Ministry of Nature Protection of RA
Ministry of Urban Development of RA

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"Improving Energy Efficiency in Buildings"
UNDP-GEF/00059937 Project

Case Study in Armenia

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IMPROVING ENERGY EFFICIENCY IN BUILDINGS

Project Objective and Components

Objective: to reverse the existing trends and reduce consumption of electrical and thermal energy and associated GHG emissions in new and restored, primarily residential buildings in Armenia.

Project Basics:	
Financing	GEF
Co-financing	Government of the RA UNDP
GEF executing agency	UN Development Program
Implementing partners	Ministry of Nature Protection of the RA Ministry of Urban Development of the RA
Duration	2010 – 2015

Design and Enforcement of New EE Building Codes and Standards

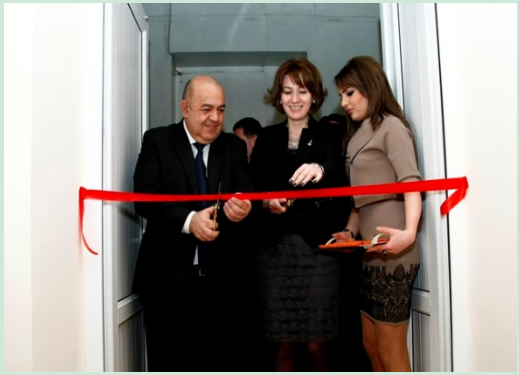
- ✓ The ways to improve the energy efficient building codes discussed within the RA Ministry of Urban Development Collegium and approved:
  - ✓ Amendments were drafted to the RA Laws “On Urban Development” and “On Energy Saving and Renewable Energy” and submitted to the government stakeholders for approval;
  - ✓ “Buildings, structures, construction materials: Safety” technical regulations were drafted (submitted to the RA Government and declined);
  - ✓ “Buildings’ Energy Passport” national standard was drafted and is to be submitted for registration;
  - ✓ Harmonization of Energy Performance in Buildings EU Directive is in the making along with its six supporting standards;
  - ✓ Previously developed and approved “Construction Climatology” II-7.01-2011 RA building code was published.
- ✓ Manual – an advisory reference – was developed introducing technical solutions for thermal insulation of residential, public and industrial buildings’ envelopes in construction and in reconstruction stages in the Republic of Armenia

Quality control, testing and certification of EE materials and equipment

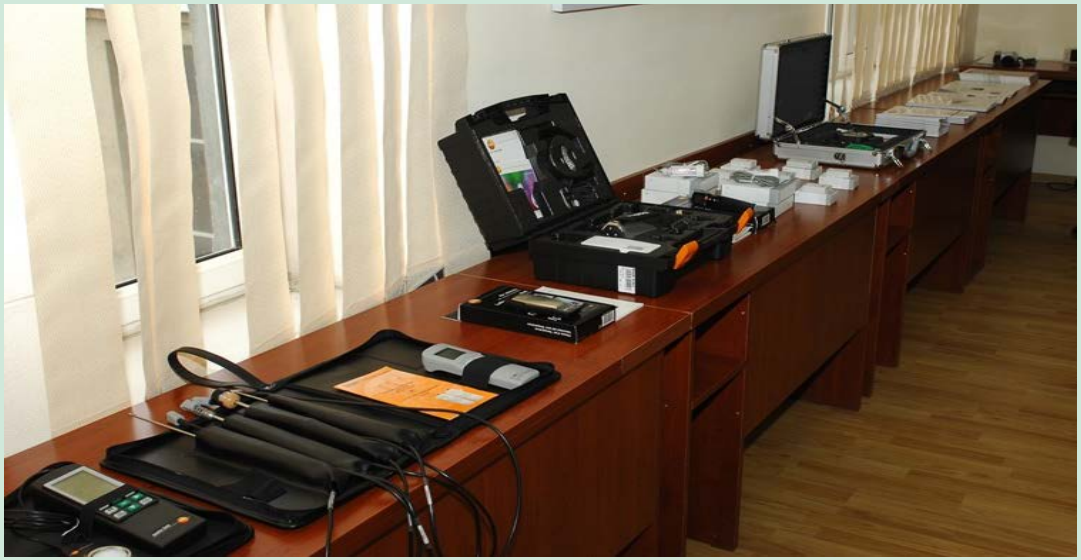
- ✓ Analysis of building insulation materials certification procedure, assessment and QA and QC systems in production facilities performed.
- ✓ Samples of seven types of locally produced insulation materials and pre-fabricates were tested and granted certificates.
- ✓ Technical specifications were developed for four local products to ensure that their quality is accurately reflected in the supporting documentation.

Quality control, testing and certification of EE materials and equipment

- ✓ Energy efficiency laboratory was opened in the Yerevan State University of Architecture and Construction (YSUAC) in March 2013.
- ✓ A testing and certification laboratory was established at “Shincertificate” LLC and opened in March 2013.
- ✓ Two information boards presenting the insulation materials available in Armenia and the list of equipment for energy audit displayed in Universities.

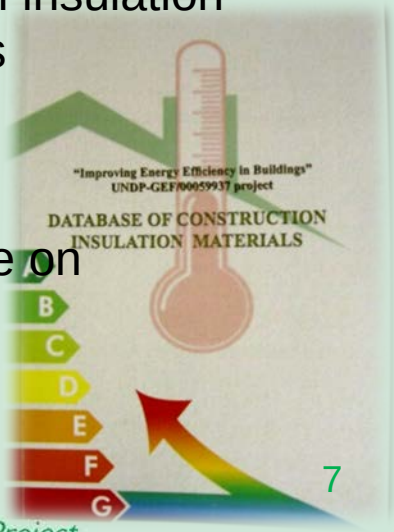


Quality control, testing and certification of EE materials and equipment



Outreach, training and education

- ✓ Designs of five replicable/typical energy efficient individual residential houses along with respective catalog was developed and submitted to the RA Ministry of Urban Development for approval to use for residential construction by individual owners.
- ✓ Four educational modules are developed (in Armenian and in English) to be included in the curricula of the respective Universities; elaboration of another four educational models is underway.
- ✓ A manual for organization of practical lessons on application of the equipment and instruments procured for the YSUAC energy efficiency laboratory is currently being developed.
- ✓ Database of locally produced and imported construction insulation materials from more than 40 producers and importers is completed and published.
- ✓ Jointly with American University of Armenia (AUA), the Project organized a “Solar Architecture” summer course on active and passive solar solutions in building design for acting architects and engineers.



Outreach, training and education

- ✓ Documentary on energy efficiency improvement measures in demonstration building in Goris town was produced, broadcasted by two local TV channels and shared on-line (official opening: 18.DEC.2012).
- ✓ Two media contests were held in 2012 and 2013 to locally promote topics on energy efficiency.
- ✓ Three thematic social ads were produced and broadcasted, a radio program was developed, and several articles, thematic calendars were published.

Demonstrating integrated building design

- ✓ In cooperation with Government and Swiss Development and Cooperation Agency was designed and constructed EE demonstration social house for 20 families in Goris town.

The opening ceremony was held on December 18, 2012.

- ✓ A 9 storey residential building was selected for energy efficient refurbishment in the city of Yerevan. This is the 1st project in Armenia for total enveloping of the multi-apartment building. The project is co-financed from Yerevan municipality and currently the construction works are on-going.
- ✓ Another social multi-apartment pilot building is under construction in Akhuryan community

Demonstrating integrated building design

- Energy audit was conducted in reference and pilot buildings using energy audit equipment (temperature data loggers (HOBOs), infrared thermal imager, etc.).
- The energy passports/EE labels for 7 buildings were issued.
- Cooperation continues with private developer “Al Hamra Real Estate Armenia” LLC: the energy efficient solutions proposed by the Project’s experts are being executed in the construction process.
- Project is providing continuous support to the Armenian Missionary Association of America, Inc. which is carrying out the design and construction of a LEED certified (USA green building standard) school in Yerevan (looks like first LEED certified building in the region).

Conclusions

- Energy efficiency measures in construction projects can be easily accommodated in the initial design without increasing the overall costs, however there is low awareness on economic co-benefits.
- A private developer company after consultations agreed to implement energy efficiency measures on their own expense, based on recalculation of the costs and gains *(additional space, marketing benefits of the operational cost reduction).*
- Due to proactive attitude of the Project towards search and selection of more pilot buildings for demonstration of energy efficient approach, was leveraged co-financing from Yerevan municipality for first of its kind thermal refurbishment experience of multi-storey residential building in Armenia.
- Supporting internationally valid certification of the locally produced insulation materials proved to be a notable encouragement for local producers to upgrade their practices and set them in accordance with the most recent standards in the sector.

Thank you for your attention!

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