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REVIEW OF IMPLEMENTATION OF THE PROGRAMME OF WORK FOR 2008–2009 AND PROGRAMME OF WORK FOR 2010–2011

HOUSING MODERNIZATION AND MANAGEMENT

REPORT OF THE FIRST WORKSHOP ON ENERGY EFFICIENCY IN HOUSING

Note by the secretariat

Summary

The Committee on Housing and Land Management at its sixty-ninth session in September 2008 decided to address the issue of energy efficiency in housing as part of its programme of work. To gather and exchange relevant information and to develop guidance on the issue, the Committee decided to hold two workshops in the upcoming biennium on energy efficiency in housing as part of its programme of work for 2008–2009 (ECE/HBP/149, para. 30 (a) and annex I, item 10.1.4), and requested a report to be presented at its next session. This paper contains main issues addressed and priorities for action identified by participants at the first of the two workshops, held on 21 and 22 April 2009 in Sofia. An outcome paper of the workshop (in English only) is contained in Informal Notice 2.

I. ISSUES ADDRESSED AND ORGANIZATION OF WORK

1. The first workshop on energy efficiency in housing was held on 21 and 22 April 2009 in Sofia. It focused on identifying the challenges and opportunities present in the United Nations Economic Commission for Europe (UNECE) region. Among its aims were to clarify necessary policy measures and to provide UNECE with direction on how it could best execute its mandate with respect to policy guidance and could best influence decision-making. The workshop: (a) reviewed the economic, social and environmental impacts of energy efficiency in housing; (b) considered current policies and solutions, as well as various barriers to effective policies; and (c) discussed the priorities that need to be addressed by Governments. Participants included national and regional government representatives, business practitioners, academic experts and other professionals.

2. The first session of the workshop discussed the importance of energy efficiency in housing and its connections with contemporary socio-economic and environmental challenges, summarizing both the benefits offered by effective policies and pitfalls of inadequate practices. The session consisted of presentations and discussions in the following areas: (a) the importance of housing in energy consumption and consequent implications for energy efficiency measures; (b) the environmental impacts of energy efficiency in housing: global and local; (c) energy production and consumption, energy imports, energy security; (d) social implications, including fuel poverty, social exclusion, and health and living conditions; (e) the multiple economic benefits of energy efficient housing; and (f) business and employment opportunities related to the development of the field.

3. The second session assessed the current state of affairs in the field of energy efficiency in housing in the UNECE region, including the measures undertaken to improve energy efficiency and to remove barriers to effective policies and practices. The session consisted of presentations and discussions related to the following aspects: (a) the status of energy efficient housing in national and regional strategies and programmes for socio-economic, environmental and energy development; (b) market failures and opportunities versus government policy failures and opportunities; (c) the impacts and limitations of existing regulations in the UNECE member States; (d) institutional and financial barriers to energy efficient investments; (e) the development of markets for energy efficiency in housing; (f) affordability of energy efficiency from tenants' perspectives as well as support to low-income households; and (g) the development of energy-saving technologies and their application in the housing sector.

4. The third session made a new round of analysis of the issues by focusing on more specific case studies that demonstrated how concrete actions in one or more areas might contribute to achieving better results and to solving problems. This session also considered the affordability and sustainability of achieved/potential measures or projects, and discussed whether it was possible to replicate good practices across time and space (i.e. to copy them into a different socio-economic or legal environment) and how it was possible to avert potential failures. The session consisted of presentations and further discussions in the following areas: (a) national/regional examples of public awareness campaigns; (b) case studies of specific institutional regimes that have created a favourable and enabling environments; (c) successful (or otherwise) patterns of collaboration between stakeholders and public-private partnerships; (d) the examples of successful/unsuccessful financial

strategies; (e) a life-cycle analysis of building materials and its importance; (f) energy-efficient technological and architectural innovations (including green building and passive houses); and (g) specific projects of infrastructural upgrades, housing retrofitting and insulation.

5. The final session involving all the previous speakers provided recommendations and conclusions based on the presentations and discussions. This session identified priorities for action (see below).

II. POLICY IMPLICATIONS

6. In the UNECE region, buildings are responsible for over a third of total final energy consumption; by and large, this energy is used the residential sector (20–30 per cent of total final consumption on average). Demographic, economic and cultural changes further increase the pressure of housing on energy use and are accompanied by even higher levels of related greenhouse gas emissions. However, it is the building sector –and particularly the residential sector – that could generate some of the greatest energy savings in comparison with other energy uses. Exploring this opportunity, the workshop outlined key benefits, challenges and prospects that UNECE member States should consider for developing their policies with regard to improved energy efficiency in housing.

7. It is widely acknowledged that investing in energy efficient homes provides a quicker and cheaper effect than alternatively boosting the capacities of energy supply, and that furthermore it offers many other environmental, social, economic, and political benefits. This report outlines some of these major benefits and opportunities, including the following:

(a) Environmental benefits. Better energy efficiency reduces the pressure of energy use on climate change. Furthermore, housing energy efficiency constitutes a climate change adaptation measure by better shielding homes from adverse weather conditions. There are also opportunities related to carbon trade possibilities due to reduced carbon dioxide emissions.

(b) Energy availability, energy security and political stability. Improving energy efficiency in housing permits more energy to be available for alternative uses or for growing energy demands in the housing sector itself. It also alleviates the risks of political instability due to the negative impacts of possible energy shortages or energy price inflation on households.

(c) Microeconomic and macroeconomic benefits. Better efficiency offers savings on operation costs for the tenants; service providers benefit from more efficient transportation of energy services. The development of the sector also has positive influences on research and innovation, business development, and employment and investment. It therefore offers effective tools to stimulate economic growth and boost national economic competitiveness.

(d) Regeneration of the built environment. Retrofitting homes and using proper technologies for housing construction considerably improves indoor thermal, moisture and noise isolation and implies higher levels of comfort of living and longer cycles of property repair. Comprehensive programmes improve the aesthetic of buildings.

(e) Social and health effects. Energy efficiency interventions in housing improve the conditions of living and the state of public health, address the problems of energy affordability and "energy poverty" and, as a consequence, mitigate social exclusion and inequality.

8. It is clear that the benefits from energy efficiency in housing represent a "multi-win" situation. They simultaneously embrace local, regional, national, and global dimensions. However, they are mostly evident at the national or international levels, at which differentiated and often contradictory microeconomic interests are aggregated. This highlights the importance of purposeful government policies in driving complex technological and institution change towards improved efficiency of energy use. Although some progress has been identified in the field recently, the situations existing in virtually all UNECE member States leave much room for improvement. Even those countries that are considered to be advanced in terms of building standards are very far from fully realizing the sector's full potential. However, it is the transition countries that especially lag behind. A specific challenge for these countries relates to overcoming what can be called the "energy inefficiency trap", or a situation in which countries having lower energy efficiency are unable to change their respective status due to the lack of funds, experience, technology, motivation and initiative.

9. In the meantime, the state of existing technology demonstrates a very high potential for drastically reduced energy consumption in the housing sector. The technology includes passive houses, zero-energy homes or even plus-energy buildings, which produce renewable energy and deliver excesses to the common energy grid. Many technological solutions are also cost-effective: it is estimated that 25–40 per cent of direct energy savings, depending on the particular UNECE member State, may be achieved in the housing sector by applying cost-effective technology. However, investment in energy efficiency is done on a limited scale, far below what might be considered rational. This paradox is known as the "energy efficiency gap". It appears that the most serious challenges to energy-efficient housing are not simply technological; they are connected with the need to establish proper institutional structures that can set large-scale efficiency measures in motion.

10. An analytical approach to understanding the institutional structure of energy efficiency in housing involved two main points. These were: (a) better energy efficiency is considered to be a result of application of technology and/or knowledge, which, in turn, is driven by the conditions that are conceptualized by five "in" keywords, investment, information, innovations, incentives and initiative; and (b) Governments, landlords and the building industry represent a triangle of the major stakeholders, whose mutual interrelations determine the status of the five "in's" in terms of delivering better energy efficiency.

11. Using this approach, a number of barriers and challenges to energy-efficient homes may be identified. The most common barriers to investing in energy efficiency in housing are the lack of incentive and the low priority of energy issues versus alternative opportunities available to households and economic agents. Energy prices are unstable or incomplete; energy efficient products are more expensive than alternatives. If there are low priorities for efficiency and no mechanisms that allow for the energy performance of buildings to influence property values, the whole technological chain involved in the design, production, and management of houses is malfunctioning. There is also the problem

of high “transaction costs” in investing in energy efficiency – households are particularly sensitive to the effort and time necessary for improving energy efficiency. Other barriers include a lack of information and awareness, a lack of initiative and organizational barriers, a lack of innovation, technological backwardness, and a lack of investment and finance (including limited affordability, limited access to capital, and the uncertainties and risks associated with energy-efficiency projects). It is clear that “the market” alone cannot solve these issues if it is not supported by purposeful government policies based on dialogue and partnerships with all key stakeholders.

III. RECOMMENDATIONS AND PRIORITY AREAS FOR POLICY

12. Having considered these experiences and policy implications, participants outlined a set of recommendations for Governments and international organizations. These are divided into two parts and include six basic prerequisite principles for policies and cover six policy priority areas. These two parts should be considered as integral parts of single institutional infrastructure to deliver better energy efficiency and to improve the state of the housing sector. Basic principles for successful policies are the following:

(a) Contextual underpinning. There are significant differences across the UNECE region with respect to the levels of economic development, legislative and organizational structures, the history and practice of the residential sector, and climatic conditions. Policies should be sensitive to this diversity and necessarily be embedded in the specific local socio-economic, institutional and geographical context.

(b) Multidimensional and integrative character. There is no single solution able to resolve energy efficiency in housing quickly and hassle-free. Policies should be comprehensive and thoroughly developed, and should integrate a number of instruments. Cross-sectoral, multidimensional and multidisciplinary approaches are necessary.

(c) Social responsibility and safety net. It is vital to create interlinkages between energy efficiency policies in housing and social policies. Policies should ensure affordable access to energy, mitigation of social inequality and improved social well-being. To consider energy-efficient housing simply in narrow, technocratic terms is wrong from the social and political points of view.

(d) Organizational leadership and energy planning. A devoted and continuous process of policymaking, planning, implementation and control is required, rather than one-off programmes. It is advisable to charge a special organizational structure with the responsibility to coordinate efforts of different ministries, stakeholders and different administrative levels. A specific tool to facilitate such coordination can be interconnected regional and local energy planning documents, of which housing should be an integral part.

(e) Statistical backing. Policymaking and management activities need to rely on sufficient data that allow assessing both the current situation and policy impacts. It is therefore important that statistical capacities are raised. In

addition, necessary information systems need to be set up at the regional and local levels to support decision-making.

(f) The application of new knowledge and best practices. Policies should both encourage and internalise best practices and innovations emerging from research and development, informational exchange and demonstration or pilot projects. Necessary structures should be in place at the national and international levels to ensure appropriate dissemination of the available information to as many stakeholders as possible.

13. The following paragraphs outline six priority areas in terms of policy, giving recommendations specific to each.

14. Raising awareness and public dialogue**.** Legally binding informational instruments such as mandatory energy performance labelling of household appliances, energy performance certification of buildings and other declarative and informing systems of energy consumption are already widely in use, and should be promoted to make energy efficiency highly visible in the residential market. Other, "soft" instruments to be encouraged include capacity-building and educative measures, State-sponsored energy information centres, good practice and informational exchanges, voluntary energy labelling, demonstration projects, and the promotion of technologies and promotion of sustainable lifestyles. The policies themselves should be transparent and widely and publicized. It is particularly in those societies that have raised energy efficiency and environmental concerns to the levels of everyday discourse that policies have received general support and loyalty.

15. Energy performance standards for buildings. Updated and mandatory energy efficiency performance standards in buildings are among the most effective instruments to increase energy efficiency and should be therefore used actively. Appropriate national targets and measures should ensure a market penetration of passive, zero-energy and zero-carbon innovative building solutions. It is also actually important to develop legal mechanisms for improving energy performance of existing buildings. All such instruments should be balanced against the level of prosperity of a particular region and may include differentiated requirements depending on the size of the affected project or status of the developer. A crucial factor is also to enforce the implementations of the mandatory building codes. The codes should be supported by other instruments, including subsidies to lower-income groups; on the other hand, energy efficiency must be a condition for subsidies. Furthermore, energy efficiency considerations should be sufficiently accommodated in spatial and land use planning.

16. Housing management and maintenance. The system of housing management should operate within a strong framework of capacities and incentives intended to deliver better energy efficiency. Improving and professionalizing housing management is a key institutional requirement and presents a particular challenge to the multifamily housing stock of transition countries. There must be legal provisions for establishing collective coordinating bodies, such as residents' associations, on which obligations for maintenance and economic incentives can be imposed. The social housing sector should be prioritized in government energy efficiency and retrofitting programmes. Public housing in some countries already delivers better standards of energy efficiency than do average private homes; among other advantages, this helps tackle fuel poverty.

17. The development of financial mechanisms. It is necessary to develop and maintain a sound financial infrastructure for owners and other stakeholders to be able to raise capital for retrofitting and efficiency technology and for new technology to be able to establish its market niche. This involves a transparent system of subsidies, grants, loans, and investment programmes and self-sustainable funding mechanisms such as revolving funds. It is also important to improve cooperation between homeowners and financial institutions, including through provisions for collaterals, guarantees and insurances. Furthermore, since it is homes standing today that will dominate the built environment for many decades, it is necessary to change the conventional "giving" direction of fiscal incentives for landlords and tenants by strengthening "taking" approaches, which may include a tax on energy inefficiency.

18. Energy pricing and utility services. One of the essential elements in the energy efficiency incentive system is energy pricing. It is important to establish an adequate pricing system and to get rid of fixed-cost payment systems for energy. A number of measures should, however, parallel or precede energy price reform. Criteria could be developed that relate to the percentage of the household income spent on energy. For those facing energy poverty, targeted subsidies should be provided (which would ideally help improve the energy performance of homes rather than cash assistance). Other measures might include block tariffs, which make utilities affordable for lower-income families and yet encourage conservation, or use of smart metering, which gives households more control over the pricing of energy they use. Specific requirements and incentives should also be imposed on energy suppliers providing services to households; these should include both regulatory and financial instruments.

19. International cooperation and knowledge exchange. Policies benefit greatly from international experiences. In particular, less developed countries of the UNECE should be assisted with transfer of knowledge. International organizations should accumulate and exchange knowledge and experiences on both good practices and negative experiences. One direction for international organizations such as the Committee on Housing and Land Management may be to include specific recommendations in the country profiles on energy efficiency in housing. Another direction for activities would be to develop more detailed and concrete "action plans" in order to inform international and national policy and to ensure the broad outreach of housing energy efficiency strategies that follow the recommendations above.
