

## GEF EO Terminal Evaluation Review Form for OPS4

1. PROJECT DATA				
		Review date:		10/16/08
GEF Project ID:	22		<u>at endorsement</u> (Million US\$)	<u>at completion</u> (Million US\$)
IA/EA Project ID:	998	<b>GEF financing:</b>	0.73	0.73
Project Name:	Commercialization of Super-Insulated Buildings in Mongolia	IA/EA own:	0	0.07
Country:	Mongolia	Government:	0	0
		Other*:	1.08	1.19
		<b>Total Cofinancing</b>	1.08	1.26
Operational Program:	5	<b>Total Project Cost:</b>	1.81	1.99
IA	UNDP	<u>Dates</u>		
Partners involved:	Ministry of Construction and Urban Development (MCUD)	Effectiveness/ Prodoc Signature (i.e. date project began)		Feb 2002
		Closing Date	Proposed: 12/31/06	Actual: 04/13/07
Prepared by: Ines Angulo	Reviewed by: Neeraj Negi	Duration between effectiveness date and original closing (in months): 58 months	Duration between effectiveness date and actual closing (in months): 62 months	Difference between original and actual closing (in months): 4 months
Author of TE:	Frank Pool, Sustainable Energy Consultant, New Zealand, and Erdendalai Lodon, Sustainable Energy Consultant, Mongolia	TE completion date: Feb 2007	TE submission date to GEF EO: April 2008	Difference between TE completion and submission date (in months): 14 months

\* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

### 2. SUMMARY OF PROJECT RATINGS AND KEY FINDINGS

Please refer to document GEF Office of Evaluation Guidelines for terminal evaluation reviews for further definitions of the ratings.

Performance Dimension	Last PIR	IA Terminal Evaluation	IA Evaluation Office evaluations or reviews	GEF EO
2.1a Project outcomes	S	HS	-	S
2.1b Sustainability of Outcomes	N/A	-	-	ML
2.1c Monitoring and evaluation	-	-	-	S
2.1d Quality of implementation and Execution	NA	NA	NA	S
2.1e Quality of the evaluation report	N/A	N/A	S	S

#### 2.2 Should the terminal evaluation report for this project be considered a good practice? Why?

Yes. The TE provides a good assessment of the project design and the implications it had on project implementation. It also included an assessment of project achievements and sustainability.

#### 2.3 Are there any evaluation findings that require follow-up, such as corruption, reallocation of GEF funds, mismanagement, etc.?

No.

### 3. PROJECT OBJECTIVES

#### 3.1 Project Objectives

**a. What were the Global Environmental Objectives of the project? Were there any changes during implementation?**

The project's objective is to reduce CO<sub>2</sub> emissions from burning coal for heating. Also, less wood will be burnt for heating, further reducing CO<sub>2</sub> emissions and protecting shrubs and forests.

No changes during implementation.

**b. What were the Development Objectives of the project? Were there any changes during implementation?**

The DO was to help super-insulating, straw-bale building technology to be commercially successful on a large-scale in Mongolia.

This was initially to be achieved through technical support, training, awareness raising and full funding of demonstration super-insulated SB (straw bale) primarily social service and institutional buildings (schools, kindergartens, health clinics, local government offices, etc). By project inception, this had been updated to include the promotion of other means of building super-insulation, and with a majority of the funding for building construction coming from beneficiary households, and demonstrating super-insulation directly in private housing - and not in social or institutional buildings.

**(describe and insert tick in appropriate box below, if yes at what level was the change approved (GEFSEC, IA or EA)?)**

Overall Environmental Objectives	Project Development Objectives	Project Components	Any other (specify)
			A new output was added during implementation. It was designed by PIU.

**If yes, tick applicable reasons for the change**

Original objectives not sufficiently articulated	Exogenous conditions changed, causing a change in objectives	Project was restructured because original objectives were over ambitious	Project was restructured because of lack of progress	Any other (specify)
				Insulation for existing gers (traditional houses) was not specified in original doc.

### 4. GEF EVALUATION OFFICE ASSESSMENT OF OUTCOMES AND SUSTAINABILITY

**4.1.1 Outcomes (Relevance can receive either a satisfactory rating or a unsatisfactory rating. For effectiveness and cost efficiency a six point scale 6= HS to 1 = HU will be used)**

**a. Relevance (of outcomes to focal areas/operational program strategies and country priorities) Rating: S**

**A.1. What is the relevance of the project outcomes/results to:**

**(i) the national sustainable development agenda and development needs and challenges?**

Project outcomes are very relevant to Mongolia's national sustainable development agenda and development needs since the SBB technology is an affordable way to insulate buildings and lower costs of heating (which according to the project document can represent as much as 70% of poor households expenses).

**(ii) the national environmental framework, agenda and priorities?**

Mongolia has a very high emission of CO<sub>2</sub> per capita (higher many developed countries); and burning of coal to heat buildings result in serious pollution and related health problems. Introduction of efficient heating insulating technologies also decrease the pressure on trees (less demand for wood) in arid and semi-arid areas and assists Mongolia in its battle against desertification and land degradation.

**(iii) the achievement of the GEF strategies and mandate?**

The project successfully contributed to eliminating barriers and promoting a wide-scale adoption of the energy efficient SBB technology. These results are in line with GEF OP5.

**(iv) the implementation of the global conventions the GEF supports (countries obligations and responsibilities towards the convention as well as the achievement of the conventions objectives)**

Consistent with UNFCCC guidelines.

<b>A2. Did the project promote International (Regional and / or Global) Cooperation and Partnership<sup>1</sup></b>	
N.A	
<b>b. Effectiveness</b>	<b>Rating: S</b>
<p>The actual tangible EEH project results are 72 new SBB constructed, 95 new conventional insulated houses constructed, 53 existing houses retrofitted with insulation, three SBB ECC's built (Plus one ECC at MUST) and 440 ger insulated to nearly triple their original levels (although fuel savings of only half are expected as homeowners will take some of the energy efficiency gains as warmer temperatures). The TE concludes that the EEH project will achieve direct pilot project GHG savings far greater than those projected in the EEH project's ProDoc.</p> <p>In terms of the number of training courses and trained builders delivered by the project, the number of courses offered and the number of attendees exceeded the project's targets. The evaluation of the training courses undertaken shows that the training provided by the project was of a high quality and relevant to the wider dissemination of super-insulated buildings in Mongolia. The project also achieved its target of proving the effectiveness of insulation in SBB and refurbished houses in real-world Mongolian conditions.</p> <p>On the other hand, the expected replication outcome of the project was a completely unrealistic estimate, as no mechanism(s) were identified in the project design as to how this huge number of super-insulated (SB) buildings' replications (15,000) was to be achieved.</p>	
<b>c. Efficiency (cost-effectiveness)</b>	<b>Rating: S</b>
<p>The project reduced CO2 equivalent emissions at about \$ 7 per tonne for GEF investments and \$ 17 per tonne for total investment. The project outputs surpassed expectations. It was also able to produce a key project output that was not specified in the Project Doc: the development, deployment and establishment of the effectiveness of ger insulation blankets was an additional and highly significant project output designed and implemented on the initiative of the EEH PIU.</p>	
<b>d. To what extent did the project result in trade offs between environment and development priorities / issues (not to be rated)</b>	
No trade-offs identified for the project.	

<p><b>4.1.2 Results / Impacts<sup>2</sup> (Describe Impacts) (please fill in annex 1 – results scoresheet and annex 2 – focal area impacts (against GEF Strategic Priority indicators, where appropriate and possible)</b></p> <p>Direct project GHG savings of 5380 tons/yr of CO<sub>2</sub> have been achieved [CO<sub>2</sub> emissions generated by the insulated 390 gers was reduced by 1462.5 tons in a year according to the survey made by the team from the Mongolian University of Sciences and Technology].</p>
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**4.2 Likelihood of sustainability.** Using the following sustainability criteria, include an assessment of **risks** to sustainability of project outcomes and impacts based on the information presented in the TE. Use a four point scale (4= Likely (no or negligible risk); 3= Moderately Likely (low risk); 2= Moderately Unlikely (substantial risks) to 1= Unlikely (High risk)). The ratings should be given taking into account both the probability of a risk materializing and the anticipated magnitude of its effect on the continuance of project benefits.

<b>a. Financial resources</b>	<b>Rating: ML</b>
<p>According to the TE, EEH has provided a solid basis for UNDP and other donors to commercialize super-insulated building construction in Mongolia. Specifically, the EEH project has laid the groundwork for the proposed BEEP MSP activities in ger areas in Mongolia. EEH has also provided an excellent basis for the wider uptake of ger insulation blankets through a mix of ger owner, CDM and donor activities. The EEH project's ECC financial sustainability outcome sought (in the ProDoc) is useful as a general long term operating principle to maximize financial revenue possibilities within their activities, but was completely unrealistic in a 24 or 30 month project design context. In practice, the three "shop front" SBB ECC's and one ECC at the Mongolian University of Science and Technology (MUST) built by EEH will require ongoing "public good" funding by the Mongolian government and/or international donors if they are realistically going to continue to be able to provide "public good" building insulation and energy conservation information and support.</p>	
<b>b. Socio-economic / political</b>	<b>Rating: ML</b>
<p>According to the TE, the positioning of SBB as a mainstream and reliable super-insulated technology has been established. However, in Mongolia, as in the rest of the world, SBB (along with other natural building technologies) is likely to be of considerable interest to home builders and those retrofitting houses who are particularly interested in the environment and nature, rather than low and middle income people at large.</p>	
<b>c. Institutional framework and governance</b>	<b>Rating: L</b>
It seems that, in the absence of further donor-led activities, there is likely to be a steady construction of SBB at a level	

<sup>1</sup> Please consider for regional and global project only

<sup>2</sup> Please consider direct and indirect global environmental results; any unexpected results; local development benefits (including results relevant to communities, gender issues, indigenous peoples, NGOs and CBOs)

comparable with SBB construction levels in other countries without strong government SBB support and incentive projects underway. With continued SBB support, as envisaged in the successor BEEP project, then a stronger uptake of SBB in Mongolia can be expected.	
<b>d. Environmental</b>	<b>Rating: L</b>
No environmental risks identified.	
<b>e. Technological</b>	<b>Rating: ML</b>
A key innovation developed by the PIU and undertaken within the project was ger insulation blankets, and this would seem to be highly promising to be replicated using some mixture of CDM, donor support, ger owner funding, and partial credit guarantee financing (as detailed in the successor BEEP project design). On the other hand, the lack of a commercial supply of straw available in urban centers from the previous year's harvest is a key remaining barrier to SBB technology.	

#### 4.3 Catalytic role<sup>3</sup>

<b>a. INCENTIVES: To what extent have the project activities provide incentives (socio-economic / market based) to catalyze changes in stakeholders</b>
Fuel consumption of insulated Ger dropped 63% compared to non-insulated Gers resulting in substantial savings in expenditure for fuel.
<b>b. INSTITUTIONAL CHANGE: To what extent have the project activities changed institutional behaviors</b>
No specific mention of institutional changes.
<b>c. POLICY CHANGE: To what extent have project activities led to policy changes (and implementation of policy)?</b>
The project did not result in any specific policy change. Under the EEH project, new and simplified SBB construction standards were developed and implemented for SBB in Mongolia to remove what is a common building regulatory barrier facing SBB worldwide. However the TE clarifies that, in practice, most ger area housing in Mongolia is not inspected or certified by any state agency nor are there any practical penalties for not comply with building regulations, so it is not clear that the regulatory barrier of lack of applicable SBB standards was in fact a major barrier to SBB commercialization in Mongolia.
<b>d. CATALYTIC FINANCING: To what extent did the project led to sustained follow-on financing from Government and / or other donors? (this is different than co-financing)</b>
The project established an Agreement with Xasbank for issuing construction and mortgage loan to SBH builders. Around 10 families applied for a loan to Xasbank and their applications are being sort out.
<b>e. PROJECT CHAMPIONS: To what extent have changes (listed above) been catalyzed by particular individuals or institutions (without which the project would not have achieved results)?</b>
No mention of champions in the TE.

#### 4.4 Assessment of processes and factors affecting attainment of project outcomes and sustainability.

<b>a. Co-financing.</b> To what extent was the reported cofinancing (or proposed cofinancing) essential to achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If it did, then in what ways and through what causal linkages?
Co-financing for this project represented 57% of the total budget, and was crucial to implement output 1.2 (refurbishing houses/gers with energy efficient materials), which was described by the TE as one of the most successful project components. Also, a home owner contribution of \$521,000 was achieved, comfortably exceeding the parallel financing input of \$210,000 from home builders specified in the ProDoc.
<b>b. Delays.</b> If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If it did, then in what ways and through what causal linkages?
No delays are mentioned in the TE.
<b>c. Country Ownership.</b> Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability highlighting the causal links.
According to the TE, the lack of focus on promoting the most widely used insulation material in Mongolia (EPS) seems to come from GEF and not from the Mongolian side. EPS is widely used in the Mongolian formal construction sector as well as in private housing. So the lack of focus on EPS seems to be an example where GEF has not followed Mongolian country ownership/driveness, thereby reducing the project's national effectiveness, impact and replication potential. In addition, the fact that it was necessary to develop ger insulation blankets during the project implementation, and that

<sup>3</sup> Please review the 'Catalytic Role of GEF: How is it measured and evaluated – A conceptual framework' prior to addressing this section.

this was not included in the design, seems to suggest that the project design was strongly driven by an external desire to develop SBB, and perhaps not from a Mongolian stakeholder driven focus on improving ger area housing insulation by the most relevant and promising means possible.

#### 4.5 Assessment of the project's monitoring and evaluation system based on the information in the TE

<b>a. M&amp;E design at Entry</b>	<b>Rating (six point scale): MS</b>
ProDoc did not include enough information on the M&E system of the projects apart from indicating that the project was to be monitored and evaluated following the UNDP rules and procedures. This included Annual Progress Reports, and annual Tri-partite review meetings, among others. The indicators included in the ProDoc are very general and do not include targets, but the document specifies that performance indicators would be prepared by the project team once the project started, this would include an assessment of the performance indicators every 6 months (indicators to be prepared for each quarter).	
<b>b. M&amp;E plan Implementation</b>	<b>Rating (six point scale): S</b>
The TE states that the project seems to have been appropriately monitored by UNDP and local stakeholders, and their views and suggestions seem to have been suitably and promptly responded to. The fact that a new component was added by the PIU indicates that the M&E system was in place.	
<b>b.1 Was sufficient funding provided for M&amp;E in the budget included in the project document?</b>	
In the ProDoc, M&E activities were included under "Miscellaneous" component, budgeted with \$265,000 (this included printing, communication and reporting expenses). In addition, \$40,000 were budgeted for independent measurement, monitor and evaluation of the fuel savings and temperature gains of the SBB houses compared to the brick houses and/or gers.	
<b>b.2a Was sufficient and timely funding provided for M&amp;E during project implementation?</b>	
There is no mention of lack of funding for M&E activities.	
<b>b.2b To what extent did the project monitoring system provided real time feed back? Was the information that was provided used effectively? What factors affected the use of information provided by the project monitoring system?</b>	
The TE does not provide specific information on M&E system implementation and use. But it states that the project made numerous adjustments during its implementation, and with the exception of the decision (from GEF) to no longer continue using EPS as an insulation material (as above), the adjustments all seem to have added to the project's direct and longer-term impacts.	
<b>b.3 Can the project M&amp;E system (or an aspect of the project M&amp;E system) be considered a good practice? If so, explain why.</b>	
The TE does not provide enough information on the implementation of the M&E system in order to answer this question.	

#### 4.6 Assessment of Quality of Implementation and Execution

<b>a. Overall Quality of Implementation and Execution (on a six point scale): S</b>
<b>b. Overall Quality of Implementation – for IA (on a six point scale):MS</b>
Briefly describe and assess performance on issues such as quality of the project design, focus on results, adequacy of supervision inputs and processes, quality of risk management, candor and realism in supervision reporting, and suitability of the chosen executing agencies for project execution.
According to the TE, the implications of major changes in emphasis between the MSP Brief and ProDoc stages appears to not have been apparent to UNDP-Mongolia nor to the EEH PIU, nor was there any recognition that these changes would impact on the means that would be needed to achieve the specific project output targets. The TE also concludes that the almost exclusive focus on SBB compared to other conventional and accepted means of housing super-insulation limited the GHG and local environmental gains possible from the EEH project and its immediate replication legacy. The TE does not mention any shortcomings with regards to project implementation.
<b>c. Quality of Execution – for Executing Agencies<sup>4</sup> (rating on a 6 point scale) HS</b>
Briefly describe and assess performance on issues such as focus on results, adequacy of management inputs and processes, quality of risk management, and candor and realism in reporting by the executive agency.
The EA was the MCUD (Ministry of Construction and Urban Development). The TE concludes that the project seems to have been executed in a logical and adaptive fashion. The TE identified that the new component designed by the PIU

<sup>4</sup> Executing Agencies for this section would mean those agencies that are executing the project in the field. For any given project this will exclude Executing Agencies that are implementing the project under expanded opportunities – for projects approved under the expanded opportunities procedure the respective executing agency will be treated as an implementing agency.

(insulation blankets for gers) during project implementation was one of the most successful components.

## 5. LESSONS AND RECOMMENDATIONS

Assess the project lessons and recommendations as described in the TE

### **a. Briefly describe the key lessons, good practice or approaches mentioned in the terminal evaluation report that could have application for other GEF projects**

(i) Demonstration of the effectiveness of a product or technique with full or partial donor funding is not the same as fully user-funded commercialization, as assumed in the EEH project design. The "valley of death" between demonstration and full commercialization is frequently glossed-over by over-enthusiastic proponents of a particular technology or approach.

(ii) Self-funding of ECCs is a laudable aspirational goal, but this goal risks being taken too literally in practice. If "public good" energy efficiency activities are expected to continue post-project, then ongoing international or local public-good funding will need to be provided. It is simply not realistic to expect NGOs operating ECCs to cross-subsidize public information and support activities from their other commercial operations.

(iii) Demonstrations are far more effective when they are in the same sectors and use the same modalities as are expected for the following replications. In other words, the EEH original project design assumption of using demonstrations of fully funded institutional and social SBB was not a very realistic basis for leading to post-project fully private funded private SBB house replications.

(iv) Replications do not just occur because a good idea has been shown to work, rather there needs to be a plausible hypothesis of how the replications are supposed to occur. This link from demonstration to widespread commercial replication was rather unclear in the EEH project design.

(v) Projects need realistic targets of new technology replications, and these targets need to be set in the context of whether mass commercialization has already been achieved elsewhere in the world. It is unrealistic to expect that a niche technology that has been developed over decades in developed countries (such as SBB) will suddenly achieve mass-market and unsupported deployment in a developing country as a result of a single project.

(vi) The EEH project has shown the need to ensure that ProDoc's include all the project design information and rationale that are found in the underpinning project brief, especially if many project situation changes occur between the project brief finalization and the ProDoc signing, or it is in a fast moving sector in technical terms. Otherwise the project will encounter implementation confusion from knowing what to do but not why it is being done, as was the case with the EEH project to some degree.

### **b. Briefly describe the recommendations given in the terminal evaluation**

(i) It is recommended that donors (specifically GEF and UNDP) continue to support the dissemination and mass-commercialization of SBB construction techniques in Mongolia as a long-term environmentally promising and natural material focused private housing and smaller building (up to three storey) construction option. Alongside SBB as a long-term environmental and green construction option, more mainstream and widely available commercial super-insulated building bulk insulation materials such as mineral wool, fiberglass and EPS offer highly relevant and applicable short and medium-term super-insulation options in Mongolia. Properly engineered and specified timber frame housing would also seem to be highly relevant for Mongolia - to reduce costs and pressure on slow-growing construction timber supplies. These conventional super-insulation materials and techniques should be developed, demonstrated, commercialized and promoted alongside SBB in Mongolia.

(ii) Insulation and super-insulation materials and techniques have been demonstrated by the EEH project to be effective and widely applicable in retrofits of existing houses and ger. With the informal nature of private house construction, and the large stock of minimally insulated housing in Mongolia, it is not realistic to focus efforts only on new housing, especially as housing is frequently upgraded as funds permit, in a market with only embryonic housing mortgage availability at this stage. So future insulation and super-insulation efforts should also concentrate on insulation retrofits of existing houses and ger alongside new construction super-insulation.

(iii) The development and deployment, demonstration and proving of the effectiveness of ger insulation blankets is one of the key success stories of the EEH project. The next challenge is to move beyond providing such ger insulation blankets free of charge to a more sustainable public-private partnership ger insulation blanket funding approach. Micro-finance, partial credit guarantees, donor and Mongolian government support, and the use of CDM are all promising approaches that should be explored, combined and developed to continue the next steps to support the necessary mass deployment of ger insulation blankets in Mongolia.

(iv) A critical lesson that has been learned from the EEH project that is recommended for continued promotion is the necessity to continue and to strengthen co-operation between (in priority order): - (1) new housing and retrofit housing insulation and super-insulation initiatives; (2) develop improved and high efficiency/smokeless urban stove technologies for new and retrofit stove applications, and develop and implement their effective market deployment approaches; and (3) develop technically sound enhanced and smokeless coal-based fuels for use in ger area housing stoves.

**6. QUALITY OF THE TERMINAL EVALUATION REPORT**

**6.1 Comments on the summary of project ratings and terminal evaluation findings based on other information sources such as GEF EO field visits, other evaluations, etc.**

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Provide a number rating 1-6 to each criteria based on: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, and Highly Unsatisfactory = 1. Please refer to document GEF Office of Evaluation Guidelines for terminal evaluations review for further definitions of the ratings. Please briefly explain each rating.

<b>6.2 Quality of the terminal evaluation report</b>	<b>Ratings</b>
<b>a. To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?</b> The TE provides an assessment of relevant outcomes and impacts.	S (5)
<b>b. To what extent the report is internally consistent, the evidence is complete/convincing and the IA ratings have been substantiated? Are there any major evidence gaps?</b> The TE is consistent and presents complete evidence on achievement of project outcomes/outputs, and includes a thorough assessment of the project design. However, it does not include ratings.	S (5)
<b>c. To what extent does the report properly assess project sustainability and /or a project exit strategy?</b> The TE includes an assessment of project sustainability and risks.	HS (6)
<b>d. To what extent are the lessons learned supported by the evidence presented and are they comprehensive?</b> Lessons included in the TE are supported by the evidence presented.	S (5)
<b>e. Does the report include the actual project costs (total and per activity) and actual co-financing used?</b> The TE includes an assessment of project costs and co-finance.	S (5)
<b>f. Assess the quality of the reports evaluation of project M&amp;E systems?</b> The TE only mentions that “the project seems to have been appropriately monitored by UNDP and local stakeholders, and their views and suggestions seem to have been suitably and promptly responded to”.	U (2)

**7. SOURCES OF INFORMATION FOR THE PRERATATION OF THE TERMINAL EVALUATION REVIEW REPORT EXCLUDING PIRs, TERMINAL EVALUATIONS, PAD.**

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**8 Project stakeholders and Key Contacts (Names, addresses, emails etc – mandatory for field visit countries)**

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**9. Information Gaps (for Field visit countries only)**

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