Macedonia: Progressive feed-in tariffs for small hydropower plants in Macedonia

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Around 1,100 GWh of electricity can be generated from small hydropower plants in Macedonia, which represents a significant part of country’s hydro potential (17.5 percent). In the future, this potential will improve the ratio between renewable and non-renewable energy sources.

Taking into account the growth in electricity imports in the last decade, each new source of energy is important for the energy balance and for the state budget as well.

In order to stimulate the construction of small hydropower plants, eight years ago Macedonia's government established a system of feed-in tariffs for the production of energy from renewable sources including small hydropower plants, with up to 10 MW of power. In the following six years public invitations for granting of concessions were published and more than 70 contracts were approved. Unfortunately, only a small number of small hydropower plants are in the construction process, and only a few were finished.

For the system of feed-in tariffs to function effectively, it is necessary that the feed-in tariffs are set at a level which will cover the costs of project development, including a reasonable profit. In discussing the costs the energy price per MWh is taken into account, because this reflects the total costs of the plant, both capital and operating costs. It is necessary to take into account the assumption about the operational life of the plant and the rate of return on investment.

Based on the analysis of the actual costs of energy production from small hydropower plants, ranging from 250 to 1,000 kW, compared to the regulatory framework following the policy of the existing feed-in tariffs, some conclusions can be extracted:

1. Assuming the normal investment climate, operating and maintenance costs, the real energy price was calculated for every small hydropower plant. The average price is 12 euro-cents.
2. The impact of location on the average energy price is in the range of plus / minus three euro cent for small hydropower plants with up to 1,000 kW of power. It can be concluded that depending on the location of the plant, the costs of energy production may vary plus / minus 30 percent.
3. The paper presents a chart showing the impact of the nominal output power on the average energy price. For plants with power from 250 to 1,000 kW, average costs are about two times higher compared to the value.
4. The model of progressive feed-in tariffs follows much better the trend of the real costs of energy production in small hydropower plants, especially for plants with up to 1,000 kW of power.

5. Once established level of feed-in tariffs must be updated in order to track the actual investment costs and to make the construction of small hydropower plants feasible. A necessary tool for the development of selected projects and the corresponding total annual production is calculating the production curve for the group of small hydropower plants.