

Building Energy Efficiency Revolving Fund Program in Gumri, Vanadzor and Maralik

The Municipal Network for Energy Efficiency (MUNEE) Program is implemented by the Alliance to Save Energy (Alliance) and is funded by the United States Agency for International Development (USAID) since 2001. In Armenia, the Alliance supports the municipalities and condominiums in managing their energy use, applying modern energy efficiency technologies and reducing energy use in residential and public buildings through legal reform, capacity building, project development, awareness raising, designing innovative financing, linking the relevant experts with colleagues across the region.

During the 2005-2007 Building Energy Efficiency (EE) Revolving Funds were established in the cities of Gumri and Vanadzor. The EE Revolving Funds provide small, interest-free loans (USD \$500-600) with a 6-month repayment period. This helps condominiums increase the energy efficiency of buildings and improve space heat conservation in common areas; improve management and assist condominiums in maintaining the building stock, while eliminating the barrier of upfront lack of capital. The small loans to condominiums allowed implementation of EE measures before the start of the heating season, using the collected condominium service fees to replay the loan. The Revolving Fund established in Gumri also funded implementation of energy efficiency measures in the city of Maralik.

The Alliance and the National Association of Condominium Owners (NACO) provide project oversight, while the local NGOs in Gumri and Vanadzor – “Third Nature” NGO and the “Lori Marz Condominium Center” NGO, respectively – conduct the day-to-day project management and coordination. The “Third Nature” NGO also conducted the project management and coordination in the city of Maralik where one condominium – “Miadzuyl” – applied for a loan from the Revolving Fund to implement EE measures in two of its buildings. In Vanadzor and Maralik the local municipalities agreed to provide assistance to the low income households of participating condominiums during the implementation of EE projects. Memorandums of Understanding (MOU) were signed between the Alliance, NACO, the Mayors of Vanadzor and Maralik, and the two local counterpart NGOs – the “Third Nature” NGO in Gumri and Maralik and the “Lori Marz Condominium Center” NGO in Vanadzor. According to the MOUs, the Municipalities of Vanadzor and Maralik provided assistance to the low income households in participating condominiums.

The following tables show the distribution of funds and the start dates for the projects in all three participating cities.

City	1 st round of Program								
	Participating condominiums	Number of beneficiary households	Start date	Amount borrowed from Fund (AMD)	Own investment (AMD)	Assistance from municipality (AMD)	Total cost of the project (AMD)	STATUS of the project	
								work	repayment
Gumri	Bardzraberd	25	Dec. 2005	218,900	50,000	N/A	268,900	completed	completed
	Ghandilyan	50		218,900	50,000	N/A	268,900	completed	completed
Vanadzor	Kayaran	50	Sept. 2006	143,038	27,500	41,400	227,500	completed	completed
	Narek	36		137,000	36,000	30,000	216,100	completed	completed
	Satar	48		137,000	50,500	16,750	211,250	completed	completed
Maralik	Miadzuyl	22	Dec. 2006	180,000	30,000	20,000	230,000	completed	completed
TOTAL		231		1,034,838	244,000	108,150	1,422,650		

City	2 nd round of Program								
	Participating condominiums	Number of beneficiary households	Start date	Amount borrowed from Fund (AMD)	Own investment (AMD)	Assistance from municipality (AMD)	Total cost of the project (AMD)	STATUS of the project	
								work	repayment
Gumri	Bardzraberd	98	Aug. 2006	250,400	25,000	N/A	275,400	completed	completed
	Akhtamar	44		90,000	10,000	N/A	100,000	completed	completed
	Shirak	30		175,000	45,000	N/A	220,000	completed	completed
	Ghandilyan	63		225,000	25,000	N/A	250,000	completed	completed
Vanadzor	Kayaran	40	March 2007	155,550	55,500	27,450	238,500	completed	in process
	Narek	36		125,500	38,000	25,100	188,600	completed	in process
	Usanoghakan	50		182,750	43,500	32,250	258,500	completed	in process
	Mush	50		131,670	33,200	56,430	221,300	completed	in process
	Taron-4	24		160,000	50,000	32,000	242,000	completed	in process
TOTAL		435		1,495,870	325,200	173,230	1,994,300		

The revolving funds started with a mere USD \$1,000 as seed funding during the first round, and then doubled in size for the second round of lending. With approximately USD \$4,000 of seed funding in the EE Revolving Funds, contributions from residents, and municipal assistance to the low income households, energy efficiency measures were financed in the total amount of over USD \$8,450 (3,381,288 AMD) in the cities of Vanadzor, Gumri and Maralik during the first two rounds.

The EE measures implemented in all the aforementioned condominiums included the following:

- installation/repair/weatherization of entrance doors and windows,
- installation/repair/weatherization of basement doors and windows,
- repair/thermal insulation of drinking water and sewage system valves and pipes,
- restoration of gutter pipes,
- partial roof repair,
- partial renovation of building entrances.

“Satar” condominium in Vanadzor



Before



After

“Narek” condominium in Vanadzor



Before



After

The following energy efficiency measures were implemented 11 condominiums in the cities of Vanadzor, Gumri and Maralik during the 1st and 2nd rounds of the program:

City	Number of entrance doors installed/ repaired	Number of entrance windows installed/ repaired	Number of basement doors installed/ repaired	Basement windows installed/ repaired, m ²	Water pipeline repaired /insulated, m	Partial renovation of roofs, m ²
Gumri	16	89 (46.77 m ²)	4	5 (4.95 m ²)	10	N/A
Vanadzor	59	198 (132 m ²)	N/A	4 (3.20 m ²)	230	140
Maralik	N/A	38 (14.6 m ²)	N/A	N/A	N/A	N/A
TOTAL	75	325 (193.37 m²)	4	9 (8.15 m²)	240	140

In addition to the aforementioned efforts, almost all buildings' entrances were partially renovated, including painting and plastering.

After the projects were implemented, a survey was conducted in all participated condominiums to assess the amount of energy saved as a result of implemented measures, based on the evaluation of energy costs before and after the project (including electricity, natural gas and wood consumption for heating and other households use).

The survey results after the first round of projects in Vanadzor, Gumri and Maralik were as follows:

- ✓ In all participating condominiums the residents reported an average 2-3° C indoor air temperature increase during the heating period;
- ✓ Most of the households reported an average decrease of electricity and natural gas consumption for heating purposes by 10-25% after project implementation.
 - According to the residents in the Bardzraberd condominium in Gumri, after installation and repair of entrance doors and basement windows in their building during the 1st round of the program, the indoor temperature in the apartments increased by 2-3° C. This temperature increase amounts to approximately 8,800kWh in energy savings throughout the entire building, equivalent to 220,000AMD (around \$550) saved during the 188-day heating season or around one year.¹
 - After weatherizing 75 building entrances, indoor temperature increased by 2-3 ° C, and the aggregate energy saving amounted to 286 MWh per year.
 - Considering that roughly 95-100% of the households heat their homes using natural gas, the above energy saving are equivalent to annual financial saving of 2,131,200 AMD (greater than USD \$6,000).
- ✓ All the condominium managers reported increased trust among residents towards condominium managers and voluntary participation of homeowners in resolution process of their own problems, as well as improvement of fee collection;
- ✓ Other achieved and expected outcomes include:
 - Increased building energy efficiency, improved comfort and maintenance of buildings;
 - Extended building lifespan;
 - Improved payment discipline of the residents for regular service fees;
 - Increased capacity of condominiums in building maintenance and management;
 - Long-term availability of the Revolving Funds' resources;
 - Increased attractiveness of the city for future larger-scale investments;
 - Building credit history of borrowers.

¹ Based on the number of entrances where doors either repaired/installed and the basement windows were also repaired/installed, a rough estimate of expected energy savings can be calculated using the experience from the Bardzraberd condominium, which was most closely monitored.