

CENTRAL ASIA: KEEPING HOMES WARM IN MOUNTAINS

“When winter comes we move to a small haywire by our house because it’s easier to keep it warm,” says Joldoshbek Kaipov, a shepherd from a mountain village Akkiya in Kyrgyzstan. “There is not so much space for all of us - my wife and I have five children - but we like to drink tea altogether every evening and then it gets even warmer. We can’t afford to heat our house enough in winter and to heat the haywire we use *kizyak* (*dried manure*). We also use electricity, but when the village transformer is burnt out again because of an overload, we don’t see other way than to cut down trees near the village for firewood. Of course we understood the environmental damage, but what can I do? My family wants to have at least a bit of warmth at home...”

Mountain Energy

Today the search for potential energy sources and methods of generating energy is a focus of world attention. Energy supply in mountain regions is especially important because providing mountain villages with heat and light in a sustainable way also helps to improve villagers’ health, enlarging their household budgets and take care of the environment.

The mountains of Central Asia – because of their glaciers, rough rivers, intensive solar and wind - represent an enormous and valuable energy reserve in addition to Kazakhstan’s coal and oil, Uzbekistan’s natural gas, Turkmenistan’s oil, and Kyrgyzstan’s and Tajikistan’s hydropower stations.

However, the situation has deteriorated so much that heat and light have become a luxury in remote parts of the Pamirs and the Tien-Shan. How can we secure warmth for remote mountain villages in Central Asia and who should take responsibility?

The origin of the energy crisis lies in the Soviet period and the unfavorable transition after independence: a large energy hungry population artificially settled in areas with scarce resources was suddenly forced to rely on the limited and heavily degraded natural resource base without alternatives. But that times there were no problems with coal and electricity supply.

After the collapse of the Soviet Union new economic conditions have rendered energy supply problematic. This has forced the inhabitants of remote villages to use any fuel source that is at hand. Even when aware of the unsustainable resource use, people do not feel able to adopt more sustainable strategies mainly owing to low income, scarce and poorly productive resource bases, and high demand.

In order to heat their houses people burn manure and use trees and bushes which grow nearby as firewood. Consequently agricultural fields are deprived of valuable fertilizer and are becoming more vulnerable to erosion. In the Tajik Pamirs people, for instance, are burning *teresken*, a shrubby fuel wood that helps prevent erosion and is the key source of feed for livestock and wild animals. Although the traditional knowledge of Tajik highlanders founded on centuries of experience taught people how to build houses with thick adobe walls that were ‘warmed up’ every year by adding a new layer of clay and installing windows in accordance with the daily path of the sun in order to catch its rays.

First of all, the present energy situation in mountain regions of Central Asia is characterized by a huge gap between supply and demand, high domestic energy consumption, an insufficient electricity supply, and expensive commercial fuels with a tendency towards increasing prices.

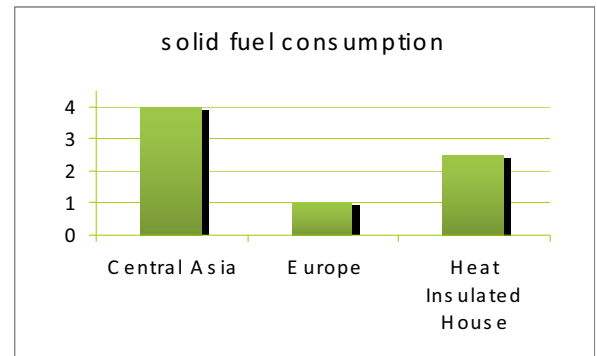
Meanwhile the average price of electricity in Tajikistan and Kyrgyzstan is the lowest in the CIS countries – from \$4 to \$30 for kW/hour. Just to compare, prices in Afghanistan, a country rated lower on poverty indices, prices for electricity range from \$25 to \$350 for 1 kW/hour. It’s now clear that electricity prices in Central Asia as everywhere in the world that will increase causing even more trouble for mountain regions.

As a result of all these factors about fifty to sixty percent of a family budget in a mountain village in Central Asian countries is spent on heating and cooking.

Improving energy supply or energy efficiency?

In Kyrgyzstan and Tajikistan the energy supply is mainly based on hydropower stations. The current national energy strategies of Central Asian countries focus on the rehabilitation of big power stations. This is a logical approach to generating as much energy as possible to meet the population's growing needs. But there is already a paradox: the more severe the energy situation, the higher the energy consumption at household level.

After independence, energy use in the industrial sector fell dramatically in Central Asian countries, however, demand from the communal-general sector gradually increased and is now responsible for current record demand and the overloading and overuse of the power infrastructure. Bad energy distribution, technical problems, electricity robbery lead to the big losses on the "way" to the energy consumers, especially in mountain regions.



According to Rafika Musoeva, chairman of the Tajik energy association "energy use in CIS countries is sevenfold higher than that in Europe. So the issue is not about energy supply alone. This is a matter of efficiency and sustainability of energy use at local level.

A balance between energy supply and energy demand has to be found – efficient energy use at local level will reduce the demand of centralised energy supplies. Meanwhile the decrease in energy use shouldn't be achieved by the decline in living standards.

All this brings to the thoughts about combination of the use of energy saving technologies and renewable energy sources (RES): solar and wind energy, biogas facilities, heat pumps and micro hydropower stations.

However the wide establishment of various facilities based on the use of RES in Central Asia remains difficult due to many factors: primarily – lack of finance, knowledge and information about operation and maintenance of such facilities among local people; and most importantly – the absence of government policy on RES. Therefore there is a high need for training and expertise regarding the establishment of various facilities based on the use of RES.

Although here are attempts to create a legislative base for RES. Some results have been reached by the moment in Kyrgyzstan where a law on RES is being developed and will be reviewed by Parliament in autumn 2008. There are two important aspects to the law: it will regulate finally the relation between individuals willing to produce energy using RES and the electricity providers and it allocates state finances to stimulate the use of more RES technologies among the population.

"The main strategy for the Central Asian countries should be the use of more and more internal national energy resources with the main focus on RES," says Alaibek Obozov, director of Center dealing with the problems of RES use in Kyrgyzstan. – "This sphere still has an immense potential to generate energy that has still not been fully researched. For instance in Europe, where such technologies are quickly developing, 7-8% of total energy production comes from RES while in Kyrgyzstan the figure is only 1%. Experts believe that in Kyrgyzstan there is potential for up to 50.4% of energy production could come from RES."

Energy strategy for a mountain village

It is rather complicated to improve the centralised electricity supply in the mountain regions of Central Asia very quickly. Also to quicken the process of bringing warmth to mountain people's homes, cheap and simple technologies are necessary. It was revealed by researchers, for instance, that the potential of energy saving through house insulation can reach up to 60% and additionally 20% can be saved by constructing energy efficient stove.

In future the combination of these cheap and ecology friendly measures as using RES and energy saving could 'feed' and 'heat' a mountain village. The main thing is the change of mentality in energy use and how people treat nature.

Today's objective of CAMP (the Central Asian Mountain Partnership) network is to develop individual strategies for the energy supply for a village that will combine traditional knowledge and new technologies. It should also include step-by-step action planning for the long-term energy supply of villages.

Villagers are trained in sustainable energy use, local energy committees are established, and a detailed action plan is prepared. The results of these activities are evaluated over several years and respective certificates are awarded in case of success. This experience was taken from the Alps where an incentive system for the best energy projects is widely practiced and supported by the government. That is, for example, how the brand 'Energy city' emerged. An integrated system of the use of renewable energy resources has been established in these cities including environmental protection and dissemination of information about best practices regarding the use of energy.

Regula Imhof, deputy secretary general of the Alpine Convention, says, "Energy saving in Alpine rural communities is a process which has become possible mainly due to the initiative of mountain inhabitants themselves, who really want to improve something. Only then a successful implementation of local energy strategies can be possible".

Vision of Jergetal village, Kyrgyzstan (by 2016), elaborated by the support of Public Foundation CAMP Alatoo (one of the members of the CAMP network):

- Over 50% of houses are insulated with local materials
- In 30% of houses energy efficient stoves have been installed
- 50% of houses are using solar facilities for hot water and electricity supply
- 3 biogas facilities used in the village
- Energy requirement of the village reduced by 30%
- Fuel facility and a coal and manure processing plant are operating in the village
- Domestic solar stoves are widely used
- New houses are constructed using local materials and new energy efficient technologies
- 8 micro HPS with the total capacity of 5-10 kWt/h are operating

"I participated in the training provided by Public Foundation CAMP Alatoo and constructed an efficient stove in my house. It warms three rooms and now we don't have to wear lots of clothes at home in winter. We also cook on it and boil tea for guests very quickly – in ten minutes. Earlier it took one hour. Thus this stove helps us even in keeping our national tea drinking traditions," says Mairamgul Sultanova, a mountain villager, Kyrgyzstan. Having such stoves villagers use five times less coal during winter than with the old stoves.

Musahodjaev Ishenbek, 1st president of the Alliance of Central Asian Mountain Communities (AGOCA), states, "The most important goal in the development of energy strategies at village level is to decrease costs and efforts for village energy supply. If an ordinary farmer saves costs, then the state saves costs".

Sustainable energy supply in mountain regions is the main factor of their social and economic development, which is leading to energy safety, independence, creating new jobs and improving the quality of life of mountain people in Central Asia. At the regional level renewable energy resources give the states the possibility to act independently and can therefore contribute to solving local and even transboundary conflicts for resources.

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Pictures by the author and from the CAMP archive**