

# Small Hydropower – Caught Between Laws and Regulations

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## ABSTRACT

*Being the best-known and best developed renewable energy source SHP has necessarily become a subject to policy and consequently to public. Following different and unpredictable mechanism an incredible great variety of regulations has been put into force satisfying the scope of interests sometimes absolutely far away from SHP but even from energy. All of the regulations are said to be aiming at the support of further exploitation. Some of them function obstructive. A couple of national examples can be taken as showcase in best practice. The different tools and their effects are discussed primarily to avoid mistakes in countries, which do not have a highly developed legislation based on long termed experience.*

## 1 INTRODUCTION

A couple of years ago the EU Directive on the promotion of renewable energy became European law. Within this document the targets concerning legislative and regulatory framework has been defined excellently:

- Reduction of regulatory and non-regulatory obstacles
- Rationalisation and speeding up administrative procedures
- Guarantee that the rules are transparent and non discriminatory

Further on the EC has set an obligation to the member states to report on the following topics which are crucial to SHP exploitation:

- The co-ordination between the different administrative bodies involved concerning time limits, reception and handling of authorisation requests;
- The establishment of possible guidelines for activities connected with targets, so as to improve administrative procedures and the feasibility of speedy planning for the RES-E producers;
- The appointment of an authority to act as a mediator in disputes between the authorities responsible for issuing authorisations and requesters.

These very few principles can be applied on the framework and the procedures to be passed.

The fact that HP exploitation has become a trans-disciplinary task has not changed the key-role of technical engineering but has enlarged significantly the additional expertise needed to make a project running sufficiently. The backside of this development can be seen in the involvement of a continuously increasing number of governmental bodies, not being familiar with the very special technical knowledge.

Unfortunately there is the rule that it needs only one single barrier within the entire process to block the project. Therefore it is helpful to have a more or less complete list of possible barriers and mechanism to delete or

overcome. In case the legislative framework is complete, one has just to modify the regulations. Much more challenging is the creation of a functioning framework from the very beginning. This article may help to do so.

## **2 THE CRUCIAL TOPICS**

### **2.1 The governmental bodies involved**

The implementation and operation of a SHP plant can be looked at from various points of view:

- Water use / water right
- Electricity generation / Connection to the grid
- Environment: water quality, aquatic / semi-aquatic and terrestrial habitat
- Other interests: Recreation, Fisheries, drinking water supply
- Construction requirements and infrastructure
- Operation and safety
- Landed properties
- etc....

All of them may play a key role in the implementation and each of the topics mentioned is related to different authorities. The following list may demonstrate the widely spread variety just for one topic – the water right: A short research has shown that alone in old EU 15 there are very many bodies to issue the water right: ministry of energy, ministry of environment, ministry of industry  
basin authorities  
regional or local governments  
environmental agency.

Easily to imagine that getting all the permissions means crossing the jungle. An additional problem is to be seen in the fact, that some topics are overlapping different authorities. Consequently it may happen that the requester will get controversial or at least conflicting official answers. How to cope with?

The recommendation is clear and will ease the procedure for both the requester and the government: there should be one governmental body – ministry – running all the granting procedure, supported by different experts for special tasks.

### **2.2. Duration of authorisation procedure**

Closely related to the number of governmental bodies involved is the duration of the entire authorisation procedure. A reduction of those would necessarily cause a significant reduction in time.

Besides that - what are the main reasons for delay?

- The project / application has not been checked in advance in cooperation with government
- The project / application has poor quality and is incomplete
- The project / application is a big and / or complex one
- The staff of government has poor competence and is working slowly
- There is not enough staff at the government to do the work in due time
- There is third party professional resistance against the project
- There is governmental / political resistance against the project

Anyhow – the responsibility for serious delay of the procedure has to be borne by both the requester and the government in many cases. It is recommended to honestly identify the main reason for delay and to act accordingly. It will neither make sense nor speed up the procedure to principally blame the government.

The topic of duration is crucial also in economical terms because design, engineering, expertise, eventually a lawyer and the procedure itself does cost a lot of money. During that time there is no income from the plant and a possible grace period from the bank will usually be limited by a maximum of three years.

The typical range is about 3 months - 5 years. That is not acceptable. The maximum time needed has to be one year including everything.

### **2.3 Water charges**

In most countries of the world the state / the public is the owner of the water. That's well known as public resource principle. Just a few countries do have an exemption. Any private use of water will reduce or impact this public ownership and therefore some money may be cached.

The discussion about water charges is a long lasting one. In Europe only a few countries have established such a system. The main argument against water charges and concession fees for SHP: **SHP use is "non-consumptive"**

If a decision pro water charges will be taken in any country it should be guaranteed that this kind of tax has to be dedicated to the local people / local or regional government who are the ideological owners of the public resource. The anonymous ministry will not be a good address in this connection. Naturally the amount has to be discussed like any political decision. To avoid installing an economical barrier it should not be more than 1 or 2% of annual income from the plant

### **2.4 Concession fees**

Concession fee is a well known term for a certain tax related to business. Concerning SHP it is not a common instrument. Few countries mainly in the eastern European countries have established it. There are two kinds of CF: to be paid once when getting the license or to be paid annually when operating the plant. The initial payment tends to serve as a prohibition instrument against small private investors, because it has to be financed without any income from the plant. Shortly said – if a country really wants to support the local or regional development of small hydro, there should not be any initial concession fee.

The annual fee has to be seen a bit different and it should be related for example to the environmental performance of the plant. The money cached should also be dedicated to any improvement of the situation. Similar to the water charge the amount will decide whether the fee is economically acceptable or not.

### **2.5 Duration of the license**

Decades ago there was the general rule, that the license does not have any time limitation. The continuously growing public awareness forced government to install mechanism to interfere in valid concessions. The limited license was born. The great majority of EU countries are running the system last mentioned.

In reality the limitation is given in a wide range between 15 and 99 years. Very common is a 30 years period. Anyway, the duration of a license is of essential importance due to financing aspects. Nevertheless it has to be mentioned that a SHP will of course have a much longer life time than for example 30 years. In fact we are speaking at least about 60 to 80 years. That means additional to any limitation a concept or a solution for the time following has to be offered.

As recommendation an acceptable minimum of 30 years with the option of prolongation is stated. It would be even better to get 60 years. Any period shorter than 30 years will necessarily lead to poor and of course cheaper quality of technical equipment. That mechanism contradicts the most valuable feature of SHP – the longevity.

### **2.6 Support systems**

In terms of renewable energy it is scientifically not correct to speak about support systems, but about compensation systems. Compensation of incorrect and incomplete calculation of non-renewable electricity production. If Non-RE would calculate fair like RE has to do obligatory, there would be no need for any systems because the price for electricity would be reasonable higher. However that's a vision since 30 years. Observing the market price for electricity during the previous years creates a certain kind of satisfaction. About 50€/MWh allow at least economically excellent projects to survive.

The repertory of tools is quite large and well experienced

- Investment support (% of investment related to environmental quality [5 – 30%])
- Feed in tariff (best experienced und most effective and simple system)
- Green certificates (difficult on national level)
- Tax relief (reduction or abolition at least for a certain period)
- Grid utilisation fee (reduction or abolition)
- Direct supply of third party (higher price)

Both investment support and feed in tariff are excellent instruments. The advantage of the feed in tariff is the fact that the owner will take care for his plant in order to maximise the output. Investment support will not create this effect.

In case of feed in tariff a guarantee for a certain period is of highest importance. Any credit will be easy to achieve in case the income is predictable. About 15 years is a very effective period.

## **2.7 Power purchase obligation**

Sometimes it is forgotten that the produced electricity has to be fed into the power grid owned by the grid operator, who is not necessarily the one buying the electricity. Anyway the physical connection has to be done and needs an official obligation decreed by the government. Superficially seen a simple story but in fact a quite mighty position for the grid operator.

## **3 CONCLUSIONS**

Many decades of experience in Europe but also other parts of the world allow to evaluate the legislative and regulatory framework

- The granting procedure decides upon the success of SHP development
- The conditions (governmental demands) should be clear and achievable
- The permissions necessary should be very few (max.3)
- The governmental bodies involved should be very few and clearly defined
- The procedure should be non-restrictive and streamlined
- The concessions should have a minimum validity of 30 years including the option of prolongation
- Any development of renewable energy sources is closely related to social development
- The development of renewable energy sources should follow the principles of sustainability which means balanced between economic, environmental and social needs