



## Policy brief #6

# Did restructuring of health facilities reduce utility costs?

This policy brief summarizes the results of a detailed study on whether restructuring of health facilities reduced utility costs. Our main finding is that the **consumption** of utilities reduced in most cases where restructuring took place and resulted in more efficient resource use although **total expenditures** on utilities have increased due to increases in utility prices.

### 1. Background

In 2001, Ministry of Health of the Kyrgyz Republic approved restructuring plans for inpatient services in the Kyrgyz Republic. There were three driving forces behind restructuring: (i) prohibitively high utility costs, (ii) new system of hospital payment; and (iii) support from the World Bank Health II Loan for capital investment related to restructuring.

**(i) Prohibitive utility costs.** There were too many buildings in the hospital sector and maintenance became too expensive. For example, share of expenditures for utility costs from total health expenditures increased from 13.7% in 1997 to 21.3% in 2000.

**(ii) New payment mechanisms.** Hospital payment became case-based and replaced historical line-item budgeting based on the number of beds. Under the new methods of financing it would have become impossible to maintain existing buildings.

**(iii) World Bank Health II Project support of restructuring.** The World Bank provided a credit of US\$5 million for renovations of buildings and purchase of new equipment.

### 2. Study methodology

We investigated 8 hospitals in three oblasts where the restructuring process was the most advanced: Chui, Issyk-Kul and Naryn. These hospitals included Issyk-Ata TH, Sokuluk TH, Issyk-Kul TH, Ton TH, Kochkor TH, JUmgal TH, At-Bashy TH and Ak-Taly TH. Since there was no centralized source of data we visited these hospitals and collected data there or from providers of utility services. Data was collected every year between 2000 and 2004.

For each hospital, we collected the following indicators:

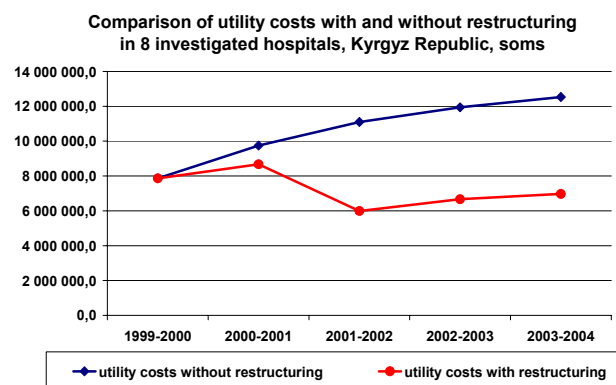
- Data on physical consumption on utilities;
- Prices for utilities and types of agreements with providers of utility services;
- Description of restructuring process in investigated health facilities and the future of closed buildings.

### 3. Results

Before restructuring there were 140 buildings in the 8 hospitals that we studied. In March of 2004, 85 buildings were in use. The investigation of Territorial Hospitals (TH) revealed that heating is the largest contributor to utility costs and thus the largest share of utility costs arises in the winter period.

Since principal expenditures for utilities occur in winter period we compared consumption of utilities by all eight hospitals during heating periods before and after restructuring. Since restructuring plans were approved in 2001 we considered the period of 1999 – 2000 as a period “BEFORE restructuring” and compared it with following years. In Picture 1 we show the actual utility expenditures of hospitals in red. We also show what their expenditures would have been if restructuring had not taken place (in blue). We obtain the blue line using the consumption level observed before restructuring at increased prices. The next section outlines the conclusions that emerge from our research.

Picture 1.





1. Restructuring of eight hospitals in three oblasts resulted in 10% reduction in financial needs for utilities during the last four years (as compared to 1999). At the same time, there was an improvement in quality of provided care through more comfortable temperatures observed in hospitals.
2. If restructuring had not taken place and consumption of utilities had remained at the level of 1999, then expenditures for utilities would have increased on average by 44% during the four years and by 57% in 2004. This would have been caused by increased prices and tariffs for energy resources.
3. Actual **electricity** consumption reduced by 23% but expenditures increased by 34% as a result of tariff increase by 87% during the last four years.
4. Consumption of **heat** as well as expenditures for heat reduced on average by 41% during the last four years.
5. Consumption of **coal** reduced by 64% and expenditures for coal reduced by 14% with the increase in tariff by 92%.
6. Consumption of **water** reduced by 30% and expenditures by 20%. Tariff increased by 105% on average.
7. Tariff for utilities have a stable trend of increase.
8. Installation of water-meters to measure consumed water allows for actual savings of resources.

#### 4. Policy implications

- Our study has shown that restructuring of health facilities leads to significant savings on utility expenditures. Therefore, further restructuring in areas where restructuring has not taken place is a precondition for efficient use of resources in the health sector. There is still plenty of room for restructuring and efficiency gains in the Kyrgyz health sector, and in particular in major urban areas.
- However, hospitals will not have the incentive to restructure as long as oblast health care budgets continue to be defined on the basis of inputs. Such budgeting process reduces funding for those regions that have restructured. However, restructuring does not change the need for health care services, merely makes the use of allocated resources less wasteful. Input based budget allocation at the oblast level and reducing the budget of those areas that have restructured is equivalent to a penalty for effect use of public resources. Therefore, it is essential to ensure that regions that

have restructured do not experience a reduction in their funding. Rewarding efficiency gains, rather than penalizing them, will be a great step forward in improving governance in the Kyrgyz public sector.

#### 5. Examples

Hospital expenditures on utilities largely depend on the optimal heating system. There were four main types of heating systems in investigated health facilities:

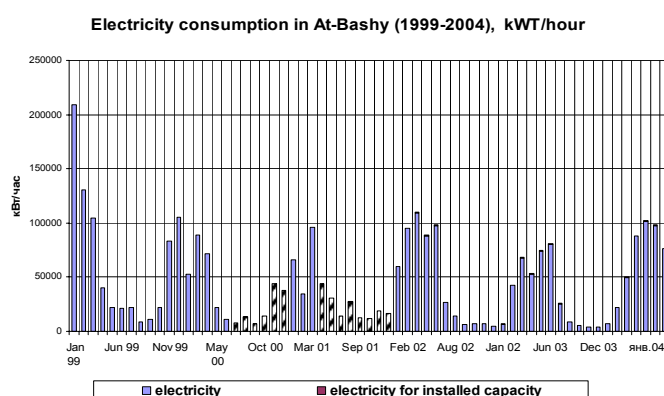
- electrical; (5.1)
- coal; (5.2)
- central heating; (5.3)
- mixed heating systems with two or more sources of heat. (5.4)

Below, we describe an example for each type.

##### 5.1. Electrical heating

Electricity is widely consumed and expensive type of energy resource. The example of At-Bashy TH, in Naryn Oblast illustrates the issues with electrical heating. This hospital has relied only on electrical heating for almost 10 years. Picture 2 shows electricity consumption of the hospital in kW/hours during the study period indicating the period of renovation with striped bars. Currently, this hospital has three large modern functioning buildings where all main structural subdivisions are located.

Picture 2.

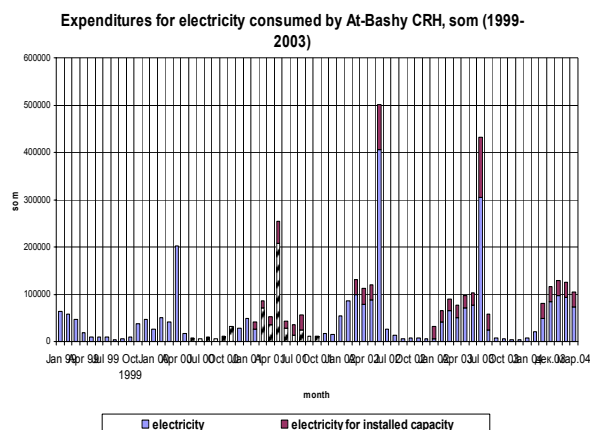


Picture 2 shows consumption with consideration of consumption by active power of transformer. But since this share of consumption is insignificant (and on the opposite, the tariff is very high) it is almost not noticeable on the graph.



Picture 3 shows expenditures during the same period. This graph shows the share of expenditures for active power of transformer more clearly than consumption graph. This happens because tariff for active power of transformer is 45 soms per Kilowatt, which is almost 50 times higher than the usual tariff.

Picture 3.



Thus, during the five months (November – March) of 1999 – 2000 period At-Bashy TH consumed 402501 Kilowatt/hour of electricity for the amount of 202202 soms and during 2000 – 2001 period it consumed 279299 Kilowatt/hour but for the amount of 245967 soms. This means that with reduction of consumption by 31% in 2000/2001 the expenditures increased by 18%.

Comparison of electricity consumption by At-Bashy TH before restructuring (1999 – 2000) with following heating seasons shows that consumption reduced by 9% whereas expenditures increased by 116% (more than twice). There are two reasons for this pattern. The first reason is increased tariff for electricity: price went up from 0.25 som per Kilowatt/hour in January of 1999 to 0.80 som per Kilowatt/hour in March of 2002. The second reason is the increased share of expenditures for installed capacity of electrical boilers used for heating of hospital buildings. It should be noted that tariff for the installed new capacity is considerably higher and amounts to 45 soms per 1 Kilowatt/hour, which is almost 50 times more than they pay for usual electricity consumption.

### 5.2. Central heating

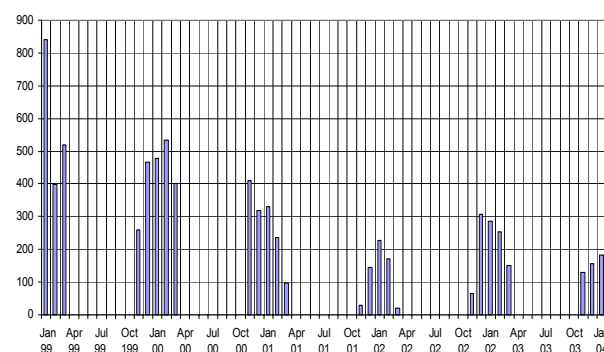
Next type of heating system is when hot water is provided to the hospital by “Teplocommunenergo” (provider of heat energy). The example of Issyk-Ata TH is a good illustration. Heat is provided by

“Teplocommunenergo” and temperature is regulated depending on monthly average temperature of outside air and the size of heated premises. Payment proceeds in two phases: an initial agreement is signed between TH and “Teplocommunenergo” on provision of preliminary volume of heat, and then they recalculate at the end of heating season based on actual amount of heat provided.

Picture 4 shows that consumption of heat reduced from 2139.92 Gcal in 1999 – 2000 season to 1393.42 GCal in 2000-2001 season and even more in heating period of 2001 – 2002 – down to 587.778 GCal (or by 72% less).

Picture 4.

Heat energy consumption in Issyk-Ata Territorial Hospital (1999-2002) Gcal



Heat consumption reduced because the CRH conserved (disconnected from consumption of utilities) several buildings and thus detached them from heating system. Hospital management also began to use resources more rationally through acts of temperature measurement for water provided by boiler-house. These Acts showed that water temperature was lower than normative by 8.8°C. Such Acts served as foundation for recalculation of actually consumed heat energy.

### 5.3. Mixed heating system

Jumgal TH had the most interesting experience with mixed heating system. All buildings of Jumgal TH (except buildings #5 and #13) were heated by local boiler-house. Buildings #5 and #13 were heated by electrical heating devices separately from general heating system. Total installed capacity of these devices is 260 Kilowatt.

In 2001 boiler-house of “Teplocommunenergo” was transferred to TH balance and during the following heating periods the hospital itself maintained it. This allowed for considerable

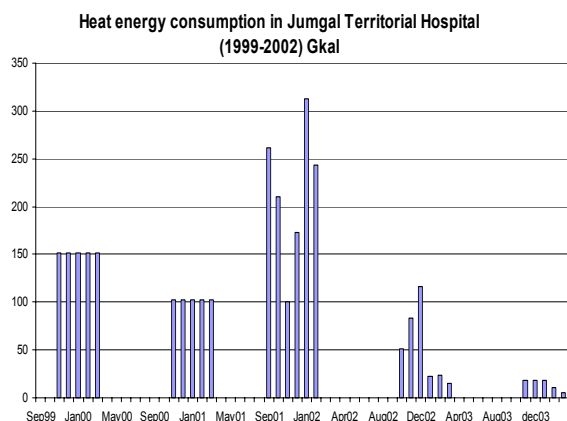


savings of resources since the hospital itself had to purchase coal for boiler-house. The following graph shows Jumgal CRH expenditures for electricity and heat. It should be mentioned that heating season of 2001/2002 was one month longer than the previous. Boiler-house was used from September of 2001 until the end of February of 2002 when the boiler broke. The whole heating system is fairly old and the boiler also broke in November of 2001 as well. The graph represents this by reduced consumption of coal.

By knowing combustion warmth of coal from Kara-Keche coal-field which is 3860 kCal/kg (Djamanbaev A. S., "Coal in Kyrgyzia and ways of rational use of it". Frunze, "Ilim" Publishing house, 1983) it is possible to calculate quantity of heat energy (GCal) consumed by hospital and compare it with quantity of heat energy consumed during previous periods. Table 4 shows heat consumption by hospital.

Picture 5 shows that during heating period of 2001/2002 hospital received significantly more Gcal of heat than in previous two years. Taking into account the fact that heating period in Jumgal CRH increased it can be assumed that microclimate in this hospital improved noticeably in 2001 – 2002.

Picture 5.



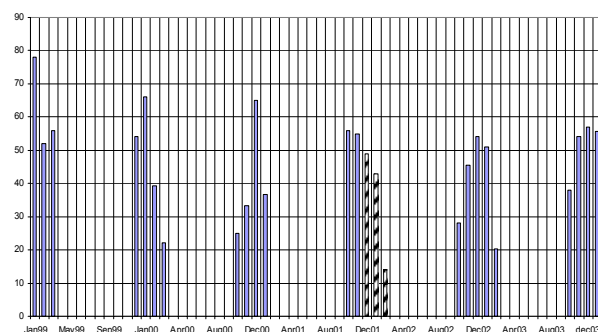
However, during the following heating seasons of 2002/2003 and 2003/2004 coal consumption reduced sharply as a result of transfer of the main structural subdivisions into two buildings (#1 and #5) heated with electricity, whereas the rest smaller buildings were heated with coal through furnaces.

#### 5.4. Coal consumption

The next topic is coal consumption. Ton TH has coal-based heating system (Picture 6). At the time of implementation of restructuring (heating season of 2001/2002) heat was provided to the hospital 30 days longer than in previous season but still 33 days less than should have been provided by normative. Coal consumption graph suggests that there was an increase in both the length of heating period (which also remained 5 months in the following years) as well as total volume of consumed fuel (from 159.8 tons to 217.1 tons, or by 35.9%). Hospital staff mentioned that heating level somewhat improved after restructuring.

Picture 6.

Coal consumption in Ton TH (1999-2004), tons



After restructuring coal consumption increased on average by 14% and payment for consumed coal increased by 64%. This resulted from the hospital being able to add 30 more days to heating period and increase volume of consumed coal from 159.8 tons per heating period to 212.2 tons in the last three heating periods (which is close to normative heating of 223.4 tons).

#### 6. Recommendations

1. It is important to use resources more rationally through closure of excessive premises and installing devices measuring consumption.
2. To help the health care system maintain its infrastructure it is necessary to develop more radical restructuring plans.
3. Savings obtained from reduced consumption of utilities does not mean that the health sector needs less resources. It is important to reinvest obtained savings back into the health system for further redistribution to patients needs.



4. Further restructuring of hospital care is a precondition for efficiency gains in the health sector. If regions that have restructured are not allowed to keep their efficiency gains and their funding reduces after restructuring, then other regions will not have any incentives to restructure and ensure efficient use of resources. This will undermine efforts to improve governance in the Kyrgyz public sector.

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To receive detailed information and complete report on the study please contact the HPAP team:

Checheibaev Erkin: [erkin@manas.elcat.kg](mailto:erkin@manas.elcat.kg)