
Economic Commission for Europe

Committee on Housing and Land Management

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Item 6(a) of the provisional agenda

Review of the implementation of the programme of work 2016-2017

Sustainable housing and real estate market

Project proposal on energy efficiency standards for buildings

Note by the secretariat

The seventy-fifth session of the Committee on Housing and Land Management in October 2014 endorsed a proposal by the Committee Bureau for the establishment of an informal expert group to develop building standards (ECE/HBP/2014/4).

In 2015, the secretariats of the CHLM and the Committee on Sustainable Energy conducted a survey of Member States and prepared the survey report on “Building Standards and Building Regulations in the UNECE Region”. Further, an Expert Consultation on Energy-Efficiency Standards in Buildings was held on 20 and 21 April 2015 in Geneva, Switzerland.

Based on the recommendations of the survey and the Expert Consultation meeting, the Committee at its 76th session endorsed the proposal for the establishment of the Joint Task Force on Energy-Efficiency Standards in Buildings with the Committee on Sustainable Energy and with the participation of experts from other ECE bodies and international partner organizations. The Joint Task Force, if established, would address issues on energy-efficiency codes and standards in buildings.

The secretariat prepared a project proposal to seek for financial support to the activities of the Joint Task Force. This document contains the proposed project description. So far the project has not been funded; the governments and other organisations are invited to provide financial and in-kind support to the proposed project.

The Committee is invited to take note of the information provided in this note.

I. Introduction

1. Houses define our living environment, and much of our leisure time is spent at home. Thus, our standard of living and quality of life depend largely on the quality of our homes. In the UNECE region, buildings are responsible for approximately one third of total energy consumption and account for almost 40 per cent of carbon dioxide emissions from combustion.¹
2. Achieving energy efficiency in buildings is a challenge for many countries in the UNECE region whilst solutions exist already today: available technology can reduce a building's energy consumption by up to 50 per cent with moderate investment costs.² Moreover, improving the energy performance of a residential building goes hand-in-hand with an increase in living comfort and a reduction of energy bills. It contributes to reducing fuel poverty and mitigating greenhouse gas emissions, while creating employment. Hence, energy efficiency measures can deliver economic, social and environmental benefits.
3. Global energy efficiency investment in buildings is estimated to have been USD 90 billion (+/- 10%) in 2014. In Germany, energy efficiency investments exceeded USD 17 billion with 75% directed towards residential buildings and more than 60% targeting energy efficiency retrofits. Global energy efficiency investment in buildings is projected to increase to over USD 125 billion by 2020, driven in part by expanding efficiency-targeted policies. In the United States, energy efficiency is considered the largest domestic energy resource, as today's energy consumption would be 55 per cent higher if there had been no efficiency improvements since 1973.³ As energy efficiency codes, standards and programmes are improved and more widely implemented, per-building efficiency investment is projected to increase across most national building markets in the Organization for Economic Co-operation and Development (OECD).³

II. How standards harmonize markets and foster economic development

4. Standards are documents based on voluntary compliance, established by consensus, and approved by a recognized body. They provide, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at achieving the optimum degree of order in a given context. They should be based on the consolidated results of science, technology and experience, and aimed at promoting community benefits.⁴ Standards may be international or national and the benefits of their use are widely recognized. Their application:
 - Promotes the harmonization of common practices, procedures and product specifications to allow compatibility across borders, in the case of international standards, and within countries, in the case of national standards.

¹ Green Homes. Towards energy-efficient housing in the UNECE region, available at: www.unece.org/index.php?id=30772

² Levine, M., Ürge-Vorsatz, D., Blok, K., Geng, L., Harvey, D., Lang, S., Levermore, G., Mongameli Mehlwana, A., Mirasgedis, S., Novikova, A., Rilling, J., Yoshino, H. (2007): Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, [Metz, B., Davidson, O.R., Bosch, P.R., Dave, R. and Meyer, L.A. (eds.)] Cambridge University Press, Cambridge, United Kingdom and New York, NY, U.S., at: www.ipcc.ch/publications_and_data/ar4/wg3/en/ch6.html

³ Alliance to Save Energy (2012): Energy Efficiency: America's Greatest Energy Resource, available at: www.ase.org/resources/

energy-efficiency-americas-greatest-energy-resource (last access 1 Sep. 2015)

⁴ International Organization for Standardization (ISO) website, at: www.iso.org/sites/ConsumersStandards/1_standards.html#section1_1 (last access 1 Sep. 2015)

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- Enables the creation of harmonized, stable and globally accepted frameworks for technologies, best practices and agreements, which support sustainable development.
 - Reduces the risk of the proliferation of non-compliant and often dangerous goods and practices and increases safety through harmonized and up-to-date processes and measures.
 - Encourages better access to new technologies and best practices by reducing costs and complexity, opening markets and promoting broader access to products and services.
 - Supports the use of clear and transparent rules, which improve consumer confidence and protection and safeguard the interests of key stakeholders.

5. Standards can be used to show compliance with the requirements set by technical regulations and help minimize inconsistencies between countries. In particular, in the buildings sector, compliance with a set of minimum standards has proven records of successful policy making that enables an increase in energy efficiency. California, for example, has reaped substantial energy-savings benefits thanks to policies that can be easily adopted elsewhere: next to research and development of new technologies, utility programs to help consumers lower their bills, guidelines for minimum standards that ensure new buildings and appliances are not energy guzzlers⁵.

6. By an increased and widely accepted use of energy efficiency standards for buildings, the achievement of targets set by several international initiatives such as energy related Sustainable Development Goals, the Sustainable Energy for All Initiative, and the Geneva UN Charter on Sustainable Housing can be substantially accelerated. In addition, the uptake of energy efficiency measures ensures energy security, mitigates GHGs emissions and grants access to affordable energy for all.

III. Need for action

7. Due to the increase of the number of national and international standards, the consequent confusion generated by this situation, and the many challenges that the building sector faces, upon the request of its member States, the UNECE has started working on this issue through the Committee on Housing and Land Management (CHLM) and the Committee on Sustainable Energy (CSE). In order to understand the interest of member States and of the international arena to energy efficiency standards in buildings, the secretariat developed a survey on building standards and regulations and held an expert consultation on energy efficiency standards in buildings. The outcomes are briefly discussed below.

III.1 Results of the survey on building standards and regulations

8. In March 2015, the UNECE sent a questionnaire to member States with the aim to identify areas and activities in the field of building standards and regulations where the UNECE can support member States. The results of the survey suggest that UNECE should focus on the following topics:

- **Thermal performance of buildings and their building components**
- **Construction materials**
- **Minimum habitable standards for healthy and safe living**

9. Regarding the role of the UNECE in supporting its member States, respondents state that the priority activities could be:

- Mapping of existing energy-efficiency standards in buildings

⁵ California's Energy Efficiency Success Story (2013): NRDC Factsheet accessed on October 2015 via www.nrdc.org/energy/files/ca-success-story-FS.pdf

- Establishing partnerships with different international bodies and professional organizations that deal with building standards in the UNECE region
- Establishing a database and network of experts and platforms for the exchange of experience and the development of guidance
- Developing best-practice guidance on inspection and enforcement of regulations

10. National and local governments can play a key role in addressing this challenge by creating the conditions that enable homeowners, residents, banks and the private sector to take action toward energy-efficient housing. However, without a comprehensive overview on existing standards that enable energy efficiency in housing this challenge is likely to be not overcome.

III.2 Expert Consultation on Energy-Efficiency Standards in Buildings and suggestions for the roadmap

11. The UNECE CHLM and CSE organized an Expert Consultation on Energy-Efficiency Standards in Buildings in April 2015.⁶ Representatives of relevant stakeholders and main international organizations dealing with energy and standards, such as the ISO, the IEA, the Buildings Performance Institute Europe came together to discuss the way ahead for promoting the use of standards to enhance energy efficiency in the building sector, starting from the current international initiatives and analyzing the needs of the UNECE member States as resulted from the survey.

12. Albeit standards being an effective tool to promote energy efficiency, the experts highlighted that they are more effective as part of a set of instruments and measures, such as for instance good practices and guidelines. The participants recommended establishing a **Joint Task Force on Energy-Efficiency Standards in Buildings**. This Task Force is the appropriate “tool” to move towards the realization of a comprehensive overview on existing energy efficiency standards in buildings of the UNECE region. Their activities are tentatively fixed to mapping energy-efficiency standards for buildings incl. conducting a gap analysis and establishing country profiles, preparing guidance materials and trainings as well as reaching out to other international organizations.

IV. The work on standards of the UNECE

13. At the UNECE, work on standards is very well established in particular in the transport sector. Here, the UNECE has established 57 transport agreements and conventions which are negotiated by government representatives and become legally binding for countries which ratify or accede to them. These agreements and conventions create international safety and environmental standards and regulations for transport and motor vehicles and their trailers, harmonize national regulations, make border crossings less complicated, and provide for the development of coherent infrastructure networks for road, rail and inland waterway transport. In the case of energy efficiency, standards are covered by the three entities below:

- **The Committee on Housing and Land Management (CHLM)**⁷ provides policy advice and expert assistance on sustainable housing development, land administration and spatial planning. Since its establishment in 1947, it has actively promoted building codes and standards.
- **The Committee on Sustainable Energy (CSE)**⁸ oversees UNECE work on sustainable energy with a view to improving access to affordable and clean energy for all and helping reduce greenhouse gas

⁶ More information on the Expert Consultation can be found at www.unece.org/index.php?id=38865#/

⁷ More information can be found at www.unece.org/housing.html

⁸ More information can be found at www.unece.org/energy.html

emissions and the carbon footprint of the energy sector. Its Group of Experts on Energy Efficiency focuses on regulatory and policy dialogue addressing financial, technical and policy barriers to improve energy efficiency and on sharing experience and best practices in the field of energy efficiency.

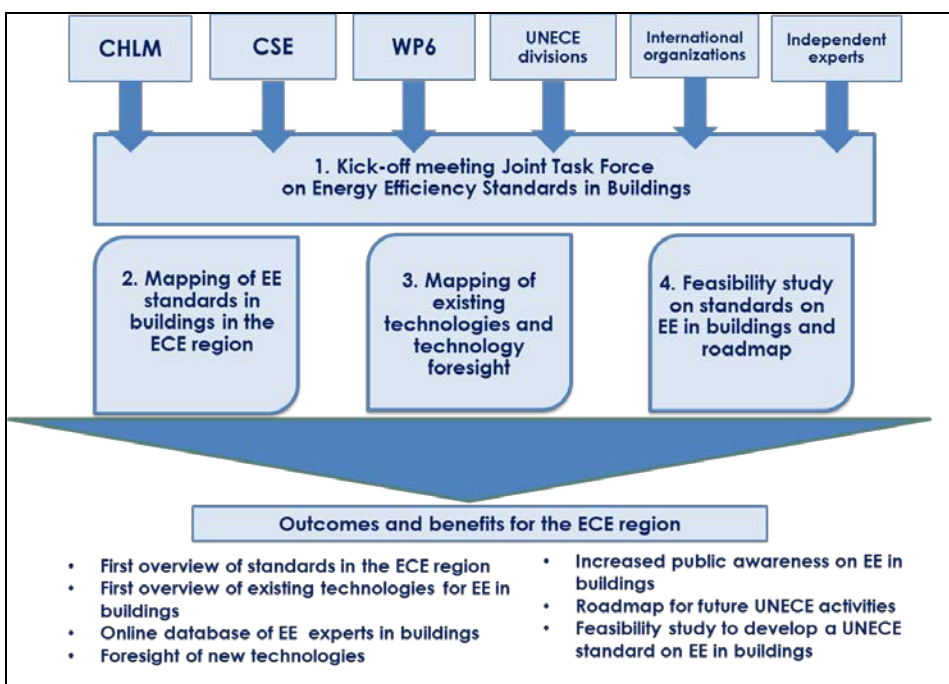
- **The Working Party on Regulatory Cooperation and Standardization Policies (WP.6)**⁹ serves as a forum for dialogue among regulators and policy makers. It addresses technical regulations, standardization, conformity assessment, metrology, market surveillance, and risk management. It promotes a holistic partnership in all phases of regulatory action, from standards-setting to regulatory enforcement.

V. Proposed activities

14. In order to respond to the need of member States for a comprehensive overview on existing standards for energy efficiency in buildings (see section 1.3), a set of activities are proposed.

15. The activities are clustered in four groups and have a project timeframe of two years. All of the activities will only be carried out for the identified priority areas (see section 1.3), i.e. thermal performance of buildings and their building components, construction materials, and minimum habitable standards for healthy and safe living. The activities are illustrated in figure 1 and described in the subsequent section.

Figure 1: Clusters of activities under this project proposal



16. **Phase 1. The kick-off meeting of the UNECE Joint Task Force on Energy-Efficiency Standards in Buildings and beginning of the activities.** The Joint Task Force comprises experts from the two CHLM, CSE and WP.6 (see section 1.4), other UNECE bodies, international organizations and relevant experts to ensure a cross-sectorial approach to addressing energy-efficiency codes and building standards. Independent technical experts on building standards and state of the art technologies will be

invited to support the work of the expert group by providing written contributions and participating in its meetings. The Joint Task Force has already nominated the two co-chairs, Mr. Marko Nokkala (Finland) and Mr. Burkhard Schulze Darup (Germany).

17. **Phase 2. Mapping of existing standards and creation of a database of experts on energy efficiency in buildings** with focus on the three areas mentioned in chapter 1.3. This activity will provide member States with a complete overview on which standards currently exist, which markets they are most relevant for and how they are applied. Accordingly, the mapping will be carried out on national and international level. Once, all standards are included they will be clustered into regional and country profiles. The finalized mapping will be used by the UNECE to conduct a gap analysis for energy efficiency standards in buildings in the UNECE region to determine the feasibility and impact for selected UNECE standards, including an established mechanism and procedure for standard setting. Further work will be devoted to the creation of an international database of experts in the relevant fields that can be clustered according to the mapping exercise.

18. **Phase 3. Mapping of existing technologies** and foresight of new technologies that enhance energy efficiency in buildings and meet the existing standards, update of the database of experts, with a particular focus on the three areas as presented in section 1.3. This initiative will help member States to understand which technologies and products exist and which ones are supposed to appear in the market to address future trends. For the UNECE this mapping exercise will allow to identify gaps that need to be addressed for an increased uptake of state of the art technologies and thereby support its member States in promoting them.

19. **Phase 4. Feasibility study on the development of standards for Energy Efficiency in Buildings and development of the roadmap of further activities of UNECE** with focus on the three areas as stated in section 1.3. The feasibility study will build on the two performed mapping exercises from the previous phases and will identify the needs and the possibility of developing a UNECE standard in the field of energy efficiency in buildings. The study will also define mechanisms and procedures to standard setting and eventually develop a draft standard based on the findings from the feasibility study. At the end of this phase, a roadmap will be developed that comprises possible future activities of the UNECE in response to the outcomes of the mapping exercises and the study. Further funding will be required for the development of draft standards and their adoption.

VI. Benefits for the UNECE community

- Unique overview and gap analysis on standards for energy efficiency in buildings
- Unique overview on existing technologies for energy efficiency in buildings
- Online database of experts in energy efficiency in buildings
- Foresight of technology on energy efficiency in buildings
- Increased public awareness
- Strategy and roadmap for future UNECE activities
- Step towards reaching energy efficiency goals amongst the UNECE region
- Step forward the harmonization of markets and standards
- Identification of mechanisms and processes which can bring to the development of a standard on energy efficiency in buildings for the UNECE region.

⁹ More information can be found at www.unece.org/trade/wp6/welcome.html