I Prize winner: Sabyr Abdumomunov
Media outlet: Radio “Azattyk”
Video story: “People who found path to green energy”
Link to the video: **https://www.azattyk.org/a/kyrgyzstan-daniste-edition/31754248.html**
Date: 15.03.2022

UNOFFICIAL TRANSLATION

Date of publication 15th of March, 2022

Title: PEOPLE WHO FOUND THE PATH TO GREEN ENERGY

STAND-UP: SABYR ABDYMOMUNOV, author

- Last few years, Central Asia has been facing an energy shortage.The level of water in Toktogul reservoir, the largest reservoir in the region dropped from 8 billion cubic meters.Year by year, the situation with shortage of water has been worsened, and prices for natural gaz and oil risen.

This situation is forcing people to build energy-efficient housing and switch to alternative energy sources. In this episode of "Daniste" program, we are going to tell you about those people, who found their way to the new energy.

Kyrgyzstan. Chui oblast. Baitik village.

- Why did you make the entrance to the house from the corner of it?

- Had we done the entrance in the middle of the house, first of all, there would not have been such a panoramic window. Secondly, the kitchen and living room would be have been divided. We, Kyrgyz people, the kitchen and the hall are built separately. This is a modern house, called as a flathouse. This house has a kitchen and a living room. Because, the owner is building the house for himself. It's like cooking while you rest. If we keep the hall of the house separately, it will remain a cold house. And used only 6-7 times in a year.

Azamat Attokurov moved from Bishkek to Baitik village of Alamedin district at the end of last year. He had been preparing for many years to build his dream home. This house, which is a model of modern houses in Kyrgyzstan, uses as less energy as possible.

AZAMAT ATTOKUROV, a resident of Baitik village: - *A half-baked brick. It is covered with 6 cm thick, 20-layer foam. This is because the foam does not lose its shape over time. For example, basalt wool becomes wet, or it sweeps away over time.*

And then it's a panoramic window. We set up a special window. 2.65 to 5 meters. This is because the house is warm in the winter when there is a lot of sunlight. It was up to 25 degrees with sunlight.

The walls of this house are insulated with foam, and the ceiling is retained by 8 cm of polyurethane foam. It is covered with plasterboard. One thing to keep in mind about the polyurethane synthetic mixture is that there is no air escaping from the roof of the house. And in this case, the walls and ceiling inside the house begin to mold.

- Most modern houses are airtight and do not allow air to enter. Therefore, it is necessary to install air fans. On the roof of my house, like a net, two pipes go to each house. Someone blows fresh air, someone sucks bad air.

- This place is a lobby. There must be a lobby in the house. The reason is that the lobby traps the heat. It is cold outside, the house is warm inside, and the temperature here is moderate.

The house is heated by electricity. The heating system is mainly connected to automatic control. This means that as soon as the temperature inside the house reaches the required level, the heaters turn themselves off and light up when the air cools down again.

AZAMAT ATTOKUROV, a resident of Baitik village:

- 24 degrees (Celsius) with the remote control. It keeps the house at 24 degrees. We keep the child's room at a temperature of 26 degrees. This is a kitchen area. We were on horseback. This is because the smell does not come out when frying boorsok or cooking other things. Then he looks out the window. While my wife is cooking here, you can see what the boy is doing.

This is our terrace. We are looking at the sunny side, and inside the house we are looking at the beauty of the mountains. Then a large window makes the house bigger. Large windows show the infinity of space. This is where the warmth strikes.

The area of the building is 163 square meters. Mr. Azamat paid 8,500 soms for electricity in January.

- Everything here is powered by electricity. Same phase. From January 5 to February 5, eight and a half thousand of these bills were issued for electricity. The previous month, more than 6,000 had come out.

- Your house is heated by electricity. what if electricity cuts out??

"When the lights go out, the house heats up like a thermos for 24 hours." It keeps you warm like a thermos because it is well insulated in all respects, both above and below. Food can be cooked on fire or on gas.

There are two fans here. This includes fresh air from the two holes and can absorb more bad air in terms of cost.

The material of the basement and the floor are very important for the warmth of the house. Experts recommend digging deeper into the ground. The house will be warmer if two rows of concrete are laid on top of the compacted soil and synthetic foam, which is impervious to heat and moisture, is placed in the middle.

AZAMAT ATTOKUROV, a resident of Baitik village: - *In Kyrgyzstan, the point of freezing is up to 70 cm. If your foundation is above than that, it can get very wet and the ice can kick you up. It should be 70 cm below it. However, the foundation does not need to be excavated too much. For example, I did only 3 steps. 45 cm. And since this side is sloping, it was 1 m 10 cm. Then the soil is thrown on top of the foundation. There is a black screed on it. There is foam on it. On top of that another*

screed is given 5 cm. Then the warm floor is covered with electricity. Then another screed is given. Then the paralon is 5 mm. Then the laminate is nailed on top.

No matter how many rooms there are in the house, we walk a lot in the hallway. Young children love to play in the hallway. That is why these days new houses' entrance and corridor mostly are covered by thermos floors.

Sokuluk district. Novopavlovka village.

Thus, if the majority of people are trying to build their houses by energy-saving ways, the others are exploring new technology of house construction.

STAND-UP + DIALOGUE: SABYR ABDYMOMUNOV

We are now in Novopavloka village.. This is a house is built by use of geothermal pump, which has just started to be introduced in Kyrgyzstan. Next to me stands Mr. Bolot, the owner of the house. Will the steel heat pump or the geothermal heating system heat the groundwater?

BOLOT AMANOV, a resident of Novopavlovka village: - *Yes. The 8-degree underground water is pumped into the house, where it is pumped to a geothermal pump, which rises to 65 degrees Celsius and heats the inside of the house through pipes.*

- Now let's look at that system.

- A geothermal pump is installed here. It's been two years. The depth of the water varies from place to place. For example, in my house it came out from a depth of 16 meters. In some places it can reach eight meters, in others - 10 meters. That pumped water heats up to 65 degrees in a geothermal pump. This is the main device. Then the hot water was connected to the old system.

"This room is cramped." Let me get over here now. Where did you learn about this system?

"I saw it from an acquaintance." When I asked, he said, "This is a geothermal pump." It will be energy effective. I stopped by it, because I wanted to get rid of burning coal.

- And there is coal here?

- Yes, we used to use coal. We haven't use it for two years now. Old coal is left. It remains the same. You can see that the surface has been covered with dust for two years.

Most of all, this family is happy with the ease of use of technology and the automatic panel that controls everything from the inside of the house.

"The house is warm." Here are the batteries. And this panel is the sensor of the thermal pump. You can set the desired temperature by clicking here. It can be raised to 23. Thousands 22., 21 Did you see the pump turned off automatically.

The area of Bolot Amanov's house is 170 square meters. Before he installed the heat pump, he used to get 5 tons of coal out of the winter. Now he uses electricity for about 2,000 soms a month, including the cost of all electrical equipment.

- We have been using it since the second winter. There is difference. We forgot to light a fire. Secondly, we used to pollute the air since the coal was of poor quality. Now there is no smoke at all. Thirdly, we do not need coal. Half of the expenses is cut. We used to burn 5 tons of coal in a year.

JAINAGUL AMANOVA, a resident of Novopavlovka village: - *The temperature in the house remains the the same. It was good. I mostly used to burn coal to heat the house. Now, when I was about to give up my "profession", my husband runned away.*

BOLOT AMANOV, a resident of Novopavlovka village: - *This is utility bill for January. Only 2180 soms. The price paid in the coldest period. That includes everything. Cooking, dishwasher. We make tea. We heat water, use shower. The energy spent on a geothermal pump is barely half that amount. So 1000 soms a month now.*

Geothermal heating pumps not only save the family budget, but also harmless for the environment. This village of Novopavlovka, where Mr. Bolot lives, is one of the most polluted areas in the winter.

- The highest level of heat is in this area. That's why it would be good if everyone use this geothermal heat pump. The air will be clean. Because there are new settlements here and everyone is using coal.

Issyk-Ata district. Novo-Pokrovka village.

To learn more about geothermal heat pumps, we met with Farkat Yarulin, the founder of GEO Energy, which is launching this technology in Kyrgyzstan. We met him while inspecting houses in the village of Novo-Pokrovka, Issyk-Ata district, where heat pumps will be installed. In this village, we saw that one street in the new system is almost complete.

FARKAT YARULIN, a founder of GEO Energy: - *We live on Chapaev Street in Novopokrovka village. All the houses on the left side of the street have switched to geothermal heaters.*

Sabyr Abdumomunov: - *Why did all the houses of this street have switched to geothermal heaters?*

- Because this is a unique street. They are very friendly. Then, as soon as they saw each other, they all stopped using coal. The people on the street made a collective decision and switched to geothermal heaters. This was a very interesting moment in my experience.

To date, GEO Energy has installed geothermal heating stoves in 137 homes. So far, only Bishkek, Chui and Talas oblasts are accepting applications.

Farkat Yarulin, who visited his client's house the day before to find out how the heat pump was working, said Kyrgyz physicists and engineers had redesigned the system

because of the high cost of the technology in Europe. However, the cheaper version costs around 4-5 thousand dollars, so now the pumps are rented and users are charged only for heating. Prior to the development of geothermal heat pumps, Farkat Yarulin conducted several studies with his partners.

FARKAT YARULIN, Founder of GEO Energy: - *Heat pumps are old-fashioned. It was invented by Lord Kelvin 160 years ago. In the 19809s, it became actively used around the world. Thus, it has reached Kyrgyzstan. The main problem is the high cost of technology. So it did not spread among the people. We have been working for a long time and tried to reduce the cost of this equipment. Even then, the cost of our equipment remained high for the average person. That's why we are moving to the service sector and registering residents as subscribers. So we put pumps on them and started selling heat through the meter. This made it convenient for the customer. So they don't have to pay large sums of money. However, we have fully assumed the service.*

The minimum equipment is 6 kW. Its capacity is up to 80 square meters. The connection costs $ 460. A 100-square-meter house costs $ 560 worth of equipment. Then the customer starts paying through the counter. The cost of 1 kW of thermal energy is 99 tyiyns (smallest unit of national currency, like cent). It includes an additional 50 tyiyns for electricity. As a result, the monthly cost, including all payments, will be equal to the monthly cost of coal. It is twice as cheap as electric and gas heating.

There are basically three types of heat pumps. While the above-mentioned species heats groundwater and receives heat, there are other species that receive energy from the earth's crust and air. According to experts, groundwater pumps are suitable for Kyrgyzstan

INOFOGRAPHIC: Heat pump - capable of absorbing heat from the air, water and the earth and raising the temperature up to 5 times. These pumps are popular today because they provide heat without polluting the environment. This technology uses 1 kW of electricity and provides 5-6 kW of heat energy. In other words, a kettle heats a house with boiling electricity.

The geothermal heat pump equipment we are talking about:

- conventional electric compressor;

- capacitor;

- evaporator;

- thermostat;

- consists of capillaries.

Freon refrigerant is also used as the main fluid in the system.

The pumping system works in the same way as air conditioners, refrigerators and other household appliances. In other words, just as heat is removed from

the environment and returned to the building, it also absorbs heat from groundwater, the earth, and the air.

Alamedin district. Kok-Jar village.

Year by year, fuel and water shortages and the energy crisis are driving Kyrgyzstanis to switch to alternative energy sources. Some of them have switched to solar energy.

STAND UP: SABYR ABDUMOMUNOV: - *We arrived in the village of Kok-Jar, Alamudun district. Here is the house of our hero Ermek Niyazov. As you can see, this house receives electricity from sunlight. We'll show you how it works.*

Ermek Niyazov and his family finished their house last year and moved in. It receives electricity from the sun, heats the house, and provides hot water.

- Now there is no electricity in your area. Repairs were underway. And you have electricity in your house. What is this taking from these panels? How many panels are enough? What are the panels?

"I use two different panels in my house." The two panels on the top are called heat collectors. It only provides heat. It has a pump that circulates warm water. Warm water goes home, warm floor and hot water bath. The lower solar panels at the bottom are also called photovoltaic modules. They only provide electricity. In today's bright sun, the power of these panels can carry the load of our home. Our workload is computers, televisions, refrigerators, pumps, coffee machines and light bulbs.

- How many panels do you have?

- You see 9 panels. There are 3 more panels everywhere. All together it consists of 12 panels. If you do not have enough, you can add more. In Europe, for example, the sun shines for 140 days. In Moscow 120. In Kyrgyzstan, 365 days are 300 days in Chui and 320-330 days in Batken.

So, in general, it would be better to install solar panels in small businesses and homes, instead of transformers, which require expensive funds. It would also be very convenient for people living in mountainous areas. Then I'll go into the house and show you the distribution and tell you everything.

Ermek Niyazov's house is 160 square meters. The sun can also be heated with additional gas when energy is scarce.

ERMEK NIYAZOV, a resident of Kok-Jar village: - *As I said before, we have 300 days of sunshine and 65 days of eclipses. We installed a gas boiler at a time when energy is running out. When there is a lot of snow, or when it is very cold at night, the main controller gives an alarm and the gas heater turns on and starts working. Thus, our solar energy is also heated by gas.*

Ermek has been ordering equipment from different countries to install such an alternative energy system. The solar panels come from China, while the water accumulators and controllers made by Czech company.

ERMEK NIYAZOV Kok-Jar resident: - *We call this room a boiler room. This is a large water accumulator. The hot water from that heat collector comes and collects here. Here it shows 35 degrees. This is the average temperature. But the heat goes up and the ice goes down. Then the top will be 45-50 degrees. and this pump consumes as little as 50 watts. This circulates the water.*

"And this box is the chief controller. It comes from the Czech Republic. It works like an automatic computer. The program is included. For example, we need to predict the water temperature. We enter the information that the temperature in the house should be this. He catches it. Performs. If the sun is not enough, this controller will give the gas boiler room a "party". The gas then ignites and heats the water. When it reaches the required temperature, the gas stove switches itself off. All of this is automated. It is energy efficient.

Another advantage of a computer controller is that you can control the heating system of the house with the application on your smartphone. So the owners are in control of the lighting and heating system in the house wherever they go.

- You can see the system on the mobile phone. You can see the temperature here.

Our hero spent a total of 15 thousand US dollars to assemble the system, which is now beginning to bear fruit. It is known that in recent years, Kyrgyzstan has been importing equipment for alternative energy sources.

Ermek Niyazov: - *Here we are at the Tabyl shopping center. The advantage of this shopping center is that only electrical appliances are sold. The equipment I saw in my house can be obtained here. Although people can collect it themselves without watching video tutorials on YouTube. Here you will find all the equipment needed to use solar energy*.

The mall we visited had more than a dozen shops selling the necessary equipment. Mr. Ermek recalled that five years ago, there was very little choice in the market, and he was forced to import expensive equipment from abroad.

--

- Hello. There are many types of solar panels.

In the Kyrgyz market, solar panels can be purchased for 13 thousand soms. The price will increase depending on the capacity of the panel. For example, equipping a small house with solar panels and heating will cost at least 450-500 thousand soms.

NURISLAM AJIMATOV, salesman: - *For example, a house has 3 kW of energy for lighting, a kettle, a telephone and a refrigerator, and it costs 450-500 thousand soms. However, the refrigerator cannot be switched on immediately. This is because it requires a lot of electricity when it is lit. The equipment may not be able to support it.*

Ermek: - *Won't you sell a smooth start for this?*

Seller: - *Now we did not have cash.*

Ermek: - *I needed this for my house. Gently adds a smooth start when turning on low appliances.*

Sabyr: - *Ermek, which one do you recommend to use then?*

Ermek: - *As this boy said, each panel has its own capacity. That's 200 watts, that's 300 watts. Blablabla For example, a person builds according to how much electricity he wants to be free before he gets it. He should calculate that the refrigerator is so big and the kettle is so big.*

Seller: - *It can also be obtained depending on the region. If you look at the color here, it's different. This is a polycrystal and this is a mono crystal. Mono crystals store energy very well when exposed to the sun. High efficiency. The poly crystal is lower. However, in mountainous areas, this means that even if it is cloudy, it will still provide electricity. In the sun, this collects better energy.*

MELIS TOKTOMUSHEV, a head of Termoclimat: - *The demand for them is growing. For example, it is a pump heated by sunlight, the total cost of which is 130 thousand soms. Most often private entrepreneurs are taking hotel bars. It has paid off in two years.*

Melis Toktomushev has been working in this field for 6 years. He noted that with each passing year, the range, number and variety of equipment for the production of clean energy has increased, and prices have fallen, but Kyrgyzstanis do not have enough money.

MELIS TOKTOMUSHEV, a head of Termoclimat: -- *In the past, we admired that this was the case in America and Europe. In the last two or three years, we have seen that these modern technologies can be used in Kyrgyzstan. It is economically viable. But our market is not ready anyway. Therefore, it would be a great support for us if the government reduced subsidies or tax duties. Many people would have access to these technologies.*

ERMEK NIYAZOV, a resident of Kok-Jar village: - *The government promises to provide relief. There are currently no benefits. Of course, I do not need a subsidy. But it would be better if the government helped other houses. It would also be good for the environment. Now there is only one thermal power plant. He is not strong enough. And this is distributed energy. In other words, each house has its own station. It would be good to build such stations and subsidize them. Then people would randomly burn firewood. The air would be clean.*

Bishkek city. Kyrgyzstan-1 settlement.

NURDIN SHAKIROV CEO of N-Tek: - *This is a smart stove. There is a computer here. This oven can be operated remotely. You can check how it burns and set the desired temperature.*

Nurdin Shakirov is the head of N-Tek. For 12 years, the company he founded has been building energy-efficient homes and repairing old houses. In addition, the businessman brings from Poland "smart stoves" that burn without smoke.

- This oven comes from Poland. This puts it as a bunker. I put 7 bags of coal in it. The time I put in and then took out the ashes was half an hour. That coal lasts up to ten days. Here's a look at small coals. If the house is well insulated, the coal will burn less. The more holes in the house, the more coal will be wasted.

Let me note at once - a smart stove is not cheap. It costs at least 5,000 euros. This furnace, which looks like the equipment of a small workshop, is controlled by a computer system. As with previous technologies, this stove depends on the temperature inside the house.

"I'm setting the temperature here to 60 degrees. It burns out. When it reaches 80, it turns off and turns on again when it drops to 60. Works for 25 minutes at a time. The oven works for 3 hours at 12 hours. That is burning.

- This screw is called an auger. Here is the ashes. Very little ash. There is no ashes every day. Ash is taken once every ten days. It is also easy to clean. You will not come to the stove for ten days. If you look at the chimney while it is working now, there is no smoke.

Nurdin Shakirov believes that Kyrgyzstan needs to develop special programs and receive state support for the transition of people to high-quality and efficient energy sources. The expert cited the experience of his familiar Poland.

NURDIN SHAKIROV CEO of N-Tek - *The stove itself is not cheap. We bring it from Poland. 8 years ago it was 3,000 euros. Now it is 5,000 euros more expensive. 5 thousand euros is just 500 thousand soms. Many people can't stand it. That money includes 12% VAT and 10% duty. Then only 22% taxes will be added. Now I do not know what the government will do in connection with the EAEU. In Poland, where I lived, it was considered good to receive 1,000 euros. And if you imagine, even the Poles can't get that stove. Then the Polish government did so, and the landlord pays 20 percent. For example, 800 euros out of 4,000 euros. The rest will be covered by the government fund. That option worked well though. Many people moved to new stoves. We could do the same. The EAEU can create a fund for taxes, which can be paid to the people in installments. No interest. would motivate people to switch to new technology.*

So far, there are about 50 smart stoves in Kyrgyzstan that burn coal completely and minimize emissions.

There have been several studies in Kyrgyzstan related to energy efficiency in housing. Buildings in Kyrgyzstan use about 50 percent of the energy produced. 70 percent of it is lost. In other words, Kyrgyzstan uses 4 times more energy to heat 1 square meter than European countries.

NURZAT ABDYRASULOVA, President of Unison Group: - *This means that we will not use this energy efficiently. This was due to low energy prices. The cheaper the energy, the more irrational it is. In Kyrgyzstan, energy efficiency is not a priority policy. Because we live with the concept of the Soviet era. We have a lot of energy and we can continue to use it. However, there has been no clear policy on how to achieve this, and no explanatory work has been done.*

Unison, led by Nurzat Abdyrasulova, has implemented more than 40 projects in the field of energy efficiency, ecology and climate change for 20 years. In partnership with the organization, Kyrgyzstan has adopted a unique law "On energy efficiency in buildings."

NURZAT ABDYRASULOVA, President of Unison Group: - *The law was adopted in 2011 and entered into force in 2012. However, ten years after its entry into force, not much has been done. Together with the State Construction Agency, we helped develop tools that would help the law work. These are:*

- resolutions at the governmental level

- energy certification of buildings

- certification and accreditation of special independent experts

- creation of the state energy register

- updating methodologies

- Bringing SNIPs and standards in the field of construction to the field of energy saving.

If we create a government program, it would be easier to solve the financial problem, to mix companies and do this.

Dear viewers, in this show we will show you how to get new sources of energy with the help of new technologies in the current energy crisis, how to implement modern systems in everyday life.

If we want to take care of the climate, preserve the environment, develop green energy, improve the living conditions of the population and build a prosperous country, we must realize that this is the work of every citizen, community and the state as a whole. It should be noted that its implementation requires close cooperation between civil society, the business community and the government.