

Retrofitting Buildings for an Energy-Efficient, Low-Carbon Future: Forum on Domestic and International Practice

16–17 October 2025 | Beijing, China

The Energy Efficiency Hub, in collaboration with China's [Ministry of Housing and Urban-Rural Development](#) (MOHURD) and affiliated agencies, co-organised a two-day international forum focused on retrofitting buildings for energy efficiency and carbon reduction. Hosted by the [National Center of Technology Innovation for Green and Low-Carbon Building \(NCTI-GB\)](#), the event marked the first Hub event in China and demonstrated the country's strong commitment to international cooperation on energy efficiency.

Over 80 participants from governments, international organisations, the private sector, and research institutions across China and a dozen other countries joined the forum. The event generated enthusiasm for a variety of follow-up activities, including targeted exchanges on building digitalisation, collaborative workshops on retrofit financing, and deeper engagement with international partners to scale best practices. These initiatives aim to sustain the dialogue and accelerate implementation across Hub Member countries and options for pursuing them are being explored.

Takeaways

- 1. Retrofitting existing buildings is essential to achieving energy efficiency and carbon reduction goals.** China provided insights into the practical realities of implementing retrofit programmes. Operational changes, such as improved building management, consistently delivered energy savings of 10–30%, while some capital-intensive measures like insulation retrofits showed mixed results.
- 2. Mobilising investment remains a major challenge.** The Asian Development Bank showcased district heating projects in Qingdao and Jinan that achieved significant reductions in coal use and emissions through clean energy integration and smart demand-side management. The ICLEI Transformative Actions Program (TAP) demonstrated how to de-risk urban climate projects through technical assistance, capacity building, and alignment with the UN Sustainable Development Goals.
- 3. Cooling Retrofits require tailored financing models.** The German Agency for International Cooperation (GIZ) presented the PEEB Cool initiative, which supports cooling retrofits in hot climates through concessional loans, performance-linked grants, and technical assistance. The programme combines blended finance, harmonised standards, and enabled frameworks to unlock investment in dense urban contexts.
- 4. Concerted policy packages drive market transformation.** The IEA stressed that no single policy could deliver transformation. A mix of regulations, incentives, and information tools — such as energy performance certificates (EPCs), building codes, and financial support — is most effective. Examples from China, France, and Scotland illustrated how targeted incentives can accelerate adoption of efficient technologies.
- 5. Digitalisation and smart energy management are emerging priorities.** Digital tools such as Building Energy Management Systems (BEMS), smart meters, and grid-interactive appliances are essential for optimising building performance. Korea showcased its national rollout of smart metering infrastructure and standards for

BEMS, while Schneider Electric described AI-powered platforms that enable real-time optimisation of HVAC systems, predictive maintenance, and energy diagnostics.

6. **International collaboration can enhance national policy design and implementation.** The forum underscored the value of international cooperation in advancing retrofit strategies and energy efficiency policy. Exchanges between governments, international organisations, and technical experts bring to light practical lessons and scalable solutions. The Energy Efficiency Hub was recognised as a useful platform for convening such exchanges. Through its Task Groups and events, the Hub facilitates knowledge sharing, supports implementation, and strengthens ties among Members and partners. The forum deepened engagement between Chinese and international institutions, opening pathways for ongoing collaboration in building digitalisation, retrofits, and appliance efficiency.

Day 1: Site Visits

Participants visited four sites across Beijing, each highlighting different aspects of building energy efficiency:

- **Beijing Research and Development Center of Building Energy Efficiency** showcased passive house approaches;
- **China Architectural Design and Research Group BIM Building** featured AI-driven operation and maintenance;
- **Beijing Planning Exhibition Hall** presented green urban planning strategies; and
- **Daji Lane Residential District**, a newly renovated neighbourhood, demonstrated practical retrofit applications.

Day 2: Panel Discussions

1. **Technologies for Building Retrofits:** Panels explored advanced cooling technologies and digitalisation of building systems. Speakers from the German Energy Agency, Midea Group, Schneider Electric, and Tsinghua University shared insights on smart controls, demand flexibility, and grid-interactive appliances.
2. **Implementing Retrofit Policies:** Presentations and discussions focused on policy frameworks to support retrofits, including cooling performance standards, energy management systems, and certification schemes. The European Commission offered a keynote address. The IEA provided a scene-setting presentation on policy packages, and Kazakhstan shared its national experience.
3. **Scaling Financing for Green and Efficient Buildings:** This session addressed investment strategies and de-risking mechanisms. The Asian Development Bank presented models for low-carbon district heating, while GIZ, ICLEI East Asia, and others discussed financing for cooling retrofits and smart energy systems.
4. **ESCO Financing Deep Dive (hybrid session):** Organised by the [Hub Energy Efficiency in Buildings Task Group](#), this session examined the role of energy service companies (ESCOs) in building retrofits. Speakers from Australia, the European Commission, Saudi Arabia, Asia Clean Energy Partners, and Towngas Hongkong discussed business models, implementation challenges, and regional best practices.