

“Dissemination of Energy Efficiency Best Practices in the Construction Sector of Public Buildings”

Riaz Ramin, GERES Afghanistan

ABSTRACT

During period of wars, Afghanistan lost most of its forest; its public buildings and infrastructures have been destroyed. The urgent need to provide Afghans with quantities of schools and clinics stressed the international community providing short terms solutions in which Afghan climate and context were not taken into account, especially for clinics. At the beginning of FFEM (French Fund for World Environment) program, the country reconstruction was at fast speed with hundreds of clinics and thousands of schools built. In Afghanistan 70% of the population face hard winter with temperature falling below 0°C. The clinics are not built to face such climate and only one or two rooms of the clinics are sporadically heated to save fuel. For the same reasons, schools are not heated and Ministry of Education closes them during winter. School designs focus on cost-effectiveness, but should consider bioclimatic buildings for comfort improvement. In the long term Afghans will face problems to pay the energy bill of all these unsustainable buildings.

FFEM project aimed to demonstrate that energy efficiency in clinics and schools is technically possible and necessary for the sustainable reconstruction of the country. Within 3 years, the FFEM project convinced Ministry of Public Health to adapt its standards and to implement thermal insulation in its new buildings. For schools, GERES in partnership with Turquoise Mountain Foundation provided an architectural solution following bioclimatic concepts.

The project promoted efficiently the need of Energy Efficiency and demonstrated the technical feasibility in 275 energy efficient buildings and offered dozen of trainings in various kinds of technical solutions. It reached its objective and provided a significant contribution to the reconstruction in Afghanistan.

INITIAL OBJECTIVES and RESULTS

Below is a short reminder of the initial objectives defined at the project starting time, in 2005. The objectives are listed with more details in the 1st progress report.

1. Support the implementation of 100 energy efficient public buildings (38,000m²)

The project collaborates with the Ministries of Public Health and Education (MoPH and MoE) to identify which buildings should benefit from the proposed improvements.

According to 2005 cost estimation, the direct over costs for 38,000 m² is about 1,225,000 €. 200,000 € are provided by the FFEM to cover a fraction of the over costs, 16.3% on average.

To reach this objective, the project raises awareness of Ministries and donors through trainings. It provides also training to implementers about thermal insulation and solar architecture (window sizing, building orientation, overhang, etc). The project aims to introduce thermal insulation over cost in proposals of donors and Ministries and to insert energy efficiency techniques in standard drawings.

Contractual documents give to the project the following framework:

- Over cost limited to 12%, to be split between FFEM and donors
- Technical assistance to donors and implementers by GERES and Ministries
- Control, supervision and commissioning by GERES and Ministries

Major results:

- More than **270** buildings or **173,000 m²** are thermally insulated with technical support of GERES (with MoPH, MoE, MoD, caritas Germany, GTZ, IbnSina, Misereor, etc)
- About **16,145 tCO₂/yr** are saved thanks to implementation of bioclimatic architecture or thermal insulation on above mentioned buildings (based on theoretical estimation for each contracted project)
- Thermal insulation is integrated into the standard of Ministry of Public Health (MoPH)
- Budget is approved by Ministry of Finance (MoF) and parliament of Afghanistan to cover thermal insulation over cost in Basic Health Clinics (BHC) and Comprehensive Health Clinics (CHC) of MoPH
- A pilot bioclimatic school constructed by GERES and TMF (Turquoise Mountain Foundation) with use of local thermal insulation materials will become part of Ministry of Education (MoE) standard plan for future projects

Brief list of projects

Objectives	Planned	Achieved or in way of achievement
Health posts and hospitals	60	13
Education buildings	40	28
Administration Buildings	0	70
Energy information centers, Museum	0	3
Dormitories	0	161

The work was carried out on schools, clinics, Ministry of Defense training centers, energy information centers and a museum.

2. Training, upgrade of local capacities and presentations

Technical trainings on various types of thermal insulation techniques (wall insulation, windows double glazing and roof insulation) and solar architecture were also given to ministry employees, major implementers. Site visits to nearby exemplary buildings complement the lectures. Lectures and site visits are also be provided to students of Kabul universities.

Major results:

- Tools prepared for each training and new standards for BHC and CHC designs of MoPH
- More than 20 trainings and presentation given to different organizations (governmental and non government)
- Totally, about **1170 people** attended lectures or trainings.
- More than 20 local construction companies and NGOs are able to implement thermal insulation on public buildings.
- 3 construction companies are theoretically and practically trained and now are able to implement Façade insulation system with the technology of a German company (STO) for the first time in Afghanistan

3. Support to the thermal equipment and thermal insulation materials

Technical and marketing support is provided to local and international manufacturers or providers of thermal equipment such as thermal insulation materials, solar water heaters, stoves, etc.

Major results:

- One Afghan company is able to start and run a polystyrene (thermal insulator) factory for the first time in Afghanistan.
- One Afghan company is importing STO insulation materials from Germany for the first time in Afghanistan.
- A few companies are able to import thermal insulation materials and solar water heaters as well as solar panels
- Use of cotton, sheep wool, reeds has been experimented as thermal insulation materials by GERES and partners

4. Promotion of the concept of energy efficiency

Promotion of energy efficiency is achieved using all means of communication. Targeted public includes donors, ministries and implementers but also the wide public. Press actions give visibility to the program and to the Afghan French German Energy Initiative.

Major results:

- Presentation of the project in national and international workshops and seminars
- Two steering committee meetings hold in 2006 and 2007 in Kabul, Afghanistan
- June 30th 2008, steering committee meeting hold at the French Ministry of Foreign Affairs in Paris (in presence of MoPH, MOE, MoEW, NEPA representatives from Afghanistan)
- July 2nd 2008, presentation of the project at the International Energy Workshop held in the International Energy Agency, Paris (MoPH, MOE, MoEW, NEPA representatives were present from Afghanistan) by Riaz RAMIN from GERES Afghanistan
- July 4th, presentation of the project at Cologne University of Applied Sciences (GERMANY)
- Presentation of FFEM Afghanistan project in Nepal, India, Bangladesh and Afghanistan in 2006, 2007 and 2008
- December 13th 2008, presentation on “***Toward an Energy Efficiency Policy in Afghanistan***”, 40 participants. It was published in the press and broadcasted on

national TV. Workshop report was given for consultation to 8 ministries, NEPA, the World Bank, the Asian Development bank GTZ, and USAID.

- Presentation of the project at the 2nd Second USAID SARI/Energy Application Workshop on Efficient Energy Management and Renewable Energy hold on November 17 - 19, 2008 at Hotel Sheraton, Dhaka, Bangladesh.
- 4 issues of the Afghan, French, German Energy Initiative (AFGEI) Newsletters were printed and distributed
- Booklet presenting the FFEM project was distributed at presentations and seminars held in different countries
- 19 sets of FFEM project Visiting Cards for Afghan partners
- 15 set of paper posters and 16 set of plastic posters (A1 Size) on Energy Efficiency and Renewable Energy in collaboration with Ministry of Energy and Water, NEPA and GTZ were printed and distributed
- Energy efficiency guidelines for public buildings both in Dari and English were prepared
- A demonstration house was build in MoEW, opening ceremony with Minister of Energy and water, deputy minister of MoEW, French Ambassador in Afghanistan, head of departments from 6 ministries and about 600 participants 6 and was broadcasted in 6 TV channels.
- Logo of the AFGEI, designed by French designer
- 219,267 communications in English through press and flyers and 88,007 in Dari
- 30 technical leaflets “local materials for insulation”

Next steps of the project:

1. To produce a technical guide for implementers.
2. To support MoPH and MoUD for standard bioclimatic designs according to Afghanistan climate zone (3 sets)
3. To support MoPH to implement of thermal insulation and energy efficiency in 160 health facilities 2010- 2013
4. To support MoE to include local material construction schools in MoE standards
5. To provide trainings, workshops, seminars for implementers as well as governmental officials about use of new standards and Energy Efficiency technologies.
6. To start and run the energy efficiency policy with key ministries and National Environmental protection agency (NEPA) of Islamic republic of Afghanistan
7. To monitor fuel consumption and temperature in FFEM pilots buildings

8. To hand over the project to the international community and Afghan institutions.