

**1st INTERNATIONAL CONFERENCE FOR SMALL HYDROPOWER  
in Budapest**

**“ Legal Constraints Restricting the Development of SHP  
Plants in Macedonia, and Possible Solutions”**

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**DISCLAIMER**

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## **ABBREVIATIONS**

SHPP- Small Hydropower plants  
HPP- Hydro power plants  
RM- Republic of Macedonia  
ELEM- Macedonian Power Plants  
EE- Electrical energy  
EU- European Union  
WB- World Bank  
GoM – Government of Macedonia  
ME – Ministry of Economy  
MFAW- Ministry of Forestry, Agriculture and Water  
MTC- Ministry of transport and communications

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## **THE SPEAKER DETAILS**

Igor Nikolov obtained his Electrical Engineering degree at the Sts. Cyril and Methodius University, Skopje in 2004. In 2006 he obtained Master degree at the Federal Institute of Technology in Lausanne, Switzerland. He began his professional career in 2004 in MHyLab – Mini hydraulics laboratory of Montcherand, Switzerland where he participated in the development programme of the Kaplan turbines in the low-head area ( $H < 30$  m) and Design & dimensioning of small turbines and worked on engineering projects in the small hydro domain.

In 2007 he joined Macedonian Power Plants, the largest Macedonian electricity producing company, where he works on the company's renewable energy strategy as responsible engineer for renewable energy. Also he works on environmental (CDM) and strategic issues as part of the Development and Investments sector staff.

## **ABSTRACT**

The small hydro power plants can help increasing the part of the renewable energy sources in the electricity mix of R. Macedonia, reduce the import dependence, and also on Global level to mitigate the climate change.

Macedonian Small hydro power is a promising sector for increasing the power system decentralization and its reliability. Since the Government, the World Bank and EU support the development of the Small Hydro Power Plants (SHPP) in Macedonia, certain mutual efforts were made to attract investments in this sector. These efforts mainly consisted of changing the policy in this sector, as well as implementation of the necessary legal bases so as to support the SHPP.

Still there are many other barriers and this paper intent is to clearly identify them, as well as to propose steps which would lead to solutions and to fast development of this sector in Macedonia.

## **1. Potential for SHPP in Macedonia**

Although in the past was frequently overlooked, the SHPP sector in Macedonia, with adequate policy may be important source of renewable energy in R. Macedonia. Although dependant from hydrology the existing SHPP in Macedonia generate in-between 10% and 12% (Macedonian Energy Statistics 1994-2004) of the total hydropower production of R. Macedonia (This amounted 143.5 GWh in 2006)

According to existing studies (Ministry of Economy, 1981) the technical feasible potential of Macedonia is estimated to more than 1300 GWh/per year. This technically feasible identified potential does not include all the sites, so it is expected that the technically feasible potential for SHPP is even bigger than the mentioned. Although the technically feasible potential is big, the economically feasible potential up to beginning of the 2007 was negligible.

The diversity of potential SHPP includes run-of river HPP, accumulation HPP, HPP on irrigation schemas, on drinking water network, on purification stations etc. All the potential SHPP are previewed as grid connected HPP.

From 1991 to 2006 the expected development of the SHPP in Macedonia was not realized, mainly due to lack of implementation of legislative, lack of experience of developing SHPP in the new market conditions, as well as the absence of SHPP manufacture and design industry.

As further elaborated below, the SHPP in Macedonia faces various barriers that are overcome with the new measures.

## **2. Barriers to the development of the SHPP in Macedonia**

The slow uptake of the development of the SHPP in Macedonia is one of the most discussed ironies of the power sector in R.M. In the face of rising oil prices and increasing the energy shortages in Macedonia in the last decade efforts were made to identify what are the main barriers for the development of the SHPP in the Macedonian Power market.

However, it seems that there are many barriers of the development of the SHPP in Macedonia, among them as most important were identified the following ones:

### **1. Legal and Policy Barriers**

- a) lack of specific legal framework particularly for implementing programs for development of the sector
- b) SHPP technologies, is not given due consideration at the fiscal policy level
- c) Pricing of electricity below costs and poor recovery of the investment

## **2. Finance Barriers**

- a) Not known price sensitivity (cost curve) of the identified sites
- b) No financial incentives for manufactures to invest in manufacturing SHP parts
- c) Non existence of domestic credit lines for investment in SHP (equipment) -only commercial credits with high rates are available
- d) Non existence of funds for credit guarantying

## **3. Business and Management Barriers**

- a) Manufacturers uncertain about the domestic market demand for SHP equipment
- b) Lack of manufactures for small size machinery (during the transition period the hydro equipment manufactures was destroyed).

## **4. Information Barriers**

- a) The institutions dealing with hydropower were cut of the ex-Yugoslav SHPP business network, and still are not integrated within the EU networks on SHPP.
- b) Lack of information at all levels about the precious energy from SHPP
- c) Lack of information about the state-of-the-art SHPP

## **5. Technology Barriers**

- a) Limited access to the state-of-the-art technologies for turbines
- b) Lack of R&D programs by research institutes
- c) Non-existence of adequately equipped and staffed independent test labs for turbines
- d) Limited experience of SHPP among engineers

### **3. Overcoming the Legal and Policy barriers (Macedonian experiences)**

It was mentioned that biggest barriers constraining the development of the SHPP in Macedonia were the existing Policy and Legal barriers, which are precedence for going further and finding solutions for the other barriers.

As candidate member for adhesion to EU, R. Macedonia had changes in the legislative according to the EU directives; changes were made on few laws which impact directly the SHPP development:

#### **a. Law on Energy**

In accordance with the Law on Energy **Agency for Energetic** was created, this agency has the responsibility to issue certificates for Preferential Producers, and according to law and the Agency rules all run-of-river SHPP up to 10 MW are qualified as preferential producers of Electrical Energy.

Further, the regulatory commission of R. Macedonia has set in **Feed-in tariffs** for the preferential Producers of EE. The tariffs differ from 4.5-12 €cts/kWh depending on the production (decreasing balance).

#### **Next steps:**

-The law on Energetic provides simpler procedures for SHPP up to 2 MW, but the Law on Build and the Law on concessions are not coherent with this providing in the Law on Energy and the procedure actually is the same for all HPP no matter the size of the plant.

-There are no decrees or amendments on Law about the level of technical documentation, insurances, etc for the SHPP which are very different form the big ones.

#### **b. Law on Water and Law on Concessions**

Up to date no concession for water was granted, and the current users of the water work with 10 years renewable water use licenses. This was kind of problem for the SHPP as the Water Use License is renewable on 10 years period, and there is no warranty that the Water Use License will be renewed. So, with the introduced DBOT model for the SHPP 20 years renewable Concession agreements for water were issued in order to insure the payback of the investments in SHPP.

The grant on Concessions is possible only through International Tenders for DBOT of SHPP mainly because of the wish to have public and transparent procedures, forein investments and the know-how transfer.

Furthermore, to give the investors choice between different types of sites, bulk tendering is introduced and the published tenders are for 60 to 100 SHPP sites.

**Next steps:**

In the scope of the Legal aspects in this part the model DBOT/BOT which was accepted in Macedonia has the inconvenience that many institutions (GoM, ME, MFAW, MTC and Governmental Commission) are in charge, and the procedure is complicated because of mix of responsibilities and order of obtaining permits and approvals.

**c. Law on expropriation, Land issues**

Following the big HPP, use of the Law on Expropriation for the SHPP as public interest will be applied. That would mean that if on any site it is not possible to arrange a purchase agreement, expropriation will be conducted in accordance with the Law on Expropriation (which is consistent with EU regulations and Operating Policy for Expropriation of the World Bank). This permits to increase the number of potential sites for an important percentage.

The biggest governmental efforts were in liberation of taxes and fees for the usage of the state owned land<sup>1</sup>, so the Government decided (February 2007) that all the state owned land is announced free of charge if it is used for build/operate of SHPP.

**Next steps:**

The government should create a fund for SHPP; this fund should provide financing for expropriation of private land used by the SHPP, so that the economic viability of projects is increased.

**d. SHPP technologies, consideration at the fiscal/custom policy level**

In accordance with the fact that in Macedonia there are still no Manufacturers of hydromechanical equipment, at fiscal level few taxes and custom duties were decreased, in order to help the developers to obtain equipment at concurrent prices. At the moment the custom duties for hydro mechanical equipment are 1% of the value of the equipment, which is considered as a reasonable value.

**e. Pricing of electricity below costs and poor recovery of the investment**

In the past 15 years all the Governmental efforts were to develop the SHPP with the existing electricity prices. Regarding the fact that the electricity price in Macedonia is far below than the market prices, all this efforts were unproductive, and only 5 SHPP on

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<sup>1</sup> One SHPP site takes up 30'000 – 50'000 m2 for which according to Macedonian legislation the taxes would be 15'000-25'000 euros/year which for SHPP is far above than the water concession fee

drinking water network were implemented. Due to this fact and the fact that even if all the potential sites will be realized (which has low probability to happen) the total production of all the SHPP sites will be less than 10% from the current electricity consumption and with the current tariffs in that best scenario the impact to the price at the consumers is increase of the price of the electricity of less than 3%.

#### **4. Possible next steps for overcoming the other barriers**

The changes introduced by the government had shown a positive result, and there was big interest from investors on the first announced tender in February this year, in order to achieve even better results and to improve the further process of built and operate of the SHPP it is recommended few things to be considered, and the next steps should be:

##### **Institutional issues**

- Creation of one-shop-stop for SHPP investors
- Strengthening the institutional capacity
- introducing Energy labels, rating and certification schemas in order to add value (increase of awareness) to the environment friendly projects
- Integration with EU programs for promoting the SHPP

##### **Technical Issues**

- Completing the national cadastre<sup>2</sup>, and increasing the accuracy of the data available
- Clear distribution codes that set explicit connection specifications<sup>3</sup>
- Enforcing the national hydrological measurement network
- Integration with EU programs for exploring and developing the SHPP potential in EU

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<sup>2</sup> Many sites in mountains regions are not possible to develop because of non existence of the mapped cadastre

<sup>3</sup> The distribution operator attempts are to connect the SHPP to 35 kV or at least 10 kV voltage level, although sometimes it the connection to 0.4 kV it technically and economically more acceptable.

## 5. Information, Links and Sources

1. Annual reports 2005/2006 of Macedonian Power plants [www.elem.com.mk](http://www.elem.com.mk)
2. Annual report for 2006 of Energy Regulatory Commission of R. Macedonia [www.erc.gov.mk](http://www.erc.gov.mk)
3. Energy Statistics of R. Macedonia 1996-2006
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