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**EVALUATION OF THE  
COMMERCIALIZATION OF ENERGY  
EFFICIENCY PROGRAM (CEEP)  
USAID/ARMENIA**

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## ACRONYMS AND ABBREVIATIONS

ASIF	Armenian Social Investment Fund
ASE	Alliance to Save Energy
AEAI	Advanced engineering Associates International
AED	Academy for Educational Development
ArmSEFF	Armenia Sustainable Energy Finance facility
CEEP	Commercialization of Energy Efficiency Program
CFF	Cafeschian Family Foundation
CAPS	Competitive Armenia Private Sectors (USAID Armenia funded project)
DCA	Development Credit Authority
ESRE	National Program on Energy Saving and Renewable Energy
ESIB	Energy Saving in the construction sector in Eastern Europe and Central Asia
EE	Energy efficiency
EBRD	European Bank for Reconstruction and Development
ESCO	Energy service company
FSD	Financial Sector Deepening Program (USAID Armenia)
GHG	greenhouse gas
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GOAM	Government of Armenia
GWh	Gigawatt Hour
GCal	Gigacalories
IRR	Internal Rate of Return
IFC	International Finance Corporation
IFI	International financing institution
LFI	Local financing institution
LGB	Local government body
MUNEE	Municipal Network for energy Efficiency
MSI	Management Systems International
MW	Megawatt
PPP	Purchasing Power Parity
RE	Renewable energy
R2E2	Renewable Energy and Energy Efficiency Fund
SME	Small and Medium Enterprise
SEI	Sustainable finance Initiative
TA	Technical assistance
UHP	Urban Heating Project
USAID	United States Agency for International Development
UNDP	United Nations Development Program
WB	World bank

## **Executive Summary**

The “Commercialization of Energy Efficiency Program (CEEP)”, implemented by Advanced Engineering Associates International (AEIA), with the overall budget of around US\$3 million, *had the following general objectives: (I) to increase the use of clean, safe and affordable energy efficient (EE) technologies by residential, commercial, industrial and municipal energy consumers; (ii) to increase private sector lending for EE projects; (iii) to conduct a limited number of socially-oriented EE projects; and (iv) to prepare the sector for expected energy price increases. CEEP set to achieve these objectives by implementing the following Tasks.*

*Task 1: Development and Strengthening of Energy Sector SMEs.*

*Task 2: Facilitating Private Provision of Long-Term Financing for Energy Efficiency Projects*

*Task 3: Implementation of a Limited Number of Socially-Oriented Energy Efficiency Projects*

Begun in June 2007, the duration of CEEP was planned for two years (base period), with a one-year option period. Currently the project is extended until mid October 2010. The program was planned to become a "one stop shop," offering assistance in a number of areas, such as preparation of business plans, introduction and promotion of efficient and cost-effective technical solutions in buildings, necessary for developing "bankable" investment proposals, etc. CEEP also engaged in a number of activities to eliminate or reduce barriers such as limited access to financing, and to promote the implementation of energy efficiency measures in Armenia.

The purpose of this evaluation is to assess the end-results and outcomes of CEEP to inform future USAID/Armenia decision-making with regard to similar undertakings that combine sector reform with improved social well-being of vulnerable populations. The methodology used combined: document review, interviews with key informants (KII), focus groups, site visits and observation.

### Key Findings

The project was relevant in that it aimed at addressing an important issue for the economy and the energy sector in Armenia. It was also complementary to the other donor funded projects.

The project facilitated the conclusion of 10 bank funded projects against the target of 3, which is a significant achievement, testifying for the efficient one-to-one advisory work by the project with the respective key staff, and given that the funding was from bank own resources in the environment of financial crisis. Beyond these ten projects, the project did not bring about significant increased access to finance/increased level of lending by the banks for EE projects (one of the project partner LFIs reported an increase in the levels of funding for EE projects). The interviewed industry experts were unanimous in their opinion that TA alone will not bring up these changes and special credit lines are needed for this to happen. In the absence of such funding by other IFIs achieving the goal of increased commercial funding by the local financing institutions was too optimistic. This constraint was potentially reinforced by the fact that the partial guarantee scheme under DCA tentatively envisioned in the program did not materialize.

Having said that, banks are certainly more *capable* in lending for EE projects, since the project contributed to the increase in the knowledge base in risk and profitability assessment of EE

projects, specialized banking products, suitable for using in lending for EE projects, and basics of conducting energy audits. Key bank personnel are also more *aware* of more sophisticated financial instruments and funding schemes for EE projects due to the exposure to the experience of more advanced CIS countries, and hence- more capable of applying these in Armenia, in case the business and legislative environment become more enabling.

Since the project did not have a policy component, it did not have a direct impact on the changes in the energy policies. The indirect effects (impact) of the project on changes in the energy market were through (a) better informed and trained ESCOs, and (b) better informed banks, with staff trained in assessment of EE projects. Banks are more ready to engage in the upcoming large scale funding schemes for EE projects by such IFIs as IFC and EBRD.

CEEP was effective in delivering the program outputs at a high level of quality: guides, training courses for bankers and ESCOs, exposure visits for bankers, securing significant leverage for socially oriented programs, quality of the completion of the socially oriented programs, facilitating conclusion of bank funded EE projects (10 against the target of 3) and working on more than 30 EE project concepts. The program has met most of its targets (agreed with USAID), except for:

- training large enough number of finance professionals. The project shifted from a workshop mode of training to one-to-one training of bankers mid-project which resulted in training less number of people than planned. Unwillingness on behalf of the bank staff side to trade their day-to-day job for the workshop type training is the reason cited by the CEEP staff for such a shift
- reaching out to potentially larger numbers of enterprises to assist them with business plans, understanding of EE concepts and building up skills in using these for developing further business presentations for the banks. CEEP staff explains this by the limited capacity of its staffing resources.

CEEP facilitated bank-funded projects do not cover the municipal and residential sectors, although these were part of the initial SOW of the project concept. CEEP staff explained this with the fact that:

- For municipal sector: local government bodies (LGBs), are not eligible for borrowing.
- For the residential sector: while Homeowner Associations (HOA) are eligible for borrowing, in their vast majority they are not creditworthy.

The project was mostly efficient in delivering its agreed upon outputs on time and on budget: the only exception is the component of bankers' training, which was implemented with a delay. CEEP staff was praised by the beneficiaries in being hands-on and efficient in responding to their requests for advice.

While the project delivered all but one (airing of the PSA component) of the agreed with USAID components under the public awareness campaign, the outreach was not large enough, (both in terms of reaching out to the general public and to residential and municipal sectors) and the campaign was hardly innovative in nature. This is at least partly explained by the limited amount of funding allocated for this component. The limited scale of the public awareness campaign meant that consumer awareness in using EE technologies and practices has most likely increased only marginally- mostly through the increased awareness of direct beneficiaries of the project and, to a certain extent, trickle up effects of spreading the information among the peers. Hence

the project could not have resulted in significant change in consumer behavior. Moreover, the progression from the *awareness that was generated to use* is currently hampered by the existing barriers in financing and legislation/regulations.

The capacities of ESCOs have significantly increased, most notably with regards to the application of new technologies, and understanding the basics of implementing EE projects. However, the program did not attempt to raise them to the next level on their path of becoming true ESCOs, and in particular, to a shift to performance based contracting. Also the program did not work with companies on the EE supply side.

The Program generated significant leverage to USG funding, with the social objects contributing 50% of the costs. The primary objective of the leverage requirement was however replication by other parties of such projects. While there were several cases when the same or other local government bodies which were ready to contribute up to 50% of the costs having seen the results of the already completed projects, then approached CEEP for conducting similar projects, no examples of replication by major donor agency/benefactor of similar projects without USG funding were found. This casts doubts about the effectiveness of the chosen design of this scheme as a stimulus for such replication to happen, especially so, if not coupled with large scale public awareness campaign. The impact on social well-being of the targeted population is undoubtedly very positive. In socially-oriented projects, the CEEP Program:

- Helped to improve the quality of life and day-to-day work for the customers and personnel.
- Contributed to increased school attendance by children in winter months.
- Often resulted in significant costs savings to hospitals, allowing them to use the freed up resources to service a larger number of the socially vulnerable population.
- Contributed to the expansion of the services provided by these institutions.

In the bank –funded projects, the impact was also positive, resulting in sales growth and expansion of exports, and, ultimately- increase in employment.

Due to larger than expected increase in gas prices, the potential savings from electricity to gas switching have declined by 20% on average. There are still substantial savings in fuel switching when energy efficient technologies are used, however, and the direct beneficiaries of the project and their peers, are aware that using gas instead of electricity is less attractive now.

The project has taken measures to ensure the impact on gender in project implementation and management. Also, the impacts of the socially oriented projects are more pronounced on women. As for gender equity, all of the key personnel of ESCOs are male.

As for the sustainability, the know-how transferred to the key bank and company staff with whom the project worked and to the ESCOs, is an invaluable intangible asset which will stay with these companies and banks and help their future progress whether in expanding their EE funding business or development as true ESCOs. However, the sustainability of the processes, innovations, institutions, partnerships and linkages introduced by the project was hampered mainly by the insufficient effort in and building institutional partnerships with the larger constituents of companies, consumers and their unions; lack of significant efforts in institutional capacity building of the ESCO Association (especially in terms of supporting them on their way to sustainability), as well as the lack of thought through efforts to build a constituency of EE consultants.

### Lessons Learned

- Close interaction with bank staff, on-the job-training are effective tools in facilitating bank lending to EE projects and increasing bankers' understanding of EE lending. CEEP experience proved that this approach is productive even in the harsh environment of financial crisis. Training should include more exposure to the advanced experiences in the promotion of EE from countries at similar stages of development: study tours proved to be very beneficial. However:
  - TA alone will not lead to significant increase in funding by LFI for EE projects beyond the immediate project activities: Special credit lines, risk guarantee schemes, EE investment funds and other funding mechanisms need to go hand in hand with technical assistance;
  - Training of LFIs should be more broad -based: The training should include a larger number of banking professionals. To support this, more funding needs to be allocated within project budgets and innovative methods for training schemes need to be explored/developed to accommodate the constraints posed by the work schedules of banking professionals.
- More visible, large scale and innovative public awareness campaigns are needed to achieve the goals of increased awareness and use of EE technologies, policies and practices. To support this, more funding needs to be allocated within project budgets.
- Continued and quality TA and coaching of ESCOs could bring to significant improvement in their capacities, knowledge and practices. CEEP (as a logical continuation of its predecessor projects) have demonstrated the effectiveness of this approach. However, challenges in developing ESCOs must be recognized and addressed: While it is widely understood that ESCOs need to be developed and supported on their path of becoming true ESCOs and operating with internationally recognized practices, the challenges of doing so should be explicitly recognized, analyzed, and solutions sought to support the journey in a stepwise fashion. In particular, introduction of performance based contracting is needed, but this would have to be supported with a pilot, specifically designed schemes, etc.
- Importance of developing the supply side: Future projects should specifically address the need to develop the supply side of EE promotion.
- A Sustainability and an exit plan (sustainable legacy institutions and partnerships) are both required: Future projects will need to develop a sustainability plan and exit strategy at the beginning, and steps taken to implement them.
- Including socially oriented programs in the EE commercialization projects can result in very positive social impacts on the targeted segments. CEEP results are very impressive in this regard and significant cost sharing by the project beneficiaries, local authorities and other donors.
- It is important to include a policy component in the project design in future undertakings of a similar nature or ensure that the respective and specific needed improvements in the policy/legal frameworks/regulations are being pursued. Alternatively close cooperation with other (IFI or government funded) programs is needed. Policy level work is very important for the promotion of EE (especially so, if the goal of such an undertaking is to reduce barriers for the promotion of EE technologies, as was the case with CEEP) both in

terms of achieving the expected results of the project and to ensure their sustainability. Maintaining close dialogue with the respective government bodies and sharing the results/learning from the project needs to be ensured.

- Pre- and post implementation household and business surveys are needed to assess the effectiveness of certain components of future programs, e.g. public awareness campaigns. Outcome level indicators should be specified, and baseline and ongoing data collected to assist in conducting more rigorous outcome and impact evaluations

The need to promote EE in Armenia is going to increase due to the fact that the upcoming decommissioning of the nuclear power plant by 2016 requires the country to develop RE. Additionally, Armenia is a signatory of such international agreements as Copenhagen Accord, under which the country has committed to increasing energy production based on RE sources and improving EE in all sectors of the economy, as well as in buildings and construction. Better use of the potential of EE will limit the dependency of the country on imported fuel.

There are several major players in the field of promoting EE in Armenia. In particular: 1) EBRD funded ArmSEFF (branch of Caucasus EEP) and IFC “Armenia Sustainable Energy Finance Project” are bringing US\$75 million in total for onlending for EE projects; and 2) WB start-up implementation of a new loan “Energy Supply Reliability and Energy Efficiency Project” (US\$10-12 million) where it will target EE in public buildings.

#### Future Needs for Developing EE in Armenia

On balance, and through the analysis of the needs in promoting EE in Armenia on one hand and the committed assistance from other donors and the World Bank, it could be concluded that there will still be major unmet needs, including:

- Stimulating supply side of local EE market: production and testing.
- Promotion of EE in the existing housing stock.
- Conducting innovative projects, which while risky for bank lending, would allow piloting and/or adapting new technologies in Armenia and testing new funding and implementation schemes.
- Continuing capacity building of ESCOs and ESCO Association.
- While the World Bank through the R2E2 fund will implement EE measures in the public sector buildings, the needs are very large, and it will also be necessary to continue the implementation of socially oriented projects. In case this is contemplated, more innovative funding schemes for socially oriented projects should be designed, potentially partially with soft loans (e.g. through a revolving fund).

## **I. Introduction**

### ***A. Project Background***

According to the National Program on Energy Saving and Renewable Energy (ESRE)<sup>1</sup> the potential for energy efficiency (EE) savings in Armenia is large, including 40% in building sector, 35-40% in food industry, while optimization of lighting was estimated to save 475 million kWh over the next 10 years. USAID has been at the forefront in promoting EE in Armenia for

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<sup>1</sup> developed by Alliance to Save Energy (ASE) with USAID Support

almost 10 years. Apart from the development of ESRE, USAID has further supported the promotion of EE measures in Armenia through:

- the MUNEE Program, which has focused on EE policy reform needs through the development of the Armenian Energy Efficiency Council, technical assistance to the drafting of the Energy Saving and Renewable Energy Law (adopted in 2004);
- Armenia Energy Efficiency, Demand-Side Management and Renewable Energy Program (EE, DSM and RE Program)", also implemented by AEAI; and
- Residential Heating Project, implemented by Chemonics International.

Other donor agencies and IFIs have also recognized the importance of the EE for Armenia. In addition to USAID, the GOAM and other donors are engaged in efforts to reform Armenia's energy sector.

- **World Bank** supported the establishment of the *Renewable Resources and Energy Efficiency Fund (R2E2 Fund)*. At the start of CEEP, the R2E2 Fund took charge of implementing the WB's Urban Heating Project (UHP), with an IDA credit of US\$15.0 million.
- **European Bank for Reconstruction and Development (EBRD)** has made the promotion of EE one of its core activities, mainly through. *Sustainable Energy Initiative (SEI)* since 2006
- **UNDP GEF** funded the "Armenia – Improving the Energy Efficiency of Municipal Heating and Hot Water Supply" (2005 – 2009), aimed to reduce greenhouse gas (GHG) emissions from heat and hot water supply services on a sustainable basis by overcoming market barriers.

With these efforts, the energy intensity of use has dropped from 97.7 kg oil equivalent per 1,000 PPP GDP in 2003 to 70.4 in 2007<sup>2</sup>. Still, it was assessed that there was large potential in promoting EE in Armenia. In particular:

- Energy Service Companies' (ESCO) weak institutional capacity and inadequate business management experience in expanding energy efficiency services on a commercial basis;
- Lack of experience of energy sector SMEs (such as ESCOs, construction/engineering firms and others) in developing bankable EE projects, most with very limited history of commercial borrowing and, therefore, little experience developing good business plans;
- *Most local financial institutions (LFI) lack of familiarity with the commercial and technical issues presented by EE projects, consequently, most banks perceiving EE projects as high risk and avoiding lending to the sector;*
- *Absence of long-term financing to providers (e.g., ESCOs) and consumers to fund investments in EE. Under the WB program, the beneficiaries were charged interest rates of up to 24%, so there remained a need for more and cheaper capital;*
- Prohibitively high capital investment costs due to the high price of imported equipment and component parts;

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<sup>2</sup> WB Armenia Country Assistance Strategy 2009-2012

- Inadequate consumer awareness of the benefits of EE measures, in particular new heating technologies; of basic concepts of weatherization, modern heating equipment and services, and financing mechanisms;
- Lack of tax and other incentives to install new, and retrofit existing, heating systems, as well as to further develop ESCO services and more efficient and safer heating technologies.

Through the Commercialization of Energy Efficiency Program (CEEP) activity, USAID/Armenia aimed to build on its own past programs and complement other donors' efforts to remove or reduce obstacles to the further and faster development of the EE market. USAID/Armenia aimed to expand the use of EE technologies and practices in Armenia, resulting in energy security improvement by reducing the need for foreign energy imports, and in savings to consumers by reducing their energy costs; and to further strengthen the energy sector, along with (ESCO) capacity to provide EE services and products

### ***B. Description of the Project***

The CEEP, implemented by Advanced Engineering Associates International (AEIA), with the overall budget of around US\$3 million, *had the following general objectives: (i) to increase the use of clean, safe and affordable energy efficient (EE) technologies by residential, commercial, industrial and municipal energy consumers; (ii) to increase private sector lending for EE projects; (iii) to conduct a limited number of socially-oriented EE projects; and (iv) to prepare the sector for expected energy price increases. CEEP set to achieve these objectives by implementing the following Tasks (A reconstructed Results Chain for the project is presented in Figure 1).*

*Task 1: Development and Strengthening of Energy Sector SMEs.*

*Task 2: Facilitating Private Provision of Long-Term Financing for Energy Efficiency Projects*

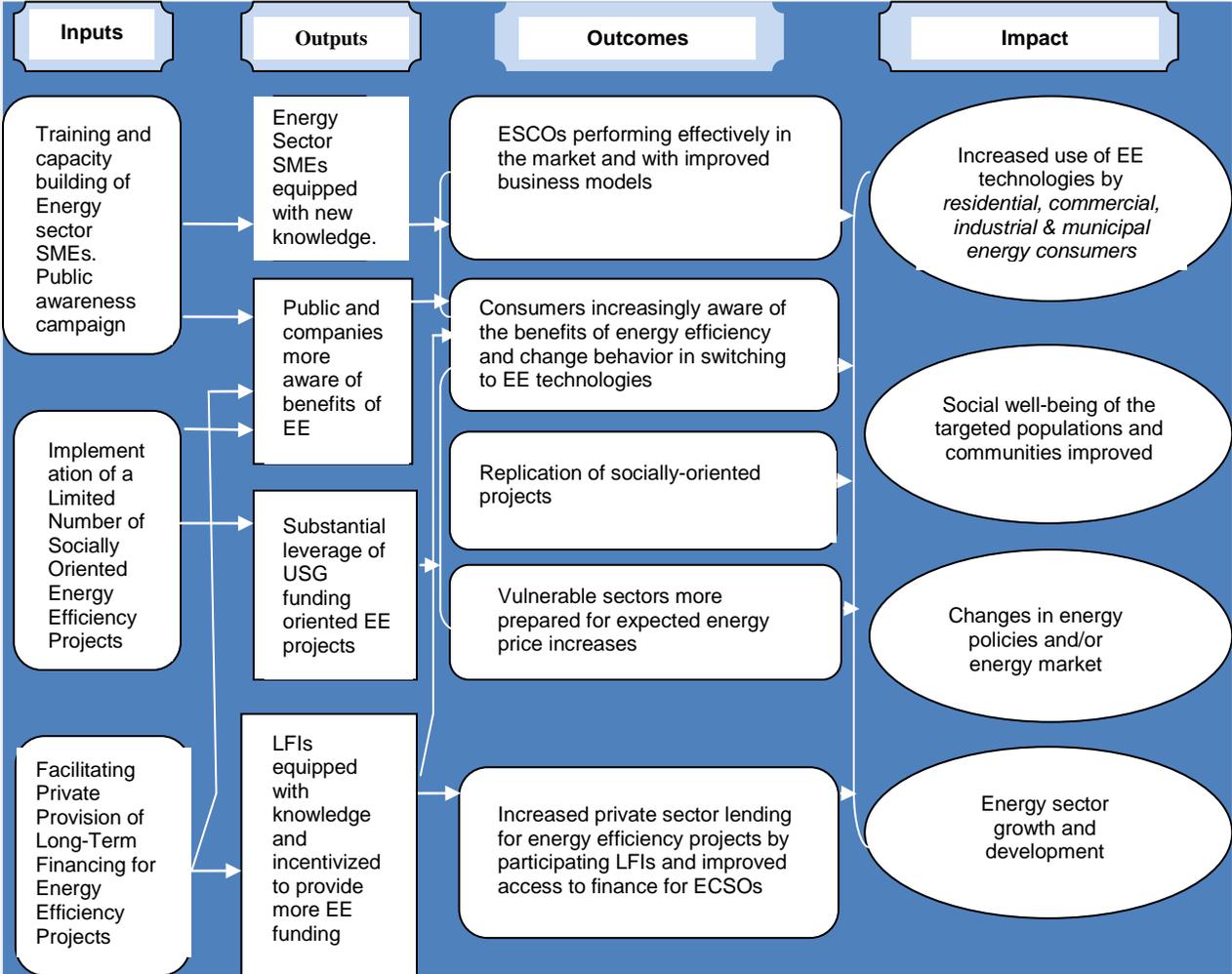
*Task 3: Implementation of a Limited Number of Socially-Oriented Energy Efficiency Projects*

The duration of the CEEP activity was planned for two years (base period), with a one-year option period. The project commenced in June 2007. The program was planned to become a "one stop shop," offering assistance in a number of areas, such as preparation of business plans, introduction and promotion of efficient and cost-effective technical solutions in buildings, necessary for developing "bankable" investment proposals, etc. To eliminate or reduce barriers such as limited access to financing, and to promote the implementation of EE measures in Armenia, it was planned that CEEP will engage in the following general activities:

- Training energy service companies in structuring and securing financing for EE projects;
- *Training and educating LFIs in assessing EE projects in collaboration with the Mission's Financial Sector Deepening (FSD) Project;*
- Working with local consumer organizations to provide extensive outreach and education to consumers about the economic advantages and disadvantages of energy efficiency services and equipment, as well as health, safety and environmental issues;
- Promoting consumption-based metering and billing to create incentives for energy conservation and payment of heat bills;

- Promoting the development of heat sector businesses, such as service and equipment providers, distributors and representatives; and
- Promoting, where possible, the domestic production of heating equipment and parts to reduce reliance on more expensive, imported products, thereby boosting local manufacturers and creating more options for consumers.

**Figure 1: Reconstructed results chain for CEEP project**



**C. Purpose of the Evaluation**

The purpose of evaluation is to assess the end-results and outcomes of CEEP to inform future USAID/Armenia decision-making with regard to similar undertakings combining sector reform with improved social well-being of vulnerable population. The methodology used combined: document review; interviews with key informants (KII); focus groups; site visits and observation. The matrix in the Annex lists all the evaluation questions and their data sources. These questions were designed before the field trip and then revised and updated during the field trip.

## II. Findings and Conclusions

### II.1 How effective was the performance management? How effective were other donor programs/ alternate approaches? What strategies, programs, processes worked, which did not and why?

CEEP was required to report on the number of common indicators under Program Element 4.1 - *Modern Energy Services*, which, along with the targets and the actual results are presented in Table 1.

**Table 1 Reporting indicators, targets and results**

Indicator	Target	Actual
# of people participating in USG-supported training/workshops in technical energy fields and energy-related business management	60	<b>35</b>
# of enterprises with improved business skills and operations (with developed business plans)	27	<b>23</b>
# of companies assisted in the development of bankable EE projects		<b>30</b>
# of banks consulted/trained on EE financial instruments and risk evaluation	3	<b>6-10</b>
# of bankable EE loans approved	3	<b>10</b>
# of people with increased access to modern energy services	22500	<b>31000</b>
Total capacity constructed as a result of USG assistance, MW	5-5.5	<b>6</b>
Energy savings achieved due to USG support, GWh	20-21	<b>18</b>
Cost savings earned due to USG support , US\$	210K-230K	<b>292,630</b>
# of socially-oriented energy efficiency projects implemented		<b>18</b>
\$US leveraged from state/local budget, other donors and beneficiaries, US\$	550,000	<b>633,345</b>

Source: CEEP

The program was largely effective in delivering the outputs at a high level of quality. A number of targets were exceeded. Most notably:

- \$633,345 was leveraged from state/local budgets, other donors and beneficiaries for the socially oriented programs, against the target of \$550,000;
- 10 bank funded EE projects were concluded with CEEP facilitation against the target of 3;
- Number of people with access to modern energy services was recorded at 31000, against the target of 22500.

#### **Task 1 Development & Strengthening of Energy Sector SMEs**

*Objective: Support for energy sector SME/ESCOs development, taking them to the next level by facilitating their growth in business terms and supporting development of the industry. The technical assistance (TA) and capacity building were to support the removal of existing barriers to the provision of affordable, safe and clean EE measures*

The program underachieved its targets for the part of the number of people trained (see the discussion below under Task 2) and enterprises with developed business plans (see the discussion below under the Task 1, Section 1.3)

In what follows below achievement of these targets is analyzed within the context of reviewing the effectiveness of specific components/deliverables under the 3 Tasks.

### **Task 1 Development & Strengthening of Energy Sector SMEs**

#### **1.1 Market Analysis**

**Task:** Market analysis of EE potential of the various market segments (i.e., residential, industrial, commercial, municipal and institutional), taking into account anticipated increases in natural gas prices, to help identify the most opportune market segments for commercial financing and to provide a guide for selecting business models and Development Credit Authority (DCA) approaches.

**Results:** A Detailed Market Analysis of EE potential of the various market segments have been prepared in cooperation with Alliance to Save Energy (ASE).

### **1.2 Business Models**

**Task:** Based on the results of the market analysis, prepare business models for the most viable market segment(s) that can be used by energy sector SMEs to develop bankable projects, with the aim to explore ways in which industry players could work together to help reduce risk and increase the profitability of business projects, such as: (a) collaboratively designing new products lines (i.e., new equipment or services); (b) vertical integration or functional specialization; (c) partnerships, joint ventures, mergers, etc.; and (d) client analysis (i.e., client-based targeting).

**Result:** Based on the results of the market analyses, fourteen business models for the most viable market segments were prepared and presented/disseminated among energy sector SMEs to develop bankable projects. All of the international organizations interviewed that are now involved in EE programs praised the work done by the project in developing this (and a number of other products), introducing for many for the first time a number of concepts of EE projects contracting and financing.

### **1.3 Public Awareness**

**Task:** Increase public awareness of the benefits of using EE technologies and methodologies.

**Results:** The concept of the “Outreach Plan” was developed in September 09 by CEEP and approved by USAID. Main components of the plan were: CEEP website; CEEP Brochure; production of Project Bulletins and success stories; production of ESCO Association Newsletter; program presentations and media events; and promoting general energy awareness. In practice:

- The website, brochures, project bulletins, success stories ESCO Association newsletters were prepared as planned. They were disseminated during the program events, during the various business expos, and public events.
- Media representatives were invited to all the major events organized by the program, e.g. opening of the social projects, or with the training events for the banks (with the number of the latter declining from the second year onwards, due to the shift of the project strategy to more one-to-one work mode with the bank representatives)
- As for promoting general awareness, CEEP prepared and launched series of newspapers and radio ads. However, while the outreach plan envisioned either producing new PSAs or airing the PSA, produced during the previous project, this did not materialize, due to the lack of funding.

### **1.3 Training and Capacity Building of CEEP training targets**

**Task:** Provide capacity building and technical assistance (TA) to CEEP training targets, in order to improve their business operations through more efficient use of energy. *Support energy sector*

*SME/ESCOs development, taking them to the next level by facilitating their growth in business terms and supporting development of the industry.*

## **Results:**

**Training for ESCOs.** Trainings, workshops and consultations were provided by the project to ESCOs on the following topics: proposal writing; project management and monitoring; energy audit techniques/equipment; site selection criteria and principles; principles of EE and CEM for ESCOs and Site Energy Managers; practical course on weatherization; and energy economics. CEEP did not work with the companies representing the supply side of EE, as envisioned by the program in the initial 2007 SOW: this fact was highlighted in the SOW for the extension of the program by USAID. Support was provided to the ESCO Association (formed in 2005 with USAID support) in the preparation of the newsletters<sup>3</sup>. CEEP coached the Association in its strategic development, but no funding was allocated for ESCO Association building with CEEP: the initially allocated \$15K was diverted to Task 3.

**Training for potential beneficiaries of EE projects** CEEP focused on building the technical capacity of companies interested in the implementation of EE projects through (a) ongoing TA and consultation to the companies included into the pipeline of potential EE projects and (b) facilitating the process of negotiations with banks. Consultations focused on the technical and financial aspects of EE projects such as feasibility and creditworthiness assessment, basic energy audit of enterprises, development of most optimal and applicable financial instruments, interaction with banks. Companies also received hands-on training in the use of the software models for assessment of the creditworthiness of projects. The interviews with the project staff indicate that the outreach was limited primarily to the clients of the banks and to the respondents to the advertisements in the newspapers. Very limited outreach was contemplated though business associations: such efforts did not go beyond introductory meetings. The rationale for such an approach, as argued by the CEEP staff, was that a larger outreach would have resulted in a huge number of applications, and the limited CEEP staff could not have coped with the task of reviewing the potentially large number of projects.

### **Task 2 Facilitating Private Provision of Long-term Financing for EE Projects**

#### **2.1 Development Credit Authority (DCA)**

**Task:** To help make the transition from donor support to full private sector financing of EE project, If deemed necessary and appropriate by USAID, based on the results of the market analysis (Task 1) and taking into account prevailing market conditions: (a) Prepare a DCA concept paper and associated analyses required for the DCA financing approval action package; and; (b) **Contingent upon approval of the DCA financing** package, help develop and support implementation of at least two deals with the DCA.

#### **Task 2 Facilitating Private Provision of Long-term Financing for EE Projects**

**Objective:** Increase the availability of bank financing for EE projects with the long-term goal to reach the point of ensuring the continuance of such financing after the CEEP activity ends. Potentially develop a DCA financing package, and if approved, help develop EE projects to be supported by the DCA financing.

<sup>3</sup> The Association aims to enhance the market of energy services, strengthen cooperation of ESCOs, advocate for the rights of its members and build stronger relationships with various structures and organizations working in energy sector both in Armenia and worldwide.

**Results:** The concept for using DCA was developed by the CEEP team and presented to USAID. The decision was taken by USAID not to go forward with the component. As explained by USAID, it was realized that more time would be needed than was available for the mobilization of the scheme, as well as more financing for accompanying TA. *The opinions of the interviewed experts regarding the effects of this decision on the project performance varied. Four of them thought that this component would have helped the project to achieve more impressive results under Task 2, facilitating more lending by the banks, especially to the residential sector, which was not covered under the CEEP, because lending to this sector is considered risky by the banks. They pointed to the successful examples of utilizing DCA for USAID funded EE projects in Bulgaria<sup>4</sup>, Kazakhstan and Georgia. Two of them observed that special financing schemes for EE projects are needed more compared to guarantee schemes.*

## **2.2 Bank training and Capacity Building**

**Task:** Training of the staff of *at least three* local banks to properly conduct loan risk evaluations of energy efficiency projects.

### **Results:**

1) **Training locally:** *Trainings, workshops and consultations to 6-8 banks in risk evaluation/assessment*

*of EE proposals/projects were conducted.* Representatives of two banks were very positive about the training and consultation they received. Especially valued was the training received in conducting energy audits. CEEP was credited in introducing the EE concepts and highlighting the importance of these for many of the banks. One of the banks, which cooperated with CEEP more closely, especially valued the assistance they received from the project in conducting leasing operations for EE projects. The number of participants in the training events aimed at banking professionals was limited, as indicated by all the interviewees, including the CEEP staff. The latter are of the opinion that classroom based training/workshops are not the best way for such training given the busy work schedules of bank staff. Accordingly, CEEP shifted to working more on one-to one basis with bankers via on the job training and consultations toward the end of the second year. This strategy limited the number of bankers exposed to CEEP training (which is the main rationale of underachieving the target, See table 1). CEEP holds that, on the other hand, this strategy helped CEEP to facilitate the conclusion of the loans. Alternative mechanisms for the training courses (e.g. *at the banks' premises*) were not fully explored. CEEP staff said that there is no widespread interest among the banks staff in EE funding at the expense of their regular work time and ongoing responsibilities, which is why such an approach was not contemplated and the classroom training mode/workshops were abandoned. Our interviews point, however, that bank staff have expressed significant interest in obtaining/improving their knowledge in EE funding concepts in the framework of other donor funded programs, even when the conditions require cost-sharing<sup>5</sup>. It is possible that the extent of this interest depends on the

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<sup>4</sup> In Bulgaria the DCA facility was used twice for EE. Under the first one, UBB bank provided loans to municipalities and industries for 33 energy efficiency projects. Till 11/2003, the facility provided US\$9.6 million in loans for projects totaling US\$11.5 million. Under the second scheme, Europe and Eurasia Bureau extends up to US\$10 million in loans to be issued by UBB, with partial guarantee from DCA. The DCA scheme guarantees leverage US\$40 in commercial loans for each dollar of cost to USAID for providing the guarantee. The program also led to several larger IFI energy efficiency loans including the World Bank/GEF Bulgaria Energy Efficiency Fund and EBRD loans for industrial and residential energy efficiency improvements

<sup>5</sup> . In particular, International Finance Corporation (IFC) has recently (January 2010) started the implementation of the "Armenia Sustainable Energy Finance Project", which aims to establish a sustainable market for EE and RE investments and

overall package of funding being offered by these donors, It should be noted that the entire training budget of the project was only \$25K

2) **Study Tour:** The project team organized a study tour to Moscow for the representatives of six Armenian banks - ArmBusinessbank, ArmSwissBank, Ameria Bank, Ardshininvestbank, Incobank and VTB Bank (Armenia) to get acquainted with the IFC/WB implemented programs in EE. The study tour was organized in collaboration with IFC and Russian RBC. The objective of the tour was to help Armenian banks develop EE finance expertise and launch dedicated energy efficiency lending, which in turn could improve their clients' EE performance and diversify their credit portfolio during times of financial turmoil. All four of the participants in the study tour (representatives of the LFIs) to Moscow interviewed were very positive about its results. They were unanimous that:

- they received first-hand information and discussed specific practical issues related to creating this new market, including how to identify and assess EE projects at an enterprise, how to use various financial instruments such as fixed-income lending, project and trade finance to fund the projects, and how to work with vendors and project developers in creating co-finance products.
- the insights gained during the visits were invaluable in terms of broadening their understanding about the range of banking products and financing mechanisms which could be used in Armenia to stimulate funding for EE if and when the environment for it is more enabling, i.e. when: there exist special credit lines for EE lending; the legislation supports other-than-credit-lines funding mechanisms for EE projects (e.g. one of the bank representatives mentioned his bank is waiting for the National Assembly to pass the "Law on Investment Funds" to establish an EE investment Fund); and other supporting laws and regulations provide more incentives for EE funding by the commercial banks. In particular the interviewees voiced their support for more attractive tax incentives for EE projects

3) Over 30 *prospective EE projects for future commercial financing were prepared/advised on.*

### ***2.3 Develop and Facilitate Bank Funded Energy Efficiency Projects***

**Task:** Develop at least *three* bankable energy efficiency projects that successfully obtain long-term commercial (i.e., private sector) financing.

**Results:** *CEEP facilitated the conclusion of ten* bankable EE projects against the target of three<sup>6</sup>. The companies successfully obtained commercial financing. The CEEP Team helped the two sides in: carrying out risk analysis, assessment of the IRRs, preparing presentations for the

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contribute to Armenia's energy self-sufficiency by working with local and international financial institutions. Among other components (policy advice, public awareness campaign etc) it supports the development of RE and EE financing through educating LFIs and providing them with advisory services on a cost share basis, whereby the banks contribute 50% towards the costs. INOGATE currently implements a regional project "Energy Saving in the construction sector in Eastern Europe and Central Asia (ESIB)". A baseline survey was conducted among the bankers, which revealed significant demand in training on EE funding issues.

<sup>6</sup> Examples of the projects are: construction of Small Hydro Power Plant of 640 kW Waterpower in Paravaqar Village; Fuel Switch from Electricity to Natural Gas for Concrete Thermal Treatment (Construction of a boiler house equipped with 350 kW steam-boiler and gas supply pipeline); Building insulation and equipment modernization in insulation construction materials production for Sisian Chanshin; Equipment modernization project at VITAMAX-E; Construction of a new dumb (1.5 m high) for 1,400 kW Waterpower Small Hydro Power Plant in Uytz village, etc.

banks, and negotiating the terms of the loan and reaching an agreement<sup>7</sup>. CEEP also assisted in the development of more than thirty EE projects for commercial financing, which are at different stages of review at the banks. All but two of the interviewees were of the opinion that given that the timing of this component coincided with the financial crisis, that it is quite remarkable that 10 loans were extended for EE projects (facilitated by the project): because of the financial crisis the banks' lending portfolios shrank (due to stalled asset and deposit growth) with increasing dollarization; lending rates increased from 18-22% to 20-22%; maturities declined from 2.5 to 1 year; and the loan/collateral ratio decreased from 60-70% to 50-60%<sup>8</sup>

The projects chosen do not cover the municipal and residential sectors, although these were part of the initial SOW of the project concept. CEEP staff explained this with the fact that: (a) For municipal sector: local government bodies (LGBs), are not eligible for borrowing; (b) for the residential sector: while Homeowner Associations (HOA) are eligible for borrowing, in their vast majority they are not creditworthy.

### *Task 3 Implementation of a Limited Number of Socially Oriented EE Projects*

**Objective:** Develop and implement a limited number (10- to 20) of socially-oriented EE projects in hospitals, kindergartens, special schools and other social welfare and health institutions. The intention was to implement those, ideally, in cooperation with other donors and charitable organizations (e.g., UNDP, World Bank, UNICEF, COAF, etc.) active in Armenia's EE sector. The condition was that the selection of projects for implementation must be done on a competitive basis, and cost share was to be required for all projects, except for specific cases of compelling interest. The total amount allocated for implementation of such projects for the base period was not to exceed \$500,000. Due to the extensions of the project, the overall amount spent to date is about US\$670K. Towards the end of the extension period the amount spent on socially oriented projects will reach US\$770K.

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**Results:** Eighteen socially-oriented energy efficiency projects were implemented. USAID leveraged \$US 633,345 from state/local budget, other donors and beneficiaries. \$633,345 was leveraged from state/local budgets, other donors and beneficiaries for the socially oriented programs, against the target of \$550,000. Number of people with access to modern energy services was recorded at 31000, against the target of 22500. Evaluation criteria used were: estimated energy saving potential, saving/investment ratio, investment return rate (SIR, IRR), payback period (advantage given to proposals with shorter payback period), cost share size, sustainability of the project (ability of the end-user to bear the future cost associated with the maintenance and operation of the system), potential for replication, i.e. the possibility to implement similar project by other Parties and with independent financing, and importance of the project, i.e. exposure to large number of beneficiaries and the demonstration value of the project.

## **II.2 Has consumer awareness of using energy efficiency technologies increased?**

<sup>7</sup> Two out of six interviewed industry experts questioned the overall approach, namely the interference at the individual project level, claiming that this should be left entirely to the banks and clients.

<sup>8</sup> Note that the situation has now improved with average interest rates lowered compared to the crisis and immediate aftermath of the post-crisis period.

**Expected Result (ER)<sup>9</sup>: increased use of energy efficient technologies as Armenian consumers become increasingly aware of the benefits of EE.**

Interviews indicated that the direct beneficiaries of the project are increasingly aware of the benefits of using EE technologies and fuel switching. The 4 ESCO representatives interviewed cited examples which indicate that the information about the benefits spread from the direct beneficiaries of CEEP to their peers through observation of the successful projects. All the industry experts interviewed, however, were skeptical about the extent to which the project could have resulted in significantly increased consumer awareness of the benefits of EE technologies due to rather limited scope of the public awareness campaign. They were, also, of an opinion that public awareness work by the project should have been much more active and visible. Note that this observation was made in reference to the goals of the project, with no reference to the funding available under the project. Examples cited were the public awareness campaigns implemented by USAID for the Municipal Heating Program in Ukraine and the IFC EE programs in Russia and Ukraine. It could be argued whether with the available funding of \$25K, a more effective campaign could have been implemented (even that amount was not fully utilized for raising awareness: most of that funding was diverted to Task 3): interviewed experts' opinion varied in this regard.

**Conclusion:**

Consumer awareness has increased primarily at the level of direct beneficiaries of the project and some trickle up effects of spreading the information. Due to the rather limited scope of the public awareness campaign, the project could not have resulted in significant increase in consumer awareness of EE technologies at large. Note: this observation is made with regards to CEEP *per se*: under the previous USAID funding the component on public awareness was larger, involving production and airing of a PSA.

***II.3 Did the program result in ESCOs' performing with improved business models?***

**ER: ESCOs performing effectively in the market and with improved business models**

All the ESCOs interviewed mentioned that their capacity has increased, most notably with regard to the application of new technologies and in the concept of energy audits. As for the adoption of improved business models, ESCOs still operate using basic/common form(s) of contracts prevailing in the construction industry. All 4 ESCOs said that they are not prepared to work on the basis of Performance Based Contracts (PBC) because they could not be held responsible for how the constructed objects/systems are maintained after the completion of the construction stage, and the existing legislation/regulations do not protect their interests. The contractor supports that view. However all the interviewed industry experts were unanimous in saying that a more proactive approach was/is needed in order to put the developed business models into practice. In particular, all of them thought that it is high time for the ESCOs to start working on the basis of PBCs. The approach taken by the R2E2 Fund, in particular, for the implementation of the new EE Program funded by the WB, envisions introduction of certain elements of PBC.

**Conclusion:**

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<sup>9</sup> Expected Results follow the definition from the Project funding documents

The capacities of ESCOs have increased substantially, most notably with regards to the application of new technologies, and basics of energy audits. Raising them to the next level of operation, i.e. based on Performance Based Contracts, was not contemplated by the Program.

#### **II.4 Has the project resulted in improved access to finance for EE projects? Will lending to the sector continue upon completion of the project?**

##### **ER: Increased private sector lending for EE projects through participation of LFIs and improved access to finance for ECSOs.**

The project was expected to bring up increased access to financing for the companies for EE projects by the banks through the TA provided to the banks, experience gained by the banks in working through CEEP team on the bankable projects in which CEEP played the facilitation role, increased awareness in benefits of EE projects, increased skills of companies in developing bankable EE proposals, etc. The evaluation question is about the funding by the banks beyond the 10 projects with immediate CEEP facilitation (which, to repeat, was hailed by most interviewees as remarkable achievement given the state of the development of the sector and the financial crisis at the time). Only one out of four *interviewed* bank representatives mentioned that the lending to EE increased as a result of cooperation with CEEP, stating that the loans extended to the companies with the facilitation of the CEEP increased from around 20 million AMD to 50 million AMD on EE projects. This interviewee credited the training and TA from CEEP for such in an increase. The representative of the same bank mentioned that CEEP helped them to kick start their leasing portfolio (for EE Projects). The other three bank representatives responded that the levels for lending for EE projects did not change or that the projects facilitated by CEEP targeted small hydropower plants, which is an area where the bank already operated actively and continues to do so.

All the interviewees, however, both from the banks as well as from other IFIs, donor agencies, and industry experts, were unanimous in their opinion that it was hardly realistic to expect that a significant increase in lending would have occurred without special credit lines from IFIs for on-lending - with more attractive lending terms than the average lending terms of the banks from their own sources.

#### **Conclusion:**

Beyond the very positive achievement of facilitating ten bank funded EE projects, the project resulted in only a marginal increase in funding by the LFIs for EE projects. The reasons for that include: the fact the project started at a time when there were no specialized credit lines targeting EE lending; the recent financial crisis which resulted in a significant contraction in lending by the LFIs with the terms of lending getting more stringent; and, potentially, the abolition of the DCA component from the project.

#### **II.5 Are banks more capable in lending for EE projects?**

All the bank representatives interviewed testified that the banks are more capable and more interested in lending for EE projects - more so, if they get engaged in on-lending programs by IFIs. The on-the-job training, consultations and study tour helped to deepen their understanding of such lending and to develop ideas on the potential mechanisms for funding EE projects (as a result of the study tour), and certainly left them more prepared for the two upcoming funding programs targeting EE, namely:

**EBRD.** In July 2007 EBRD started the Caucasus Energy Efficiency Programme, a dedicated credit line facility for EE and RE projects in Georgia, Armenia and Azerbaijan, aimed at end-users in the industrial sector, RE sources developers and end-users in the residential sector. Under this Programme, the EBRD launched the US\$35 million Georgia Energy Efficiency Programme at the end of 2007 and plans to launch a similar USD 20 million programme in Armenia: the Armenian Sustainable Energy Finance Facility (“ArmSEFF”) for industrial EE (IEE) and renewable EE (REE). An additional US\$5 million, in local currency may be extended for residential EE, subject to local currency funding availability.

**IFC.** The main goal of the Armenia Sustainable Energy Finance Project is to facilitate at least US\$35 million of EE and RE investments, decreasing greenhouse-gas emissions, improving the EE of SMEs, and increasing the share of RE resources in Armenia’s energy generation portfolio. The conclusion of this program is expected in the coming months.

### **Conclusion:**

Banks are more *capable* in lending for EE projects, since the project contributed to the increase in the knowledge base in EE funding concepts and specialized banking products. Key bank personnel, who worked with CEEP, are also more aware of more sophisticated financial instruments and funding schemes for EE projects due to the exposure to the experience in Russia and other countries, and hence- more capable of applying these in Armenia, in case the business and legislative environment becomes more enabling. The banks are however only marginally more active in lending for EE projects, due to the lack of an enabling environment. The banks are certainly more prepared to engage in the upcoming credit programs of IFC and EBRD for EE projects.

### ***II.6 Has the program resulted in replication of socially –oriented projects?***

#### **ER: replication of socially-oriented projects**

The primary objective of requiring substantial leveraging of the USG funding was to encourage replication of socially-oriented projects *by other organizations*. While no examples of replication of similar projects without USAID funding, by other organizations were found by this evaluation, in a number of cases CEEP projects:

- prompted other/same LGBs to offer funds from their budgets to leverage the USG funding through CEEP for similar projects.
- were leveraged by other donor agencies. For example the funding for the Summer Camp in Tsakhkadzor was leveraged through a funding from the Open Society Institute.
- resulted in the beneficiaries sought more funds to expand projects within the same institution (such as the case with the Our Lady of Armenia Camp) or onto other organizations under their supervision (the Center for Social Assistance of the Our Lady of Armenia Convent).

### **Conclusion:**

No examples of replication of socially oriented projects without USG funding were found. There were several cases, when the same or other LGBs approached CEEP for conducting similar projects- ready to contribute up to 50% of the costs, having seen the results of the already completed projects. This casts doubts about the effectiveness of the chosen design of this project component as a stimulus for such replication to happen and/or the ineffectiveness of the

outreach/public awareness campaign by the project, which could have stimulated such replication.

## **II. 7 What was the impact of the project in regard to increased gas prices for commercial, residential, industrial, and municipal energy consumers on of socially –oriented projects?**

### **ER: Prepare the consumers for the anticipated gas prices increases**

The gas price increases were much too steep as was expected, and while there is still gain in fuel switching from electricity to gas, gains are 20% less now compared to the situation at the start of the project. As our interviews indicate, consumers are aware that using gas instead of electricity is less attractive now. For example, the R2E2 Fund was having difficulties in its UHP recently due to the reduction of households wanting to have gas-based heating supply systems. Our interviews indicate that the direct beneficiaries of the projects and their close peers are aware of the potential savings, even though these are not as large as before.

### **Conclusion:**

Due to the larger than expected increase in gas prices, the potential savings from electricity to gas switching have declined by 20%. Consumers are aware that using gas instead of electricity is less attractive now. There are still substantial savings in fuel switching when EE technologies are used, however. While the beneficiaries of the project, and to some extent, their peers, are more aware of these benefits, whether the consumers at large in all segments are aware about this is a different question and is related to the discussion about the effectiveness of public awareness campaign.

## **II.7 How efficient was the overall performance management?**

The main project (without extensions) was completed on time and on budget and has achieved (and overachieved) most of the targets for outputs - immediate deliverables as measured by the results indicators agreed upon with USAID. The component on bankers training started in the second year only (with a delay) and less people than planned were trained.

### **Conclusion:**

The project achieving most of its output targets on time and on budget. All the interviewed bank and ESCO representatives praised the efficiency of the project staff in responding to their queries, and requests for advice, and their hands-on attitude.

## **II.8 Are the processes, innovations, institutions, partnerships, linkages introduced sustainable?**

Under CEEP the support to ESCO Association for association building per se (e.g. in terms of support to develop the concepts of its sustainability), was limited (as mentioned before, US\$15K allocated in the CEEP budget for strengthening of the ESCO Association was eventually reallocated for one of the social projects). All the industry experts interviewed agreed on the need to develop and strengthen the Association, as the legacy institution of the project to carry on part of its activities.

The project did not actively pursue and build sustainable linkages with consumers', business and banks' associations, as envisioned by the program SOW.

While CEEP collaborated with a number of consulting companies with experience in business planning such as Development Projects Ltd, VGM Partners Ltd, DHD Contact Ltd, IED

Engineers Ltd, and Corporate Governance Center, their task was only to assist CEEP in the preparation of bankable business proposals for CEEP’s customers. Lacking was a CEEP vision to develop a constituency of EE consultants who would pick up and continue the work of CEEP after the project is over.

**Conclusions:**

The know-how transferred to the key bank staff with whom the project worked and to the ESCOs, is an invaluable intangible asset which will stay with these companies and banks and help their future progress whether in expanding their EE funding business or development as true ESCOs. This is an important factor to support the sustainability of the project. However, the sustainability of the processes, innovations, institutions, partnerships and linkages introduced by the project was hampered primarily by the: the lack of substantial support to ESCO Association for (for association building activities *per se*); and the lack of more institutionalized partnerships with business associations (e.g. UMBA, Chamber of Commerce, Association of Banks, Consumers’ Unions, etc).

**II.9 Is there gender equity in project activities? Is the impact on gender considered in project implementation and management?**

Efforts were in place at CEEP to ensure active participation of women in training events. However currently there are no ESCOs which would have women CEOs (there was one ESCO in the former program, which no longer exists). The impact of the socially oriented projects are more pronounced for women, given the nature of the projects, in particular with regards to kindergartens (allowing more women to take up employment, if they have well functioning kindergartens to look after the children), hospitals (women giving birth in the maternity wards or the nursing staff in generic wards), schools (where most of the teachers are women), etc. As for gender equity, due to the nature of the ESCOs, all of the key personnel of ESCOs are currently male.

**Conclusion:**

The project has taken measures to ensure that there is a positive impact for both women and men in project implementation and management.

**II.10 What has been the impact of the project on social well-being of the targeted populations and communities?**

We were not able to show in an analytically rigorous way “attribution” of the outcomes and impacts we observed to USG’s interventions (less so with regards to socially oriented projects, where the impacts could be directly attributed to CEEP). Hence we used contribution (vs. attribution) analysis, where appropriate.<sup>10</sup> Figure 2 describes the steps in contribution Analysis.

**Figure 2: Steps in Contribution Analysis**

<b>Step 1.</b> Develop the results chain	<b>Step 2.</b> Assess the existing evidence on	<b>Step 3.</b> Assess the alternative explanations	<b>Step 4.</b> Assemble the performance story	<b>Step 5</b> Seek out the additional evidence	<b>Step 6</b> Revise and strengthen the performance
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<sup>10</sup> John Ma  
Canadian Journal of Program Evaluation vol. 11, NO. 1

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***a. Socially oriented projects***

Interviews with the project beneficiaries, project staff and ESCO representatives indicate that these objects (kindergartens, schools, hospitals) used either inefficient boilers, inherited from the Soviet times, or electric heaters during the winter months. Rather cold winters in Armenia and dilapidated buildings/doors/windows are the other compounding factors, which made indoors conditions quite challenging for the staff and customers of these institutions (children and patients). Often, where possible, in the schools and kindergartens, the children were moved into one-two rooms during the winter months to save electricity costs. Extended holidays were common, causing problems for the working parents of the children and affecting learning. Patients at hospitals incurred additional costs, contributing to the costs of the heating at the health centers, where moving patients to one-two wards was hardly possible. The site visits indicated that savings in terms of costs at the schools and kindergartens were not recorded due to the fact that after the project more rooms are heated. Hence the impact was observed more in terms of improved living and working conditions, and increased numbers of children attending these in the winter months. At the hospitals, the situation varied. While at Arabkir medical center 200.000 AMD is being saved per month on the electricity/heating bills, at the Maternity hospital, the Deputy Director said that no significant monetary savings were recorded after the project, but that now the indoors temperature is more even in the corridors and across the wards<sup>11</sup>.

***b. Bank funded projects***

For this evaluation two bank funded projects were visited: Vitamax- E and Moussaler Printing House. Both are medium sized companies, which have experienced significant growth in the recent years. While VITAMAX-E expanded its geographical coverage of exports, Musaler expanded its operations in Armenia, satisfying the demand of the local spirits’ production industry in labels and boxes, which previously were being met in Turkey. Both companies expanded their local employment, and sales figures. Both companies could have perhaps obtained loans from the banks without CEEP assistance, but with CEEP mediation they managed to negotiate better terms of the deals with the banks, which allowed them to save resources which were directed to further expansion of their businesses. VITAMAX-E stated that the added benefit from cooperating with CEEP was that they obtained the necessary skills in terms of presenting their business ideas to the banks, and making the case for the profitability of upgrading the existing equipment with more EE technologies. VITAMAX-E has also benefited from the marketing assistance provided to them under the CAPS program funded by USAID Armenia, thus presenting an interesting case of synergies achieved between the two projects. Additionally the bank which provided the second loan to VITAMAX-E, ABB, benefited from

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<sup>11</sup> Site visits covered the following social objects: (a) Children Summer Camp in Tskahkadzor. Here interviewed also the Assistant to the Director of the “Our Lady of Armenia”, which runs Gyumri Social Center, another project by CEEP; (b) School after Ganyan, and Art school after Mkhitar Sebastatsi; (c) Local gas fire heating system a Maternity Hospital in Kanaker-Zeitun Medical center; and (d) CHP system at Arabkir Medical Center in Yerevan.

USG funded Financial Services Deepening (FSD) project, whereby leasing component was introduced at ABB by FSD and further supported by CEEP.

**Conclusions:**

The impact on social well-being of the targeted population is very positive, and in particular, for socially oriented projects where the projects: helped to improve the quality of life and day-to-day work for the customers and personnel, contributed to increased attendance of children in schools in winter months, contributed to the expansion of the services provided by these institutions, and in hospitals, often resulted in significant costs savings, thus allowing them to use the freed up resources to service larger number of socially vulnerable population; etc. For the bank –funded projects, the impact was also positive, resulting in sales growth and expansion of exports, and, ultimately- increase in employment.

**II. 11 What has been the impact of the project on changes in energy policies or energy market?**

The project did not have a policy component. One of the reasons cited by USAID for this was that it relied on other (including USAID funded) projects to cover the EE policy within their program of work. Therefore it did not have a direct impact on changes in energy polices. One interviewee, a representative of a donor agency, stated that although the project did not have a policy component, it found its niche in setting *benchmarks* for the sector.

**Conclusion:**

Since the project did not have a policy component, it did not have a direct impact on the changes in the energy polices. The impact, if any, was indirect, in the form of demonstrated examples. As for the impact on the changes of the energy market, the directly observable ones are (a) better informed and trained ESCOs, which are now more prepared to move to the next phase along their development path of becoming true ESCOs; and (b) better informed banks, with staff trained in assessment of EE project proposals, and ready to engage in the upcoming large scale funding schemes for EE by such IFIs as IFC an EBRD. In particular, the project’s contribution to introducing the concept of energy audits both to the banks and ESCOs was specifically appreciated by all the beneficiaries.

**II.12 Has the project contributed to the use of clean, safe & affordable EE technologies by residential, commercial, industrial and municipal energy?**

As with the increased *awareness* about the benefits of the use of clean, safe and affordable EE technologies, the project contributed to increased *use* of these primarily at the level of direct beneficiaries and their close peers, and only in the segments targeted by the project (i.e. not in residential and municipal segments).

**Conclusion:**

While the awareness might have spread to some extent among the non-direct beneficiaries, it would be highly speculative to assess whether this awareness has transformed into increased *use* among them, given the: existing barriers in financing and legislation/regulations, lack of large scale public outreach campaign and lack of survey data among the households.

### III Lessons Learned

***Close interaction with bank staff, on-the-job-training are effective tools in facilitating bank lending to EE projects and increasing bankers' understanding of EE lending.*** CEEP experience proved that this approach is productive even in the harsh environment of financial crisis. ***Training should include more exposure to the advanced experiences in the promotion of EE from countries at similar stages of***

***Greater emphasis on Public awareness:*** More visible, large scale and innovative public awareness campaigns are needed to achieve the goals of increased awareness and use of EE technologies, policies and practices. To support this, more funding needs to be allocated within project budgets.

***Continued and quality TA and coaching of ESCOs could bring to significant improvement in their capacities, knowledge and practices.*** CEEP (as a logical continuation of its predecessor projects) have demonstrated the effectiveness of this approach. However,

- ***Challenges in developing ESCOs must be recognized and addressed:*** While it is widely understood that ESCOs need to be developed and supported on their path of becoming true ESCOs and operating with internationally recognized practices, the challenges of doing so should be explicitly recognized, analyzed, and solutions sought to support the journey in a stepwise fashion. In particular, introduction of performance based contracting is needed, supported with a pilot, specifically designed schemes, etc.
- ***Importance of developing the supply side:*** Future projects should specifically address the need to develop the supply side of EE promotion.

***A Sustainability and an exit plan (sustainable legacy institutions and partnerships) are both required:*** Future projects will need to develop a sustainability plan and exit strategy at the beginning, and steps taken to implement them.

***Including socially oriented programs in the EE commercialization projects can result in very positive social impacts on the targeted segments.*** CEEP results are very impressive in this regard and significant cost sharing by the project beneficiaries, local authorities and other donors.

***Policy component:*** It is important to include a policy component in the project design in future undertakings of a similar nature or ensure that the respective (and *specific*) needed improvements in the policy/legal frameworks/regulations are being pursued. Alternatively, close cooperation needs to be ensured with other (IFI and/or government funded) programs to pursue these objectives. Policy level work is very important for the promotion of EE, especially so, if the goal of such an undertaking is to reduce barriers for the promotion of EE technologies, as was the case with CEEP. This is important both in terms of achieving the expected results of the project beyond the immediate deliverables and to ensure their sustainability. Maintaining close dialogue with the respective government bodies and sharing the results/learning from the project is also essential, so that the government could utilize the lessons learnt from the project in its policy/programs/projects<sup>12</sup>.

***Monitoring & evaluation of results:*** Pre- and post implementation household and business surveys are needed to assess the effectiveness of certain components of future programs, e.g.

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<sup>12</sup> The interview with the Ministry of Energy indicated that the analysis of the results of the CEEP, e.g. monitoring of the energy efficiency of the socially oriented or bank funded projects, was not shared with them so far.

public awareness campaigns. Outcome level indicators should be specified, and baseline and ongoing data collected to assist in conducting more rigorous outcome and impact evaluations

#### **IV Recommendations**

USAID Armenia does not plan to continue the CEEP program. However, the Mission has requested recommendations for potential areas of projects aimed at promotion of EE technologies in Armenia in case funding for this becomes available. Current/upcoming IFI funded projects, targeting EE include:

- EBRD funded ArmSEFF (branch of Caucasus EEP) and IFC “Armenia Sustainable Energy Finance Project”, are bringing US\$75 million in total for onlending for EE projects.
- UNDP GEF will continue to work on increasing access to sustainable energy services aiming to: (i) improve legislative frameworks to increase EE in new construction and (ii) assist rehabilitation of municipal heat and water supply systems in selected places.
- INOGATE has started a regional project on “Energy Saving in the construction sector in Eastern Europe and Central Asia” (ESIB)<sup>13</sup> which will last until 2014.
- WB has started the implementation of a new loan “Energy Supply Reliability and Energy Efficiency Project”, through which it will target EE in public buildings, worth about US\$10-12 million in loans and a grant amount of US\$90K (to cover, *inter alia*, designing an EE entity to coordinate, implement and oversee EE reforms).

Policy level work and public awareness campaigns will be supported by all the projects listed above.

It is likely that the needs of EE promotion in the country are larger than the assistance already committed. Energy policy agenda in Armenia is dominated by the necessity to decommission the nuclear power plant by 2016 and to develop a strategy for a mix of energy generating sources. It is increasingly recognized that significant improvements can be made in the efficiency of energy use as part of a strategy to reduce energy vulnerability. A recent IFC survey<sup>14</sup> of private companies showed that their majority see EE as an important issue for their business, and they plan to increase their investments in EE improvements over the next three years by eight times as compared to 2006-08. Additionally, Armenia is a signatory to such international agreements as the Copenhagen Accord, under which the country has committed to increasing energy production based on renewable energy sources and improving EE in all sectors of the economy, as well as in buildings and construction. Therefore there will still be major unmet needs in the promotion of EE in Armenia such as:

- Stimulating the supply side of local EE market: production and testing.
- Promotion of EE in the existing housing stock.
- Conducting innovative projects, which might be risky for bank lending: this would allow piloting/ adapting new EE technologies and testing of new funding and implementation schemes.

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<sup>13</sup> Beneficiary countries include: Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. The total budget of the project is: €4.449.650. Project duration: 01/10- 01/14.

<sup>14</sup> IFC, Energy Efficiency: A New Resource for Sustainable Growth: researching EE practices among companies in Armenia, Azerbaijan, Belarus, Georgia, Russia and Ukraine

- Continuing capacity building of ESCOs. While IFC intends to improve the expertise of the local design companies in the application of modern design solutions and new technologies, the assistance started by USAID in developing ESCOs will require more in-depth work with them individually, as well supporting the ESCO Association. The latter, with further support, has the potential to become: (a) a resource center for ESCOs, e.g. with testing equipment for the use by members (potentially having a lab for that); and (b) a training center for the future ESCO professionals (possibly together the EE Technologies' Department at the Polytechnic University).
- While the World Bank, through the R2E2 fund will implement EE measures in the public sector buildings, the needs are very large and there would be room to continue the implementation of socially oriented projects. In case this is contemplated, more innovative funding schemes for socially oriented projects should be designed partially with soft loans (e.g. through a revolving fund).
- Using the DCA mechanism for one or more components of the program, and in particular for the residential sector.

# **ANNEXES**

## **Annex 1: List of Interviews**

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## **Annex 2: LIST OF DOCUMENTS REVIEWED**

APPLICATION OF BUSINESS MODELS FOR COMMERCIALIZATION OF ENERGY SERVICE COMPANIES AND SMALL AND MEDIUM SIZED ENTERPRISES FOR ENERGY SECTOR OF ARMENIA, June 2008

CONCEPT PAPER, Development Credit Authority (DCA) Loan Portfolio Guarantee to Support Commercial Bank Financing for Energy Efficiency Process Improvements In the Small and Medium Enterprise Sector in Armenia

CEEP First Annual Workplan, June 2007

CEEP Second Annual Workplan, June 2008

CEEP Third Annual Workplan, June 2009

CEEP Annual Report, Year 1, June 2008

CEEP Annual Report, Year 2, June 2009

CEEP Quarterly Report January- March 2009, April 2009

CEEP Quarterly Report June-August 2009, September 2009

CEEP Quarterly Report September-November 2009, December 2009

CEEP Quarterly Report December 2009- February 2010, March 2010

CEEP Outreach Plan, 2008

DCA Portable Guarantee to Centralized Heat Supply System for Sevan Micro Districts Project  
Concept Paper, draft

DCA Loan Portfolio Guarantee (for syndicated portfolio of energy efficiency loans), draft

EBRD Sustainable Energy Initiative: Scaling-up finance for climate change mitigation, May 2010

STATEMENT OF WORK, Commercialization of Energy Efficiency Program (CEEP), February 2007

IFC, Energy Efficiency: A New Resource for Sustainable Growth: researching EE practices among companies in Armenia, Azerbaijan, Belarus, Georgia, Russia and Ukraine

IFC, IFC Armenia Sustainable Energy Finance Project, program brochure

INOGATE REGIONAL EE PROGRAM IN BUILDINGS AND CONSTRUCTION:

[www.inogate.org](http://www.inogate.org)

Memorandum of cooperation between CEEP and Converse Bank on the Development of EE Financing, February 2009

STATEMENT OF WORK (for extension) Commercialization of Energy Efficiency Program (CEEP), March 2009

STATEMENT OF WORK for extension, Commercialization of Energy Efficiency Program (CEEP), April 2010

TOR, Caucasus energy efficiency Program, Georgia, Armenia, Azerbaijan, Consultancy Services to support the launch and implementation of the Armenian Sustainable Energy Finance Initiative,

USAID Armenia, National Program on Energy Saving and Renewable Energy of ROA, Yerevan 2007

USAID Armenia/MUNEE, Success Story, Building EE Revolving Fund Program, in Gyumri, Vanadzor and Maralik

United Nations Development Programme, Armenia, Multiyear Work Plan, 2010-2015, Environment and sustainable development

World Bank. Country Assistance Strategy Armenia 2009-2012