

**ITS Combined Event on Benefits and  
Requirements of the EU Directive on Energy  
Performance in Buildings**

**RWP.08**

*Copenhagen, Denmark, 14-18 December 2015*

**INOGATE Technical Secretariat and Integrated Programme in support of the  
Baku Initiative and the Eastern Partnership energy objectives**

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## Abbreviations

EE	Energy efficiency
EnC	European Community
EPB	Energy Performance in Buildings
EPBD	Energy Performance in Building Directive
EPC	Energy Performance Certification
EU	European Union
ITS	INO GATE Technical Secretariat
NEEAP	National Energy Efficiency Action Plan
NZEB	Nearly Zero-Energy Buildings
PC	Partner Country
RES	Renewable Energy Sources
SE	Sustainable Energy

## 1. PART 1 – EUROPEAN COMMISSION

### 1.1. Background

<b>Assignment Title:</b>	ITS Combined Event on Benefits and Requirements of the EU Directive on Energy Performance in Buildings, RWP.08
<b>Country and Dates:</b>	Copenhagen, Denmark, 14-18 December 2015
<b>Beneficiary Organisation:</b>	<b>Armenia:</b> Ministry of Urban Development; Ministry of Energy and Natural Resources; <b>Azerbaijan:</b> Ministry of Economic Development; Ministry of Energy; <b>Georgia:</b> Ministry of Energy; Ministry of Economy and Sustainable Development; <b>Moldova:</b> Energy Efficiency Agency; Ministry of Construction and Regional Development; Ministry of Economy; <b>Ukraine:</b> State Agency on Energy Efficiency and Energy Savings; Ministry of Regional Development, Construction, Housing and Communal Services; Ministry of Energy and Coal Industry.
<b>Beneficiary Organisation - key contact persons – name and e-mail address</b>	Names and e-mails of 15 participants of the event are provided in Annex 1 of this report
<b>Deliverables Produced</b>	Final report and presentations
<b>Expert Team Members</b>	Jens Laustsen, Oleksandr Antonenko

### 1.2. Essence of the Activity

The Combined Event on Benefits and Requirements of the EU Directive on Energy Performance in Buildings (RWP.08) took place in Copenhagen, Denmark between 14 and 18 December 2015. The Overall Objective of the event was aligned with INOGATE Technical Secretariat (ITS) Strategy i.e. to focus on policy-related topics which are in line with the requirements of the European Community Core Legislation (EnC acquis). The EPBD is one of the key Directives that should be transposed into the national legislations of Moldova, Ukraine (both full-members of the EnC) and Georgia (candidate to become full-member of the EnC) and it is very important to design the proper implementation at the early stages. The event also supported the implementation of an energy performance certification system in Armenia that is the key objective of the ongoing ITS country specific activity for Armenia (CWP.04.AM).

The ITS fully achieved the overall and specific objectives of the combined event (see section 2.2) that were related to enabling the participants to independently transpose EPBD into the national legislation frameworks.

### 1.3. Key Findings

1. The right combination of expert presentations, trainings and site visits was the key for sufficient transfer of knowledge and know-how to the Partner Countries (PCs) during ITS capacity building events.
2. Inviting the representatives of different stakeholders involved in the improvement of energy efficiency in buildings, i.e. relevant ministries and agencies facilitated the 3-layer networking: internal, among the PCs and with participant's peers in the EU.

3. Equally, the Danish case studies presented by the different contributors, like representatives of the government, university, building research and business community underlined the importance of partnership and joined-up thinking across stakeholder groups.

4. Most speakers highlighted the importance of the policy design to support the improvement of Energy Efficiency (EE) in Buildings. Buildings consume about 40% of the energy in the EU and about 45% in PCs and thus can significantly contribute to the reduction of energy dependence and improvement of energy security of the INOGATE partner countries.

5. The representatives of the PCs demonstrated a very strong motivation to learn and participate in all the activities. To stimulate the interest, the participants were also asked to develop presentations on key barriers impeding the improvement of EE in buildings in their countries and answer test questions before the event. This approach revealed the gaps in knowledge that were filled-in during the event.

#### **1.4. Ownership and Benefits of the Activity**

The main benefits of the activity for the Beneficiaries are:

1. The participants improved their understanding on elements of the EPBD and the transposition of the Directive into the national legislation framework. The enhanced capacity will facilitate the fulfilment of PCs' obligations under the Energy Community Treaty.
  2. The participants learned about EU and Danish experience in designing efficient instruments to support the improvement of energy efficiency in buildings. They understood the importance of involving industry and other stakeholders in the process and observed various benefits from the implementation of the EPBD.
- The Beneficiaries took ownership in the following way:
    1. Moldova has adopted a corresponding law transposing EPBD on 11.07.2014 and used the findings of the event to develop the secondary legislation on minimum energy performance requirements and certification scheme.
    2. Ukraine introduced strict minimum energy performance requirements for new buildings and used the findings of the event to develop legislation on an energy certification scheme.
    3. As a result of ITS country specific activity (CWP.04.AM), Armenia initiated the transposition of the EPBD into a national legislation in a form of technical regulation and used the findings of the event to facilitate its development and implementation.
    4. Azerbaijan expressed interest in starting a new Technical Assistance project on the transposition of EPBD with the involvement of INOGATE or other International Donor Organisations.

#### **1.5. Challenges Faced**

The organisers did not face any challenges during the preparation and the implementation of the combined event. The event was well organised: the Danish counterparts were very cooperative and eager to share their experience, ITS Country Coordinators identified and selected relevant candidates

all of whom arrived timely in Copenhagen and took part in all sessions of the event. Many questions were raised and this led to fruitful discussions where important experience was shared.

Table 1. Impact Matrix

Impact Area	Developments	2012 (%)*	Dec 2015 (%)*
<b>Policy</b>	<i>Support of the implementation of EPBD and its elements, like certification scheme, minimum energy performance requirements etc.</i>	0%	70%
<b>Regulation</b>	<i>Support of the adaptation of EN/ISO standards on energy performance in buildings</i>		
<b>Technology</b>	<i>Support of the development and utilisation of modern EE technologies, primarily in buildings. Promotion of local business with low impact on the prices of new dwellings</i>	5%	55%
<b>Environment</b>	<i>The implementation of EE measures can reduce the consumption of energy in old buildings by 40% with the simple pay-back period less than 10 years.</i>	5%	45%
<b>Economics</b>	<i>Indicators of decreased energy dependency</i>	4%	24%
<b>Social</b>	<i>Better indoor climate and living conditions for citizens.</i>	5%	25%

\* The impact is estimated based on the experts' opinion under the current circumstances and can be changed over time

Note: It is particularly difficult to quantify the impact of capacity building activities. The figures provided in the table should therefore be considered with great caution.

## 2. PART 2 – BENEFICIARIES

### 2.1. Executive Summary

This report presents the results of the combined event on Benefits and Requirements of the EU Directive on Energy Performance in Buildings which took place in Copenhagen, Denmark between 14 and 18 December 2015. The overall objective of the combined event was to align the national legislations of Armenia, Azerbaijan, Georgia, Moldova and Ukraine with the EnC acquis with specific regard to the EU Directive on Energy Performance in Buildings (EPBD).

A total of 15 delegates from Armenia, Azerbaijan, Georgia, Moldova and Ukraine participated in the event (see Fig.1). The programme of the event combined presentations, site visits and trainings delivered by a range of stakeholders who are actively engaged in improving of EE in buildings. Various stakeholders also provided the relevant policy background at the Danish and European levels. Expert presentations were complemented by site visits which showcased the institutional framework and organisational setup for the building certification scheme in Denmark. The delegates also presented their own experience and discussed possible solutions on how to overcome the identified challenges.



Fig. 1 Group photo of participants at the head office of Ramboll

In order to assess the improvement in knowledge resulting from the learning experience, the participants were asked to complete a tailored test before and after the combined event. The test results demonstrated an average 30% increase in knowledge. The results of the confidential questionnaires also showed a significant improvement of participants' understanding of elements of the EPBD and their capability in transposing the Directive into the national legislation frameworks.

The combined event was a unique opportunity for the participants from the INOGATE PCs to learn about best practice from the range of stakeholders with differing backgrounds. The participants were able to engage extensively with Danish experts on key EU legislative instruments and their implementation in Denmark. The event was also a great opportunity for networking and nurturing ties among INOGATE beneficiaries and with their Danish counterparts, which is expected will generate further collaboration in this area. Overall, the event can be described as a success from the perspective of the participants and the organising team.

## 2.2. Introduction

The combined event on Benefits and Requirements of the EU Directive on Energy Performance in Buildings (RWP.08) took place in Copenhagen, Denmark between 14 and 18 December 2015. The overall objective of the combined event was to align the national legislations of Armenia, Azerbaijan, Georgia, Moldova and Ukraine with the EnC acquis with specific regard to the EU Directive on Energy Performance in Buildings (EPBD).

The Specific Objectives of this event were:

- To help the PCs understand elements of the Directive and be able to transpose it into their National Legislations;
- To help the PCs comply with the Directive once it has been promulgated in National Legislations.

## 2.3. Participants

A total of 15 delegates from Armenia, Azerbaijan, Georgia, Moldova and Ukraine participated in the event. The participants represented different ministries and governmental agencies involved in the transposition of the EPBD and (or) improvement of EE in buildings. The list of participants is provided in Annex 1, while Figure 2 illustrates the composition of the group. The event was effectively implemented as all invited participants came to Copenhagen and attended all trainings, discussion sessions and study visits.

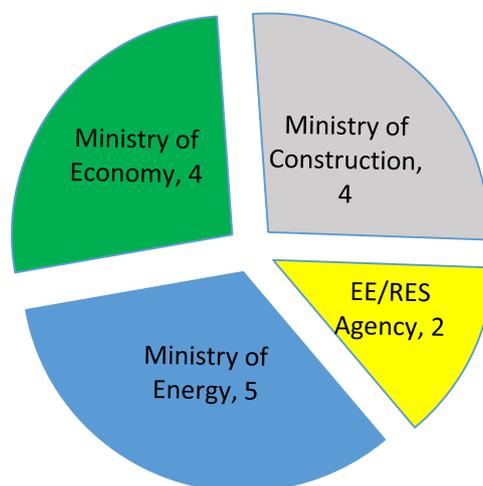


Fig. 2 Composition of the trainees' group

Taking into account the fact that the most delegates represented governmental bodies responsible for the improvement of energy efficiency in the country, the participants showed a strong interest in policy-related issues supporting the improvement of EE in buildings. The event was facilitated and moderated by Jens Laustsen, a senior policy expert who coordinates the new Concerted Action EPBD IV project, which assists 28 EU Member States and Norway in the implementation of the EPBD. In total, ten experts from Denmark took part and generously contributed to the delivery of the event with presentations and site visits. Therefore the participants were able not only to learn from the Danish experience, but also to meet and establish contacts with their peers from the EU.

## 2.4. Expert Presentations

The programme of the combined event (Annex 2), contained a series of presentations by a range of stakeholders who are actively involved in the implementation of EPBD in Denmark. Mr Jens Laustsen made a number of presentations on the EU and Danish experience and lessons learned on EPBD. Mr Laustsen also presented the views the future transformation of the building certification scheme in Europe as the coordinator of the new Concerted Action EPBD IV project.

The visit to the Danish Building Research Institute showed participants the Danish experience on calculation of cost-optimal levels of minimum energy performance requirements in the Denmark. Mr. Soren Aggerholm and Ms. Kirsten Thomsen gave a comprehensive and in-depth overview of the Danish building Regulation and calculation tools. They also provided the delegates with the list of Energy Performance in Buildings (EPB) standards and results of the study on Cost optimality that will help the PCs to efficiently transpose the elements of the EPBD into the national legislation framework.

The meeting with the Danish Energy Agency helped the participants to understand the institutional and organisational framework for Energy performance Certification (EPC) scheme in Denmark. Taking into account that Armenia, Azerbaijan and Georgia do not have a separate governmental bodies responsible for the improvement of energy efficiency in the country, it was very important to show the participants the importance of the organisational setup for the building certification scheme. Mr Casper Villumsen and Mr Jesper Ditlefsen shared lesson learned and challenges while developing and implementing the EPC scheme in Denmark. They provided the participants with a clear understanding of the steps and resources needed to establish such a system in their home countries. They further gave many details from the monitoring of EPC systems directly from the Danish National Secretariat for these systems.

Mr Nikolaj Haaning and Ms Yvonne Shack provided participants with the hands-on experience in developing viable projects on the improvement of energy efficiency in buildings and issuing building certificates. Participants were also very eager to find out about the practical application of the Danish tool for calculating energy performance of the buildings and details of the inspection of the buildings for issuing energy certificates.



Fig. 3 Presentation of the participant from Ukraine on key barriers impeding the transposition of EPBD

The ITS experience in the area of EE in buildings was presented by Ms Svetlana Timshina and Mr Oleksandr Antonenko, who informed participants about completed and ongoing INOGATE activities, including the results of the ESIB project, findings from the previous Combined event in Dublin, Ireland and preliminary recommendations of the ongoing country specific assistance for Armenia, namely “CWP.04.AM: The Development of a road-map for the introduction of an energy performance certificates system in the building sector of Armenia, including legal framework and distribution of institutional roles”. The participants in their turns made presentations on key barriers and progress made for the implementation of EPBD and (or) improvement of EE in their countries (See Fig 3). The delegates were very eager to find out the recent development in this area from their neighbours as most of participants identified the same challenges for their countries.

All presentations were published on the [INO GATE web-portal](#). The web-portal was used as principal source of communication with the participants both before and after the combined event.

## 2.5. Baseline assessment

The conducted baseline assessment aimed at providing a benchmark against which to monitor and evaluate the event’s impact on enhancing the skills and knowledge of the participants to independently transpose EPBD into the national legislation frameworks. A tailored test (Annex 3) and self-assessment questionnaires (Annexes 4 & 5) were the key tools for the baseline assessment.

### A tailored test

A test was carried out before and after the Combined Event to measure the participants’ knowledge acquisition as a result of the event (Annex 3). The test was designed to accurately define the existing level of awareness and knowledge on the EPBD by the participants. The unanswered questions by the participants revealed specific knowledge gaps which informed lecturers of particular areas on which to concentrate the focus of their presentations. The number of unanswered questions also helped participants to focus their attention during the presentations and site visits. Figure 4 shows the results of the ‘before’ and ‘after’ tests, per delegate and in average.

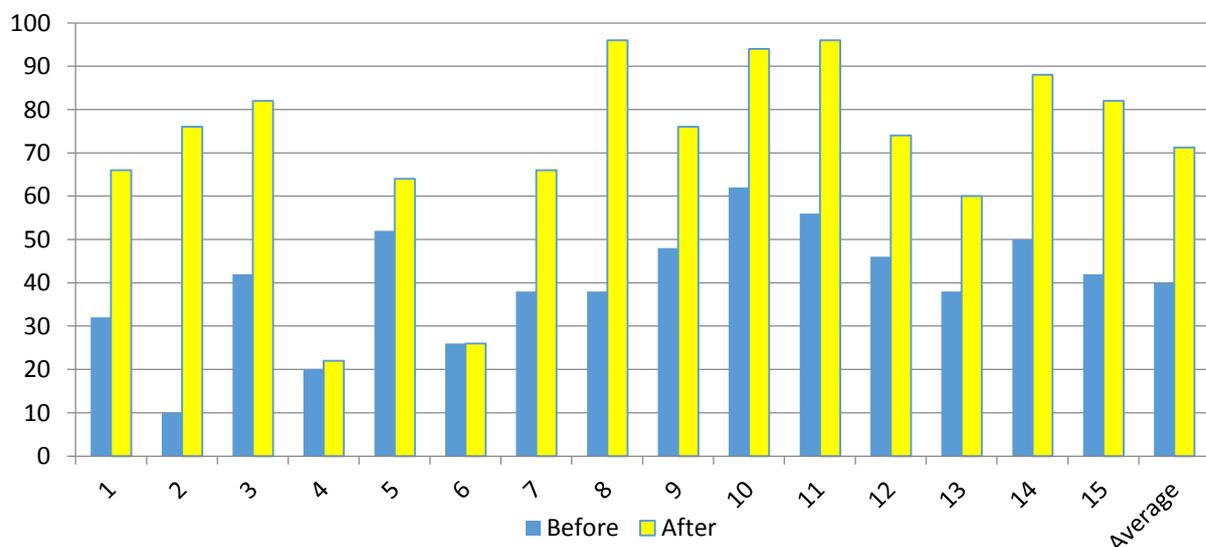


Fig. 4 Results of the ‘before’ and ‘after’ tests, per delegate and in average

As can be seen from Figure 4, the average score before and after were 40% and 71% respectively, showing a substantial increase in knowledge as a result of a 3-day combined event. 13 out of 15 participants scored above 60% and only two delegates scored below 60% at the end of the event. It is clearly demonstrated from the results of this test, that the Combined Event was successful in transferring knowledge and know-how to the participants from the PCs. At the same time the comparison of the average results per country (Fig. 5) revealed that participants from Armenia improved their skills the most whereas the participants from Azerbaijan showed the minimum improvement in knowledge. The participants from Moldova, Ukraine and Georgia showed both: a relatively strong knowledge before the event and a good improvement of skills after the event that is related to the active transposition of the EPBD into the national legislation framework in these countries.

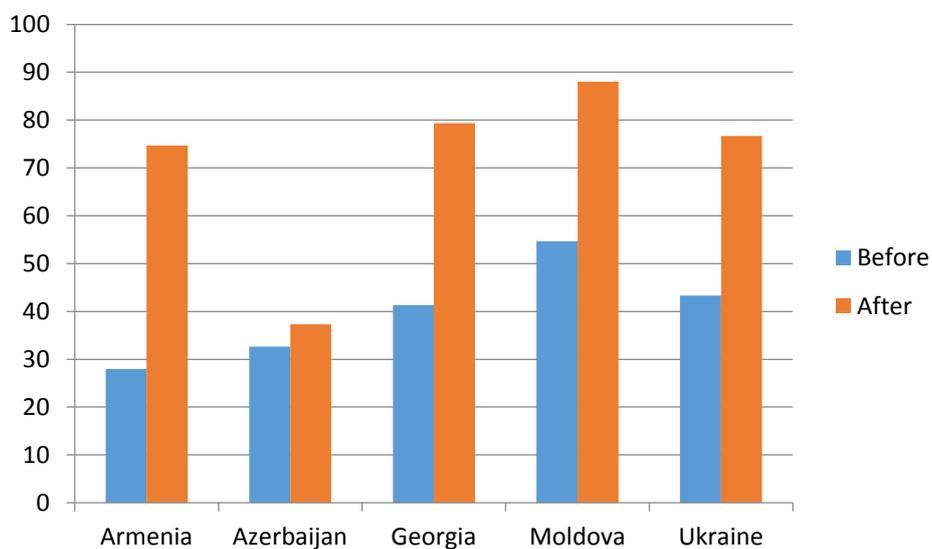


Fig. 5 Results of the 'before' and 'after' tests, per delegate and in average

### Self-Assessment Questionnaires

In order to further validate the results of the 'before and after' test, the additional metric in the form of a Self-Assessment Questionnaires was used. In the beginning and the end of the event the participants were asked to fill in confidential questionnaires (Annexes 4 & 5) that allowed them to self-assess their familiarity, skills and experience in relevant areas covered during the Combined Event (EBPD requirements, minimum energy performance requirements, energy performance certificates, Nearly zero buildings, accreditation, awareness raising, etc.). On average, the questionnaires revealed that the participants felt that their capability was 'Satisfactory' and 'Basic' at the beginning of the event but this had increased to 'Good' and 'Full understanding' at the end, thereby demonstrating a clear increase in the participants' self-assessment of understanding elements of the EPBD in order to be able to transpose it into national legislation (table 2).

Table 2. The results of the confidential evaluation on understanding of elements of the EPBD after the event

Key elements of the EPBD	Full understanding	Good understanding	Satisfactory understanding	Weak understanding
1. General requirements of Directive	2 participants	13 participants		
2. Minimum energy performance requirements	6 participants	8 participants	1 participant	
3. Energy performance certificates	6 participants	9 participants		
4. Nearly zero energy buildings	4 participants	9 participants	2 participants	
5. Accreditation of experts and control system	7 participants	7 participants		1 participant
6. Awareness raising	6 participants	9 participants		

Finally, 14 out of 15 participants indicated that the event was useful for their professional activities and all participants indicated that Danish experience is fully or partially applicable for their home countries. In average, the organisers also received high score for the overall organisation of the event (4.4, where 5 is 'excellent' and 1 is 'poor') and for the provided help before and during the event (4.7, where 5 is 'excellent' and 1 is 'poor').

The ITS also asked participants to describe how the acquired knowledge and experience would help them to contribute to their organisations' work, especially for improvement of EE in buildings and the implementation of EPBD and received the following responses. As a result of the survey, the participants provided the following answers:

- The knowledge I have gained here in Denmark will help me to design measures on the improvement of the EE in the residential sector while developing NEEAP together with the EBRD;
- Will help us in developing the overall system for energy savings in buildings;
- Will facilitate the dissemination of the EU experience and awareness raising among population;
- Will facilitate our work in the ministry, especially with regards to the energy efficiency in buildings;
- I am the member of the working groups on the building certification scheme and your event gave me a lot of useful information, including new ideas regarding the improvement of the draft law on energy performance of buildings;
- It will help us to determine the minimum energy performance requirements better and more accurately;
- The event enhanced understanding on required legislative framework for energy efficiency of buildings that will be useful while developing our own building regulations and awareness raising campaigns;
- Will help to improve the current legislative framework;
- Will help while developing and implementing the legislative acts;
- Adjust primary and secondary legislation with respect to the introduction of building energy certification scheme;

- Determination of the definition of the Nearly Zero-Energy Buildings (NZEB) in my country; Dissemination of information regarding Danish experience related to EPB achievements;
- I will use the acquired knowledge for the development of technical regulation in the field of energy efficiency.

## 2.6. Conclusions

The INOGATE ITS Combined Event on Benefits and Requirements of the EU Directive on Energy Performance in Buildings which took place in Copenhagen between 14 and 18 December 2015 is clearly demonstrated to have been an unambiguous success for a number of reasons. First of all, the tightly-packed programme provided a wealth of know-how to participants through a combination of expert presentations, trainings and site visits. These activities explored the improvement of energy efficiency in buildings from the perspective of different stakeholders (government, university and business community) and underlined the importance of partnership and joined-up thinking across stakeholder groups.

Secondly, the importance of the policy design to support the improvement of EE in Buildings was highlighted by many of the speakers. Participants were given a clear picture of how EU policy instruments are translated into Danish policy and vice versa how the Danish experience was used to develop EU Policy. Taking into account that buildings consume about 40% of the energy in the EU and about 45% in PCs, the improvement of energy efficiency in this area can significantly contribute to the reduction of energy dependence and improvement of energy security of the INOGATE partner countries.

Finally, the delegations from PCs demonstrated a very strong motivation to learn and participate in all the activities organised during the combined event. It was clear from their active participation in Q&A sessions and from their enthusiastic engagement with the training tasks that participants wanted to make the most of it. The participants were also asked to develop presentations on key barriers impeding the improvement of EE in buildings in their countries and most of participants identified the same challenges for the whole region. Thus, the delegates were very eager to find out the recent development in this area from their neighbours. The unanswered questions of the test before the event also revealed the gaps in knowledge that were filled-in during the event and contributed to the enthusiastic engagement.

Overall, the test and evaluation performed before and after the combined event prove beyond doubt that the participants' knowledge and ability was improved significantly as a direct result of the combined event. The ITS fully achieved the overall and specific objectives of the combined event and the result of the survey demonstrated a clear increase in the participants' self-assessment of understanding elements of the EPBD in order to be able to transpose them independently into national legislation.

The feedback from Danish contributors indicated that they too benefited from being involved in the event, and were grateful to have the opportunity to showcase their know-how and achievements, as well as to learn from their peers from the INOGATE PCs. It was highlighted that the contributors were impressed by the high level of questions, which were raised during the presentations. Informal bonds and connections were made between all parties, including during social activities organised as part of the event, and it is hoped that this combined event will be an important step in transnational collaboration in the areas of improvement of energy efficiency in buildings.

## Annex 1: List of participants

NN	Country	Full name	Position	Participants' sending Institution	e-mail
1	Armenia	Yevgenya Atayan	Head of the Division of Housing policy and municipal infrastructure	Ministry of Urban Development of the Republic of Armenia	<a href="mailto:mud-housing@rambler.ru">mud-housing@rambler.ru</a>
2	Armenia	Susanna Sargsyan	Leading Specialist of Energy Efficiency division	Ministry of Energy and Natural Resources of Republic of Armenia	<a href="mailto:sussarg@mail.ru">sussarg@mail.ru</a>
3	Armenia	Samvel Srapyan	Head of the Division of housing fund and municipal infrastructure	Ministry of Urban Development of the Republic of Armenia	<a href="mailto:ssrapyan@yandex.com">ssrapyan@yandex.com</a> ; <a href="mailto:ssrapyan@yandex.ru">ssrapyan@yandex.ru</a>
4	Azerbaijan	Namig Salamov	Head of the Technical Regulation division, Department of Energy Saving, Alternative and RE	Ministry of Energy of the Republic of Azerbaijan	<a href="mailto:namiq_68@inbox.ru">namiq_68@inbox.ru</a>
5	Azerbaijan	Bayram Rzayev	Deputy Head of the Department of Housing and Communal policy	Ministry of Economic Development of the Republic of Azerbaijan	<a href="mailto:Bayram.Rzayev@economy.gov.az">Bayram.Rzayev@economy.gov.az</a>
6	Azerbaijan	Iftikhar Huseynov	INO GATE Coordinator for Azerbaijan	Ministry of Energy of the Republic of Azerbaijan	<a href="mailto:iftixar.huseynov@minenergy.gov.az">iftixar.huseynov@minenergy.gov.az</a>
7	Georgia	Davit Sharikadze	Head of Energy Department	Ministry of Energy of Georgia	<a href="mailto:d.sharikadze@energy.gov.ge">d.sharikadze@energy.gov.ge</a>
8	Georgia	Omar Tsereteli	Consultant on Energy Efficiency (EE) issues	Ministry of Economy and Sustainable Development of Georgia	<a href="mailto:otsereteli@economy.ge">otsereteli@economy.ge</a>
9	Georgia	Grigol Kakauridze	Head of the Technical and Construction Supervision Agency	Ministry of Economy and Sustainable Development of Georgia	<a href="mailto:g_kakauridze@economy.ge">g_kakauridze@economy.ge</a>
10	Moldova	Oleg Izvoreanu	Head of Energy Efficiency and Renewable Energy Sources Division	Ministry of Economy of the Republic of Moldova	<a href="mailto:oleg.izvoreanu@mec.gov.md">oleg.izvoreanu@mec.gov.md</a>
11	Moldova	Alexandru Tagadiuc	Head consultant	Ministry of Construction and Regional Development	<a href="mailto:alexandru.tagadiuc@mdrc.gov.md">alexandru.tagadiuc@mdrc.gov.md</a>
12	Moldova	Valentin Arion	Advisor on Energy Efficiency (EE) and RES policies	Energy Efficiency Agency	<a href="mailto:valentin.arion@gmail.com">valentin.arion@gmail.com</a>
13	Ukraine	Serhiy Porovskyy	Adviser of Minister	Ministry of Energy and Coal Industry	<a href="mailto:serhiy.porovskyy@gmail.com">serhiy.porovskyy@gmail.com</a>
14	Ukraine	Volodymyr Buchyk	Head of Division of the State Programme and the implementation of the EU requirements	State Agency on Energy Efficiency of Ukraine	<a href="mailto:volodymyr.buchyk@gmail.com">volodymyr.buchyk@gmail.com</a>
15	Ukraine	Roman Radchenko	Head of division of energy efficiency in housing sector	The Ministry of Regional Development, Construction, Housing and Communal Services of Ukraine	<a href="mailto:RadchenkoRM@minregion.gov.ua">RadchenkoRM@minregion.gov.ua</a>

## Annex 2: Agenda of the Combined event

### Agenda

#### Combined event (training course and site visits) on Benefits and Requirements of the EU Directive on Energy Performance in Buildings

Copenhagen, Denmark, 14-18 December 2015

#### Day 0 (14 December)

Participants arriving in Copenhagen, Denmark

Briefing and introduction of participants in the evening at the hotel (**Wakeup Copenhagen, Carsten Niebuhrs Gade 11, DK-1577 Copenhagen V**)

#### Day 1 (15 December)

8:30 Meeting at the lobby of the hotel

8:30-9:00 Travel to Ramboll's office (**Ramboll, Hannemanns Alle 53, 2300 Copenhagen**)

9:00-9:30 Welcome and intro overview of programme

9:30-10:30 EU and Danish Experience and lessons learned on EPBD. Introduction of Danish energy policy and the institutional framework – Jens Laustsen;

10:30-10:45 Coffee break

10:45-12:00 Presentations of INOGATE activities in the improvement of EE in buildings:  
- reflection on the results of ESIB project – Svetlana, Timshina  
- results of CWP.04.AM– Jens Laustsen & Oleksandr Antonenko  
- findings on Building Energy Rating (BER) from the Combined event in Dublin, Ireland – Oleksandr Antonenko.

12:00-13:00 Lunch

13:00-13:30 Travel to the Danish Building Research Institute (**Statens Byggeforskningsinstitut | A.C. Meyers Vænge 15 | DK - 2450 København SV**)

13:30-16:30 Meeting with the representatives of the Danish Building Research Institute. Presentation on calculation rules, cost optimality and comparison with other European experience.

16:30-20:00 Guided walk tour of Copenhagen city centre

20:00 – 20:30 Travel to the hotel

#### Day 2 (16 December)

8:30 Meeting at the lobby of the hotel

8:30-9:00 Travel to Ramboll's office (**Ramboll, Hannemanns Alle 53, 2300 Copenhagen**)

09:00-10:00 Evolution of the Danish building Energy Performance certification scheme – Jens Laustsen

- 10:00-10:45 Presentations of participants from AM and GE on key barriers, progress made and the next steps planned to facilitate the improvement of Energy Efficiency in buildings (25 min for each country)
- 10:45-11:00 Coffee break
- 11:00-12:30 Presentations of participants from AZ, MD and UA on key barriers, progress made and the next steps planned to facilitate the improvement of Energy Efficiency in buildings (25 min for each country + summary of the findings by Svetlana Timshina)
- 12:30-13:30 Lunch
- 13:30-14:30 Reflection on Participants presentations and presentation on challenges and benefits on the implementations of energy performance certification system – Jens Laustsen
- 14:30-15:30 Presentation of process and toolbox for energy optimization in buildings, practical application for Lyngby Port, commercial building constructed in 1992 - Nikolaj Haaning
- 15:30-15:45 Coffee break
- 15:45-16:45 Building regulation and Nearly Zero-Energy Buildings (NZEB). Cost-optimal procedure for setting energy performance requirements and action plan for progression to NZEB – Jens Laustsen
- 16:45-17:30 Q & A session and discussion

### Day 3 (17 December)

- 8:30 Meeting at the lobby of the hotel
- 08:30-09:00 Travel to the Danish Energy Agency (**Amaliegade 44 1256 Copenhagen K**)
- 9:00-11:30 Meeting with the representatives of the Danish Energy Agency, responsible for the management of the Danish energy certification of buildings.  
Presentation on lessons learned on both the good and the bad experiences
- 11:30-12:00 Travel to Ramboll's office (**Ramboll, Hannemanns Alle 53, 2300 Copenhagen**)
- 12:00-13:00 Lunch
- 13:00-14:00 Roles and impact of the Danish industry on the implementation of the EPBD – Jens Laustsen
- 14:00-15:30 key elements of the inspection and the labelling process in practice – Yvonne Shack
- 15:30-15:45 Coffee break
- 15:45-17:00 Discussion of next steps to facilitate the improvement of Energy Efficiency in buildings in INOGATE PCs and the information on the gained knowledge the participants should provide to ITS three months after the event.
- 17:00-18:00 Conclusion and evaluation of the event
- 18:30 - 20:00 Dinner and networking

### Day 4 (18 December)

Participants' departure to their respective home countries.

### Annex 3: TEST for Combined event on EPBD

#### Some questions can have more than one correct answer

1. **Buildings account for \_\_\_ % of total energy consumptions of the EU:**
    - a) 20%.
    - b) 25%.
    - c) 35%.
    - d) 40%.
  
  2. **Among other requirements, the EPBD stipulates**
    - a) The standard minimum energy performance requirement and format of EPC for all MS.
    - b) All new buildings should be NZEB by 31.12.2020.
    - c) Validity of the energy performance certificate should not exceed 7 years.
    - d) Mandatory Energy Performance Certificates (EPC) for all new buildings or buildings which are sold or rented.
  
  3. **The improvement of EE in buildings is supposed to contribute to the following Danish target(s)**
    - a) CO<sub>2</sub>-emission free country by 2050.
    - b) 30% of renewable energy in Denmark's final energy consumption by 2020.
    - c) Reduction of energy consumption by 7.6% in 2020 relative to 2010.
    - d) All above targets.
  
  4. **What authority is responsible for the implementation of Energy Performance Certificates in Denmark?**
    - a) Danish Energy Agency.
    - b) Danish accreditation Agency.
    - c) Ministry of Energy, Utilities and Climate.
    - d) Danish Building Research Institute.
  
  5. **What are the requirements for “Nearly zero energy building (NZEB)” in the EU?**
    - a) 0 kWh/m<sup>2</sup>/year.
    - b) No more than 15 kWh/m<sup>2</sup>/year.
    - c) Each Member States defines its own criteria for NZEB.
    - d) Directive sets different requirements for each MS.
  
  6. **What are the current minimum energy performance requirements for new residential buildings (150 m<sup>2</sup> of heated gross floor area) in Denmark**
    - a) 63 kWh/m<sup>2</sup>/year.
    - b) 50.7 kWh/m<sup>2</sup>/year + utilisation of RES (heat pump, solar energy or biomass boiler) in a building.
    - c) 36.7 kWh/m<sup>2</sup>/year.
    - d) 20 kWh/m<sup>2</sup>/year.
  
  7. **Energy performance certificate in Denmark is valid for:**
    - a) 5 years.
    - b) 7 years if the EPC identifies major energy savings with a simple payback period in less than 10 years.
    - c) 10 years.
    - d) 12 years if the building is NZEP.
-

- 8. If the new building does not comply with the minimum energy performance requirements in Denmark:**
- a) The owner of the building should pay fine.
  - b) The owner of the building should improve EE of the building before putting it into operation.
  - c) The owner of the building should improve EE of the building during 3 years after putting it into operation.
  - d) The owner of the building should pay annual fines until it meets the minimum energy performance requirements.
- 9. The prices for issuing EPC in Denmark are**
- a) Not regulated – market regulates the price.
  - b) Not regulated for large buildings.
  - c) The government regulates the maxim price for small buildings.
  - d) Regulated by the EU Directive on EPBD.
- 10. The EPC tool (software) for calculation of the energy performance of building helps:**
- a) To reduce the cost of issuing EPC.
  - b) To provide transparency of the calculation and quality control.
  - c) To collect statistic information about energy efficiency of the building stock.
  - d) All above answers are correct.

Extra difficult question:

- 11. In order to document that the new building meets the minimum energy performance requirements in Denmark:**
- a) The owner should ensure the issue of a EPC by an independent expert that documents the performance of the building to be equal or less than the energy performance value.
  - b) The owner should allow for compliance check of the design of the buildings before the construction.
  - c) The owner should arrange a detailed inspection of each part of the building and the technical systems in the building after the construction.
  - d) The compliance should be confirmed based on the actual consumption of the building one year after the commissioning.

## Annex 4: Questionnaire for immediate evaluation (at the first day of the event)

### INOGATE Technical Secretariat -Questionnaire-

**Q1: How would you rate your overall knowledge and understanding of reforms to support the improvement of energy efficiency (EE) in buildings?**

- Excellent
- Good
- Satisfactory
- Basic
- None

**Q2: How much do you know about the requirements and elements of the EU Directive on Energy Performance in Buildings (EBPD)?**

- Extensive knowledge
- Good knowledge
- Moderate knowledge
- Basic knowledge
- None

**Q3: What is your knowledge and familiarity with the minimum energy performance requirements for new buildings?**

- Excellent
- Good
- Satisfactory
- Basic
- None

**Q4: How much do you know about energy performance certificates and the establishment of the certification scheme?**

- Extensive knowledge
- Good knowledge
- Moderate knowledge
- Basic knowledge
- None

**Q5: How much do you know about accreditation of experts and control system for energy performance certificates?**

- Extensive knowledge
- Good knowledge
- Moderate knowledge
- Basic knowledge
- None

**Q6: What is your knowledge and familiarity with the requirements for Nearly zero energy buildings (NZEB)?**

- Excellent
- Good
- Satisfactory
- Basic
- None

**Q7: How would you rate your skills in designing and/or implementing awareness raising campaigns to support the improvement of EE in buildings?**

- Excellent
- Good
- Satisfactory
- Basic
- None

**Q8: How would you rate the capacity of your organisation to implement reforms to support the improvement of EE in buildings, and implement the requirements of EPBD, if applicable?**

- Excellent
- Good
- Satisfactory
- Basic
- None

**Q9: Please name three main expectations that you have about this event**

1.
2.
3.

**Q10: Please briefly describe your role and contribution in your organisation's work, especially for improvement of EE in buildings and the implementation of EPBD, if applicable**

**Annex 5: Questionnaire for immediate follow-up, after the event**
**INOGATE Technical Secretariat  
-Questionnaire-**

The overall objective of this event is to help understand elements of the EPBD in order to be able to transpose it into national legislation. Please answer to what extent the objective of the event has been achieved.

Key elements of the EPBD	Full understanding	Good understanding	Some understanding	Weak understanding
1. General requirements of Directive				
2. Minimum energy performance				
3. Energy performance certificates				
4. Nearly zero energy				
5. Accreditation of experts and control				
6. Awareness raising				

**Q1: Was the event useful for your professional activities?**

- Yes  
 Somehow  
 No

**Q2: Is Danish experience applicable for your home country?**

- Yes  
 Somehow  
 No

**Q3: How would you rate the overall organisation of the event?**

- Excellent  
 Good  
 Satisfactory  
 Basic  
 Poor

**Q4: How would you rate the help of organisers before and during the event?**

- Excellent  
 Good  
 Satisfactory

- Basic
- Poor

**Q5: How would you rate your overall knowledge to improve EE in buildings and transpose the requirements (elements) of the EPBD into the national legislations framework, if applicable, of your country?**

- Extensive knowledge
- Good knowledge
- Moderate knowledge
- Basic knowledge
- None

**Q6: Please name the most interesting topics that you have learned during this event**

1.
4.
5.

**Q7: What would you suggest to improve such events in the future?**

**Q8: Please briefly describe how the acquired knowledge and experience will help you to contribute to your organisation's work, especially for improvement of EE in buildings and the implementation of EPBD, if applicable**