



---

**Economic Commission for Europe****Committee on Sustainable Energy****Thirty-second session**

Geneva, 13-15 September 2023

Item 6 of the provisional agenda

**Promoting systemic efficiencies and digitalization in the United Nations Economic Commission for Europe region****Progress report on High Performance Buildings Initiative****Note by the Secretariat**

1. The United Nations Economic Commission for Europe (ECE) is mandated to carry out a programme of work in the field of sustainable energy with a view to improve access to affordable and clean energy for all, and help reduce greenhouse gas emissions and the carbon footprint of the energy sector in the region, by promoting international policy dialogue and cooperation among governments, the energy industry and other stakeholders.
2. Adopting a holistic approach to building design, delivery and operation and a paradigm that envisions buildings as energy producers and not solely or primarily as energy sinks, ECE, through its Committee on Sustainable Energy, its Group of Experts on Energy Efficiency, and the Joint Task Force on Energy Efficiency Standards in Buildings established with the Committee on Urban Development, Housing and Land Management, promotes the development and dissemination of international standards in energy efficiency and maintains its Framework Guidelines for Energy Efficiency Standards in Buildings (the Framework Guidelines).<sup>1</sup> To deploy the Framework Guidelines, ECE launched the High Performance Buildings Initiative (HPBI) that focuses on capacity development and impact in the field and involves engagement with relevant partners.
3. This activity supports the implementation of decisions taken at the 69<sup>th</sup> session of the Economic Commission for Europe,<sup>2</sup> builds on recognizing the role of built environment in driving the green transformation<sup>3</sup> and in progressing the work of the Committee on Sustainable Energy,<sup>4</sup> supports the Programme of Work of the ECE sustainable energy subprogramme,<sup>5</sup> the Programme of Work of the Committee on Sustainable Energy,<sup>6</sup> and the

---

<sup>1</sup> ECE/ENERGY/GE.6/2020/4

<sup>2</sup> See E/2021/37-E/ECE/1494, sect. E (69), para.5

<sup>3</sup> See E/ECE/1504, sect. V (C)

<sup>4</sup> See E/ECE/1507, para.33

<sup>5</sup> Informal Document 2021/34 of the Executive Committee of the United Nations Economic Commission for Europe, 119<sup>th</sup> meeting, item 9

<sup>6</sup> See ECE/ENERGY/2022/1, sect. III (A), and ECE/ENERGY/31/2022/INF.1/FINAL APPROVED, para.5(e)

activities envisioned in the Work Plan of the Group of Experts on Energy Efficiency for 2022-2023<sup>7</sup> and for 2024-2025.<sup>8</sup>

4. Stakeholders in the area of energy efficiency in the built environment identified in the framework of the implementation of the HPBI, may be recognized as International Centres of Excellence on High Performance Buildings (ICE-HPB) through the established procedure, and join a collaborative network of organizations. ICE-HPB constitute a network of organizations, which currently includes nine entities located in Bulgaria, Canada, Ireland, United Kingdom of Great Britain and Northern Ireland, and United States of America, that support the following areas:

(a) Support opportunities for dialogue amongst local and international leaders in the real estate, construction, design, and engineering industry to identify challenges, share best practices and build a growing and diverse knowledge community;

(b) Gather and disseminate knowledge to industry professionals, including through partner organizations, by the means of education and training, exhibits, case studies, research, demonstration and/or technical assistance projects, and the development of tools and industry-focused training resources;

(c) Conduct research on best practices, identify potential barriers to their adoption and implementation, develop innovative and creative strategies and solutions as means and methods to support industry professionals to implement and adopt measures and best practices to save energy and reduce carbon emissions;

(d) Catalyse, create and nurture public support and demand for industry standards and best practices through public outreach, initiatives, and events;

(e) Seek collaboration opportunities on relevant matters with other entities, networks, and alliances active in the area of energy efficiency in the built environment.

5. The reported activities and efforts made by ICE-HPB in 2022, demonstrate progress in advancing sustainable practices in the built environment in the respective geographies. Key focus areas included reduction of buildings' energy requirements, reduction of carbon emissions, improvement of indoor air quality, and improvement of materials supply chain including increasing recyclability of materials. Besides promotion of principles of the Framework Guidelines, the following common categories of activities of ICE-HPB in 2022, can be highlighted:

(a) Research and innovation: conducted research to develop innovative solutions for energy-efficient buildings; these efforts encompass exploring new materials, technologies, and systems that contribute to reduced carbon emissions and improved energy performance of buildings;

(b) Policy advocacy: ICE-HPB were instrumental in advocating for policy changes that support sustainable building practices, including facilitating positive change of national legislation in the areas of promoting energy efficiency and aligning with global climate agreements;

(c) Education and training: focused on education and capacity-building, including development and delivery of comprehensive training programmes and workshops to share knowledge and skills needed to implement modern sustainable solutions and practices in buildings;

(d) Community engagement: raised awareness, promoted behaviour change, and involved local stakeholders in the transition towards more sustainable built environments;

(e) Partnerships and collaboration: collaboration with academia, industry, government, and international organizations facilitated knowledge exchange, information dissemination, and collective efforts towards common goals;

---

<sup>7</sup> See ECE/ENERGY/2021/10, sect. II (B)

<sup>8</sup> See ECE/ENERGY/2023/10, sect. II (B)

(f) Data analysis and tracking progress: employed data-driven approaches to monitor progress and evaluate the impact of their activities on energy performance of buildings, in support of informed decision-making;

(g) Diversity and inclusion: promoted diversity and inclusion, with initiatives supporting underrepresented groups in the areas of science, technology, engineering, and mathematics, and engaging with diverse communities to ensure equitable access to sustainable practices.

6. The common approach was to emphasize the interdisciplinary collaboration and to leverage partnerships. As ICE-HPB serve as vehicles for knowledge exchange, capacity-building, and matchmaking, building a community of knowledge and practice is instrumental in achieving impactful outcomes in the framework of HPBI.

7. In certain cases, these actions impacted positively industry practices resulting in reduction of the sector's carbon footprint. As a result of collaboration with educational institutions and government bodies, this facilitated the improvement of national legislation and policies on energy-efficient practices in buildings and construction.

8. For instance, the following progress and impact in 2022 in the key categories of activities aligned with the HPBI objectives, were reported by the selected ICE-HPB:

(a) Built Environment – Smarter Transformation, BE-ST (before May 2022, Construction Scotland Innovation Centre) (United Kingdom of Great Britain and Northern Ireland):

(i) Platforms: fostered collaboration, exchange of knowledge and practices, and value creation among stakeholders active in the area of net-zero built environment; the existing platform infrastructure – digital platforms, centres and hubs gathering representatives of government, academia, industry, and civil society – played a central role in disseminating knowledge on relevant innovative technologies and processes and in skills development;

(ii) Programmes: facilitated collaboration between academic institutions in support of achieving objectives of industries, including advanced manufacturing and affordable net-zero carbon housing that contributed to national goals; conducted accredited upskilling training in such areas as Passive House standards, retrofits, energy efficiency, and construction materials;

(iii) Policy: contributed to national just transition plans, with emphasis on energy and buildings and construction sectors, as well as played a role in procurement reform, policy implementation, and contributed to national net-zero goals;

(iv) Global partnerships: strengthened engagement in cross-border collaborations; increased relevance within the built environment ecosystem by incorporating innovation, research, system design, skills development, and knowledge exchange.

(b) Green Building Alliance, GBA (United States of America):

(i) Policy and demonstration projects: developed case studies highlighting energy efficiency best practices across industries, resulting in certifications for 20 buildings; successfully advocated for legislation updates in the areas of energy efficiency including residential weatherization, decarbonization, and clean energy, promoting equitable economic growth;

(ii) Tracking progress and data analysis: established community energy baselines for 12 local municipalities by collecting and evaluating energy and water use and carbon emissions data showcasing attractiveness of investments in high-performance buildings;

(iii) Development of training materials: developed training materials in furtherance of the Framework Guidelines, covering an array of topics surrounding built environment;

- (iv) Communication and engagement: organized events and workshops, enabled networking opportunities, and engaged diverse communities in sustainability curriculum and policy development;
  - (v) Global partnerships and engagement in the framework of HPBI: collaborated with the United Nations Environment Programme and its Global Alliance for Buildings and Construction (GlobalABC)<sup>9</sup> and other ICE-HPB on co-organizing conferences, as well as training courses for students.
- (c) Global Building Network, GBN (United States of America), a network with more than 40 global partnerships spanning nine countries:
- (i) Interdisciplinary collaboration: fostered cross-disciplinary collaboration bringing experts from architecture, engineering, health sciences, and policy, leading to the development of comprehensive solutions to address complex challenges, and to bridging the gap in the translation of knowledge to policy through global-to-local and local-to-global connections;
  - (ii) Workforce development: reached diverse audiences with education and training, engaged students in research projects providing valuable experience and career opportunities;
  - (iii) Policy advocacy: engaged with policymakers, government agencies, industry leaders, non-profit organizations, and other stakeholders to facilitate the dissemination of research findings and inform policy discussions; supported community-engagement processes for equitable development and implementation of policies;
  - (iv) Research: undertook fundraising efforts with various stakeholders, including foundations, industry partners, and alumni; secured research grants and implemented projects, resulting in new research teams, educational projects, and collaborations with national and international institutions; disseminated research findings through workshops, webinars, and conferences;
  - (v) Educational initiatives: organized educational events to raise awareness, build capacity, facilitate knowledge exchange and skills development among researchers, practitioners, and students in such areas as climate resilience, reduction of embodied carbon, and data-driven decision-making;
  - (vi) Strategic partnerships: supported partnerships with academia, industry, non-profit organizations, and international entities focused on sustainability, climate change, and health.
- (d) High Performance Building Alliance, HPBA (Ireland), as a joint initiative carried out by the Wexford County Council (WCC) and the Waterford and Wexford Education and Training Board (WWETB):
- (i) Programming the increase of buildings energy performance at national level: pioneered net zero energy building (NZEB) training that was recognized nationally, and expanded its model to multiple training centres;
  - (ii) Reducing energy requirements: led the effort of achieving compliance of new social housing with NZEB and targeting the same for retrofits;
  - (iii) Emissions reductions and indoor air quality: led initiatives and projects that focused on achieving up to 40 percent of carbon dioxide emission reductions, on improving indoor air quality, and on health improvements in residential, commercial, and public sectors through, for instance, monitoring air quality and pollutant parameters for effective ventilation;
  - (iv) Supply chain improvements: promoted green economy opportunities and circularity, aligned with policy initiatives at national and supranational levels;

---

<sup>9</sup> As of June 2023, GlobalABC gathered 280 members, including 39 countries.

- (v) Outreach and dissemination: increased global presence through representation at international fora, sharing national experiences and replicable best practices.

## Conclusions and recommendations

9. ICE-HPB in the framework of HPBI share a commitment to global impact, aligning with the targets set by major international initiatives such as the 2030 Agenda for Sustainable Development and the Paris Agreement. While promoting the Framework Guidelines and disseminating principles contained therein, ICE-HPB participate in international dialogue, engage in cross-border collaborations, and contribute to policy discussions on buildings' design and construction that advance clean energy and positive climate outcomes in the built environment.

10. The Framework Guidelines go beyond the incremental, component-wise approach of most existing building standards. Rather, they represent a principles-based performance guidance for building energy standards that are outcome-based and help holistically design and operate high-performance buildings as part of an integrated sustainable energy system. This bears evidence of relevance of HPBI to the Sustainable Energy subprogramme.

11. At the same time, it is noted that significant secretariat resources need to be involved in the administration of the ICE-HPB network and in comprehensively stocktaking its operational results achieved in the framework of implementation of HPBI. Such resources are currently not available.

12. More importantly, the scale of the issue is such that in order to have a macro-impact, a very large and resource-rich network would be needed to cater at local level the variety of characteristics of the built environment that the ECE region presents. The geographical width, its climate diversity and the size of the built environment, represent a challenge that necessitates an adequate response for a tangible impact.

13. Finally, and with the view to avoid duplication of activities, it would be worthwhile to assess the modalities of closer cooperation with similar programmes or initiatives to acquire a broader geographical coverage and leverage other available resources. As an example, the existing cooperation and exchange with the United Nations Environment Programme and notably its GlobalABC, where ECE is member, could prove an effective vehicle for this purpose.

14. Stronger collaborations are needed to implement energy codes, building performance standards, compliance paths, and enforcement across all countries and all building types. This is also evidenced by key findings from major events, such as the Clean Energy Ministerial in 2022. ECE, along with many HPBI participants, was represented at the event that oversaw the Breakthrough Agenda, including Buildings Breakthrough which emerged at the 27<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) as an international endeavour to make clean technology solutions the most affordable, accessible, and attractive option in each emitting sector.

15. The Committee on Sustainable Energy might see value in focusing the HPBI efforts where it can exert maximum impact, by leveraging the existing centres of expertise to provide technical assistance to ECE member States, in particular focus to programme countries, in collaboration with other potential partners.