANCE

1. How does the project fit into the strategic priorities and current programming of your organization?
2. What is the key role that your organization has played in the project's success? E.g. policy support, co-financing in cash/kind, mainstreaming into other programming, etc.
3. How can/will the project's successes/activities feed into future programming/strategy of your organization?
4. In addition to PEERAC, what other EE Bricks/EE Buildings programs has your agency been involved in? Has there been any linkage between MTEBRB and these other programs?

5. How would you rate the comparative contributions and challenges of MTEBRB with these other programs?

## **DELAYS IN IMPLEMENTATION**

1. Have there been any key delays in project implementation? If yes, what caused these delays? What has been the impact of these on project implementation and progress?
2. What measures were taken by key stakeholders to avoid any further delays?

## **STAKEHOLDER COLLABORATION**

1. Which project stakeholders/beneficiaries do you deal with directly?
2. What is the mechanism for collaboration with the project and other beneficiaries? E.g. quarterly meetings, etc.
3. In your opinion, which stakeholders have played a key role in ensuring the project's success?
4. What have been some of the opportunities/positive outcomes of the stakeholder collaboration under this project? E.g. funding leverage, policy support, higher outreach, etc.
5. What have been some of the challenges in regard to collaboration among stakeholders? E.g. difference in organizational priorities, delay in reporting, etc. Have these issues been resolved? How?

## **PROJECT STEERING COMMITTEE**

1. What key role has the PSC played in guiding / facilitating the project implementation? Any specific examples? How effective has been the PSC been performing its duties of oversight (e.g. review of Annual Work Plans, Annual Progress Reports), and guidance (e.g. linkages to UNDP corporate policy decisions) PMO linkages with UNDP-China?
2. Has the PSC met regularly? If no, what have been the reasons?
3. What challenges and opportunities has the PSC faced in overseeing the project activities? E.g. policy, stakeholder buy in, etc.?
4. How could the role of the PSC have been strengthened further?

## **KEY STAKEHOLDER SUPPORT**

1. What support has been provided to the project by the UNDP China?
2. What support has been provided by the GEF Focal Point?
3. How has the collaboration between the various stakeholders leverage the project performance?
4. What key challenges have been faced by the key stakeholders in collaborating with each other? How were some of these challenges mitigated?

## REPLICATION& UP SCALING

1. Are there any mechanisms in place for the up-scaling of the project activities? E.g. training programs, policy enforcement, financing schemes, etc?
2. What are the potential opportunities and challenges for such replication?

## IMPACT

1. In your opinion, how has the project impacted the performance of your organization?
2. What impact has the project had on the EE Bricks industry in China?

## SUSTAINABILITY

1. Will there be opportunity for the project stakeholders from the business and/or public sector to continue collaboration after project end? How?
2. What can the project do to institutionalize such collaboration platforms before it closes?
3. Which of the key project activities are sustainable in the medium and long term? Why/How?
4. Which of the project activities are not sustainable in the medium and long term? Why/How?
5. What can be done to increase the chances of sustainability of some of these activities?

## LESSONS LEARNED & RECOMMENDATIONS

1. In your opinion, what are the key lessons learned from the project?
2. Based on the project implementation experience, what are your suggestions for improvement in future projects?



## KII WITH SUB-CONTRACTOR

- **Name and Position of Person(s) Interviewed:**
- **Phone Number and Email Id:**
- **Name of Organization:**
- **Sector: Public, Private, or Semi-Govt.**
- **Title of Sub-Contract:**
- **Date of Interview:**
- **Name of Interviewer:**

## HISTORY OF SUB-CONTRACT

1. When was the sub-contract signed between your organization and the MTEBRB project?
2. Were you involved in the process of bidding and acquiring the sub-contract?
3. What was the start and end date of the contract?
4. Was the contract finished on time? If no, how much was the delay and what was the reason for the delay?

## PERFORMANCE OF ACTIVITIES

1. What activities did your organization perform under the contract? Please provide details
2. What problems did you face in delivering on the contract? E.g. lack of support from the PMO, delayed funds, lack of interest from the beneficiaries, absence of technical know-how, etc.
3. How did you overcome these issues?
4. How did the PMO support you in the resolution of such issues?
5. How could the role of the PMO be improved in future projects?

## RELEVANCE OF PROJECT

1. Since the start of MTEBRB there may have been some changes in the policy environment, technology, and market demand, etc. In view of this, was MTEBRB still relevant? If yes, how? If no, why not?
2. In your opinion, what have been some of the key contributions of the project to the EE Bricks industry in China?
3. What have been some of the major challenges to the success of the MTEBRB project?
4. Which project approach or activities were not highly relevant to the EE Bricks context in China?

## IMPACT

1. In your opinion, how has the project impacted the performance of your organization?
2. What impact has the project had on the EE RAC industry in China?

## SUSTAINABILITY

1. Which outcomes/results of the project are particularly sustainable? Why?
2. Which outcomes/results of the project are least sustainable? Why?
3. What are the major risks to the sustainability of the project's activities? E.g. lack of funding, high product cost, lack of technical capacity, etc.

## CONCLUSIONS AND RECOMMENDATIONS

1. In your opinion, what are some of the key achievements of the MTEBRB project?
2. In your opinion, what are some areas in which MTEBRB could have played a more active role but did not play?
3. What are the key lessons learned from the implementation of MTEBRB?
4. What are your recommendations to ensure sustainability of the MTEBRB's key activities?
5. What components/activities would you recommend for a similar program in the future?

## **KII WITH INSTITUTIONAL BENEFICIARIES (EE BRICK PRODUCERS AND BANKS, ETC.)**

- **Name and Position of Individual Interviewed**
- **Name of Company:**
- **Company Ownership: (State Owned, Private, Joint Venture, MNC)**
- **Year of Establishment of Company:**
- **Percent Market Share of Company:**
- **Name of Interviewer**
- **Phone Number and Email Id:**
- **Date of Interview**
- **Location of Interview**

## **HISTORY AND BACKGROUND**

1. Since when has your company been involved with the MTEBRB project? Start and end dates of involvement (Month and Year)?
2. What role did you play as an individual in these activities? E.g. attended training, coordinated activities, etc.

## **PERFORMANCE OF ACTIVITIES**

1. Was your company involved in the project design process? E.g. consultations, advice, etc.
2. What particular activities has your company been involved with MTEBRB? Please provide details. E.g. If training, how many employees were trained and in what topics; access to financing...how much financing was obtained and from which sources, etc.
3. Has your company ever asked for assistance in these matters from another source? (e.g. donor project, government agency, etc.?). If yes, how is the support provided through MTEBRB project different?
4. What problems did you face in dealing with the MTEBRB project? E.g. lack of support from the PMO, delayed activities, lack of ability among service providers/sub-contractors, etc.
5. How did you resolve these issues? How did the PMO support you in the resolution of such issues?
6. How could the role of the PMO be improved in future projects?

## **RELEVANCE OF PROJECT**

1. Since the start of MTEBRB have there been a lot of large-scale changes in the policy environment, technology, and market demand, etc. If yes, was MTEBRB still relevant? If yes, how? If no, why not?
2. In your opinion, what have been some of the key contributions of the project to the EE Bricks industry in China?
3. What have been some of the major challenges to the success of the MTEBRB project?
4. Which project approach or activities were not highly relevant to the EE RAC context in China?

## IMPACT

1. In your opinion, how has the project impacted the performance of your organization?
2. What impact has the project had on the EE Bricks industry in China?

## SUSTAINABILITY

1. Which outcomes/results of the project are particularly sustainable? Why?
2. Which outcomes/results of the project are least sustainable? Why?
3. What are the major risks to the sustainability of the project's activities? E.g. lack of funding, high product cost, lack of technical capacity, etc.

## CONCLUSIONS AND RECOMMENDATIONS

1. In your opinion, what are some of the key achievements of the MTEBRB project?
2. In your opinion, what are some areas in which MTEBRB could have played a more active role but did not play?
3. What are the key lessons learned from the implementation of MTEBRB?
4. What are your recommendations to ensure sustainability of the MTEBRB's key activities?
5. What components/activities would you recommend for a similar program in the future?

## ANNEX 3

## DETAILED MISSION SCHEDULE

DATE	TIME	MEETINGS	INTERVIEWER
11.8	15:30	Arrival of International Consultant in Beijing	
11.9	9:00-17:00	Briefing with UNDP and PMO PMO's presentation on project progress Discussion about the arrangements of the in-country mission	Umm e Zia, BaiQuan, Liu Jie

11.10	09:00-11:30	Discussion with project experts of brick-making industry and major subcontractors	Umm e Zia, BaiQuan, Liu Jie
	13:30-15:30	Discussion with project experts and subcontractors in brick-making industry	Umm e Zia, BaiQuan, Liu Jie
	15:30-17:00	Discussion with PMO of PPM table	Umm e Zia, BaiQuan, Liu Jie
11.11	09:30-12:00	Discussion with project experts of building industry	Umm e Zia, BaiQuan, Liu Jie
	14:00-17:30	Discussion with project experts of wall material reform	Umm e Zia, BaiQuan, Liu Jie
11.12	6:45-13:00	Travel to Hangzhou, Zhejiang Province	Umm e Zia, BaiQuan, Liu Jie
	15:30-17:30	Meeting with Wall Material Reform Office of Zhejiang Province	Umm e Zia, BaiQuan, Liu Jie
11.13	9:00-12:00	TE team's internal discussion	Umm e Zia, BaiQuan, Liu Jie
	13:00-17:30	TE team discussion with PMO members and Zhejiang Wall Material Office Administrator	Umm e Zia, BaiQuan, Liu Jie
11.14	9:00-12:00	Field visit to Brick Making Factory in Zhejiang Province	Umm e Zia, BaiQuan, Liu Jie
	13:00-17:30	Field visit in Xinmiaoli Village, Deqing County, Zhejiang Province to interview local residents on Energy Efficient Rural Building	Umm e Zia, BaiQuan, Liu Jie
11.15	9:00-12:00	Field visit in Dongheng Village, Deqing County, Zhejiang Province to interview local residents on Energy Efficient Rural Building	Umm e Zia, BaiQuan, Liu Jie
	13:00-17:30	Travel from Huzhou city to Beijing	Umm e Zia, BaiQuan, Liu Jie
11.16	9:00-12:00	Meeting with Deputy Director and former Deputy Director of PMO	Umm e Zia, BaiQuan, Liu Jie
	13:00-17:00	Meeting with PMO and CTA	Umm e Zia, Liu Jie
	13:00-17:00	Meeting with MOHURD official	BaiQuan
11.17	9:00-17:00	Meeting with PMO and CTA	Umm e Zia, Liu Jie
	9:00-10:30	Interview official from Wall Material Reform Office from Changsha City, Hunan Province	BaiQuan
	10:30-12:00	Interview subcontractor from CCTV for information dissemination	BaiQuan

	13:00-15:00	Interview subcontractor of financial support	BaiQuan
	15:00-17:00	Meeting with PMO and CTA	BaiQuan
11.18	9:00-10:30	Interview brick makers from Chongqing city and Shannxi Province	Umm e Zia, BaiQuan, Liu Jie
	10:30-12:00	Meeting with PMO and CTA	Umm e Zia, Liu Jie
	10:30-12:00	Interview official of Wall Material Reform Office from Chengdu City, Sichuan Province	BAI Quan
	13:00-17:00	Internal discussion of TE group	Umm e Zia, BaiQuan, Liu Jie
11.19	Whole day	Preparing for debriefing	Umm e Zia, BaiQuan, Liu Jie
11.20	Whole day	Preparing for debriefing	Umm e Zia, BaiQuan, Liu Jie
11.21	AM	Debrief meeting with UNDP china and PMO	Umm e Zia, BaiQuan, Liu Jie

**ANNEX 4****LIST OF STAKEHOLDERS INTERVIEWED**

Name	Designation	Organization	Role in the Project
Liu Shijun	Project Manager	UNDP China	International agency
TengYue	Project Assistance	UNDP China	International agency
XuLitong	CTA	PMO	CTA
Wang Jiuchen	Deputy director	Rural Energy & Environment Agency, MoA	PMO Deputy Director
Wang Quanhui	Division chief	Division of International Exchanges, Rural Energy & Environment Agency, MoA	PMO Executive Deputy Director
XuYanming	Vice President	China Bricks & Tiles Industrial Association	PSC member, Project experts of brick-making industry and important subcontractors
Zhou Xuan	Director General manager, Senior engineer	National Building Materials Industry Wall Roofing Materials Quality Supervision, Inspection and Testing Center China Building Material Test & Certification Group Xi'an Co., Ltd.	Expert in brick making industry And EE brick technology and standards and M&E subcontractors
Song Bo	Director Senior engineer	China Academy of Building Research	PSC member ,Expert in rural EE building and EE building standards and M&E subcontractors
Deng Qinqin	Doctor	China Academy of Building Research	EE building standards and M&E subcontractors
TengJunli	President	Wall Material & Reform Committee, China Association of Circular Economy (former NDRC official)	PSC member, Expert in rural wall material reform system And wall materials policies subcontractors
Fang Fang	Researcher	CAAS	expert on rural energy
QuHongle	Deputy chief engineer	Science and Technology Development and Promotion Center , Ministry of Housing and Urban-rural Development	expert in building management, rural building policies subcontractors
Ma Hong	Manager	Beijing Baixin Movie &Television Culture Dissemination Co. Ltd.(Subordinated company of CCTV)	project dissemination films subcontractors

Zhang Fengyun	Reporter	Farmers' daily	project dissemination subcontractor
Zhang Lei	Manager	Beijing Full Honor Warrant Information Consulting Co.,Ltd	Financial subcontractor
Yang Yong	Director	Wall Material Reform Office, Changsha City, Hunan province	local project management in Changsha City, Hunan province
Zhang Bowen	Village head	Xunlonghe Village, Changsha, Hunan Province	Head of EE building replication village
Zhao Jianhua	Former director	Chengdu wall material reform office	local expert in Chengdu, Sichuan province
Cai Honglian	Agronomist	Hebei Agriculture Environment Protection Station	Local PMO staff of Hebe
CaiDekuan	Village head	Wangyu Village, Qinhuangdao City, Hebei province	Head of Demo EE building Village
Zhao Wenxue	Director	Xianyang Wall Material Reform Office	Local project management and local expert
Zhang Xincong	Manager	Chongqing Jukang Building Material Co. Ltd.	EE brick replication mill in Chongqing
Si Lingke	Manager	Shaanxi Zhouling Building Material Co. Ltd.	Demonstration EE Brick mill
Huang Yong	Director	WMRO, Zhejiang Province	Director of Zhejiang PMO in province level
Yu Xianqing	Deputy director	WMRO ,Zhejiang Province	Deputy director of Zhejiang PMO in province level
Yang Zhibing	Deputy director	Rural Energy and Environment Office, Zhejiang	Deputy director of Zhejiang PMO in province level
Shao Jianjun	Agronomist	Rural Energy and Environment Office, Zhejiang	PMO staff of Zhejiang province, subcontractor of project replication
LvHaiyan	Engineer	WMRO, Zhejiang Province	PMO staff of Zhejiang province
Zhang Ling	Senior Engineer	WMRO ,Zhejiang Province	PMO staff of Zhejiang province
Chen Lina	Engineer	WMRO, Zhejiang Province	Finance management of the subcontract
Tong Guixiang	Secretary-general	Zhejiang Association of New Wall Material	Subcontractor of project replication



Wang Meichun	Manager	Zhejiang Guanglun New-Type Building Materials Co. Ltd.	Manage of EE brick Demo mill in Zhejiang
Yu Fuyuan	former Director	WMRO, Huzhou City, Zhejiang Province	Provide technical support for replication project in Huzhou City, Zhejiang Province
XuGuhua	Deputy Mayor	Government of Nanxun District, Huzhou City, Zhejiang province	Provide guidance for the EE building replication village construction in Nanxun
Yao Guofeng	Deputy director	Development reform and economic Committee, Nanxun District, Huzhou City, Zhejiang Province	Provide guidance for the EE building replication village construction in Nanxun
He Junqi	Director	WMRO Nanxun District Huzhou City, Zhejiang Province	Provide technical and policy guidance for the EE brick replication mill in Nanxun
XuGuang	Party secretary	Xinmiaoli Villiage, Nanxun District, Huzhou City, Zhejiang Province	Head of EE building replication village
QianQinlin	Manager	HuzhouHuizhong Building Material Co. Ltd.	Manager of EE brick replication mill i
Zhu Haixin	Village head	Xinmiaoli Villiage, Nanxun District, Huzhou City, Zhejiang Province	Head of EE building replication village
Chen Jun	Designer	Huzhou Time Building Design Co.ltd	building designer for Xinmaioli Village
ShenZhongping	Deputy director	Government of Deqing County, Zhejiang Province	Provide guidance for the EE building replication village construction in Deqing
Chen Yongming	Deputy director	Economic information and technology Committee, Deqing County	Provide guidance for the EE building replication village construction in Deqing
Yao Hong	Director	Luoshe town, Deqing County, Zhejiang province	Provide guidance for the EE building replication village construction in Deqing
Zhang Shunlong	Secretary of Party branch of Dongheng village	Dongheng village , Luoshe Town, Deqing County, Zhejiang	Head of EE building replication village

You Xiaochun	Director	WMRO Deqing County, Zhejiang	Provide technical and policy guidance for the EE brick replication mill in DeqingCounty,Zhejiang
Li Chengyu	Finance Manager	Project Management Office, MTEBRB	
Zhang Yanping	Contract Officer	Project Management Office, MTEBRB	
Li Junlin	Information Officer	Project Management Office, MTEBRB	
Xue Lin	Project Assistance	Project Management Office, MTEBRB	

- i. **Opening page**
  - Title of UNDP supported GEF financed project
  - UNDP and GEF project ID#s.
  - Evaluation time frame and date of evaluation report
  - Region and countries included in the project
  - GEF Operational Program/Strategic Program
  - Implementing Partner and other project partners
  - Evaluation team members
  - Acknowledgements
- ii. **Executive Summary**
  - Project Summary Table
  - Project Description (brief)
  - Evaluation Rating Table
  - Summary of conclusions, recommendations and lessons
- iii. **Acronyms and Abbreviations**
1. **Introduction**
  - Purpose of the evaluation
  - Scope & Methodology
  - Structure of the evaluation report
2. **Project description and development context**
  - Project start and duration
  - Problems that the project sought to address
  - Immediate and development objectives of the project
  - Baseline Indicators established
  - Main stakeholders
  - Expected Results
3. **Findings**  
(In addition to a descriptive assessment, all criteria marked with (\*) must be rated)
- 3.1 **Project Design / Formulation**
  - Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
  - Assumptions and Risks
  - Lessons from other relevant projects (e.g., same focal area) incorporated into project design
  - Planned stakeholder participation
  - Replication approach
  - UNDP comparative advantage
  - Linkages between project and other interventions within the sector
  - Management arrangements
- 3.2 **Project Implementation**

- Adaptive management (changes to the project design and project outputs during implementation)
- Partnership arrangements (with relevant stakeholders involved in the country/region)
- Feedback from M&E activities used for adaptive management
- Project Finance
- Monitoring and evaluation: design at entry and implementation (\*)
- UNDP and Implementing Partner implementation / execution (\*) coordination, and operational issues

### **3.3 Project Results**

- Overall results (attainment of objectives) (\*)
- Relevance(\*)
- Effectiveness & Efficiency (\*)
- Country ownership
- Mainstreaming
- Sustainability (\*)
- Impact

## **4. Conclusions, Recommendations & Lessons**

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success

## **5. Annexes**

- ToR
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Evaluation Question Matrix
- Questionnaire used and summary of results
- Evaluation Consultant Agreement Form

Stakeholder	Role in the Project
The Ministry of Agriculture	The National Executing Agency for the project, responsible for overall management of the project development and implementation activities, and a member of Project Steering Committee (PSC)
The National Development and Reform Commission	Advises on energy efficiency policy, wall material reform fund and a member of PSC
Ministry Of Housing and Urban Rural Development	Providing guidance and technical support for energy efficient buildings in rural area, and a member of PSC
The Ministry of Finance	The National GEF Operational Focal Point and a member of the PSC
China Bricks & Tiles Industrial Association	Providing technical guidance and organizing the promotion of EE bricks, and serves as a member of PSC
China Academy of Building Research	Providing technical guidance and organizing the promotion of EE buildings in rural area, and serves as a member of PSC
China Central Television	Developing information dissemination videos and pictures and broad cast nationwide in China
China Agriculture Daily	Developing reports and articles to disseminate information nationwide in China
Local Governments from provincial / city/ county /town levels	Organize local stakeholders' participation, providing wall material reform fund, capacity building and information dissemination during the project
Local financial institutions	Responsible for providing loan or guarantee fund to EE brick making enterprises and consumers of EE building in rural areas
Local village administrators	Responsible for the management of construction of rural villages in demonstration / promotion sites to practice the rules and standard developed by this project
Brick making enterprises	Producing EE bricks for the construction of EE rural buildings
Building construction companies	Producing EE bricks for the construction of EE rural buildings
Rural villagers	Consumer of EE rural buildings. They received the benefit of this project

**ANNEX 7****LIST OF THE PSC MEMBERS**

S. No.	Organization	Year of Joining the project
1	Ministry of Finance (MOF)	2010
2	UNDP	2010
3	Ministry of Agriculture	2010
4	National Development and Reform Committee	2010
5	Ministry of Science and Technology	2010
6	Ministry of Housing and Urban-Rural Development	2010
7	Ministry of Land and Resources	2010
8	Ministry of Environmental Protection	2010
9	China Bricks & Tiles Industrial Association	2011
10	National Committee of Technical Standardization on Building Energy Saving	2011

# ANNEX 8

# LIST OF THE TAP MEMBERS

No	Name	Institution	Post	Role	Responsibility
1	Xu Litong			CTA	
2	Zhou Xuan	National Building Materials Industry Wall Roofing Materials Quality Supervision, Inspection and Testing Center China Building Material Test & Certification Group Xi'an Co., Ltd.	Director General manager, Senior engineer	Expert in brick making industry	Provide technical support and consultation on EE bricks produce technology, standards, testing method and the calculation of energy efficient on brick industry.
3	Song Bo	China Academy of Building Research	Director, Senior engineer	Expert in rural EE building	Provide technical support and consultation on rural EE building construction and energy efficiency
4	Xu Yanming	China Bricks & Tiles Industrial Association	Vice President	Selection for replication sites and construction consultation	Provide support and consultation on brick and tile production technology and policy ,and the selection of replication brick mills
5	Qu Hongle	Science and Technology Development and Promotion Center , Ministry of Housing and Urban-rural Development	Deputy chief engineer	Expert in building management	Provide support and consulting on technical and policy related to EE buildings
6	Teng Junli	Wall Material & Reform Committee, China Association of Circular Economy	President	Expert in rural wall material reform system	Provide consultation and guidance for wall materials application and prompt the EE brick application in rural areas
7	Yang Zhenyu	Sinolight Corporation	Senior engineer	Expert in rural green building design and construction	Consulting for rural building design and construction technology

8	Wang Xiudong	Institute of Agricultural Economics and Development, CAAS	Researcher	Expert on the plan of rural community development/ expert on energy-saving building case study	Plans on rural community development
9	Zhao Lixin	Chinese Academy of Agricultural Engineering	Senior engineer	Expert on new rural construction	Consulting for plan and development of villages
10	Fang Fang	CAAS	Researcher	Expert on rural energy	Consulting for energy utilization in rural
11	Wang Guiling	Rural Social Undertakings Development Center, Ministry of Agriculture	Senior engineer	Expert on project management and training	Consulting for project management
12	Meng Zhaoli	Tsinghua University	Professor	Method on tracking evaluation of energy efficiency of energy saving brick production	Technical support for tracking evaluation of energy efficiency of EE bricks production
13	Hu Bo	Institute of Finance, Renmin University of China	Professor	Financial expert	Financial support



<b>ANNEX 9</b>	<b>YEAR-WISE DISTRIBUTION OF THE SUB-CONTRACTS SINCE THE PROJECT'S INCEPTION</b>
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Year	Contract Issued				Total	Percentage
	Component 1	Component 2	Component 3	Component 4		
2010	3	2	0	6	11	13.41%
2011	2	2	0	13	17	20.73%
2012	4	1	1	8	14	17.07%
2013	3	3	5	1	12	14.63%
2014	2	4	10	6	22	26.83%
2015	1	0	2	3	6	7.32%
<b>TOTAL</b>	15	12	18	37	<b>82</b>	<b>100.00%</b>

<b>ANNEX 10</b>	<b>DETAIL OF STATUS OF REALIZATION OF THE COMMITTED CO-FINANCING FROM VARIOUS STAKEHOLDERS FOR THE PROJECT</b>
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Components	Total Commitment for Co-Financing (USD)	Total Actual Co-Financing (USD)	Percentage of Actual
<b>Component 1</b>			
in-cash	150,000	288,355	192.24%
in-kind	5,114,570	12,856,025	251.36%
<b>Component 2</b>			
in-cash	150,000	186,892	124.59%
in-kind	2,890,392	3,559,820	123.16%
<b>Component 3</b>			
in-cash	41,250	1,657,363	4017.85%
in-kind	2,011,998	88,133,637	4380.40%
<b>Component 4</b>			
in-cash	6,617,646	154,954,279	2341.53%
in-kind	26,901,156	63,225,479	235.03%
<b>Project Management</b>			
in-kind	965,106	3,285,190	340.40%
<b>Total</b>	<b>44,842,118</b>	<b>328,147,040</b>	<b>731.78%</b>

ANNEX 11	SUMMARY OF ACCOMPLISHMENTS FOR FOUR COMPONENTS ALONG WITH THE EVALUATION RATING
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Project Strategy	Indicator	Target	Actually Achievement
<b>Goal</b> Reduction of GHG emissions from brick manufacturing and the commercial & residential (C&R) buildings in rural areas	Annual Reduction in CO2 emissions from rural brick production and from the C&R buildings in rural areas by end-of-project (EOP), ton/year	118,476[2]	1,342,348
	Cumulative CO2 emission reduction in rural brick production and from the C&R buildings in rural areas by EOP, (ton/year)	236,669[3]	1,614,491
<b>Objective</b> Removal of barriers that have persistently hindered the widespread development and application of EE bricks and EE buildings in rural China.	Reduction of energy consumption for rural building industry and brick industry by EOP, calculated by standard coal.	95,048[6]	648,390.15
	% improvement in energy efficiency in targeted rural buildings industry by EOP	30%	50%
	% improvement in energy efficiency in targeted rural brick makers by EOP	20%	20.07%
	% share of EE brick products in the targeted local rural building construction materials market by EOP	20%	70% local market 30% of national market
	% of rural buildings in the targeted local areas that are considered as EE buildings by EOPs	20%	91%
<b>Component 1</b> EE Brick and EE Building Information Dissemination Network	An operational EE Brick & EE Building information dissemination network by Year 3	Operational from Year 3	3
	Number of multi-media product packages developed and disseminated per year starting Year 3	5	28
	Number of completed promotion and advocacy program by EOP	1	3
	Number of people reached by project information dissemination network and public awareness campaign starting Year	At least 1 million[8]	6,421,975
<b>Output 1.1</b>	An operational EE Brick & EE Building information dissemination network by Year 3	Operational from year 3 [10]	3

Established and operational information dissemination network	Number of stakeholders that are utilizing the information exchange services starting in Year 3	At least 10 thousand [11]	110,000
	Number of on-line connections with the information exchange services each year starting Year 3	At least 76	111
<b>Output 1.2</b> Developed and disseminated full package of multi-media products	Number of multi-media product package developed and disseminated starting Year 3	At least 5 sets	28
	CDs developed & disseminated	2 CDs (1000 for each )	4CDs, 3000 copies
	Books and training materials disseminated	2	7
	TV and radio program products and aired	1	6
<b>Output 1.3</b> Completed promotion and advocacy program	Number of provinces, counties, and villages covered by the program starting Year 1		
	Provinces	At least 10	23
	Counties	At least 20	133
	Villages	At least 100	1,563
	Number of on-site visits (group visit rather than individual ) to demonstration and replication sites starting Year 3	At least 500 times [14]	1,064
	Total number of promotional/ advocacy workshops and conferences conducted by EOP	6 times	39
<b>Component 2</b> Policy development and institutional support	Number of project policy proposals incorporated in to national EE building and rural development decision making processes by EOP	1[17]	9
	Number of standards and codes on rural EE buildings developed and approved by the local government authorities by EOP	At least 1	21
	Number of local governments that have incorporated rural EE building application and EE brick production into their local development planning and action plan implementation by EOP	At least 10	125

<b>Output 2.1</b> Formulated policies, and associated implementing rules on EE building materials production and utilization	Number of completed policy studies carried out and utilized in the policy formulation on EE building materials production (e.g., EE bricks manufacturing) and utilization (e.g., EE building constructions) by EOP	1	11
	Number of successful promotional activities conducted to help influence and petition the approval of formulated policies on EE bricks production and EE building construction by EOP	At least 1[19]	16
	Number of formulated policies that were recommended and approved by government authorities by EOP	1	9
<b>Output 2.2</b> Improved local governments policy enforcement capabilities and implemented action plans	Number of capacity development programs (inclusive of the training materials) on policy formulation and enforcement developed by EOP	8[22]	13
	Cumulative number of trained local government officials that by EOP are directly involved in EE brick making and/or EE building development projects	At least 200	364
	Number of policies/action plans developed and enforced by the local governments by EOP	10	125
<b>Outcome 3</b> Finance Support & Accessibility Improvement	Number of financial institutions involved in the project by EOP	At least 40	240
	Total amount of funds (RMB) leveraged by the project into the rural EE building construction and brick production by EOP	At least 50 million	658.8 million
<b>Output 3.1</b> Completed and publicized financial and accounting assessment of rural EE brick makers and EE building developers	Number of local developers and brick mills trained by EOP	At least 200	245
	Number of financial and accounting reports developed by EOP	At least 60	60
<b>Output 3.2</b> Developed and implemented new business models for	Number of information exchange and knowledge sharing programs completed to identify and disseminate best Practice and business models by EOP	At least 5	11

local banks/financial institutions to engage in rural EE brick and EE buildings projects	Number of local financial staff involved in knowledge sharing activities by EOP	At least 100	288
<b>Outcome 4</b> Demonstration and Technology Support	Total number of rural brick mills making EE bricks by EOP	at least 28	1,720
	Total output of EE bricks (pieces) in the targeted rural areas by EOP	At least 1.4 billion standard bricks	20.7 billion
	Total rural EE buildings constructed in targeted areas by EOP	At least 1760 sets	17,306
<b>Output 4.1</b> Completed demonstration of rural EE buildings and EE bricks production	Number of feasibility study reports (including baseline development) developed by year 3	At least 9 (EE brick production projects) and 8 (EE building projects)	19
	Number of EE building and EE brick making projects in place and satisfy the preset EE targets	At least 8 (EE brick production) and 8 (EE building)	16
	Number of information dissemination program completed by year 3	At least 1 time [32]	1
<b>Output 4.2</b> Developed and disseminated technical guidelines and templates to develop and implement rural EE brick and EE building applications	Number of study reports on national and international best practices, lessons learnt on rural EE building and EE brick production by EOP	2[36]	6
	Number of feasibility study of standardization of EE brick products by EOP	1[37]	1
	Number of rural EE buildings database and report developed by EOP	1[38]	1
	Number of information dissemination program conducted by EOP	1[39]	47
	Number of training materials on EE brick making and EE building development in rural areas developed by EOP	At least 2	6
	Number of persons trained by EOP	200	11,734
<b>Output 4.3</b>	Number of Evaluation reports of demonstrations developed by EOP	16[40]	19

Constructed replication projects	Number of Replication projects constructed by EOP	60[41]	255
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## ANNEX 12 LIST OF TECHNICAL STANDARDS DEVELOPED AS A RESULT OF THE PROJECT INTERVENTIONS

S. No	Title	Title	National /Local	GEF Fund/Other	Issued Date	Implementation Date
1	《烧结墙体材料单位产品能源消耗限额》（GB 30526-2014）	The norm of energy consumption for unit product of sintering wall materials（GB 30526-2014）	National	GEF	28-04-14	01-01-15
2	《烧结多孔砖和多孔砌块》（GB13544-2011）	Fired perforated brick and block（GB13544-2011）	National	GEF	16-06-11	01-04-12
3	《烧结空心砖和空心砌块》（GB/T 13545-2014）	Fired hollow bricks and blocks（GB/T 13545-2014）	National	GEF	24-06-14	01-02-15
4	《烧结保温砖和保温砌块》（GB26538-2011）	Fired heat preservation brick and block（GB26538-2011）	National	GEF	16-06-11	01-04-12
5	《复合保温砖和复合保温砌块》（GB/T 29060-2012）	The bricks & blocks composited insulation materials（GB/T 29060-2012）	National	GEF	31-12-12	01-09-13
6	《轻集料混凝土小型空心砌块》（GB/T 15229-2011）	light aggregate concrete hollow blocks（GB/T 15229-2011）	National	GEF		



7	《农村居住建筑节能设计标准》（GB/T 50824-2013）	Design standard for energy efficiency of rural residential buildings （GB/T 50824-2013）	National	GEF	25-12-12	01-05-13
8	《墙体材料当量导热系数的测定方法》（GB/T32981-2016）	Measuring Method of Equivalent Thermal Conductivity of Wall Materials （GB/T32981-2016）	National	GEF	01-10-16	01-07-17
9	《烧结砖瓦能耗等级定额》	Energy consumption rating of sintered brick	National	GEF	not been issued	
10	《绿色村庄评价技术导则》	Technical Guidelines for Evaluation of Green Villages	National	GEF	not been issued	
11	《DP 型烧结多孔砖砌体结构技术规程》（DBJ61/T103-2015，陕西）	Technical specification masonry structures DP-type fired perforated brick(DBJ61/T103-2015 , Shaanxi)	Local	GEF	28-12-15	10-03-16
11	《DP 型烧结多孔砖墙建筑结构构造图集》（陕西）	Building Construction Special Atlas of DP-type Fired perforated brick (Shaanxi)	local	GEF	28-12-15	10-03-16
12	《烧结墙体材料单位产品能源消耗限额》（DB33/766-2016,浙江）	Energy consumption limit per unit product of fired wall material （DB33/766-2016,Zhejiang）	local	other	20-06-16	20-09-16

13	《烧结复合自保温砖和砌块墙体保温系统技术规程》（DB J 51/T001-2011, 四川）	Technical specification for wall insulation system of the bricks & blocks composited insulation materials (DB J 51/T001-2011, Sichuan )	Local	other	28-12-11	01-03-12
14	《烧结自保温砖和砌块墙体保温系统技术规程》（DB J 51/T002-2011, 四川）	Technical specification for wall insulation system with Fired heat preservation brick and block (DB J 51/T002-2011, Sichuan)	local	other	21-11-11	01-03-12
15	《烧结自保温空心砖和砌块墙体构造》DBJT20-60 (川 10J156)	wall structure of fired self - insulating hollow brick and block	local	other	21-11-11	01-07-12
16	《非承重节能型页岩空心砖墙体工程技术规程》（DBJ50-127-2011, 重庆）	Technical Specification for Non - load - bearing and Energy - saving Shale Hollow Brick Wall (DBJ50-127-2011, Chongqing)	Local	other	28-06-11	01-09-11
17	《无机复合烧结页岩空心砖自保温墙体建筑构造图集》（13J10, 重庆）	Building Construction Special Atlas of Inorganic Composite fired Shale Hollow Brick (13J10, Chongqing)	local	other	05-02-13	05-02-13
18	《农村居住建筑节能技术标准》（DB13(J)/T174-2014, 河北）	Design standards of energy efficient rural	local	other	03-12-14	01-04-15

		housing(DB13(J)/T174-2014, Hebei)				
19	《农村低层节能住宅房屋设计与施工指南》(ISBN978-7-5611-9809-4, 长沙市)	Guidebook for Design and Construction of Rural Low - rise Energy - saving Residential Buildings (ISBN978-7-5611-9809-4, Changsha)	Local	other	2013	
20	《安徽省工程建设标准--农村居住建筑节能技术标准》	Design standards of energy efficient rural housing(Anhui)	local	other	2015	
21	《农村节能建筑烧结自保温砖和砌块墙体保温系统技术规程》(四川)	wall insulation system technical regulations of Rural energy-saving building with Fired heat preservation brick and block (Sichuan)	local	GEF	not been issued	
22	《烧结保温砌块应用技术规程》(草)	Technical specification for fired perforated block application	National	other	not been issued	

# ANNEX 13 LIST OF NATIONAL POLICIES INFLUENCED BY THE PROJECT

S. No.	Title	Title	Pub year
1	财税[2015]73 号 财政部 国家税务总局关于新型墙体材料增值税政策的通知	Notice of the Ministry of Finance and the State Administration of Taxation on Value-Added Tax Policy for New-Type Wall Materials (2015)	12-06-15
2	国务院办公厅关于改善农村人居环境的指导意见（国办发〔2014〕 25 号）	the General Office of the State Council's guiding opinion on improving the rural living conditions (2014)	16-05-14
3	《“十二五”墙体材料革新指导意见》（发改环资〔2011〕 2437 号）	Guiding Opinions of 12th five year plan for wall materials innovation	15-11-11
4	"十二五"建筑节能专项规划（建科[2012]72 号）	Special planning for 12th five year plan for building energy efficiency	09-05-12
5	《砖瓦工业“十二五”发展规划》	12th five year plan of brick and tile industry;	2012
6	农业部美丽乡村创建目标体系（试行）	Ministry of Agriculture's Target System for Beautiful Villages Construction (Trial)	2014
7	2016 年中央 1 号文件	No. 1 document from the national central government in 2016	2016
8	砖瓦行业“十三五”规划(待发布)	13th five year plan of brick and tile industry (to be issued)	
9	墙材革新“十三五”行动计划（待发布）	13th five year action plan of wall materials innovation	
10	《新型墙体材料专项基金征收使用管理办法》（修订）(待发布)	Measures for the Collection and Use of Special Fund for New-Type Wall Materials; (revision) (to be issued)	