

Terms of reference (ToRs) for the procurement of services below the EU threshold

BRICK INDUSTRY MISSION: MARKET TRANSFORMATION TOWARDS ENERGY EFFICIENCY IN BRICK SECTOR	Project number/ cost centre: 14.2298.9-001.00
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0. List of abbreviations

AVB	General Terms and Conditions of Contract (AVB) for supplying services and work 2018
B2B	Business to Business
BEE	Bureau of Energy Efficiency
EC Act	Energy Conservation Act, 2001
EE	Energy Efficiency
ESCO	Energy Service Company
FAQ	Frequently Asked Questions
IGEN	Indo German Energy Programme
MoP	Ministry of Power, Govt. of India
MRV	Monitoring Reporting and Verification
MSC	Mission Steering Committee
SEC	Specific Manufacturing Energy of Consumption
SFC	Standing Finance Committee
ToRs	Terms of Reference
TSA	Technical Support Agency (viz. consultant)
WP	Work Package
WG	Mission Working Group

1. About GIZ

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH 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 and implements development programs in partner countries on its behalf in order to achieve the German development policy objectives.

The Federal Republic of Germany and the Federal 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.

In India, the Bureau of Energy Efficiency is the nodal agency to assist Govt. of India 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.

The GIZ works closely with the Bureau of Energy Efficiency (BEE) to promote energy efficiency and the execution of policy backed national and state level programs.

2. Context: Energy Use in Brick Manufacturing

Brick manufacturing in India is considered an un-organized activity for which the precise industry specific parameters like size, production, energy consumption, turnover etc. are not readily available. Various studies such as those by NGOs like TERI, CSE and GreenTech have estimated the following as below:

	TERI (2000-01)	TERI (2013-15)	CSE (2016)	GreenTech (2017)	Shakti-GreenTech (2018)
Bricks; billion	144	220-280	274	200-250	250
Brick Kilns	90000	190000-280000	121000	150000	250,000-300,000
Coal; million tonnes	24	29-35	35-40	25-30	30
Biomass; million tonnes	--	12-16	--	10-15	10
Workers (direct + indirect) employed; million	--	--	>10	15	9-10
Annual turnover; billion Rupees	--	--	--	1250	1000
CO2 emissions; million tonnes	--	--	--	60-65	66-84

The brick sector contributes 0.7% of India's GDP and is the nation's second largest employer after agriculture and one of the largest (coal) energy users and source of GHG emissions in India.

India is the world's second largest producer of bricks, manufacturing over 200-275 billion bricks per annum¹.

Fired Brick (the traditional red brick) making accounts for significant energy consumption, wherein nearly twenty to forty percent of a brick's cost of manufacture is due to energy.

The Specific Energy of Consumption (SEC) of the red brick technology is around 1.6 MJ/kg. However, the range of efficiency can vary from 2.5MJ/kg – 1.10MJ/kg² based on factors such as:

- Type of brick kiln technology employed
- Brick material density and raw material mix options (hollow / fly-ash/ construction waste)
- Efficiency of fuel combustion and fuel mix

Overall in India, the bricks industry consumes 5% to 15% of the total industrial energy and is largely dependent on coal and biomass for its energy requirements. Introducing energy efficiency in brick making will not only reduce energy use, it would also result in reductions in raw material use. Market driven sectoral transformations have been successfully tried out in a diversity of sectors in India to scale up energy efficiency.

A recent Indo German Energy Forum (IGEF) report conducted by TERI on behalf of BEE identified Brick manufacturing with the second largest potential for energy efficiency amongst the industrial sector in India with savings of around 2 mtoe by 2031 and 4 mtoe by 2041³.

Indeed, the Centre for Science & Environment (CSE) in 2016 had proposed a National Brick Mission which essentially called for a manufacturing transition from FCBTKs to Zigzag kiln technology and shift towards uptake of 30% hollow bricks and ultimately 100% hollow bricks between now and 2030. Under this proposal with modern manufacturing technology, a *fifty percent reduction in raw material and fuel requirements* is envisaged.

Although nearly twenty to forty percent of a bricks cost of manufacture is due to energy, comprehensive energy efficiency improvements⁴ and technology modernisation (apart from

¹ Global production is around 1500 billion per annum; market share China (67%) and India (13%).

² Refer Annexure 3 for description

³ The largest is the iron and steel sub-sector (about 27 mtoe by 2031 itself and 45 by 2041)

⁴ Comprehensive energy efficiency improvements focus on modernization of all steps in brick manufacturing process AND shift in product from dense solid to lower density (e.g. perforated, hollow) bricks and/or diversified brick and tile production. It is characterised by the use of machinery for clay-mixing and brick forming), use of artificial dryers and efficient/modern kilns (e.g. zig-zag, tunnel kiln). The brick manufacturing enterprise transforms from "traditional informal enterprise" to "organised formal enterprise" and significant improvements in working conditions. Typically, 30-50% reductions in SEC (MJ/m³ of brick) are possible when perforated and hollow products are produced.

incremental improvements⁵ due to tightening emissions standards⁶), has not found much traction in India due to a variety of factors apart from, (*inter-alia*):

Historical: traditional Brick making has low entry barriers and large risks (weather, cyclic market); thus entrepreneurs seek (quick) profitability by extracting savings from labour, machinery, customer and regulation compliance. The uncertainties in the sector are aptly captured in the Hindi proverb *bhatta baith gaya!*

Policy Stability: frequent revisions and lack of clarity in policy surrounding mining, use of alternative materials (e.g. fly-ash) discourages brick kiln owners to invest in new technology.

Perception overhang: Brick output quality mix from traditional kilns is - 50% (Good)/25% (under-fired)/25% (over-fired). This puts pressure on pricing of good bricks and in the past seen to encourage dumping of the low-quality product through public/government construction projects. The low-quality product coupled with non-compliance with regulations dimmed the entire sector perception especially in policy making circles.

Brick price: Revenues of brick owner are driven by product price to recover costs of technology risk, fuel choice, marketing, financing etc (Bricks-Rs 1.5 to 3 per Kg/ Hollow Blocks-Rs 2.5 to 5 per Kg). Price of product varies across regions like North-West India is low, whereas in Bengal, North East states and part of South India better pricing and profitability encourages brick makers to consider technology upgradation.

Overall, end-product brick price to consumer does not encourage investments to bring in comprehensive energy efficiency technology in the sector. The price arbitrage from bricks manufactured using traditional kilns and those using modern technology creates a perception of *lack of affordability*, which is reflected by the less than 5% market share of brick units deploying energy efficient technology in India.

Modernization of brick manufacturing is a low hanging energy efficiency fruit, which has recently started through conversions to zig zag / tunnel kilns albeit with low momentum. ***This momentum needs to be accelerated to enhance supply and bring in economy of scale.***

Modernization entails mechanization of brick manufacturing process AND shift in product from dense solid brick to lower density (e.g. perforated, hollow) bricks and/or diversified brick.

Overall this reduces - energy, clay, water use and reduces wastes per unit production.

⁵ Incremental energy efficiency improvements means energy efficiency improvements due to incremental improvements in traditional brick kilns e.g. retrofitting fixed chimney BTK to zigzag kiln. There is no change in the final product (solid brick), and no significant change in the brick manufacturing process, nature of enterprise and working conditions. Typically, 15-20% reductions are possible in SEC through incremental improvements like retrofitting FCBTKs to Zigzag kilns.

⁶ Two incremental energy efficiency improvements in brick industry have happened due to implementation of emissions standards to control air pollution emissions. This includes, shift from movable chimney to Fixed Chimney Bull's Trench Kiln (FCBTK) technology in late 1990's and the ongoing shift from FCBTK to Zigzag kiln. In both cases (if done correctly), the shift results in 15-20% reduction in specific energy consumption.

Lessons from China

China started modernizing the clay brick industry since 1990. Even today, the Clay brick continues to hold the largest market share and the current production is estimated at 1000 billion bricks/ year.

Over a period of 25 years, three clear trends have emerged:

Consolidation of brick manufacturing to—large scale (1200 tpd sizes) in about 4000 units. Earlier this was around 100-200 tpd in 150,000 plus kilns. The kilns are also located closer to raw material supply chain in the hinterland.

Shift to modern technologies like Tunnel and Rotary Tunnel kiln working all around the year.

Clay remains the main raw material constituting 85% of the brick market. However, instead of solid brick now the product mix has shifted towards perforated and hollow bricks.

Green shoots of these trends are emerging in India. The BEEs action is likely to accelerate above.

From the perspective of Energy Efficiency (EE) in brick sector, interventions need to be considered which support

- ‘Creation of Demand’ viz. enhance customer acceptance of energy efficient bricks like hollow and perforated products vis-à-vis the solid clay brick

- ‘Creation of Supply’ viz. lower risks to investing in a transition to comprehensive energy efficient manufacturing with lower SEC.

Given the large potential for energy efficiency (~50%) in solid clay brick manufacturing (and co-benefits of resource efficiency), the BEE is proposing a market transformation initiative for this sector. Under the proposed strategy, a market shift use of bricks with lower specific energy for manufacturing is being proposed.

Proposed Market Transformation Action

The BEE seeks to pilot a market driven strategic approaches in two states / key brick markets to demonstrate success of the strategy.

The BEE, under the Energy Conservation Act, 2001 has the function and powers to:

13-e: take all measures necessary to create awareness and disseminate information on efficient use of energy and its conservation.

13-j: Formulate and facilitate implementation of pilot projects and demonstration projects for promotion of efficient use of energy and its conservation.

13-k: Promote use of energy efficient processes, equipment, devices and systems.

Along with the pilot, the BEE seeks to develop a ‘National Brick Mission’ which details out the portfolio of market transformation approaches which can be spear-headed by the BEE under a five-year roll-out.

The mission document shall be finalized by the BEE taking into views received from various stakeholders including ministries/departments policy makers to get their inputs and buy-in to the proposed mission.

The strategic market interventions proposed are detailed under the ‘**Strategic Action Plan**’ (SAP) developed by the BEE with support of GIZ. An excerpted summary is tabulated below (inter-alia **Table 1**):

Create Market Push	Create Market Pull
<ul style="list-style-type: none"> Establish a national baseline of energy use in brick manufacturing based on data for specific energy of consumption (SEC) for EE brick and its technical specifications. (BEE has defined a deemed MRV methodology for use) Create demand for Energy Efficiency (EE) brick by 'developing procurement guidelines for B2B public and private consumers. (Builders or CPWD/PWD/Railways etc.) 	<ul style="list-style-type: none"> Create demand access through communication say via Accreditation Symbol for manufacturers to convey energy savings / Enhance customer visibility via Online dashboard Promote assurance in adopting new EE technology / Reduce business transactions costs (Standard Technology design packages, Model business models)

The market transformation strategy on one hand focuses on lowering the specific manufacturing energy through improvements in production technologies and promoting production of energy efficient bricks⁷ (supply side measures), and on the other hand creating market demand for such manufactured bricks (demand side measures).

The central piece of this strategy is to develop a BEE accredited symbol/mark to convey adoption of energy efficient manufacturing and develop the award process for “Energy Efficient Enterprise (E3)” symbol/mark to such manufacturers. This will create differentiated recognition in eyes of customer to manufacturing units who manufacture energy efficiently.

The BEE accredited symbol shall be awarded to those brick manufacturers who adopt the BEE proposed process SEC threshold⁸. The Manufacturing SEC is calculated based on deemed specific manufacturing energy for different production processes (MJ/kg) and the product density (kg/m³). A manufacturer will be awarded “E3” mark if the weighted average specific manufacturing energy of the manufacturing plant is below a certain threshold value. It is proposed that this threshold value should be kept at 25% lower than the national baseline for specific manufacturing energy of clay bricks.

Implementation arrangement

The initiative is proposed to be spearheaded by the BEE, with support of GIZ and implemented in two phases:

Phase-1: Initiation Pilot Phase	Phase-2: National Brick Mission
<p>Market Transformation Strategy tested in two selected regions/markets by (6-7 months):</p> <ul style="list-style-type: none"> Establishing the mechanism for award of E3 mark, developing the standard technology packages, developing communication and outreach materials targeted at various stakeholders such as manufacturers, consumers, financing agencies and relevant government stakeholders, and mobilization 	<ul style="list-style-type: none"> The National Brick Mission proposed for 4-year duration will be continued till 2024. Under the mission, all the major clay brick manufacturing clusters in the country are expected to be covered. Detailed action plan for the National Brick Mission will be developed during the Initiation Phase.

⁷ Energy efficient bricks are those bricks that have lower specific manufacturing energy.

⁸ Refer Annexure 3 for the Deemed SEC approach

Phase-1: Initiation Pilot Phase	Phase-2: National Brick Mission
<p>and exposure of the potential manufacturers, technology providers and key consumers.</p> <ul style="list-style-type: none"> ■ Overall the institutional framework and the implementation procedures will be established during this phase. ■ The outcomes from this phase will be crucial to laying the foundation for scaling up implementation nationwide under the proposed National Brick Mission. 	

The initiation phase developmental work would be led by the BEE. Relevant government ministries or agencies will be important partners in the proposed initiative. To facilitate communication and get their buy-in for the programme, the stakeholders will be invited to be part of the Mission Steering Group for implementation of the National Brick Mission (Figure 1).

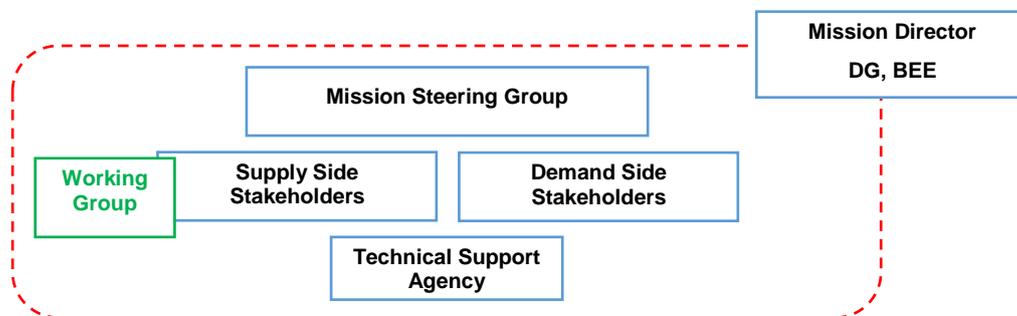


Figure 1: Institutional Map for Programme

Mission Steering Group (MSG)	Working Group (WG)
<ul style="list-style-type: none"> • Apex committee to review / guide all tasks • ~10-15 member: MoP, BEE, GIZ, CPWD, EESL, Association (Brick, Builder), MoEF, MoUD, MSME, CPCB, BMPTC, SDAs, Smart Cities, CSE, Financiers etc 	<ul style="list-style-type: none"> • Guide and Review tasks document development and Review Stakeholder inputs related to Mission development • -- Mission development • -- Pilot thrust areas (SEC baseline data, Procurement guidelines, Technology modules, Accreditation Process, Symbol, Agreements etc). • ~ 10 Multi-institutional membership: BEE, GIZ, Brick manufacturer, Builder, PWD, SDA, Technology, Financiers, SPCB, ULB, CEPT etc.

3. Tasks to be performed by the contractor

The role of the Technical Support Agency (TSA) during the initiation phase of around 7 month would be to develop the four thrust areas as summarized below. *It may be noted that the TSA may be required to undertake any other set of activities in line with the overall mandate.*

Work Package 1 (WP-1): Pilot Market Transformation Strategy

Thrust Area-1: Accredited Symbol / E3 Mark for manufacturers producing energy efficient bricks

This accredited mark will result in enhanced visibility of the brick manufacturing enterprise in the eyes of consumers looking for their products. A simple and robust process will be adopted by the BEE for the award of the accredited mark. The E3 symbol shall signify both 'Manufacturing' energy efficiency and to users of the brick products 'User' energy efficiency. In due course, the mark is also expected to support the manufacturers in gaining access to green finance⁹ for undertaking capital expenditure.

The key TSA activities under this may include (inter-alia):

- Develop E3 symbol / mark design for approval by BEE and the Process for award to manufacturer (application formats, review, data verification, mark use guidelines etc)
- Develop agreements-tender document for empanelment of agencies¹⁰ by the BEE who will award E3 mark to manufacturers and assist in procurement management
- Finalize SEC baseline, deemed MRV (already developed by BEE) using Pilot market data

Thrust Area-2: Creation of market demand for uptake of E3 mark Energy Efficient bricks. The key TSA activities under this may include (inter-alia):

- E3 Outreach (develop materials, event support, stakeholder mobilization)
- Increasing demand of Energy Efficient bricks by large institutional players through getting E3 mark included in standard procurement guidelines
- Support 'focused' communication and outreach campaign targeted at builders, architects, contractors and home buyers for uptake of E3 mark¹¹. Minimum one agreement with manufacturer and user signed agreement for E3 uptake. participation in exhibitions are expected under this initiative.

Thrust Area-3: Comprehensive support package to manufacturers to facilitate the shift to E3 enterprises. The key TSA activities under this may include (inter-alia):

- Needs Assessment- Technology

⁹ *Green finance refers to* financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy. Green finance includes climate finance but is not limited to it, as it could support a wider range of other environmental objectives, such as industrial pollution control, water sanitation or biodiversity protection. <https://www.thegef.org/sites/default/files/events/Intro%20to%20Green%20Finance.pdf>

¹⁰ Potential agencies include green building rating agencies (e.g. GRIHA, GBCI, IGBC, etc.); Inspection testing and certification bodies (e.g. TUV, DNV, UL, etc.).

¹¹ A conventional brick manufacturing enterprise takes around 1-2 years to upgrade to an E3 enterprise. Therefore, in the beginning the enterprises already manufacturing as per energy efficiency technology and energy efficient bricks (e.g. hollow/perforated) will be mobilised for gaining the accredited mark. For award of E3 mark, the E3 enterprises will be required to sign an agreement or MoU with BEE ensuring energy efficient production in certain quantity.

- Example--Development of standard technology packages customised to Indian requirements. Minimum one technology package for desired product mix and production capacities (e.g. 100 ton per day, 200 ton per day, etc.).
- Needs Assessment-Finance
 - Engage with green/ development finance institutions/ BEE Risk Guarantee initiatives (kFW, IFC, SIDBI, RBL, Bandhan etc) for promoting access to finance to manufacturers / Customers (and address elevated technology costs or risks)

Work Package 2 (WP-2): Brick Industry Mission – Development and Approval

Thrust Area-4: Development of National Brick Industry Mission to lay the guidelines for implementation of the initiative.

- Draft National Brick Industry Mission document, Operation plan and SFC document
- Communication with the key government ministries and agencies and get their inputs and buy-in for the programme.
- Support MSG/WG meetings (once in 45-60 days), consultation and outreach with stakeholders (around 4 consultation events expected), development work till its finalization and approval. Includes developing content for communication material (Brochures, Social media, BEE website etc)
- Develop final Mission document, Operation plan and SFC document

Thus, the appointed Technical Support Agency (TSA) would need to accomplish two main work packages:

Work Package 1 (WP-1): Pilot Market Transformation Strategy

Pilot Brick markets:

- Delhi NCR-Chandigarh (North India)
- Bangalore - Chennai - Coimbatore - Madurai (South India)

Note: the markets chosen reflect the manufacturing and geographic diversity of the sector. Locations are indicative.

Tasks include: Establish deemed SEC baseline for pilot market; Accreditation (E3 Symbol design, Adoption by Manufacturers as a means for differentiation, Adoption by B2B Customer for their procurement); Capacity Building (Standard Technology/ Financial Packages / Outreach in pilot region), Support Mission Working Group (WG).

Work Package 2 (WP-2): Brick Industry Mission – Development and Approval

Tasks include: Draft long range (~ 5 years) Mission and accompanying Standing Finance Committee (SFC) document (Objectives, Strategies, Work flow, Implementation mechanism, Impact, budget etc); Stakeholder consultations, Support 'Mission Steering Group' (MSG) and Mission Working Group (WG), support and guide mission to approval.

Detailed break-up of the Work package 1 and 2 tasks is provided in **Annexure 1**. Draft template for the mission document is provided in **Annexure 2**.

WP-1: Pilot Market Transformation Strategy

Nov-Dec 2019	Jan-Feb 2020	Mar-Apr 2020	May 2020
<ul style="list-style-type: none"> • Mission Steering & WG formation / Plan of Action • Technical (E3 mark; SEC baseline & threshold & Process) • Draft Agreements (Manufacturer, Customer, Accredited Agency) 	<ul style="list-style-type: none"> • Pilot market consultations • Finalise SEC baseline & threshold • ToR (Accreditation Agency) 	<ul style="list-style-type: none"> • Procurement Management (Accredited Agency) • Signed agreements (Manufacturer, Customer, Accredited Agency) 	<ul style="list-style-type: none"> • Pilot Case example/ Study

WP-2: Brick Industry Mission – Development and Approval

Nov-Dec 2019	Jan-Feb 2020	Mar-Apr 2020	May 2020
<ul style="list-style-type: none"> • Mission Steering & WG formation / Plan of Action • Templates (Mission, SFC) • Draft Mission + SFC consultation document 	<ul style="list-style-type: none"> • Stakeholder consultations • Needs assessment (technical, financial) 	<ul style="list-style-type: none"> • Finalise Mission document + SFC 	<ul style="list-style-type: none"> • Mission Decision • Mission document

Milestones, as laid out in the table below, are to be achieved by certain dates during the contract term, and at particular locations:

Milestone	Deadline/place/person responsible
Work Package 1 (WP-1): Pilot market transformation strategy	Pilot Region / TSA Team Lead
– WG formation / Plan of Action	– 15 Nov 2019

Milestone	Deadline/place/person responsible
– Draft (Procurement guidelines; E3 Symbol)	– 10 Dec 2019
– SEC baseline & threshold; Consultations	– 30 Jan 2020
– Capacity Needs Assessment/ Signed buy-in of Manufacturer and B2B Customer (e.g. Agreement / MoU with BEE)	– 30 April 2020
– Pilot Impact Report	– 31 st May 2020
Work Package 2 (WP-2): Brick Industry Mission – Development and Approval	Pilot Region / TSA Team Lead
– Mission Steering & WG formation / Plan of Action	– 15 Nov 2019
– Draft Mission + SFC consultation document	– 10 Dec 2019
– Stakeholder consultations	– 30 Jan 2020
– Mission Decision	– 30 April 2020
– Final Mission document	– 31 st May 2020

Period of assignment: From 1 November 2019 until 31st May 2020.

4. Concept

To enable objectives defined in Chapter 2 and 3, and detailed in **Annexure 1** are achieved, GIZ seeks to hire a Technical Support Agency (TSA) to provide overall technical support, implementation support and co-ordination of the tasks.

Consortiums comprising of two or more firms can bid. In this case the qualification criteria shall be fulfilled by the consortium. In case the bidder is a consortium, the lead bidder needs to demonstrate its role (as the lead) by undertaking notable share of tasks in the assignment.

Project management of the contractor

To ensure coordination with the GIZ project:

- The contractor is responsible for selecting, preparing, training and steering the experts (international and national, short and long term) assigned to perform the advisory tasks.
- The contractor for its experts makes available equipment and supplies (consumables) and assumes the associated operating and administrative costs.
- The contractor manages costs and expenditures, accounting processes and invoicing in line with the requirements of GIZ.
- When requested, the contractor reports to GIZ in accordance with the applicable GIZ guidelines (e.g. AVB of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH from 2018)

The bidder is required to submit a **personnel assignment plan** which lists all the experts proposed in the bid; duration and expert days and locations of the individual members of the team complete with the allocation of work steps as set out in the work schedule.

5. Personnel concept

TSA Qualification Criteria:

- Should be a firm/company registered/incorporated in India
- Should have an employee base of minimum 5 full-time employees
- Should have a minimum annual turnover of INR 1.50 Crores in the last three (3) years i.e. FY 2016-17, 2017-18, 2018-19
- Should have been profitable for at least two (2) of the last three (3) years.
- Should have minimum work experience of 10 years in brick industry sector which should include experience on
 - Data monitoring energy/environment performance of brick industries / Specific Energy Consumption (SEC) / measurement of thermal properties of bricks
 - Training and technical assistance on technology and / or best practice and/or policy in brick sector.
- Should have carried out one or more project for a bi-lateral/multi-lateral international development agency/ Government agency involving development of a documented outcome (like project document / Mission document), which has been coordinated and vetted through a Stakeholder Consultation Committee related to renewable/ energy efficiency / environment / buildings.
- use of social media / web/ mobile digital platforms for targeted outreach to stakeholder networks (Brick Manufacturers and/or Users and/or Policy developers)
- Experience of working with brick sectors entrepreneurs and associations; builders, architects and their professional bodies; and government agencies

Desirable experience-

- experience of 3 years in the field of building energy efficiency, like experience in energy simulation of buildings, embodied energy calculations and development/implementation of energy conservation building code/ building material label.
- conceptualised one Accredited Symbol / Rating / Label. for Energy Efficiency / Renewable/ Building / Environment etc
- Carried out one or more market study/ market development in energy efficiency/ renewable energy/ brick/ ceramic sector.

Note: The bidder may note that use of SEC data in public domain is envisaged to construct the SEC baseline and E3 mark threshold. Any purchase or testing of data is entirely at the discretion and cost of the bidder. Bidder should absolve BEE and GIZ of any copyright issues pertaining to the SEC data.

The bidder is required to provide personnel who are suited to filling the positions described, on the basis of their CVs (see Chapter 8), the range of tasks involved and the required qualifications.

The below specified qualifications represent the requirements to reach the maximum number of points.

Team leader

Tasks of the team leader

- Overall responsibility for the advisory packages of the contractor (or Consortium) (quality and deadlines)
- Coordinating and ensuring communication with GIZ, BEE, stakeholder partners and others involved in the project
- Personnel management as well as planning and steering assignments and supporting the experts. TSA will source short term experts in the field of contracts, financing, branding, digital / social media development etc. as per requirement.
- Regular reporting in accordance with deadlines

Qualifications of the team leader

Essential:

- Education/training (2.1.1): University qualification (B.Tech / B.E / B. Architecture and/or Master in any discipline)
- Language (2.1.2): Good business language skills in English and Hindi
- General professional experience (2.1.3): 15 years of professional experience in the (Energy Efficiency/ Environment/ Renewable/ Policy) sector
- Specific professional experience (2.1.4): 5 years in brick sector (Energy use / Best practice)
- Leadership/management experience (2.1.5): 6 years of management/leadership experience as project team leader or manager in a company
- Regional experience (2.1.6): 5 years of experience in projects in India
- Development Cooperation (DC) / Government project experience (2.1.7): 3 years of experience in DC projects
- Other (2.1.8): Organised / Supported 'Stakeholder Committees' as per the tasked goal

Expert 1

Tasks of expert 1

- As per the directions given by Team Leader

Qualifications of expert 1

- Education/training (2.2.1): B.Tech / B.E / B. Architecture and/or Master in any discipline
- Language (2.2.2): English and Any other national language
- General professional experience (2.2.3): 8 years
- Specific professional experience (2.2.4): 2 years (SME / Brick / Ceramic sector sector)
- Leadership/management experience (2.2.5): 0 years
- Regional experience (2.2.6): 5 years of experience in projects in India (region)
- Development Cooperation (DC) / Government project experience (2.2.7): 0 year
- Other (2.2.8): Ability to draft documents / Comfort with digital / social platforms

Expert 2

Tasks of expert 2

- As per the directions given by Team Leader

Qualifications of expert 2

- Education/training (2.3.1): B.Tech / B.E / B. Architecture and/or Master in any discipline
- Language (2.3.2): English and Any other national language
- General professional experience (2.3.3): 3 years
- Specific professional experience (2.3.4): 2 years (SME / Brick / Ceramic sector)
- Leadership/management experience (2.3.5): 0 years
- Regional experience (2.3.6): 1 years
- Development Cooperation (DC) / Government project experience (2.3.7): 0 year
- Other (2.3.8): Ability to draft documents / Comfort with digital / social platforms

Soft skills of team members

In addition to their specialist qualifications, the following qualifications are required of team members:

- Analytical skills on issues related to energy efficiency
- Excellent drafting and communication skills in English.
- Demonstrate initiative and ability to work independently and as a Team player
- Prioritise multiple tasks, deploy client-focused working methods

Short-term expert pool with minimum 1, maximum 2 members

Tasks of the short-term expert pool

- Accredited Mark Design
- Brick Manufacturing and plant technology (Hollow / Perforated)

Qualifications of Short-term expert 1: Accredited Mark

- Education/training (2.6.1): Graduate and/or Master in any discipline
- Language (2.6.2): English and any national language
- General professional experience (2.6.3): 7 years
- Specific professional experience (2.6.4): 2 years (Mark design, philosophy and Outreach strategy)
- Regional experience (2.6.5): 3 years in India
- Development Cooperation (DC) / Government project experience (2.6.6): 0 year
- Other (2.6.7): Used Digital/ social media outreach

Qualifications of short-term expert 2: Brick Manufacturing (for energy efficient production process)

- Education/training (2.7.1): Graduate in any discipline
- Language (2.7.2): English
- General professional experience (2.7.3): 10 years
- Specific professional experience (2.7.4): 2 years (Plant design/ Plant operation in Brick and/or Ceramic industry))
- Regional experience (2.7.5): 0

- Development Cooperation (DC) / Government project experience (2.7.6): 0 year
- Other (2.7.7): Brick and/or Ceramic sector experience

The bidder must provide a clear overview of all proposed short-term experts and their individual qualifications.

6. Costing requirements

Assignment of personnel

Team leader: On-site assignment for 76 expert days (includes estimated 12 Travel days)

Expert 1: Assignment in India for 105 expert days (includes estimated 12 Travel days)

Expert 2: Assignment in India for 105 expert days (includes estimated 12 Travel days)

Short-term expert 1 and 2 (Pooled): total 14 expert days

Travel

In the course of the assignment around four to five consultation workshops are envisaged. Pilot discussions to the extent feasible are envisaged to be dovetailed with such consultations. If necessary one to two additional trips to pilot regions may be considered.

The bidder is required to calculate the travel by the specified experts and the experts it has proposed based on the places of performance stipulated in Chapter 3 and list the expenses separately by daily allowance, accommodation expenses, flight costs and other (local / out-station etc) Taxi travel expenses.

- Experts if found unsuitable, the TSA has to replace them with replacements with the approval of GIZ/ BEE.
- All travel, boarding and lodging, per diem for TSA team members has to be borne by the TSA and budgeted for in the proposal.
- The bidder should at all time of the assignment possess the copy-rights / licenses of the documents, picture, technical papers, standards used in the assignment.
- Any data to be sourced from third parties, at cost, shall be purchased by the TSA on its own expense.

Workshops, training

For workshops/study trips/training courses, contractor

- Develops agenda content and communication materials (Brochure, web-site content etc). Any Design and Printing is by GIZ.
- Provide overall event support (delegate invites, follow up etc). Event logistics is by GIZ/BEE.

Other costs

- Visa costs

7. Inputs of GIZ or other actors

GIZ and/or other actors (BEE or affiliated partners e.g. SDAs) are expected to make the following available:

- 1 to 2 sitting space in the BEE office for the Experts. Computer, printer, hardware and software is to be provided by the TSA.
- Lawyer to support drafting of agreements
- Extend invites to Steering / Working group members
- Appoint agencies for accredited mark registration, copyright; Agency for award of accredited mark
- Design and printing of documents, Event logistics during stakeholder consultations. TSA shall technically support the events.

8. Requirements on the format of the bid

The structure of the bid must correspond to the structure of the ToRs. In particular, the detailed structure of the concept (Chapter 3) is to be organised in accordance with the positively weighted criteria in the assessment grid (not with zero). It must be legible (font size 11 or larger) and clearly formulated. The bid is drawn up in English.

The complete bid shall not exceed 25 pages (excluding CVs). If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment.

The CVs of the personnel proposed in accordance with Chapter 5 of the ToRs must be submitted using the format specified in the terms and conditions for application. The CVs shall not exceed 4 pages. The CVs must clearly show the position and job the proposed person held and for how long.

The pricing should be provided as with optional and without optional tasks.

9. Option

Nil.

10. Annexes

1. Detailed Work package 1 and 2 Tasks
2. Brick Mission Document / SFC document Template
3. Deemed Specific Energy of Consumption in Manufacturing

Annexure 1: Detailed Work package 1 and 2 Tasks

The four key thrust areas along with the planned activities are detailed below.

Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
Work Package 1 (WP-1): Pilot Market Transformation Strategy						
Inception Phase						
0	Study BEE developed Strategic Action Plan (SAP) document; Review of SAP for Pilot Plan of Action (Activities, Resources committed, Time-lines, Deliverables etc); Pilot location review (Potential manufacturers/ Users etc), Stakeholder consultation (dates/ location)	Plan of Action & Calendar		SAP document; Tentative Pilot location: (Delhi-NCR-Chandigarh (North India);Bangalore - Chennai - Coimbatore - Madurai (South India))	Design and Print would be undertaken separately by BEE/ GIZ.	Around 4-5 consolidated (together for Pilot/Mission) consultations would need to be carried out , Tentative Consultation locations: Chandigarh/ Delhi/ Kolkata/ Mumbai/ Bangalore/ Chennai
0.a	Support Steering & Working Group formation for oversight to Mission development and Pilot Phase; expected to meet every 45-60 days in BEE office - Define Terms of Reference (Scope of	Mission Steering & Working Group formation, 1st Meeting Held	25%	Use of BEE office for meetings; Around 4-5 meetings envisaged.	Support for any special/ specific invitees to the Steering/Working group	Understanding and Network in Brick (Manufacturing, User) Sector; Ability to deliver objectives working with disparate groups

	Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
		Work ,Time-lines, Deliverables, Business procedures, Suggested Membership, Meeting calendar).					
Thrust Area 1: Accredited Symbol / E3 Mark for manufacturers							
	1.1	Develop E3 symbol / mark and design philosophy to sell to manufacturer and user; Develop content for outreach material e.g. brochures, web-content, etc; Document Design and Print would be undertaken separately by BEE/GIZ.	E3 mark-approved; Communication Content		Application for E3 mark registration/ copy-right	Design and Print would be undertaken separately by BEE/GIZ.	Understanding and Network in Brick (Manufacturing, User) Sector especially what 'E3 symbol/mark' will work for them; design.
	1.1.a	Process guide for award to manufacturer (application formats, review, data verification, mark use guidelines etc) and surveillance mechanism to maintain credibility of the mark	Detailed guide		Appointment of 'Accreditation Mark' award agency'		

	Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
	1.2	Develop tender document for empanelment of agencies by the BEE who will award E3 mark to manufacturers (Award Agency) ; and assist in procurement management			The mark is expected to be awarded to the manufacturer by availing the 'services' of BEE empanelled E3 mark agency.		Regular availability in BEE
	1.2	Develop legal Agreements in-between BEE and (Manufacturer, Customer, Award Agency). Note: <i>Depending on emerging scenario there could be two or more agreements.</i>			BEE has its own lawyers.		Around 2-3 agreements are envisaged.
	1.3	Finalize SEC baseline using deemed MRV (already developed by BEE) for Pilot market data. Note: <i>Use of public secondary data sources is envisaged by BEE/GIZ. Any purchase/ Testing of SEC data vests with the TSA at their</i>	SEC Baseline & MRV as per data for Pilot Market / Region		SAP document		Understanding of deemed MRV; Knowledge of SEC Data for Pilot market using secondary data sources; Analytical skills

	Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
		<i>own cost. (Note: may require travel to Pilot locations)</i>					
	1.3.a	Identification of interested stakeholders (manufacturers, users)	List of Interested stakeholders				Understanding and Network in Brick (Manufacturing, User) Sector
Thrust Area 2: Creation of market demand for uptake of E3 mark Energy Efficient bricks							
	2	E3 Mark Outreach content for consultation event (e.g. brochures, standees, web-content, etc in English / Hindi); Design and Print would be undertaken separately by BEE/GIZ.	Communication Content			Design and Print would be undertaken separately by BEE/GIZ.	
	2. a	Generating demand of E3 mark manufactured products by customers (example: getting E3 mark included in the schedule of rates, developing standard procurement for customer institutions)	Procurement guidelines seeking E3 mark				Understanding and Network in Brick (Manufacturing, User) Sector

	Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
	2.b	Support focussed communication and outreach targeted at builders, architects, contractors and home buyers for uptake of E3 mark (e.g. Participation in exhibitions and social / multimedia advertisements etc).	Minimum one agreement with manufacturer and user signed agreement for E3 uptake; (more agreements is better)	25%			All travel post approval of Contract incharge
Thrust Area-3: Comprehensive support package to manufacturers to facilitate the shift to E3 enterprises.							
	3	Assessment Needs-Technology (example : Development of standard technology packages customised to Indian requirements, for desired product mix and production capacities (e.g. 100 ton per day, 200 ton per day, etc.) OR Plant Design Simulation tool etc. Non-subsidy-based delivery mechanisms using market players preferred.	Identification of capacity needs (Technology package)				Understanding technology trends in sector and best practice

	Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
		(Note: Dovetailed with Consultation travel)					
	3.a	Assessment of Needs-Financing (example: Manufacturer or Customer oriented Financing structure to access green/ development finance; Reduce credit risk due to technology / promotor etc. Non-subsidy based delivery mechanisms using market players preferred. (Note: Dovetailed with Consultation travel)	Identification of capacity needs (Financial access package)		Access to BEE initiatives on Financing		Understanding business risks in sector and best practice
Thrust Area-4: Development of National Brick industry Mission							
	4	Draft National Brick Industry Mission document	Draft document	25%	Provide Mission document, Operation plan and SFC document Templates		Technical Content writing, Analytical skills

	Work Package	Activity	Progress Indicators	Payment Milestones against deliverables	BEE Resources	GIZ Resources	Technical Support Agency (TSA) Skill Set Required
	4.a	4-5 consultation events and outreach with stakeholders (Technical support for event like agenda, content for communication material, stakeholder invite and mobilization). Design and Print would be undertaken separately by BEE/GIZ.	4-5 consultation events		Event logistics; Design and Print would be undertaken separately by BEE or affiliates.	Tentative locations: Chandigarh/ Delhi/ Kolkata/ Mumbai/ Bangalore/ Chennai	Event planning.
	4.b	Incorporate Stakeholder inputs and Develop final Mission document, Operation plan and SFC document	Final draft to MSG (Final Mission document, Mission brochure, Operation Plan, SFC documents)				Technical Content writing, Analytical skills
	4.c	Final Mission Document (Review and inputs on designed documents)	Approved by MSG (Final Mission document, Mission brochure, Operation Plan, SFC documents)	25%		Design and Print would be undertaken separately by BEE/ GIZ.	

Annexure 2:

I. Brick Industry Mission Document Template (Tentative)

Table of contents

1. Mission Statement
2. Executive Summary
3. Introduction
4. Main objectives of the mission
5. Approach and strategies to address gap areas
6. Proposed actions to address objectives and goals of the mission
7. Work elements and their functional arrangements
8. Mission Road-map and Timelines for actions proposed
9. Implementation arrangements, coordination mechanism and organizational structure for the mission
10. Mission deliverables and Impact Evaluation
11. Financial resources required
12. Annex-I: Acronyms used in the document
13. Annex-II: Brief activity reports of ministries/ departments partnering in the Mission
14. Annex-III: Deemed Methodology for Enterprise Branding
15. Annex-IV: Design of Pilot initiative and locations
16. Annex-V: Operational Guidelines

Reference: Compiled from the study of Smart City Mission document, Mission on Strategic Knowledge for climate change, Pradhan Mantri Kaushal Kendra Operational Guidelines.

Also refer https://doe.gov.in/sites/default/files/sample%20TOR_0.pdf (accessed 9 Sept 2019)

Mission Statement

A concise statement that defines what the mission reason for being.

At a minimum, the mission statement should define who your primary customers are, identify the products and services you produce, and describe the geographical location in which you operate.

Executive Summary

Summary of Need, Objectives, Outcomes, Milestones and Deliverables

Introduction

Description of Genesis, Role of BEE and Why BEE, Importance of Sector, Sectoral criticism/ challenges and the Mission, Coverage and duration

Main objectives of the mission

Describe constraints limiting the sector and Proposed strategies and objectives to address them

Proposed actions to address objectives and goals of the mission

Description/ Convergence of existing work in the sector, Synergies with proposed goals and objectives, expected interaction with other stakeholders including foreign agencies.

Work elements and their functional arrangements

Description of mission institutional mechanism for roll out, Role/Responsibility/Authority

Mission Monitoring/ Implementation arrangements, coordination mechanism and organizational structure for the mission

Mission work strategic elements, objectives

Mission Road-map and Timelines for actions proposed

The Road-map summarizes the mission broadly in one picture, Tabulate milestones and guidelines for effective roll-out of the mission

Mission deliverables and Impact Evaluation process

Tabulate the milestone-based deliverables along with any indicators. A impact evaluation methodology based on principles of 'SMART (Specific/Measurable/ Assignable/Realistic/ Time bound)' to evaluate the mile-stones.

Financial resources required

Describe the budgetary support requirement towards short / Middle / Long term mission objectives (in context of the overall mission timeline)

Annex-I: Acronyms used in the document

Annex-II: Brief activity reports of ministries/ departments partnering in the Mission

Annex-III: Deemed Methodology for Enterprise Branding

Annex-IV: Design of Pilot initiative and locations

Annex-V: Operational Guidelines (Guidelines for the operationalization of the mission essentially lay down the process steps for implementing the activities under the mission inter-alia mechanism for disbursement of funds / Capacity support, Deviations Resolution, Timelines for handling Supplier/Demand side requests, Stakeholder engagement etc. These shall be defined under the mission document as its annexure.)

II. Standing Finance Committee (SFC) Document Template (Tentative)

Guidelines for approval of Govt of India Projects:
https://www.finmin.nic.in/sites/default/files/GuidelinesAppraisal_Approval_Schemes_Projects_0.pdf

A template for the same is available in Annexure IV A of the above document. (last accessed on 9 Sept 2019)

Annexure 3: Deemed Specific Energy of Consumption in Manufacturing

Specific Energy of Consumption in Manufacturing Energy (SEC)

The Specific Manufacturing Energy of a brick product includes energy consumption in the manufacturing of bricks in the manufacturing plant.

In the case of burnt clay products, the specific manufacturing energy includes fuel used in the kiln, fuel used in drying of bricks, and electricity/diesel used in the operation the brick manufacturing plant machinery. The energy consumed in the mining of raw materials and transportation of raw materials and finished products are not included.

Figure 1 below shows the various stages and energy consumption involved in the entire production process of a brick product and the boundary considered for estimation of Specific Manufacturing Energy. The energy used for the mining of raw materials and transportation of finished products are not included.

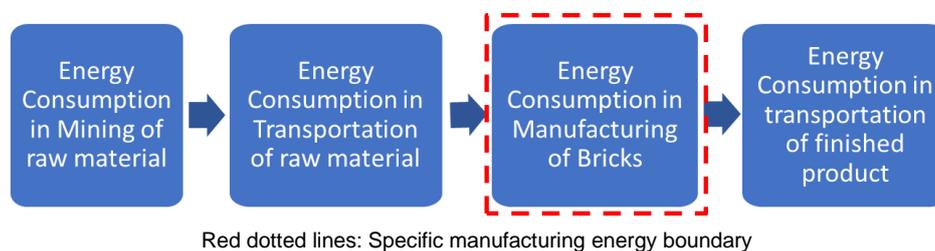


Figure 1: Specific Energy for Manufacturing does not include energy for mining of raw materials and transportation of finished product

Estimation of Deemed Specific Manufacturing Values (MJ/m³)

Specific manufacturing energy (MJ/m³) will depend upon two parameters:

- (i) deemed specific manufacturing energy for different production processes (MJ/kg). It will depend upon the type of production process and the kiln technology being used for manufacturing of bricks. Deemed values for different production processes and kiln technology are provided in Table 1.
- (ii) the product density (kg/m³). It will depend upon the type of brick product. The product density can be measured easily by measuring its dimensions and the weight.

The deemed specific manufacturing energy (MJ/m³) for a brick product can be estimated by multiplication of the two parameters explained above.

It is to be noted that for estimation of specific manufacturing energy (MJ/m³), only the product density needs to be measured. For data on specific energy consumption in manufacturing process, deemed values (as provided in Table 1) will be considered.

Indicative specific energy consumption in manufacturing¹² of burnt clay bricks for different production processes and kiln technologies are provided in Table 1.

¹² Indicative values based on data available through sample energy audits and plant data made available by individual manufacturers.

Table 1: Indicative specific energy consumption in manufacturing

Production Process & Kiln Technology	Average Indicative Specific energy consumption in manufacturing (MJ/kg)
Mostly manual clay preparation and moulding; sun drying; Fired in clamp/downdraught kiln ; Specific Energy Consumption 1.5 -2.5 MJ/kg	2.0
Mostly manual clay preparation and moulding; sun drying; Fired in FCBTK ; Specific Energy Consumption of 1.1 -1.5 MJ/kg of fired brick	1.3
Mostly manual clay preparation and moulding; sun drying; Fired in Zigzag kiln ; Specific Energy Consumption of 0.95 -1.25 MJ/kg;	1.1
Semi-mechanized clay preparation; extrusion/ soft-mud moulding; shed/sun-drying; Fired in a Zigzag kiln . Specific Energy Consumption of 1.0-1.30 MJ/kg	1.15
Mechanized clay preparation, extrusion, followed by artificial drying; Fired in a tunnel kiln . Specific Energy Consumption of around 1.6 MJ/kg of fired brick	1.6

Source: GKSPL, 2018: Roadmap for Resource Efficient Bricks

The indicative densities for some of the brick products are provided in Table 2¹³.

Table 2: indicative densities for some of the brick products

Type of brick product	Indicative density (kg/m ³)
Solid burnt clay brick	1600
Perforated burnt clay brick (around 25% perforation)	1550
Hollow burnt clay block (around 60% perforation)	800

Criteria for awarding “E3” Mark

Currently the national baseline of specific manufacturing energy of burnt clay bricks and blocks is estimated to be around 2300 MJ/m³. The threshold value for award of “E3” mark is proposed to be kept at 1700 MJ/m³ which is 25% lower than the current baseline¹⁴. That means an enterprise will be awarded “E3” mark if the specific manufacturing energy of its manufacturing plant is lower than the threshold i.e. 1700 MJ/m³.

If an enterprise is manufacturing more than one product, then for award of “E3” mark, the weighted average specific manufacturing energy of its entire product range should be less than the threshold.

¹³ These numbers are indicative only. The densities of brick products need to be measured for estimation of specific manufacturing energy.

¹⁴ It is proposed that the national baseline will be updated periodically every 2 years. Thus, the threshold for award of the E3 mark will also get updated regularly.

MRV Methodology based on Deemed Specific Manufacturing Values

The Measurement, Reporting and Verification (MRV) methodology for the award of “E3” mark will be based on the deemed values of specific manufacturing energy of various manufacturing technologies and processes as specified in Table 1. The estimation of energy savings will also be based on the deemed values. Thus, it will not be required to do a complete energy audit of the manufacturing unit for award of mark or for estimation of energy savings.

Award of the E3 Mark

The step-by-step process to be adopted for the award of “E3” mark to manufacturers is explained below:

1. Empanelment of labelling agencies (E3 mark agencies) for awarding E3 mark

Through open tender, BEE will invite applications and empanel agencies (two or more for initiation phase) which will collect information from the manufacturers, verify data and award E3 mark based on the criteria laid down by BEE. The E3 mark will be awarded for two years.

A standard cost/fee for the labelling agencies will also be fixed, through the tender, by the BEE which the manufacturer will directly pay to the empanelled agency.

2. Submission of application by the manufacturers to the empanelled agency

The interested manufacturers will submit the branding application form along with the required data in the prescribed format to the empanelled agency. Initially there will a digital application form and later on, online application submission system will also be explored.

3. Due diligence by E3 mark agency

The empanelled agency will verify the data provided by the manufacturers and assign deemed specific manufacturing energy values to the manufacturers.

4. Award of E3 Mark

Based on the evaluation of application in previous step, the empanelled branding agency will award E3 mark to the manufacturer. This mark will be awarded for two years. The list of E3 manufacturers will be displayed on the web-portal/dashboard and will be updated quarterly.

5. Surveillance: Audit of E3 Mark Agencies

A certification body will be hired by the BEE which will do random sample audits of the E3 manufacturers to verify their eligibility for the mark and the due diligence process followed by the E3 mark agencies. A penalty will be levied on the E3 mark agencies in case of any discrepancy. The defaulting E3 manufacturer shall be black-listed from the E3 programme.