giz

General Terms of Reference
Project: Grid integration of renewable energy and demand side energy efficiency
Project no.: 14.2298.9-004.00
Tender: Energy Efficient Building Materials Directory for India, IGEN-EERB
Contract No. 83305352

List of abbreviations

BAI	Building Association of India
BEE	Bureau of Energy Efficiency
CREDAI	Confederation of Real Estate Developers' Associations of India
DISCOMs	Distribution companies
ECBC	Energy Conservation Building Code
ECBC-R	Energy Conservation Building Code- Residential Building
EC Act	Energy Conservation Act
EE	Energy Efficiency
EEB	Energy Efficiency in Building
ESCOs	Energy Services Companies
FSI	Financial Services industry
GHG	Green House Gas
IGEN	Indo German Energy Program
LCC	Life Cycle Cost
MEPS	Minimum Energy Performance Standards
MNRE	Ministry of New and Renewable Energy
MoP	Ministry of Power
MoUD	Ministry of Urban Development
M&V	Measurement and Verification
NAPCC	National Action Plan for Climate Change
NMEEE	National Mission on Enhanced Energy Efficiency
NDC	Nationally Determined Contributions
NREDCO	National Real Estate Development Council
NZEB	Net Zero Energy Building
ULBs	Urban Local Bodies
TCs	Technical Co-operation
ToR	Terms of Reference

1 Project description

1.1 Brief description of the project

Energy efficiency is one of the world's largest energy resources, and we are only just beginning to tap its potential. India has a tremendous opportunity to turn its building boom into an energy boom, simply by building in energy-efficient features and capturing the value of energy savings in its buildings.

The current policy environment is beginning to promote energy efficiency and the execution of national and state level programs will be the key determinants of its success. India's National Action Plan on Climate Change (2008) points to building efficiency measures as essential to carbon emission reduction.

Rapid urbanization is creating vast opportunities through an unprecedented demand for the construction of buildings, which already account for more than 30 percent of India's total electricity consumption. In line with expanding development, the country's buildings sector is expected to increase five-fold from 2015 to 2050. India is at a unique crossroads where two-thirds of the commercial and high-rise residential structures that will exist in 2030 are yet to be built. Implementing energy efficiency in buildings that are being constructed in the next ten years thus presents a singular opportunity to lock in energy and cost savings for the next several decades.

In 2012, residential buildings accounted for 20.4% of India's total electricity consumption and the electricity consumption in residential buildings is about 2.3 times more than that of commercial buildings. Projections shows that electricity consumption in residential buildings is expected to increase 7 fold during the period 2012-2032. The residential sector will become the largest consumer of electricity in the country with 36.5% share of the total electricity consumed in 2032.

The Ministry of Power and Bureau of Energy Efficiency (BEE) are entrusted with the task of implementation for the National Mission on Enhanced Energy Efficiency (NMEEE) under National Action Plan on Climate Change (NAPCC). This mission has a component which deals with the Commercial and Residential Building Energy

The Energy Conservation (EC) Act of 2001 provides the framework for energy efficiency imperatives in India followed by the National Mission for Enhanced Energy Efficiency (NMEEE) in 2008. India's Nationally Determined Contributions (NDC) aim to reduce the emissions intensity of our GDP by 33–35 per cent by 2030 from the 2005 level; mandates promotion of energy efficiency in the economy, notably in industry, transportation, buildings and appliances; as well as development of climate-resilient infrastructure. Over the past few years, BEE has introduced initiatives to promote design of energy-efficient commercial buildings based on ECBC so far related to commercial buildings; energy conservation in buildings and municipalities through performance contracting by ESCOs; adoption of energy-efficient consumer appliances through energy labeling; market transformation towards energy-efficient appliances through demand side management programs; energy efficient motors; and enhanced focus on energy-efficiency investments in industry due to energy data reporting and benchmarking practices.

The project is aligned with the commitments made by the Indian Government to meet its objectives submitted under NDCs.

The Federal Republic of Germany and the Government of the Republic of India have, under the Indo-German Technical Cooperation, agreed to jointly promote the "Indo-German Energy

Programme" (IGEN) with the aim to promote energy efficiency/conservation in energy consumption so to use energy more efficiently and in turn improve the environment/climate protection.

GIZ is an international cooperation enterprise for sustainable development which operates worldwide, on a public benefit basis. GIZ is fully owned by the German Federal Government, GIZ implement development programs in partner country on behalf of the German Government in achieving its development policy objectives.

Under IGEN–EE, considerable amount of work has been done in different programs such as Standard and Labeling, Energy Manager Training and Examination, Energy efficiency in Industries under PAT Program. BEE and GIZ mutually agreed that there is a need for development of Energy Efficiency Building program in India through the International experience gained by GIZ.

GIZ seeks to contract a consultant for conducting a comprehensive study on the status of Energy Efficient Building Materials in India to assist BEE. Buildings account for more than 30 percent of India's total electricity consumption in India and it also contributes significantly to peak load. In line with expanding development, the country's buildings sector is expected to increase five-fold from 2015 to 2050. Transformation to effective use of efficient building materials can offer major energy and cost savings. Therefore it is imperative to carry out a study to promote market transformation towards efficient materials.

1.2 Description of the measure of Technical Cooperation (TC)

1.2.1 Objectives

Buildings consume energy at different levels in every stage of its life-cycle. Building materials occupy a great share of this consumption. Therefore, the amount of energy consumed by materials used in building during their life-cycle is an important parameter in determining the energy efficiency of the building. Energy efficient building materials can support the constructions both ecologically and economically because of their environmental positive features. Moreover, material consuming less energy at the same time causes less harmful emissions and decrease the environmental pollutions resulted from the construction materials. Furthermore, with their various thermal properties (like heat storage, heat retention) they make contribution to the creation of comfort in indoor environment.

1.2.2 Target group and other stakeholders

The target group of the consulting work consists of the relevant staff members of MoP, MoUD, BEE, State Designated Agencies, CPWD & State PWDs, State Urban Development Ministry, ULBs, City Planners, Bulding material manufacturers/processors/suppliers/retailers Municiplaities, Green Building certification bodies in India.

1.2.3 Lead executing agency and implementing organization

Lead executing agency and implementation organization will be BEE on behalf of the Ministry of Power, Government of India. The Government of India set up Bureau of Energy Efficiency

(BEE) on 1st March 2002 under the provisions of the Energy Conservation Act, 2001. The mission of the Bureau of Energy Efficiency is to assist in developing policies and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act, 2001 with the primary objective of reducing energy intensity of the Indian economy. This will be achieved with active participation of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

2 Terms of Reference

2.1 Contractor's profile

The agency shall be consisting of team of experts in the field of efficient building design, energy efficiency policy development, building labeling, energy efficiency financing, energy simulation, and green building certification. The contractor, must have worked in energy efficiency policy advisory and planning, and developing standards and labelling for buildings, products and appliances. The experience of the agency shall also be counted through International and national level policy and building label formulation.
The agency should have worked on development of the Energy Efficiency projects in building and should have supported in several International and national programs on Energy Efficiency in building, training and awareness, impact assessment, and implementation. The experience of data collection & analysis, benchmarking, energy savings analysis, GHG impact assessment, and developing large scale implementation programs shall be an added advantage.

2.2 General Terms of Reference for the Contractor

The Terms of Reference (ToR) covers the scope and deliverables by the Contractor to include the energy efficient building materials for buildings in India. The Contractor will be required to carry out market survey so as to assess material which is presently available in the market.. The tender involves coordination with BEE, GIZ, building material manufacturers and contractors within stipulated timelines.
The main activities outlined in this tender document provide a guideline for the activities envisaged by the Contractor is expected to adjust flexibly to changing demands for support. This tender solicits to develop the list following the strict timelines; the mobilization of activities will be based on demand and needs of the project tasks, and coordinated by the GIZ project coordinator in India in close coordination with the Indian partners and experts of the contractors.
The Contractor is required to execute the work by involving pool of international and local experts who will be undertaking the desired survey and research activities. The pool has to consist of a mix of senior and mid level experts. A consortium or joint venture can be formed to submit one single bid. A consortium/joint venture needs to appoint one consortium/joint venture leader who will take over all communication and represents the contracted parties in front of GIZ and third parties. No cross-communication to GIZ (via other consortium/joint venture members) will be accepted by GIZ.

The staff members seconded by the Contractor must co-operate closely with the GIZ project co-ordinator. The Contractor will have to submit quarterly (and on request) project status report to GIZ in the prescribed format (in the format provided in annexure A). It is important here to indicate whether the project is within the objectives defined in sections A.2.1.
The activities include seminars, workshops and round table talks with stakeholders at state-level and national level.
The Contractor shall provide documented proofs of internationally acquired experience. The objective of the contract is to make available state of the art information about energy efficient building materials presently available in the Indian market. The final report must highlight impact of present as well as future material over policy roadmap in Indian residential building sectors for developing the energy efficiency for residential building.. The Contractor mandatorily needs to demonstrate adequate technical knowledge and experience in the Building Energy Efficiency domain. The Contractor is also expected to be familiar or to familiarize him/herself with:

- The objectives of the national energy policy, National Building Code, ECBC 2017, ECBC-R development stages, and the energy policy on state levels of India as well as other relevant documents and regulations .
- The interests of all stakeholders.

2.3 Short description of the work packages

The project aims to develop the use of energy efficient building materials in building through developing a building materials directory and by policy roadmap to enhance energy efficiency in the residential sector through market forces. The proposed scheme should be easy to understand and communicate the unique energy efficiency potential of a building to the end-users and affect the commercial decisions of end-users, government programmes etc. The contract duration shall be 15 months. In the event that the duration of the programme may be extended by German authorities, GIZ may extend the duration of this contract too, with no additional remuneration implication to the Contractor.
The entire activity is divided into following work packages:

a. WP1: National Mapping
b. WP2: Market Assessment
c. WP3: Techno-economic Analysis
d. WP4: Guidelines for Energy Efficient Material Procurement
e. WP5: Web-based tool for ECO-NIWAS portal
f. WP6: Process for establishing Standards & Labels

2.4 Detailed Specifications (Work Packages)

The Consultant will be responsible for successfully executing the following activities and tasks as part of the study. Execution of all activities and tasks must be conducted in close consultation with BEE and GIZ.

2.4.1 National Mapping:

a. National mapping of all major (at least 5,000) Building Materials and products (including but not limited to wall components, roofing, flooring, finishing, insulation, window components, door components, innovative technologies, etc.) currently available in Indian market;

b. Capture sufficient product performance data[1] (both manufacturer claimed and accredited independent laboratory test certificate) to demonstrate the efficiency of materials and products currently available on the market;

c. Identify associated test methodologies used to define these efficiencies and other associated performance metrics;

d. Identify production vs import of materials / products as well as components including the supply chain by these manufacturers;

e. Detail available standards and testing infrastructure in the Country;

f. Identify phase out and transformation from conventional to energy efficient materials / products in India and globally.

g. Based on the data captured during the mapping activities, conduct:

- International comparison of efficiency metrics including minimum energy performance standard (MEPS) levels / labeling requirements with inclusion / exclusion of other relevant performance parameters that influence energy efficiency and selection;
- Comparison of material / product performance data with the local and potentially other international labeling / MEPs performance requirements.

Deliverables:

1. Four regional stakeholder workshops to discuss the findings of mapping study.
2. A comprehensive report that covers the following:
   - Information sources: Secondary Research, Primary Research and Analyst Tools & Models
   - Key players– including manufacturers, component suppliers, and relevant stakeholders in the supply chain. Also identify their market share for each of these sub categories.
   - Highest level of efficiency of materials / products sold by each leading manufacturer/supplier in both in India and globally and their respective cost.
   - Domestic manufacturing vs import for each of these categories for every major manufacturer. Among products manufactured in India, which components are currently manufactured in-house and which ones are procured locally and/or imported?

[1] The material / product performance data shall include all parameters related to energy performance, thermo-physical parameters, embodied energy, environmental impact and other selection relevant criteria.

- Preparedness to manufacture high efficiency materials / products with regard to availability of technology and technical competency of the manufacturers in India.
- Policy relevant information summary: bottlenecks or barriers to implementing high-efficiency materials / products in India, availability of standards and technology, testing infrastructure, product pricing, product performance data etc.

2.4.2 Market Assessment:

a. Assess the size of the national market for all major Building Materials and products (types, sizes/capacities, etc.) including units manufactured and sold, installed stock, market share of main manufacturers, and main distribution channels;

b. Assess impact of the building energy codes and green building certifications on materials / products currently available on the market;

c. Market Dynamics (Drivers, Constraints and Opportunities)

d. Market Segmentation and Analysis (Market Size, Growth, and Forecast);

e. Develop a forecast for market growth of energy efficient materials in India. The forecast should be accompanied by an analysis of key drivers of market penetration and growth including, but not limited to, material / product features and options, service options that affect consumer choice, and secondary market for used materials / products;

f. Develop and execute a comprehensive data collection process, including the development and dissemination of a detailed questionnaire, outreach to manufacturers and other key stakeholders, and final data collection, management, and analysis;

g. Assessment of the current state of play of Monitoring, Verification, and Enforcement processes for building materials / products and its effectiveness

h. Identify the barriers that exist to increased market penetration of efficient building materials / products. This should include barriers related to manufacturing, technology, consumer issues (service, price, quality, etc.), and policy implementation.

i. Conduct a literature review to provide examples of global best practices for increased market transformation and recommendations for ways to overcome the barriers identified.

Deliverables:

1. Preliminary market assessment report to feed in to the detailed analysis with information sources: Secondary Research, Primary Research and Analyst Tools & Models;

2. Summary of barriers pertaining to manufacturing, technology, policy and consumer issues, and recommendations for market transformation for efficient materials / products.

3. Comprehensive market assessment report that encompasses all sub-tasks identified above; and definitively presents all final analyses, recommendations, and conclusions.

4. Two stakeholder workshops to present outcomes of the market assessment.

2.4.3 Techno-economic Analysis:

a. Assess typical energy consumption of buildings w.r.t material / product efficiencies for five climatic zone and various geographic zones of the country;

b. Define and profile existing and potential material / product technologies, the potential for efficiency improvements found in the Indian domestic market, and compare these profiles with international best practices in technology and manufacturing;

c. Assess typical costs (including labour, installation, maintainence charges) of materials / products with respect to efficiency improvement options. Include domestic as well as international materials / products;

d. Develop strategies for energy saving opportunities, including but not limited to energy labeling and minimum performance standard options. For each option, assess the costs and benefits to end-users, national energy impacts, and impacts on manufacturers;

e. Assess international test procedures and energy performance standards in major economies, and recommend and develop test procedures and energy performance standards for building materials / products;

f. Assess the availability of testing infrastructure in India.

Deliverables:

1. Preliminary techno-economic report that encompasses all sub-tasks identified above with information sources: Secondary Research, Primary Research and Analyst Tools & Models;
2. Comparative summary of global test procedures and energy performance standards;
3. A comprehensive final report, based on the techno-economic analysis that clearly and definitively presents all final analyses, recommendations, and conclusions.
4. Two stakeholder workshops to present outcomes of the techno-economic analysis.

2.4.4 Guidelines for Energy Efficient Material Procurement

a. Develop specifications of building materials for incorporation in Schedule of Rates (SOR) developed by CPWD and State PWD

b. Develop procurement rules for integration in tender document of energy efficient new buildings and retrofits; mentioning following specifications:

- minimum energy performance targets or savings;
- Restrict the use of toxic or hazardous substances in building materials;
- Specify the use of sustainably sourced natural materials;
- Include performance based incentives for retrofit projects;

- Include commissioning, measurement and verification for training users;
- Include selection criteria for consultants, architects or engineers based on experience in green building or retrofits.

Deliverables:

1. Report containing specifications of building materials for incorporation in PWD Schedule of Rates (SOR).
2. Comprehensive template enlisting procurement rules for integration in tender document of energy efficient new buildings and retrofits.

2.4.5 Web-based tool for ECO-NIWAS portal

a. Develop a database of at least 5,000 materials / products (including but not limited to wall components, roofing, flooring, finishing, insulation, window components, door components, innovative technologies, etc.) having cost details (with associated labour, installation and maintanence charges), energy performance parameters, thermo-physical parameters, embodied energy, environmental impact parameters, other selection related parameters, representative illustrations / photographs and manufacturer / supplier information for web-based tool;

b. Tool should have a dedicated interface for new and existing manufacturers/suppliers (having dedicated user ID / login) to upload/edit specific material / product related information / online certification for inclusion in the online database along with necessary approval process;

c. Develop an intutuive web-based tool to visualize and compare building materials / products based on energy performance and other selection criteria. The objective of the tool is to assist the user in taking informed decision w.r.t material selection;

d. Support in the possible linkage of developed database with the existing building performance tool on ECO-NIWAS portal.

Deliverables:

1. Preliminary database of at least 5,000 building materials / products
2. Access for beta testing of the developed tool
3. Hosting the developed tool on ECO-NIWAS web-portal
4. Organize launch event for the comprehensive report on mapping, market assessment, techno-economic analysis and developed tool

2.4.6 Process for establishing Standards & Labels:

a. Rationale for selection of new materials / products,

b. Approach to material / product analysis,

c. Existing institutional and operational processes, including stakeholder engagement and outreach strategy,

d. Voluntary labeling schedules and transition to mandatory performance standards (if any)

Deliverables:

1. Formulation of Technical Committees for developing Standards & Labels of identified materials / products.
2. Organizing Technical Committee meetings (approx. 4 meetings) to discuss implementation roadmap.
3. A roadmap with key recommendations as per tasks above explaining the stakeholder interaction process, preferably with a flow-diagram clearly stating the roles of BEE, Laboratories, manufacturers, implementing partners, etc.
4. A comprehensive report that analyzes the current status of all of the parameters identified above, provides detailed recommendations for improvement in each area, and defines comprehensive processes for standards-setting (norms/standards/rating plan) for various building materials / products. Recommendations should tend towards the simplification and strengthening of the standards-setting process.

2.5 Specification of Inputs

2.5.1 Assignment of personnel

In total, the contract is projected to have a volume of up to 700 man-days; however, bidders are expected to draw a detail expert-days distribution as per the table of Expert-day schedule & activities, to optimize the project timeline with a streamlined and efficient approach. Out of 700 man-days at least 100 days have to be from senior consultant level. Therefore, the total expert days shall be approx. 700 expert days.

Sr.No.	Expert Category	Tentative expert-months
1	Team Lead (senior level)	up to 100 expert days
2	International Experts (senior level)	up to 40 expert days
3	Pool of Experts	up to 560 expert days

2.5.2 Brief Profile of Experts

1. **Team Lead**: The team lead should be an Engineering Graduate or Architect. S/he should be a senior consultant having at least 15 years of experience and proven understanding of concept for building energy efficiency standards, labeling programs, and related policy design. S/he should also have experience of managing and implementing large and complex projects wherein co-ordination with multiple stakeholders is required.

2. **Pool of International Experts**: At least two International experts from two different countries to be included in the team to share the international best practices and guide the program throughout. The proposed international experts should have at least 15 years of experience in the international building energy efficiency and business economics, inclusive of 5 years experience in Building sector, and its impact of different countries having diverse policies and labeling scheme adopted. The experts should be an Engineering gradute or Architect.

3. **Pool of Experts on mapping and market assessment:** The contractor should propose a pool of experts in the area of building energy efficiency and market assessment strategies. At least 35 man-days should be proposed in the category of senior consultant in this pool.

4. **Pool of experts on techno-economic analysis, material procurement and label design:** The contractor should propose a pool of experts in the area of building energy efficiency, Gap Assessment, Best Practices and lead the techno-economic analysis. At least 50 man-days should be proposed in the category of senior consultant in this pool.

5. **Pool of Experts on web-based tool developement:** The contractor should propose a pool of experts having required software development skills for building sector. At least 15 man-days should be proposed in the category of senior consultant in this pool.

Definition of senior consultant level: At least 15 years of experience in the area of expertise the professional is supposed to cover in the project context and should be an Engineering gradute or Architect.

Definition of consultant level: At least 8 years of experience in the area of expertise the professional is supposed to cover in the project context and should be an Engineering gradute or Architect.

Efforts from Interns cannot be taken into consideration here.
All the Senior Consultants / Consultants should have good command over English language (reading, writing and speaking)

The contractor has to assign no. of personnel, national and International Experts of different level for different activities during the course of project completion. It is expected from contractor to provide the list of assigned personnel for the activities along with expected man days as per format provided. In the case of a tender being submitted by a consortium or joint venture, for each of the consortium/joint venture partner a separate listing shall be provided.

Expert-day schedule & activities						
Sr. No.	Expert Category	Expert International /National	Activities Involved	Job Description	Tentative experts-days	Brief Profile Attached (Yes/No)
1	Team Lead					

2	Expert 1					
3	Expert 2…					
4	Expert ….					
5	etc……					

2.5.3 Timeframe of the contract

Timeframe: The duration of contract shall be for 15 months.

2.5.4 Workshops, Meetings and Launch event

Cost of venue, food etc. for organizing round-tables, workshops shall be borne by GIZ separately. All travel, accommodation, food etc. for the staff of the Contractor has to be borne by them and have to be budgeted in their proposal. Expenses incurred can only be reimbursed after cost proposals have been submitted to and approved by GIZ prior to the acceptance and if sufficient bills / proofs are submitted to GIZ as desired. All costs related to participants shall be borne either by the participants themselves or by GIZ separately.

2.5.5 2.5.5 Flexible Renumeration

This position is supposed to allow for flexible reaction to changing situations and new requirements, if necessary for reaching the objective of the project. INR 1.0 million is to be included for this. Use of this remuneration item has to be initiated and approved by the responsible person on GIZ side.

2.6 Further Requirements

a) The entire proposal including approach and methodology, including tool and software's proposed, CVs etc., needs to be in English. The CVs need to be in uniform format with a maximum of three pages.

b) All activities including travels, meetings and tasks in different focus areas need to be aligned with the GIZ project co-ordinator (to be nominated by GIZ in the beginning of this assignment)

c) In case the bidder is a consortium or joint venture, the lead bidder should as well take up tasks in the assignment and shall be involved as the responsible coordinator among the group. The share of tasks shall be evaluated on the basis of the proposal submitted as above.

d) All communication with media (TV, radio, print and other media) related to the assignment has to be approved by the responsible person of GIZ.

e) All reports, slides, presentations and other media and information material need to be submitted to GIZ in English language in soft copy and in hard copy (at least 3 copies) as required.

f) The Contractor should at all times of the assignment possess the copyrights (licenses in the case of software packages) of the documents, pictures, technical papers, standards used in the study.

g) Any data to be purchased from external sources if necessary for the purpose of execution of the contract shall be purchased by the Contractor on its own expense.

h) Cost of venue, food etc. for organizing round-tables, workshops shall be borne by GIZ separately. All travel, accommodation, food etc. for the staff of the Contractor has to be borne by them and have to be budgeted in their proposal. Expenses incurred can only be reimbursed after cost proposals have been submitted to and approved by GIZ prior to the acceptance and if sufficient bills / proofs are submitted to GIZ as desired. All costs related to participants shall be borne either by the participants themselves or by GIZ separately.

i) The bidder should consider all the relevant and related activities, including but not limited to the activities proposed above in the work packages, to ensure the successful completion of all Work Packages.

j) All deliverables under Work Packages shall be considered final after incorporating all the comments and Feedbacks from the stakeholders and final approval from GIZ.

k) Tendering shall be executed in two stages, where the agencies have to be assessed through the Assessment grid for eligibility for qualification in next stage for opening of Technical bid. The technical assessment of the proposals will be undertaken for the bidders, who qualify in eligibility.

Annexure A: Sample Template for Progress Report

Activity	Responsible Consultant	Timeline as per work plan	Actual % Work Progress	Status	Remarks
WP 1					
Sub task 1.1					
…					
…					
WP 2					
…					
Brief summery in bullets to justify the status					
	Completed (100%)				
	in progress (26%-99%)				
	Progress less than 25%				

S.no	Deliverables/Activities	Reporting after commencment of contract	Milestone
0.1	Project kick-off meeting to discuss approach for the study and expected outcomes.	within 10 days	
0.2	Inception Report: The consultant shall provide an overview for all sub activities mentioned under each Task.	within 15 days	
0.3	Monthly Progress Reports: summary of progress on activities and tasks	monthly until project completion	
WB1	**National Mapping**		
1.1	Four regional workshops to discuss the findings of mapping study.	4 months	
1.2	Comprehensive report on Mapping study	4 months	1
WB2	**Market Assessment**		
2.1	Preliminary market assessment report to feed in to the detailed analysis with information sources: Secondary Research, Primary Research and Analyst Tools & Models;	5 Months	2
2.2	Summary of barriers pertaining to manufacturing, technology, policy and consumer issues, and recommendations for market transformation for efficient materials / products.	5 Months	
2.3	Comprehensive market assessment report that encompasses all sub-tasks; and definitively presents all final analyses, recommendations, and conclusions.	7 Months	3
2.4	Two stakeholder workshops to present outcomes of the market assessment.	7 months	4
WB3	**Techno-economic Analysis**		
3.1	Preliminary techno-economic report that encompasses all sub-tasks with information sources: Secondary Research, Primary Research and Analyst Tools & Models;	7 Months	5
3.2	Comparative summary of global test procedures and energy performance standards;	7 Months	
3.3	A comprehensive final report, based on the techno-economic analysis that clearly and definitively presents all final analyses, recommendations, and conclusions.	11 Months	6
3.4	Two stakeholder workshops to present outcomes of the techno-economic analysis.	11 Months	7
WB4	**Guidelines for Energy Efficient Material Procurement**		
4.1	Report containing specifications of building materials for incorporation in PWD Schedule of Rates (SOR).	13 Months	8
4.2	Comprehensive template enlisting procurement rules for integration in tender document of energy efficient new buildings and retrofits.	13 Months	9

WB5	**Web-based tool for ECO-NIWAS portal**		
5.1	Preliminary database of at least 5,000 building materials / products	11 Months	**10**
5.2	Access for beta testing of the developed tool	12 Months	
5.3	Hosting the developed tool on ECO-NIWAS web-portal	13 Months	**11**
5.4	Organize launch event for the resources developed under the assignment and web-based tool	13 Months	**12**
WB6	**Process for establishing Standards & Labels**		
6.1	Formulation of Technical Committees for developing Standards & Labels of identified materials / products.	11 Months	
6.2	Organizing Technical Committee meetings (approx. 4 meetings) to discuss implementation roadmap.	13 Months	**13**
6.3	A roadmap with key recommendations as per tasks above explaining the stakeholder interaction process, preferably with a flow-diagram clearly stating the roles of BEE, Laboratories, manufacturers, implementing partners, etc.	13 Months	
6.4	A comprehensive report that analyzes the current status of all of the parameters identified above, provides detailed recommendations for improvement in each area, and defines comprehensive processes for standards-setting (norms/standards/rating plan) for various building materials / products. Recommendations should tend towards the simplification and strengthening of the standards-setting process.	14 Months	**14**