

Energy Risks in Kyrgyzstan and Their Mitigation through Use of Renewable Sources of Energy

Iliia Domashov & Anna Kirilenko, BIOM, Kyrgyzstan

Modern energy crisis in Kyrgyzstan has put the greatest impact on small mountain communities, and natural ecosystems in the country. As a response to this challenge "BIOM" developed the concept of individual ecological safety measures, aimed to help such communities through several priority programs, such as:

- 1) RE for local communities program - we conduct information-practical seminars, where local population gets knowledge about simple methods to save energy and use of renewed energy sources in household conditions, skills to make simple installations, and discuss positive effects of using RE for mitigation of climate change and conservation of local mountain ecosystems.

At present BIOM works with 30 villages, mostly located in the mountain regions or near nature protection areas. They are joined into "Solar villages of Kyrgyzstan" network and are involved in development of local strategies on increasing energy-efficiency and ecological safety measures. In 2007-2008 BIOM also conducted several researches on adaptation of local communities to the consequences of climate change.

Besides BIOM has established a solar laboratory which investigates new designs of solar barrels, collectors, etc and the most effective ones are now presented at 7 RE exhibitions, where people of diverse civil group can choose the most suitable installation for use.

- 2) Energy-saving for youth (SPARE) – has been working in KR since 2002 on improvement energy-efficiency in schools. More than 70 schools of the country are now involved in the program.
- 3) Assistance to use RE at the country level. BIOM took part in development of the Law about RE, and now actively cooperates with parliament and political parties for development of a national policy in this sphere.

Also separately we realize some initiatives in the sphere of rural development in mountains villages of Kyrgyzstan. Bellow we represent more detail information about some of our initiatives:



1. In the sphere of cold regions of Asia we are working on the following fields

1.1. Development of methods for effective energy management in the local community

As in the Novopakrovka village (Chuoblast of Kyrgyzstan), people have uncovered some priority problems in the sphere of energy:

- a) The electricity can not cover all needs in cooking, but the transition to other energy resource (furnace heating) increases the burden on women and atmosphere;
- b) Shortage of hot water have negative effect on the hygiene of people, the direct impact is the increase of diseases, especially among children;
- c) For the winters each family need up to 3- 7 tons of coal. The coal costs about 2800-3000 SOM (around 40 – 70\$) –generally family need 15000 SOM. The average wages of local people in villages are 2500 SOM per month, thus, not everyone can buy coal;
- d) The use of coal and generators worsens the condition of an environment.

As a result of this research we came down to work with the local actors to plan the energy management development. Also this plan of energy management has been realized now. Thus, in October14 villages were officially open for the action of first energy effective furnaces.

Construction of energy effective furnaces went about 10 days, and had been combined with training rates for stove-makers of village. The master, who supervised over process, had been invited on the part of international organization CAMP. At the opening of the furnace there were journalists of broadcasting companies and newspapers of Kyrgyzstan. The information on opening of the furnace has been broadcasted in mass media, and by its results in EM "BIOM" some local people and government organization have offered to cooperate in distributing energy effective technologies for the people of Kyrgyzstan.



1.2. International School Project A Resources and Energy (SPARE)

The project was started in East Europe, Caucasia and Central Asia (EECCA region) in the year 2002. What is the progress of SPARE project?

First of all it is:

- Direction of attention towards new sustainable life style;
- Innovation methods in school education processes;

- Real contribution to lower CO2 emission and energy saving;

The main focus of the activity is:

- Development of educational programs on sustainable energy in schools
- Realization of low cost and small-scale energy pilot projects in renewable energy and energy saving spheres

Some results / outcomes of the project:

- Long term impact from education/ awareness building on sustainable energy
- Contribution to energy saving methods at schools and home
- Reduced growth in CO2 emissions (for example solar heating installation and window restorations)
- Improved comfort, better indoor atmosphere
- Save vulnerable natural resources (nature ecosystem)
- Entrepreneurship in local societies- because school students become initiators of changes in the life style of the communities
- Well developed multi stakeholder cooperation

Lessons learned:

- A school is a very good instrument for dissemination of information – the major parts of activities in LC are connected to schools. Teachers in rural communities have great prestige in the society.
- Teachers’ competence on environmental problems linked to energy and climate is poor.
- There is a gap between educational programs and real challenges in protection of the environment.
- Local societies in districts are very interested and receptive to small-scale, local solutions
- Authorities are focusing on big-scale solutions (which poor people in the regions often do not see the results of)
- For achievement of SD it is necessary to demonstrate concrete positive and practical results.
- Multi-stakeholder cooperation give results

And finally some steps for the future:

- Use school for dissemination of information to the local community.
- Improve competence and training of teachers. It is very important because it is contribution to the future.
- Improve knowledge and competence on environment, energy and climate on all levels! Especially it is very important on local community level, because use of ecologically clean technology allows community to protect local nature.
- National focus on small-scale solutions, not only big energy projects, saves energy for example in schools, window restorations and solar installation constructions.
- Authorities on education, environment and energy issues should have better cooperation and interaction regarding education on energy and environment.

1.3. Country network activity “Sun energy for Kyrgyz Republic”

The project is realized by Ecological Movement “BIOM”, Norway Society of nature Conservation under support of Small grants program of Global Ecological Foundation and Ministry of foreign affairs of Norway. The project started its work in 2005 and some network activities are still going on to this day.

The main goal of the project is to promote reduction of greenhouse gas emissions through enhancement of Kyrgyzstan’s population potential in the sphere of solar energy utilization. The special focus was given to local communities, which were located in the high mountains where the weather is cold most of the time.

The following tasks are also important for us:

- Reduction of cutting down of forests and using wood for heating and cooking
- Improvement of the quality of life and social conditions
- Reduction of level of catarrhal diseases and brucellosis among women and children

There are 4 main activities in the project:

- 1) To construct sun installations on training courses. In framework of the project we are working with 20 pilot villages. When choosing pilot villages the priority was given to those, which are closer to natural ecosystem of nature protection areas. In each training participants from 10 families from local community were to construct 10 solar installation (batch heater, solar collector). Women, teachers and children get involved in this process very actively.



Each of the training consists of two parts – construction of the solar installation and testing. Testing part was very popular for all population in local community. Especially women, as they suffer most from the lack of warm water in the house.

Now there is no need to spend money or time on electricity or to chop firewood for heating of water, as solar energy is accessible to everyone. According to participants’ response for the past autumn and winter women and children were less sick with catarrhal diseases in households after the installations of solar stations.

Within the framework of the training, project exhibition was established in every region of Kyrgyzstan, where visitors can see a wide range of solar stations. Solar station models, which are present at the exhibition of villages and settlements, can be assembled at home by people using makeshift materials. Also at the exhibition there are solar stations, which can be purchased from the market of Kyrgyzstan.

Exhibitions are established at places of social significance like kindergarten schools, tourist centers, mosques, children's home, etc. Staff and visitors of these territories are able to use solar stations for cooking, water heating and room lighting. Those who desire to know more about solar energy can visit solar exhibitions and choose those things for themselves which are more suitable with conditions and needs of the household.

Villages participating in the Project exchange experiences of solar stations' maintenance and information about new availabilities of solar energy. Such cooperation results in establishment of Kyrgyzstan's Solar Network, which include 20 villages and 7 solar exhibitions.

2) Another important activity in the project is to develop and adopt a full proof technology of sun installations which are low cost and of accessible materials.

Sun plastic collector is used for water heating, works for the major part of the year. It is possible to construct it from simple materials and in home conditions. The volume is about 60 liters, heats water to 70-80 degrees in 2-3 hours.

Solar batch heater is simple sun installation for heating water, keeps water warm for more than 48 hours; it is possible to construct it from improvised materials in home conditions. The volume is about 60 litres, heats water to 50-60 degrees in 4 hours.

Sun pasteurizer allows pasteurizing milk, butter, sour cream and other milk products in 1 hour, and reducing the risk of brucellosis diseases.

3) Another important Project element is conducting information campaigns for the broad sections of the public and persons making decisions. Till today we have issued publications such as:

- Brochure on using of sun energy in Kyrgyzstan
- Manual on the creation of sun installations
- Brochure on passive heating of buildings
- Issuing posters, T-shirts, bags, etc.
- We issued more than 10 news video-plots, more than 20 articles in printing and electronic mass-media

Our project results:

- During the project realization we provided more than 600 consultations to diverse interested persons and organizations, who applied to us
- We spread knowledge about possibilities and practical examples of using sun energy among the population of all regions of Kyrgyzstan.
- We educated more then 300 people to use methods of



self-construction of sun installations

- We created demonstrational – functioning installation
- We developed and distributed information materials

As a result of our project we have a reduction of more than 27000 kg of CO₂. (It aggregates 26087 kg of wood and 12564 kg of coal).

4) In the sphere of rural development we are working on the following programme

This program of EM “BIOM” is directed to increase the level of literacy of farmers in the sphere of sustainable agriculture, agro-ecology and other related fields. Also this program focuses on practical skills of farmers, in particular on the high mountain villages. This program has some sub-programs:

Educational program for local community farmers “the sustainable agriculture - new opportunities”

In the framework of this subprogram following lists are included:

- Organization of some seminars and practical meetings for pilot local territory;
- Creating a database on environmentally friendly agro-technologies;
- The edition and distribution of thematic brochures and the booklets devoted to various aspects of a sustainable agriculture.



Educational program for students “environmentally friendly rural development: problems and prospects”

The given educational program is directed on distribution of ideas of environmentally friendly rural development among students of different specialties. For this purpose seminars are organized for students with the agriculture, water and ecological faculties of the universities of Kyrgyzstan.

The organization of round table and thematic discussion clubs on environmentally-friendly rural development topics, with the participation of students and farmer associations.

Public programs:

Within the framework of EM "BIOM" activity we have published different materials, some devoted to the principles of sustainable agriculture. So, for example, we have developed books of - Korotenko V.A., Domashov I.A., Postnova E.A., Kirilenko A.V.

Ecology and in the lifestyles - Bishkek, 2004 and also same brochures on this theme. In these publications we represent some common topics of sustainable agriculture and environmentally friendly technology in rural development projects.