



## **TRAINING ON MUNICIPAL ENERGY MANAGEMENT, ENERGY MANAGEMENT INFORMATION SYSTEM, MEASUREMENT, REPORTING AND VERIFICATION IN THE BUILDING SECTOR**

**Date:** 25-26 October 2021

**Venue:** Ararat Resort Hotel Tsaghkadzor

**Organizers:** United Nations Economic Commission for Europe (UNECE) and United Nations Development Programme (UNDP) in Armenia

### **DESCRIPTION**

The training seminar is covering aspects related to the high-performance energy efficiency standards in buildings and is divided into six sessions, as follows:

- 1<sup>st</sup> session – Introduction to Energy Management (EM) and Monitoring, Reporting and Verification (MRV) in the buildings sector
- 2<sup>nd</sup> session – Institutional, organizational and legal aspects of energy management and monitoring, reporting and verification at the global and EU levels
- 3<sup>rd</sup> session – Municipal energy management as a part of the national monitoring, reporting and verification system
- 4<sup>th</sup> session – Energy Management Information System and examples of energy management system tools
- 5<sup>th</sup> session – Energy audits procedure of buildings and multicriteria analysis
- 6<sup>th</sup> session – Best practices of funding possibilities for energy efficiency measures in buildings

### **LEARNING OUTCOMES AND COMPETENCIES**

By the end of this training seminar the participants will have gain knowledge and expertise on high-performance energy efficiency standards in buildings and will have the following competencies:

- Understanding the energy management and monitoring, reporting and verification in the buildings sector
- Competency to understand the institutional, organizational and legal aspects of energy management and monitoring, reporting and verification at the global and EU level
- Knowledge to organize the municipal energy management as part of the national monitoring, reporting and verification system
- Knowledge to use existing or organize the development of the energy management information system
- Understanding of the energy auditing process and confidence in using multicriteria analysis tools
- Ability to use and understand the funding possibilities for energy efficiency measures in buildings

### **FORMS OF TEACHNIG**

The following form of teaching will be used during the training seminar:

- Classroom lectures (or online depending on the situation with Covid-19 restrictions)
- Classroom calculation exercises using calculation tools

### **SCHEDULE**

The training seminar will last 2 working days in total, with the schedule explained hereafter

## AGENDA

**Day 1: Monday, 25 October 2021**

Time	Lecture	Content
<b>09.00 SHARP</b>	<b>Collection on Republic Square</b>	<b>Transport to Ararat Resort Hotel Tsaghkadzor</b>
<b>10:00 – 10:30</b>	<b>Registration and welcoming coffee</b>	
<b>10:30 – 10:45</b>	<b>Presentation of the host. Introduction to the training seminar.</b>	Opening statements by UNECE (Mr. Oleg Dzioubinski and Ms. Nadejda Khamrakulova)  Establishment of building sector MRV in the frame of "De-risking and Scaling-up Investment in Energy Efficient Building Retrofits" UNDP-GCF project (Mr. Tigran Sekoyan)
<b>10:45 – 11:30</b>	<b>1<sup>st</sup> SESSION Introduction to Energy Management (EM) and Monitoring, Reporting and Verification (MRV) in the buildings sector</b>	- Definition of key terms - Basic regulatory framework (global and EU level) on MEM and MRV in the buildings sector - EU experience - Q&A's (Mr. Matija Vajdić)
<b>11:30 – 12:15</b>	<b>2<sup>nd</sup> SESSION Institutional, organizational and legal aspects of energy management and monitoring, reporting and verification at the global and EU levels</b>	- Legal aspects and global/EU experience - Institutional and organizational structure of EM and MRV in the buildings sector - Organization of the national and municipal energy management system - Q&A's (Mr. Matija Vajdić)
<b>12:15 – 12:30</b>	<b>Coffee break</b>	
<b>12:30 – 13:15</b>	<b>2<sup>nd</sup> SESSION – cont.</b>	- Basic principles of the Measurement, reporting and verification (MRV) - Continuous monitoring of energy savings - IT MRV tools - Organization of MRV at the municipal/national level - Q&A's (Mr. Matija Vajdić)
<b>13:15 – 14:00</b>	<b>3<sup>rd</sup> SESSION Municipal energy management as a part of the national monitoring, reporting and verification system</b>	- Municipal energy consumption (from energy generation to energy consumption - buildings, transport, lighting, public spaces) - Municipal energy management organizational units (scope of work) - Q&A's (Mr. Matija Vajdić)
<b>14:00 – 15:15</b>	<b>Lunch and Check-in</b>	
<b>15:15 – 16:00</b>	<b>3<sup>rd</sup> SESSION – cont.</b>	- Municipal energy data collection - Classification of buildings - Key performance indicators (energy, environment, cost) - Monitoring and evaluation of data - Q&A's (Mr. Matija Vajdić)
<b>16:00 – 16:45</b>	<b>Wrap-up, Open discussion</b>	
<b>18:00 – 19:00</b>	<b>Dinner</b>	

## Day 2: Tuesday, 26 October 2021

Time	Lecture	Content
9:00 – 9:45	<b>Breakfast</b>	
10:00 – 10:45	<b>4<sup>th</sup> SESSION</b> <b>Energy Management Information System and examples of energy management system tools</b>	<ul style="list-style-type: none"> <li>- Best practices in ECE member states</li> <li>- EMIS at the country level and local level</li> <li>- Development of the municipal energy management information system</li> <li>- Organizing data collection and defining data sources</li> <li>- Q&amp;A's</li> </ul> (Mr. Matija Vajdić)
10:45 – 11:30	<b>4<sup>th</sup> SESSION – cont.</b>	<ul style="list-style-type: none"> <li>- Analyzing large amounts of data (bigdata, multicriteria, etc.)</li> <li>- Energy monitoring and reporting</li> <li>- Recommendations for the development of Armenian EMIS</li> <li>- Q&amp;A's</li> </ul> (Mr. Matija Vajdić)
11:30 – 11:45	<b>Coffee break (and check out)</b>	
11:45 – 12:30	<b>5<sup>th</sup> SESSION</b> <b>Energy audits procedure of buildings and multicriteria analysis</b>	<ul style="list-style-type: none"> <li>- Energy audits of buildings</li> <li>- Basic energy audits principles and procedures</li> <li>- Technical systems within the buildings (supply, demand)</li> <li>- Data collection and defining the baseline</li> <li>- Metering of energy consumption</li> <li>- Q&amp;A's</li> </ul> (Mr. Matija Vajdić)
12:30 – 13:15	<b>5<sup>th</sup> SESSION – cont.</b>	<ul style="list-style-type: none"> <li>- Energy efficient technologies</li> <li>- Energy retrofit measures (energy, financial and GHG emission reduction)</li> <li>- Multicriteria analysis and selection of buildings suitable for energy retrofit</li> <li>- Building retrofit</li> <li>- Energy savings calculation (ET curves, CUSUM diagrams)</li> <li>- Q&amp;A's</li> </ul> (Mr. Matija Vajdić)
13:15 – 14:15	<b>Lunch</b>	
14:15 – 15:00	<b>6<sup>th</sup> SESSION</b> <b>Best practices of funding possibilities for energy efficiency measures in buildings</b>	<ul style="list-style-type: none"> <li>- Basic economic evaluation of investment projects (NPV, IRR, etc.)</li> <li>- How can building retrofit be funded?</li> <li>- Social aspects (capacity building, trainings, awareness rising)</li> <li>- Q&amp;A's</li> </ul> (Mr. Matija Vajdić)
15:00 – 15:15	<b>Wrap-up and closure of the event</b>	UNECE, UNDP
16:00	<b>Transportation to Yerevan</b>	