UNDP efforts in promoting EE policies in Armenia

Building Construction Norms, Standards, EE Label, Audit Methodology

17 October 2019, Yerevan

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UNDP Climate Change Programme
Senior Expert on Energy and Energy Efficiency
UNDP support in implementation of Armenia’s Climate Change agenda

• UNDP Climate Change Program initiated its support to the Government of Armenia starting from 1996 when the first GHG inventory for 1990 was developed and First National Communication under UNFCCC was prepared.

• The Program currently implements several projects under Ministry of Environment coordination related to the development of new updated NDC and National Adaptation plan, development and adaptation of the energy efficiency regulations for energy appliances under Eurasian Economic Union rules, development of Armenia’s 4th National Communication and 3rd Biennial Update Report, and GCF 20 mln project for de-risking and scaling investments in buildings energy efficiency.
The latest National GHG Inventory Report of the Republic of Armenia for 2015-2016 has been developed within the framework of the “Development of Armenia’s Fourth National Communication to the UNFCCC and Second Biennial Report” UNDP-GEF Project in 2018.

- It has been compiled according to the 2006 IPCC Guidelines. The Armenia's total GHG emissions in 2016 amounted to 10,284 Gg CO2eq. (net emissions - 9,801 Gg CO2eq.)
- In 2016 Energy Sector emissions have decreased by 3.4 times compared with the baseline year 1990, while Total Primary Energy Supply (TPES) decreased by 2.6 times, which is evidence of low-carbon development trends in Armenia resulted from the: structural changes in economy.
Paris Agreement Implementation
Issues in the RA

• Intended Nationally Determined Contributions (INDC) document was approved by the RA Government decision #41 of September 10, 2015 and it sets the GHG emission reduction targets for Armenia and identifies the sectors with notable contributions to GHG emissions; including energy sector, transport buildings, etc.
• The Paris Agreement is ratified by Armenia in 2017.
• In 2018 Armenia joined the NDC Partnership

• Armenia has no proven fossil fuel reserves.
• Armenia can cover only 33.7% of its energy demand with domestic energy production (atomic energy, hydropower, and biomass).
UNDP Climate Change Programme Armenia

Building capacities of institutions and professionals

- Energy efficiency laboratory established in State University of Architecture and Construction
- Testing and certification laboratory established at “Shincertificate” LLC
- Designs of five replicable/typical energy efficient individual residential houses along with respective catalog
- Database of locally produced and imported construction insulation materials
- Education curricula and bilingual modules “Green Architecture” - 420 pages
- 11 locally produced and imported insulation materials and pre-fabricates were tested and granted certificates.
Established Laboratories on EE and on Building Physics
Why in Buildings

- The households are the main and largest final consumers of energy (36.9%) including the natural gas and electricity.
- About 30% of Armenian residents are considered in energy poverty.
- Armenia does not produce any fossil fuels.
- Armenia manages to cover some 33.7% of its energy demand with domestic energy production (nuclear, hydro energy, biomass).

**Final energy consumption in Armenia by Sectors, 2017**

Thermal insulation in buildings can ensure about 50% energy saving in energy consumption.
Mandatory requirements for buildings’ energy efficiency

• Mandatory requirements for buildings’ energy efficiency introduced through amendments to the Law “On Energy Saving and Renewable Energy”, (adopted May 12, 2016),

• Mandatory consideration of energy efficiency in construction/reconstruction under the state funded activities is stipulated by the Government Decision #1504-N (December 25, 2014)

Mandatory requirements for buildings’ energy efficiency

• Armenia introduced in 2016 a mandatory building energy code with the adoption of a new regulation “Thermal Protection of Buildings”, which was developed based on Russian Building Energy Code from 2003 (updated in 2012) with application of some methodologies and approaches of European standards, e.g. EN 15217:2007; EN15316-1:2007; EN15603-1:2007; ISO 16818:2008; and ISO 23045-2008. It links building envelope components and heat losses with established energy limits, taking into account differences in climatic conditions.

• It also includes a requirement for issuing a building energy passport and an energy efficiency label with energy efficiency classes.
EE Refurbishment of Existing Residential Building

- 9-storey, 36 apartment building in Yerevan
- In cooperation and with co-financing from Yerevan Municipality

**Before 178kWh/m² year**
- CO₂ emissions: 91 tons/year
- 620$ per flat/year – heating

**After 74kWh/m² year**
- CO₂ emissions: 31 tons/year
- 255$ per flat/year – heating

Energy performance improved by 60%!
Infrared Imaging of the Energy Efficient Building
First LEED Certified Building in the Region
(Leadership in Energy & Environmental Design)

UNDP assisted private donor funded school construction in Yerevan in:

- identification of insulation approach design and
- insulation of 1260 sq. m of beams and columns with 50mm layer of polyurethane foam, thus eliminating all the “cold bridges” of the building
- Monitoring equipment and software for showcasing the energy saving in online regime
- School opened its doors in September 2014
Knowledge Products

- **Database of insulation construction materials and lighting equipment** produced in and imported to Armenia (with technical parameters) 2013, 2016
- **Advisory Handbook on Technical Solutions in Insulation.** Adopted by the resolution of the Minister of Urban Development, 2013
- **Replicable design of energy efficient residential houses.** Full package of design documents for 5 buildings (published on the web-site of the Ministry of Urban Development) for free use, 2014
- **Green Architecture” Bilingual Textbook.** For students of architectural-engineering specialties, faculty and acting professional in the building sector, ten thematic educational modules (430 pages)
### Thermal Protection of Buildings

#### Table 3: Summary of thermal insulation properties of building materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Thermal Conductivity, λ (W/m·K)</th>
<th>Density, ρ (kg/m³)</th>
<th>Length, L (m)</th>
<th>Area, A (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Glass fiber, type A</td>
<td>0.035</td>
<td>120</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>2. Rock wool, type B</td>
<td>0.038</td>
<td>150</td>
<td>12</td>
<td>144</td>
</tr>
<tr>
<td>3. Mineral wool, type C</td>
<td>0.040</td>
<td>180</td>
<td>15</td>
<td>180</td>
</tr>
</tbody>
</table>

#### Table 5: Summary of thermal insulation properties of building systems

<table>
<thead>
<tr>
<th>System</th>
<th>Thermal Conductivity, λ (W/m·K)</th>
<th>Material</th>
<th>Length, L (m)</th>
<th>Area, A (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Single glass window</td>
<td>0.85</td>
<td>Glass</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>2. Double glass window</td>
<td>0.75</td>
<td>Glass</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>3. Triple glass window</td>
<td>0.65</td>
<td>Glass</td>
<td>4</td>
<td>8</td>
</tr>
</tbody>
</table>

#### Notes:
- λ: Thermal Conductivity
- ρ: Density
- L: Length
- A: Area

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**UNDP Project Notes:**

- **UNDP Project:** Thermal Insulation Improvement
- **Project Code:** TIP-1234
- **Project Duration:** 2022-2024
- **Project Impact:** Increased energy efficiency and reduced carbon footprint

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**Project Staff:**

- **Project Manager:** Anna Shahghasemian
- **Senior Engineer:** Arman Petrossian

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## Thermal Protection of Buildings

### Нормируемая (базовая) удельная характеристика расхода тепловой энергии на отопление и вентиляцию зданий за отопительный период $q_{отп}$ зданий, Вт/(м³·°C)

<table>
<thead>
<tr>
<th>Тип здания</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4, 5</th>
<th>6, 7</th>
<th>8, 9</th>
<th>10, 11</th>
<th>12 и выше</th>
</tr>
</thead>
<tbody>
<tr>
<td>Жилые многоквартирные, гостиницы, общежития</td>
<td>0,455</td>
<td>0,414</td>
<td>0,372</td>
<td>0,359</td>
<td>0,336</td>
<td>0,319</td>
<td>0,301</td>
<td>0,290</td>
</tr>
<tr>
<td>2 Общественные, кроме перечисленных в строках 3–6 таблицы</td>
<td>0,487</td>
<td>0,440</td>
<td>0,417</td>
<td>0,371</td>
<td>0,359</td>
<td>0,342</td>
<td>0,324</td>
<td></td>
</tr>
<tr>
<td>3 Поликлиники и лечебные учреждения, дома-интернаты</td>
<td>0,394</td>
<td>0,382</td>
<td>0,371</td>
<td>0,359</td>
<td>0,348</td>
<td>0,336</td>
<td>0,324</td>
<td></td>
</tr>
<tr>
<td>4 Дошкольные учреждения, хосписы</td>
<td>0,521</td>
<td>0,521</td>
<td>0,521</td>
<td>0,521</td>
<td>0,521</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5 Сервисное обслуживание, культурно-досуговой деятельности, технопарки, склады</td>
<td>0,266</td>
<td>0,255</td>
<td>0,243</td>
<td>0,232</td>
<td>0,232</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6 Административное назначение (офисы)</td>
<td>0,417</td>
<td>0,394</td>
<td>0,382</td>
<td>0,313</td>
<td>0,278</td>
<td>0,255</td>
<td>0,232</td>
<td>0,232</td>
</tr>
</tbody>
</table>

### Нормируемая (базовая) удельная характеристика расхода тепловой энергии на отопление и вентиляцию зданий, $q_{отп}$ малогаражных жилых домов одноквартирных, за отопительный период, Вт/(м³·°C)

<table>
<thead>
<tr>
<th>Основные параметры</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Площадь, м²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 и менее</td>
<td>0,579</td>
<td>0,517</td>
<td>0,455</td>
<td>0,414</td>
<td>0,372</td>
<td>0,359</td>
<td>0,336</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0,517</td>
<td>0,558</td>
<td>0,496</td>
<td>0,434</td>
<td>0,372</td>
<td>0,359</td>
<td>0,336</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>0,455</td>
<td>0,496</td>
<td>0,455</td>
<td>0,445</td>
<td>0,393</td>
<td>0,359</td>
<td>0,372</td>
<td></td>
</tr>
<tr>
<td>250</td>
<td>0,414</td>
<td>0,434</td>
<td>0,455</td>
<td>0,445</td>
<td>0,393</td>
<td>0,359</td>
<td>0,372</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td>0,372</td>
<td>0,372</td>
<td>0,372</td>
<td>0,372</td>
<td>0,393</td>
<td>0,359</td>
<td>0,372</td>
<td></td>
</tr>
<tr>
<td>600</td>
<td>0,359</td>
<td>0,359</td>
<td>0,359</td>
<td>0,359</td>
<td>0,393</td>
<td>0,359</td>
<td>0,372</td>
<td></td>
</tr>
<tr>
<td>1000 и более</td>
<td>0,336</td>
<td>0,336</td>
<td>0,336</td>
<td>0,336</td>
<td>0,336</td>
<td>0,336</td>
<td>0,336</td>
<td></td>
</tr>
</tbody>
</table>

Примечание — при промежуточных значениях отапливаемой площади дома в интервале 50—1000 м² значения $q_{отп}$ должны определяться по линейной интерполяции.
Advantages of Norms 24-01-2016

• Comply with the provisions of the national program of energy conservation and renewable energy sources of the Republic of Armenia;
• Based on advanced developments of CIS interstate building codes;
• Harmonized with the norms of foreign countries
• Help to improve the energy efficiency of the designed buildings due to unused reserves;
• Include the necessary methods for calculating normalized thermophysical indicators;
• Determine the requirements for the reduced heat transfer of building structures, the characteristics of the energy efficiency of buildings, the class of energy efficiency of buildings, the energy passport of the building;
• Create the prerequisites for the possibility of using SNiP for the design of new building envelopes with enhanced heat-shielding properties;
• Lay the foundation for the further development of the standardization of the thermophysical properties of building envelopes
National Standards in Energy Efficiency

AST 240-2005 ENERGY CONSERVATION Terms and definitions
AST 243-2005 A SET OF ELECTRICAL DEVICES AND EQUIPMENT FOR POWER STATION AND NETWORK Terms and definitions
AST 246-2006 Energy conservation. NORM-METHOD SECURING. Basic concepts
AST 247-2006 Energy conservation. ENERGY EFFICIENCY.COMPOSITION OF INDIKATORS. Basic concepts
AST 248-2006 Energy conservation. ENERGY CONSUMING EQUIPMENT IN GENERAL INDUSTRIAL APPLICATION. Kinds. Types. Groups. Indicators of energy efficiency. Identification
AST 249-2006 Energy conservation. METHODS OF ASSURANCE FOR ENERGY EFFICIENCY INDICATORS OF ENERGY CONSUMED PRODUCTS TO ITS NORMATIVE VALUES. General requirements
AST 250-2006 Energy conservation. INFORMING OF CONSUMERS ABOUT ENERGY EFFICIENCY OF EQUIPMENT IN THE RESIDENTIAL SECTOR. General requirements
AST 255-2006 Energy conservation. Methods of determination of energy efficiency measures on energy conservation
AST 256-2006 Energy conservation. Secondary energy resource. Terms and definitions
AST 257-2006 Energy conservation. Electrical energy (power) metering. General requirements
Legislative and Regulatory Framework

- The GHG mitigation policy development
- Energy efficiency related laws and decrees revision and amendment in accordance with EU and Eurasian Economic Community directives and technical regulations
- National and international standards development and adaption for Armenia
- Building codes, methodologies and handbooks on energy efficiency
- Energy Balances preparation and NEEAP monitoring

Two new National Standards were developed
**AST 371-2016** Methodology for performing energy audit in residential and public buildings.
National Standards AST 362-2013

MSN 24-01-2011 "Thermal protection of buildings"

8. Տարածաշխատականության համակարգման միջոցառումներ

<table>
<thead>
<tr>
<th>( q_{\text{m}})</th>
<th>( q_{\text{m}}(\text{W}^\circ\text{C}) )</th>
<th>0,33</th>
<th>0,343</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 ստանդարտ սալիկապատման սարքի խմբավորման համակարգման միջոցով տարածաշխատականության համակարգման միջոցով տարածաշխատական սարքի խմբավորման համակարգման միջոցով</td>
<td>( q_{\text{m}}(\text{W}^\circ\text{C}) )</td>
<td>0,372</td>
<td>0,372</td>
</tr>
<tr>
<td>32 ստանդարտ սալիկապատման սարքի խմբավորման համակարգման միջոցով տարածաշխատական սարքի խմբավորման համակարգման միջոցով տարածաշխատական սարքի խմբավորման համակարգման միջոցով</td>
<td>( q_{\text{m}}(\text{W}^\circ\text{C}) )</td>
<td>0,372</td>
<td>0,372</td>
</tr>
</tbody>
</table>

9. Տարածաշխատական սարքեր

<table>
<thead>
<tr>
<th>( q_{\text{m}})</th>
<th>( q_{\text{m}}(\text{W}^\circ\text{C}) )</th>
<th>24</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 ստանդարտ սալիկապատման սարքի խմբավորման համակարգման միջոցով տարածաշխատական սարքի խմբավորման համակարգման միջոցով</td>
<td>( q_{\text{m}}(\text{W}^\circ\text{C}) )</td>
<td>75</td>
<td>78</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>( q_{\text{m}})</th>
<th>( q_{\text{m}}(\text{W}^\circ\text{C}) )</th>
<th>60693</th>
<th>63164</th>
</tr>
</thead>
<tbody>
<tr>
<td>36 ստանդարտ սալիկապատման սարքի խմբավորման համակարգման միջոցով տարածաշխատական սարքի խմբավորման համակարգման միջոցով</td>
<td>( q_{\text{m}}(\text{W}^\circ\text{C}) )</td>
<td>74227</td>
<td>76793</td>
</tr>
</tbody>
</table>
National Standards AST 371-2016

Methodology for performing energy audit in residential and public buildings

**Phase I.** Preparatory Stage: Performs energy audit planning, data collection and information on the basis of which energy conservation, energy efficiency improvement assessment and comparative analysis are performed.

**Phase II.** Measurement stage - collects necessary information on the building's thermal-technical characteristics and actual energy consumption parameters, performs relevant surveys (including instrument measurements, sampling and testing) to adjust the building's energy / thermal balance and basic energy demand and options for energy efficiency measures.
Phase III. Analytical Stage - Performs analysis of data obtained during previous stages (including results of design documentation and instrumental measurements). Determine the main actual performance indicators of the building and the possibilities for its improvement. Perform technical and economic analysis of energy efficiency improvement measures for optimization of individual building structures, equipment and technical processes, optimization of energy efficiency and occupancy optimization of the building and preparation of a package of energy efficiency measures.

Phase IV. Final stage: documentation of energy audit results and reporting including classification of energy efficiency measures included in the plan according to the plan and financial goals priorities, as well as building energy passport. The standard form of passport and the procedure for filling it out are given in AST 362.
## Building Energy Audit

<table>
<thead>
<tr>
<th>Project</th>
<th>Investment</th>
<th>Electricity Savings</th>
<th>Electricity Savings</th>
<th>Thermal Savings</th>
<th>Cost Savings</th>
<th>Simple Payback</th>
<th>IRR</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof Insulation</td>
<td>51,288</td>
<td>3.3</td>
<td>7.9%</td>
<td>74</td>
<td>1,673</td>
<td>30.7</td>
<td>0.0%</td>
<td>-36,105</td>
</tr>
<tr>
<td>Walls Insulation</td>
<td>39,270</td>
<td>3.5</td>
<td>8.3%</td>
<td>78</td>
<td>1,771</td>
<td>22.2</td>
<td>0.9%</td>
<td>-23,190</td>
</tr>
<tr>
<td>Adjustment of windows/doors</td>
<td>35,294</td>
<td>2.0</td>
<td>4.9%</td>
<td>46</td>
<td>1,037</td>
<td>34.1</td>
<td>0.0%</td>
<td>-25,868</td>
</tr>
<tr>
<td>Basement Insulation</td>
<td>18,076</td>
<td>1.6</td>
<td>3.7%</td>
<td>35</td>
<td>790</td>
<td>22.9</td>
<td>0.7%</td>
<td>-10,901</td>
</tr>
<tr>
<td>Heating System Modernisation</td>
<td>8,441</td>
<td>0.0</td>
<td>0.0%</td>
<td>47</td>
<td>1,202</td>
<td>7.0</td>
<td>10.1%</td>
<td>60</td>
</tr>
<tr>
<td>Replacement of lamps with energy</td>
<td>1,850</td>
<td>3.1</td>
<td>7.3%</td>
<td>0</td>
<td>263</td>
<td>7.0</td>
<td>11.4%</td>
<td>150</td>
</tr>
<tr>
<td>efficient</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solar water heaters for HTW</td>
<td>3,539</td>
<td>7.1</td>
<td>17.0%</td>
<td>0</td>
<td>543</td>
<td>6.5</td>
<td>12.8%</td>
<td>591</td>
</tr>
<tr>
<td>Installation of a solar PV system</td>
<td>21,606</td>
<td>41.6</td>
<td>99.2%</td>
<td>0</td>
<td>2,964</td>
<td>7.3</td>
<td>10.8%</td>
<td>939</td>
</tr>
<tr>
<td>TOTAL</td>
<td>179,363</td>
<td>62</td>
<td>148%</td>
<td>278</td>
<td>10,244</td>
<td>18</td>
<td></td>
<td>-94,324</td>
</tr>
<tr>
<td>TOTAL ACCEPTED</td>
<td>179,363</td>
<td>62.2</td>
<td>148.3%</td>
<td>278</td>
<td>10,244</td>
<td>18</td>
<td></td>
<td>-94,324</td>
</tr>
</tbody>
</table>
Roadmap for development of MRV system in Armenia

**STEP 1: SELECTION PROCESS**
- **Public Buildings**
  - Municipalities / Public institutions
  - Pre renovation energy audits
  - EPC
  - Ex ante
- **Residential Building**
  - Banks / ESCOs
  - Pre renovation energy audits
  - EPC

**STEP 2: VERIFICATION OF SAVINGS / REDUCTIONS**
- **MRV system**
  - Registration of measures / projects
  - Emission Factor
  - Climate data
  - EMIS data for verification of GHG reductions (TIER 2)
  - Ex post
  - EMIS data (if possible)
  - Post renovation energy audits

**STEP 3: DEVELOPMENT OF METHODOLOGIES FOR TIER 1**
- **MRV system**
  - Data from 173 public buildings
  - 6290 residential buildings
  - Development of the inventory of public buildings
  - Development of the Typology of residential buildings

**STEP 4: FINALIZATION OF THE MRV SYSTEM**
- **MRV system**
  - With possibilities for calculation using TIER 1 and TIER 2

**Energy distribution companies**
- Pre-retrofit energy consumption data
- Post-retrofit energy consumption data

**Measured data of other building refurbishments**
Municipal Energy Management System (MENMS), as a part of domestic MRV System

This will ensure Implementation of Sustainable Energy Plan of Yerevan community, conducting monitoring of energy consumption in public buildings, storing all the data collected in the Energy Management Information System (EMIS), developing list of buildings for prioritized selection for energy efficient retrofits, resulting assessment of achieved energy savings and greenhouse gas (GHG) emissions reductions.

EMIS implementation should be organized in cooperation with the Community, engaging energy supplier companies such as “Electric Networks of Armenia” CJSC, “Gazprom Armenia” CJSC and “Service of the Hydrometeorology and Active Influence on Atmospheric Phenomena” SNCO under the Ministry of Emergency of the Republic of Armenia.
THANK YOU

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Energy Efficient Social Building in Goris

- In cooperation with Swiss Development and Cooperation Agency and Government of Armenia
- Total enveloping of the building
- Thermal insulation of reinforced concrete columns and balcony blocks and elimination of “cold bridges”
- Installation of windows and doors with higher thermal resistance
- Construction of tambours of the entrances
- Installation of regulation and metering equipment for heating system

940 m² total area
22 apartments
3 storeys

Incremental cost of EE measures: 8%
Energy performance improvement: 2 times
Additional benefit: about 25 m² of living area
Energy Efficient Residential Building in Earthquake Zone

In cooperation with Government of Armenia, under state housing program.

total area: 2242 m²
apartments: 36
story’s: 4

Incremental costs: 6%
Energy performance improvement: 2 times
Additional benefit: about 90 m² of living area
Insulation of the Building Structure
Replication of Energy Efficient Building Design Involving Private Sector

- The energy efficient solutions piloted by the UNDP are replicated in the construction by private developer “Al Hamra Real Estate Armenia” LLC
- Additional >900 sq.m available as a result of redesign valued at 1800$/sq.m
- Direct benefit to the developer - > 1,500,000 USD
- Energy performance improvement - 36%
Green Urban Lighting Project

BEFORE

AFTER
Municipal Energy Efficiency Funds Established in 15 cities
Operational scheme of the municipal energy efficiency revolving funds

**Purpose:** to ensure sustainable funding for replication of energy efficient modernization activities in municipal lighting systems.

**Source of funding:** monthly savings of energy costs achieved as a result of pilot projects as well as any other funds not prohibited by law.

**Legal status:** special off-budget accounts in Municipalities authorized by Ministry of Finance of RA.

**Management body:** council consisting of representatives of the local self-governance body and of the project (for project period only).
Supporting Behavioral Change Towards Energy Efficiency

- TV programs for pilot project results dissemination
- Journalists training and contests (2)
- Web-site (local and regional)
- EE certification of buildings (8)
- Media contests to promote topics on EE (2)
- Articles, thematic calendars (on annual basis)
- School classes, contests (on annual basis)