

MEETING DETAILS

TOPIC	Consultation workshop	DATE	25 July 2025
PROJECT	Development of Green Building Standards for GHANA		
LOCATION	Energy Commission, Nearly Zero Energy Building	TIME	9:00 AM to 3:00 PM

PARTICIPANTS

ORGANIZATION	Representative		
MINISTRY OF WORKS AND HOUSING	Richard Don-Braimah	ENVIRONMENTAL PROTECTION AGENCY (EPA)	Felix Addo Okyrieh Joseph A Baffoe; Joy Hesse Ankomah;
MINISTRY OF LOCAL GOVERNMENT AND RURAL DEVELOPMENT	Lawrence Commodore	ENERGY COMMISSION	Mrs. Eunice Biritwum Ebenezer Kyere Hubert Zan Terry Tamakloe Kwadwo Kyei
GHANA INSTITUTE OF ARCHITECTS	Freeman K Agbomanyi Prosper Agbesi Amlade	ARCHITECTURAL AND ENGINEERING SERVICES LIMITED, (AESL)	Emmanuel Otchere-Darko
GHANA GREEN BUILDING COUNCIL	Daniel Quartey	IMPERIAL HOMES LTD. /PROJECT MANAGEMENT PROFESSIONAL	Freeman K. Gordor
NATIONAL ARCHITECT	Foster Osae-Akunnor	LEGAL EXPERT	Ing. Seth Bright Attipoe
ENERGY EXPERT	Amos Darko	GENDER EXPERT	Augusta Boateng
KNUST- DEPT OF ARCHITECTURE	Kwabena Gyimah PhD	CAPACITY BUILDING EXPERT	Prof Ge-Graft Owusu Manu, PhD
GREEN COMMUNITIES INT.	Matilda Owusu Manu	CBG/HUMAN RESOURCE AND ENVIRONMENTAL SAFETY PROFESSIONAL	Abigail Appiah
HEAT	Martin Brown-Santirso		
CTCN	Valentin Rudloff	FCC RESOURCES LTD	Kenneth Dadson
WISSTECH ENGINEERING	Wisdom Gyansah; Thomas Kutin; Joshua Amengor; Kobina Apeatse; Noah Kitcher Augustine Owusu Ansah	OTHER ONLINE PARTICIPANTS	Frank Osmanu



ABSENT

ORGANIZATION	Person Invited	MINISTRY OF WORKS AND HOUSING	Alfred Bershire
DEM	Karsten Holm	FMR. MINISTER OF ENERGY	Dr. Kwabena Donkor MP

AGENDA

1	Welcome Remarks
2	Project Background and Description
3	Baline Assessment – Overview and Findings from Baseline Report
4	Presentation BEEG (Ch 1-6)
5	Presentation BEEG (Ch 7-11)
6	Discussion
7	Next steps
6	AOB

DISCUSSION POINTS AND RECOMMENDATIONS

<p>1 Welcome Remarks</p>	<p>The Energy Commission Executive Secretary (Mrs Eunice A. Biritwum) emphasised Ghana's commitment to reducing carbon emissions in the building sector and improving overall energy efficiency. The key points of the remarks include:</p> <ol style="list-style-type: none"> 1. Emphasis was placed on the importance of the consultation workshop in shaping the Building Energy Efficiency Guidelines. 2. The workshop's primary objective is to gather input from stakeholders to ensure the proposed guidelines are both effective and realistic. 3. Focus on advancing sustainability and addressing the significant energy consumption and carbon emissions associated with buildings. 4. Attendees were reminded that the success of the guidelines depends on collective input from experts and practitioners in the field. 5. Participants were encouraged to share their feedback openly to ensure the guidelines reflect the practical needs of the industry while contributing to long-term sustainability goals. <p> Senior backing for the completion of this project seems strong with the participation of senior officials in the workshop.</p>
<p>2 Introductions</p>	<p>Participants introduced themselves, their roles, and their organisations' interests in the development of the BEEG. Key highlights included:</p> <ul style="list-style-type: none"> • EPA: Prioritising green building standards as a strategy to meet Ghana's GHG reduction targets. • Ghana Green Building Council: Advocating for sustainable building practices and contributing expertise in awareness and implementation. • Energy Commission: Focused on energy efficiency and the need for comprehensive regulations in the building sector. • Architectural Associations: Highlighted challenges in promoting green designs due to a lack of mandatory regulations and emphasised the importance of including site-level considerations (e.g., tree planting, ventilation corridors) in future standards. • Gender Expert (Auguster Boateng): Stressed integrating gender-sensitive architectural design to address differential energy needs and promote equity. • Technical Experts: Shared insights into data collection and the need to align the project with Ghana's existing frameworks like the Ghana Building Code. <p></p>

<p>3 Baseline Assessment – Overview and Findings from Baseline Report</p>	<p>HEAT provided a summary of the Baseline Assessment (Deliverable 3).</p> <p>The baseline analysis included a look at the basic components for the development of the Building Energy Efficiency guidelines: policy background, building energy performance baseline assessment, and a look at existing good practices to identify existing gaps.</p> <ul style="list-style-type: none"> • Policy background key elements: Building codes have existed in Ghana for decades, and the most recent one from 2018 has Energy Efficiency requirements. At the same time, there has been a national and global focus on climate change, and as part of Ghana’s commitment to the reduction of emissions, numerous policy documents have looked at buildings. • Despite all this focus, there are significant gaps in enforcement, primarily due to low availability of capacitated staff and resources available, primarily in the form of qualified inspectors. • The building performance assessment looked at the existing level of building performance based on data collected from existing buildings. There was also an analysis looking at the national level to estimate the possible energy reduction potential from the implementation of a strong standard. • International best practice was discussed in terms of certification schemes, and advanced technology options available for highly efficient buildings. <p>The general conclusions of this report are that while there has been a focus on energy efficiency in buildings, this effort has not been sufficiently coordinated among all the actors or provided with sufficient capacity and resources for effective enforcement</p> <p>KEY TAKEAWAY</p> <ul style="list-style-type: none"> • The background research has been completed to provide a sense of the existing environments from policy, existing stock, and possible directions. • The key conclusions are that, in terms of policy, there is room for a more coordinated approach and more complete measures in the existing building code. • In terms of building performance, there is significant room for energy efficiency gains in the building stock. A complete code that is well enforced could have significant impacts on the building landscape.
<p>4 Presentation BEEG (Ch 1 to 6)</p>	<p>HEAT presented a summary of the BEEG chapters 1 to 6, highlighting how the implementation and enforcement of the proposed BEEG can take Ghana a long way towards achieving zero (net-zero) energy buildings:</p> <p>The key elements of this presentation included:</p> <ol style="list-style-type: none"> 1. Scope and application – A summary of the key scope in terms of the types of buildings (Residential, Office, and commercial buildings) and the elements of building and

construction that will be included. It is proposed that the minimum size of a building for which this code applies is 80m².

2. **The general objectives and the overall performance targets** – The general objectives describe the integration of optimum design with energy-efficient technologies within a robust compliance framework. On the other hand, the performance targets provide a hard and fast performance compliance approach to ensure all buildings perform suitably.

	Building category	Maximum energy index (kWh/m ² /yr)
1.	Residential	50
2.	Office	150
3.	Commercial	200

3. Building orientation – this chapter focuses on the provision of design recommendations to optimise the balance of desired environmental gains/losses, largely focused on thermal energy, lighting, and ventilation. This includes alignment of the building with the path of the sun across the sky and prevailing winds.
4. Building envelope – arguably the most important component of a building, as it presents the largest interface with the outside environment. This chapter looks at recommendations for materials and insulation of walls and roofs, as well as openings in the envelope for human use: windows and doors. This includes recommendations of the WWR and the R and U values recommended that are strong yet achievable based on current technologies.
5. Low-carbon materials – usually one of the more important contributions to the life-cycle GHG emissions of a building, this chapter looks at some options to reduce emissions from the construction cycle. Unfortunately, for these components, it is not always relevant to set targets of emissions as much depends on the building purpose and design, but general recommendations include:
 - Recycled Concrete and Aggregate as it reduces the need for virgin materials, reducing GHG emissions.
 - Sustainably Managed Timber: as a carbon-neutral material, it is recommended to maximise its use where relevant.
 - Low-Carbon Cement Alternatives – this refers to cement made with a higher content of alternative materials, such as industrial by-products or made with higher proportions of renewable energy.
 - Bio-based materials – where possible, this may include locally made materials such as mud brick, or insulation materials that use natural or recycled materials, etc.
6. **Heating, Ventilation, and Air Conditioning** – in a warm country like Ghana, this is an essential element of design, particularly for cooling. The key strategies look at the design of HVAC needs in an integrated manner with high-quality system designs that are fit for purpose (size properly and provide sufficient service), that have a high technical energy efficiency, and combine whole-system thinking that includes smart controls, smart shadings, etc.

Questions and discussion:

- The 80m² limit was questioned as the current level in the Ghana Building Code (BGC) has a 75m² limit. – **HEAT to follow up.**
- Concerns about using a performance compliance approach as there is a risk that developers may not use some of the best tech available, as well as the risk of issues arising around the

appropriate use of the method during enforcement (e.g. what software to use and how to use them, what data will be required, how to ensure uniformity). This is compared to a prescriptive approach, where the high-performance features are dictated and easy to check off during the compliance process, such as auditing, etc. – **discussion ensued between several members indicating that all these issues can be standardised during the enforcement strategy design process, and the performance pathway allows for much greater flexibility and benefit. HEAT to improve wording on this, indicating the recommended hybrid approach of dictating in certain areas but with overall performance targets guiding the majority of decisions. Ultimately, this is a Government decision on how it believes that it can achieve the best results for the possible enforcement options it can bring to bear in this environment.**

- Some questions around the recommended 20% - WWR, indicating that another existing source for Ghana indicates 30% to better use natural lighting. In the current proposed BEEG, there is a 20% proposal, but there are provisions to increase this if measures are taken to minimise thermal gains from the increased window surface. – **HEAT to make this more explicit.**



- HEAT to follow up on key comments, especially any referring to existing sources, and provide specific requirements related to EE in buildings. While this has been done, further sources were mentioned in the meeting.
- Resolving the compliance path difference of opinions is something that the Government of Ghana (particularly through the MoWH and the EC) when the final code is developed and implemented.

5 Presentation BEEG (Ch 7 to 11)

This presentation provided a summary of Chapters 7 to 11:

7. **Lighting** is one of the more important user comfort elements in the building. The BEEG makes recommendations regarding the technology with a firm push towards mandating the use of LEDs wherever possible. At the same time, the chapter outlines the minimum level of lighting needed for different building uses to ensure safety and comfort. These levels are also often recommended in other types of regulations, such as health and safety regulations. For this report, the majority of levels suggested are directly picked up from the existing BC, but some further recommendations are made:

Building Type	Maximum LPD (W/m ²) Ghana BC	Beyond BC requirements (W/m ²)
Office	11	8
Hotel	11	-
Hospital	13	-
Health care centre	11	-
Library	14	-
Convention	15	-
School	12	-
Commercial, services	16	12
Indoor parking space	3	-
Residential	-	6

8. **Renewable energy integration** – One of the ways to minimise energy demand from buildings is to integrate renewable energy generation on site. The technologies in this space focus on solar PV and thermal options, where there are a number of existing technologies that are cost-effective. It was mentioned that there are jurisdictions where solar water heating is mandated in all residential new builds, as it is very effective already.
9. **Building control systems** are another technology option to optimise energy use in buildings, reducing waste and targeting comfort levels to occupant levels as well. Some of the key options include occupancy sensors for AC and lighting, adapting lighting to the level of lighting entering from outside.
10. **Energy performance index** focuses on discussing the proposed minimum levels of performance discussed earlier and the options for software tools to support this pathway, the links to building labelling schemes, and the continuous auditing and performance assessment that they support.
11. **The Compliance Pathways** chapter discusses the options of compliance pathways and recommends the hybrid pathway that was discussed during the questions session earlier. The chapter also indicates the opportunity afforded by certification schemes working in tandem with a Building code.
12. **Enforcement** is arguably the most important step in the implementation of a BEEC, as without strong measures, the entire code is meaningless. This chapter provides guidelines on the needs of a strong enforcement scheme, looking a core activities, the importance of assigning roles and responsibilities to different actors, and the different proposed stages of a phased implementation plan.

Institution/Agency	Role in BEEC Enforcement
Ministry of Works & Housing (MoWH)	Policy leadership; overall BEEC integration
Energy Commission (EC)	Technical authority; standards, audits, renewable systems
Metropolitan, Municipal, District Assemblies (MMDAs)	Primary implementation body; design review, site inspections
Ghana Standards Authority (GSA)	Development & calibration of testing protocols
Certified Third-Party Firms	System testing and commissioning



Discussion and key points are captured in the next session.

6 Discussion

This session was solely designated for questions and discussion with the audience and exchanging ideas. As expected, much of the discussion in this session elaborated on the questions raised on session 5, adding detail and nuance to some of the points. It became clear that in the audience there were differing opinions regarding some of the paths to follow, which will require intervention and direct action by the government during the phase of designing the final form of the code. A summary of the discussion is as follows:

- Some rating schemes (EDGE) provide alternative (lower) thresholds of performance than those provided here. It would not be to the country's benefit to adopt loose (low) levels of efficiency – HEAT will review the proposed levels in light of these comments, but there is no commitment to change them unless it feels appropriate. There is an important need to balance the first implementation of a BEEC with the stringency of the levels set to allow industry time to adapt. It is strongly recommended, however, to raise the levels periodically to maintain the momentum of progress.

- Further discussion on the WWR levels indicated that Natural lighting losses due to a small WWR requirement may be detrimental. The need to balance natural lighting losses with thermal gains was discussed, and it was highlighted that higher than 20% ratios would be allowed if EE measures are taken to minimise negative impacts.
- The ability of the simulation software to deal with microclimate impacts of building within its construction site was questioned. For example, the warming presence of a car park. Interventions by one of the Project’s architects indicated that this is not the case. Beyond that, it was indicated that these impacts have no other method to be assessed prior to construction, and any solutions would centre on ameliorating measures such as the use of shading and landscaping.
- Questions were raised on what data would be needed for compliance from the builders/designers of the building. The response centred on the choice of software tool for compliance. While there is much that is in common across the tools, it is important to make the requirements even, so it will be important to make a specific choice during implementation to facilitate the enforcement.
- Again, the discussion of performance vs specific requirements was raised with the example of roof design options being discussed. For example, it is known that a dual-layer roof design with a ventilated cavity will reduce heat gains. The discussion indicated that while this is true, a general building performance requirement will force builders to make use of all (or most) of the ‘low-hanging fruit’ options available to meet the standards, reducing the load on the enforcement side to check every prescribed item. While this point is taken, decisions still need to be made.
- It was indicated that HVAC standards have been revised recently. HEAT to look at the latest HVAC standards to update figures if needed.
- Attention was drawn to the fact that a prescriptive rating system is currently under development by the Energy Commission of Ghana, and this may shed light on some of the discussion earlier. HEAT to review documents provided to this effect and incorporate the needed elements. It is agreed that there is no sense in having competing alternative processes in place. **As such, HEAT will review existing documents, looking to adopt relevant materials. That being said, it is still recommended to have a hybrid approach to ensure that all buildings achieve a minimum level of performance.**

It was proposed that all professional bodies involved in the development/consultation of the BEEG should be acknowledged in the document – HEAT to follow up.




HEAT to follow up on the main comments and incorporate the new relevant material, where possible. However, it needs to be understood that this document is a guidelines document for energy efficiency and NOT a prescriptive instruction for the government and the final decisions will need to be taken internally.






It is suggested to bring this topic again in next meeting.

<p>7 Next Steps</p>	<ol style="list-style-type: none"> 1. Complete a new draft of Deliverable 4 (BEEG) incorporating the new details provided. 2. Coordinate the execution of the capacity building workshop and Validation Workshop during August 2025.
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ATTACHMENTS

<p>ANNEX I</p>	<p>HEAT and CTCN would like to acknowledge and thank the coordination and participation of the national stakeholders, project owners, and general participants for the valuable feedback provided from the policy, social, and technical perspectives.</p> <p>The following table provides a guide to the participating organisations:</p>
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Name	Logo	Link to Website
Environmental Protection Authority		https://www.epa.gov.gh/new/
Ghana Institute of Architects		https://gia.com.gh/
Ghana Institution of Engineers		https://ghie.org.gh/
Ghana Institution of Surveyors		https://www.ghis.org.gh/
Ghana Green Building Council		
Ghana Standard Authority		https://gsa.gov.gh/
Architectural Engineering Services Ltd		https://www.aesl.com.gh/

	<p>Ministry of Works, Housing and Water Resources</p>		<p>https://mwhwr.gov.gh/</p>
	<p>Ministry of Local Government, Chieftaincy and Religious Affairs</p>	 <p>MINISTRY OF LOCAL GOVERNMENT CHIEFTAINCY AND RELIGIOUS AFFAIRS</p>	<p>http://www.mlgrd.gov.gh/</p>
	<p>Energy Commission</p>	 <p>ENERGY COMMISSION Securing Ghana's Energy Future Today</p>	<p>https://www.energycom.gov.gh/</p>
	<p>KNUST</p>	 <p>KWAME NKRUMAH UNIVERSITY OF SCIENCE & TECHNOLOGY</p>	<p>https://www.knust.edu.gh/</p>
	<p>CABE - College of Arts and Built Environment</p>		<p>https://cabe.knust.edu.gh/ https://architecture.knust.edu.gh/</p>
<p>ANNEX II</p>	<p>Meeting Official Photo</p>		

