



United Nations Development Programme

GEF-UNDP-MoEF Project 3465 – Energy Efficiency Improvements in Indian Brick Industry (India Brick EE) Project (PIMS 3465)

Terminal Evaluation Report

**Ministry of Environment and Forest & Climate Change
(MOEFCC) *through*
The Energy and Resources Institute (TERI)
(*Implementing Agency*)**

Mission Member:

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SUMMARY

Background

Though the official project start date of the Energy Efficiency Improvements in Indian Brick Industry was when the ProDoc was approved by the GEF CEO i.e. March 2008, but the project actually started in June 2009 and practically the project implementation has began after holding on the project inception workshop held in November 2009. UNDP is the GEF Implementing Agency (IA) responsible for the project's implementation, TERI (The Energy and Resources Institute) is defined as the organization responsible for the operation of the Project Facilitation Unit (PFU) / Project Management Unit (PMU) and the Ministry of Environment and Forests (MoEF) is the Executing Agency (EA) for the project; as mentioned in the original Project Document (ProDoc).

As mentioned in the ProDoc, the stated goal of the project is to reduce energy consumption and restrict GHG emissions by creating appropriate infrastructure for sustained adoption of new and improved technologies for the production and use of resource efficient bricks (perforated or hollow clay fired bricks) or REB in India. The project objectives were to demonstrate REB technologies and develop technology models (supply side), to build awareness and develop sustainable markets for REBs among various stakeholders such as builders, architects, individual end-users (demand side) and to influence government organizations, financial institutions and policy and decision makers. The envisaged outcomes of the project included enhancing public sector awareness on resource-efficient products, providing access to finance for brick kiln entrepreneurs, improved knowledge on technology, including marketing, availability of resource efficient technology models (in 5 clusters through Local Resource Centres) and improved capacity of brick kiln entrepreneurs.

The intended impact of India Brick EE project was to achieve project GHG emission reductions of 47,128 tonnes of CO₂ over the project implementation lifetime of four years and a target of 187,840 tonnes of CO₂ reductions over 15 years, as specified in the ProDoc, comprising the savings in energy consumption by planned 12 demonstration units in five major brick making clusters in India. This GEF funded project, called India Brick EE project (PIMS 3465), which got started in 2009, was originally planned as a four-year duration; the Project however was extended during the course of executions with December 31, 2016 as the formal project closure date for this Final Evaluation.

Context and Purpose of the Terminal Evaluation

The purpose of the Terminal Evaluation (TE) for this Project is to evaluate the progress towards the attainment of global environmental objectives, project objectives and outcomes, capture lessons learned and suggest recommendations on major improvements. The TE is to serve as an agent of change and play a critical role in supporting accountability. As such, the TE will serve to:

- promote accountability and transparency, and to assess and disclose levels of project accomplishments;

- synthesize lessons that may help improve the selection, design and implementation of future GEF activities;
- provide feedback on issues that are recurrent across the portfolio and need attention, and on improvements regarding previously identified issues; and,
- contribute to the GEF Evaluation Office databases for aggregation, analysis and reporting on effectiveness of GEF operations in achieving global environmental benefits and on the quality of monitoring and evaluation across the GEF system.

Table A provides a summary of the terminal evaluation of India Brick EE Project.

Table A: Evaluation Ratings

1. Monitoring and Evaluation	Rating¹³	2. IA & EA Execution	Rating
M&E design at entry	4	Quality of UNDP Implementation (IA)	4
M&E Plan Implementation	3	Quality of Execution - Executing Agency (EA)	3
Overall quality of M&E	3	Overall quality of Implementation / Execution	4
3. Assessment of Outcomes	Rating	4. Sustainability	Rating
Relevance	5	Financial resources	3
Effectiveness	4	Socio-political	4
Efficiency	3	Institutional framework and governance	3
Overall Project Outcome Rating	4	Environmental	3
		Overall likelihood of sustainability	4

Assessment of Project Outcomes and Sustainability

The overall rating of the project results is moderately satisfactory (MS). This is based on the following outcomes:

- The project has been providing technical assistance and REB equipment to three brick kilns viz. Hisar (Haryana), Solan (Himachal Pradesh) and Amritsar (Punjab) and also provided limited facilitation support for the production of REBs at existing nine brick plants.
- Project has carried out resource audit of 6 brick manufacturing units (2 brick kilns producing perforated bricks, 2 brick kilns producing hollow blocks and 2 brick kilns producing conventional hand-made solid bricks) clearly highlighting the benefits of producing REBs.
- The Project has provided market linkage support to nine (9) REB units which has resulted increased production of REBs (by about 150 percent in perforated bricks and 200% in hollow bricks) in last five years, producing 106.3 million bricks annually. This is

¹³ 6=Highly Satisfactory (HS): The project has no shortcomings in the achievement of its objectives; 5=Satisfactory (S): The project has minor shortcomings in the achievement of its objectives; 4=Moderately Satisfactory (MS): The project has moderate shortcomings in the achievement of its objectives; 3=Moderately Unsatisfactory (MU): The project has significant shortcomings in the achievement of its objectives; 2=Unsatisfactory (U) The project has major shortcomings in the achievement of its objectives; 1=Highly Unsatisfactory (HU): The project has severe shortcomings in the achievement of its objectives.

estimated to have resulted in significant energy saving during production that translates to approximately 12,294 tCO₂ of reduction in GHG emission.

- The project efforts helped to include the REBs in the procurement schedule in one state viz. Punjab Public Works Department, Government of Punjab; though the inclusion of it formally in BIS is still has to happen.
- During the course of project implementation large number of (around 40) workshops, seminars, and meeting have been organized during which more than 1000 engineers, 1,600 brick entrepreneurs, 200 architects/builders, 150 government officials, and machinery suppliers and other stakeholders have been trained.
- Five model project reports templates have been prepared for availing of loans from financial institutions through the study commissioned under the Project entitled “Market assessment for Resource Efficient Bricks: Present Production and Future Markets”.
- The project has also helped almost 33 (instead of planned 25) conventional brick producing units to develop bankable investment plans to establish REB production.
- Two audio-visual “Bricking a Greener India” (one 8 minutes and one short 30 seconds duration), documenting project information, findings, learning, etc, have been produced to create awareness and promote the use of REBs in the country.
- The project has an operational website, which provides quite useful information on the project and provides access to the technical reports, papers, and test results.

The overall Project sustainability rating is moderately likely (ML). This is primarily due to the fact that Project has been successful, though to limited scale, in inclusion of REBs in procurement guideline in one State (Punjab) and the formal inclusion by BIS is quite in advanced stage. Also the resource audit reports of REBs indicate significant energy saving coupled with corresponding GHG emission reduction. Project also has developed various templates for seeking finance or loan for setting up REB production units several (33) units have successfully used it to develop bankable investment plans. This gives hope that in future too more units will switch over to REBs resulting in not only savings of resources (both fuel and soil) but associated GHG emissions reductions too. However, a key area of concern is the sustainability of the LRCs as their ability to continue providing services to the brick industry after the end of the project is a critical element to ensure project sustainability. However, among the 5 LRCs mentioned in ProDoc only LRC-North (PSCST) seems continuing to provide support to the brick industry till end of project and may likely to continue afterwards too.

Conclusions

- India Brick EE Project scheduled to be closed as of December 31, 2016:
 - The adoption of mechanization and production of REBs would result in substantial savings of resources like clay, water and coal.
 - Technology up-gradation would further help in enhancing the technical skills of workers and produce better quality products.
 - The financial projection of the project for production of REBs indicates that the project is financially viable and production of REBs is a techno-economically viable option.

Lessons Learned

- There needs to be clear monitoring guidelines for charge out rate band allowed as against that mentioned in the ProDoc. In this case TERI charged very high (2-4 time) the charge out rate as compared to that mentioned in the ProDoc and only after 21 months down the lone after project start this issue propped up and got highlighted in MTR, though TERI justified the chargeout rate and claims have informed UNDP in advance at the start of implementation there is need to put in place some guiding framework and monitoring mechanism to prevent occurrences of such incidences in future GEF projects as it eventually impacts project implementation and effectiveness; as in this case project practically got seized for more than 2 years crucial project implementation for resolution of the issue.
- There is need to have independent professional inputs, including international consultant, while developing project document and strong and realistic LFA. In this case the project development process had been a very long process (almost 7 years from 2001 onwards); though fortunately all major stakeholders viz. TERI, MoEF and UNDP remained committed to the project development during despite such long development period. Also though LogFrame and baseline and incremental analysis was included in the approved ProDoc, as also mentioned in MTR, it was very generic and not very closely tailored to the project's specific context and desired outcomes. Though an updated LFA was prepared by the PFU/PMU but was never implemented, as by the time the updated LFA was ready for consideration in December 2011, as mentioned earlier, the project had effectively ceased operations over the still unresolved issue of TERI staff charge out rates higher (2-4 time) than that specified in the ProDoc.
- There is need to clearly develop and mention base line scenario in ProDoc for example for number of bank loan for REBs in base year 2008 which has resulted in quantifiably verifying the project impact during the course of execution. In order to avoid such confusion in measuring the project achievements there is need to have very clear and quantifiable benchmark in a such a manner that will help track and monitor efficacy of the project.
- As mentioned in the mid-term evaluation report also there was confusion about the actual number of REB units implemented additionally during the first year of the project, as many were mentioned as already existing at project start though they did get lot of benefit in the form of facilitation support from the project. There is need to avoid such misunderstanding and confusion in projecting the project achievements.
- One of the key shortcomings observed during the project execution has been lack of focus on demonstration or replication projects. The so-called 9 “demonstration” projects were in most cases already producing REBS or were no longer interested in producing REBs, which was projects main focus. This might have occurred due to the long time delay in project development and the final approval from the GEF. There is a need to set clear guidelines for the selection of units as project demonstration/ replication units and to provide systematic support in the form of specific technical support to streamline/stabilize and increase the production, monitoring, documentation, and support for market development, so that there is a demonstrable improvement in the production volume/quality/productivity of these units and the project is able to meet at least some significant part of its CO2 reduction target.

Recommendations

With the GEF-funded India Brick EE project getting terminated on December 31, 2016, the following recommendations are provided on actions that may help to sustain rural development activities of India Brick EE Project in the targeted five clusters in India:

Recommendation 1: Fast track inclusion of REB in public sector procurement guidelines

Project has achieved success in including REBs in procurement schedule/guidelines of PWD in the state of Punjab with the help and active involvement of PSCST. However, the real success and significant real visible impact would happen only if this happens on much larger scale not only in all PWDs in Punjab but also in other states as well as in other public sector procurement schedules. There is need to enhance efforts in this direction in future and ensure REB gets included in procurement schedules of large number of PWDs and other public sector agencies across the country..

Recommendation 2: Expedite inclusion of REB in relevant BIS standards

In order to achieve the project goal of promoting energy efficiency to reduce GHG emissions through promotion of REBs (perforated bricks and hollow blocks) there is need to expedite follow-up with Chairman of CED-30 committee of Bureau of Indian Standard (BIS) to complete incomplete task of inclusion of REBs in relevant standards like BIS code related to REB viz. IS 2222 : 1991 (Specifications for burnt clay perforated building bricks), IS 3952 : 2013 – Specifications for burnt clay hollow bricks and blocks for walls and partitions. This will help a lot in large scale promotion of REBs considering the very high relevance of the project in view of Government of India's ambitious mission to provide home for all its population by 2022 resulting in huge demand for REBs which can significantly reduce energy demand for meeting bricks demand and help reduce high volume of GHG emissions associated with its production.

Recommendation 3: Need to brand the website and include content in local language

As knowledge sharing platform and learnings among the stakeholder, the project has an operational website, which provides useful information on the project and provides access to the technical reports, papers, and test results. However, the project website should be very well branded and should have robust framework and guidelines for improvising the quality control of content prior to its uploading with proper branding and acknowledgement. Also in order to reach out the last mile access and intended target population, which in this case for example was brick makers, good case studies and key important information available on the website should also be available into local (here Hindi or state languages) would be desirable to have intended impact and enhance utility to endusers.

Recommendation 4: Develop follow-up action plan to capitalize on the momentum created by the project to scale up REB producing units across the country

Project has achieved reasonably good success in creating awareness about need and importance of promoting REBs in the country. Project also moderately succeeded in demonstrating the REB producing technology and units as well as in quantifying its benefits. As mentioned earlier successful inclusion of the REBs in procurement schedule in Punjab and market potential studies of REBs done calls for not losing the momentum gained in promoting REBs and so there is need to evolve series of actions in order to capitalize on the success and momentum gained for scaling up REBs across the country in near future.