



**APRAISE - Stakeholder Consultation Workshop**

**“Improving Environmental Policy Making in the EU: from  
Member State Experience to EU Policy Design”**

**Brussels, 30 October 2013**

**Venue: CEPS, Place du Congrès 1, 1000 Brussels**

**Background Paper**

*The impact of hydropower generation on river basins*

*The cases of Austria and Slovenia*

## Introduction

This background document presents the assessment of environmental and sustainability-related policies in different policy fields: waste management, water management, resource efficiency and climate protection. These policy fields are reflected in four case studies

- Waste management with focus on plastic packaging waste
- Promotion of energy efficient buildings
- Use of biomass for the production of bio-fuel
- Hydro-power as an example of renewable energy sources

Starting point of each of these case studies is one (or a set of related) directive(s) enacted by the European Commission, which have to be transposed subsequently into national law. In most cases, the directives describe the environmental targets that are to be achieved, but do not prescribe exactly how the targets should be achieved. This leaves the countries plenty of room with regard to the choice of policy instruments and their respective designs. But not only the type and design of policy instruments is decisive for the effectiveness of the transposed policies; also many other factors can influence the policy output in favourable or unfavourable ways. These factors – specifically assessed in the APRAISE project – can result from

- The broader **context** including environmental, economic, social, and technological factors;
- Institutional settings that prevent the transposition and **implementation** of EU directives as well as policy specific context such as policy instrument design, operation and enforcement; and
- **Interactions** between policies and policy instruments, where one policy instrument can possibly reduce the effectiveness of another instrument or joint implementation of policy instruments could result in synergies.

Altogether, the specific policy instruments, their design, their interaction with one another and with other policy instruments, the context in which they work and the way they are implemented give rise to their specific output. For the assessment in APRAISE, this output is measured against the environmental targets stated in the policies – mainly in the directives, but also in the national laws – and the degree, to which the targets are achieved, is called the policy instrument's **effectiveness**. However, actual effectiveness sometimes differs from how a policy instrument could perform in theory. Therefore, not only the actual effectiveness of the assessed policy instruments is measured, but also the (maximum) level of achievement that could potentially be achieved. In many cases, this is also what the policy makers expected, when they planned and implemented the policy. In APRAISE, this potential achievement is called **efficacy**. Eventually, in order to assess the usefulness of policy instruments in achieving a certain target, their effectiveness (and efficacy) has to be related to the cost of implementing and pursuing these targets. This is determined by the **efficiency** of the policy instruments.

Eventually, measuring the effectiveness, efficacy and efficiency of a policy instrument and relating these results to the policy instrument's characteristics, their working context, specific implementation process and interaction with other policy instruments allows drawing conclusions as to why, possibly, a policy instrument does not perform as it was expected to and how the performance could be improved.

## The impact of hydropower generation on river basins – the cases of Austria and Slovenia

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Hydropower investment decisions are often a controversial issue in EU environmental policy. On the one hand, renewable hydropower generation causes almost zero greenhouse gas emissions, helping the EU Member States to achieve their RES targets given by the Renewable Energy Directive (2009/28/EC). On the other hand, hydropower plants impact the environment, influencing river ecology and biodiversity and make them a thorn in the side of other EU environmental and nature conservation policies such as the Water Framework Directive (2000/60/EC) and in some cases also of the Habitats and the Birds Directives (92/43/EC; 2009/147/EC).

In this case study we investigate the possible conflict between policy instrument at the Member State levels Austria and Slovenia focusing on the implementation of hydro power plants on the one hand and the Water Framework Directive (WFD) as well as nature conservation on the other hand. We considered the entire sector small hydropower plants (SHPP - plants with a maximum capacity up to 10MW), however have chosen a specific example in each country as a starting point for detailed surveys.

We observed that both countries postponed their 2015 EU goals regarding the Water Framework Directive due to various reasons including the economic crisis. In both countries the conflict of interest between water conservation interest groups and SHPP investors is noticeable, especially in Austria where a significant part of the hydro power potential is already exhausted. In Slovenia the biggest issue regarding new SHPP is the length of the procedure to obtain the building permits. While in Austria (interim) targets for SHPP expansions are being missed, Slovenia is on track to meet its targets.

Crucial domestic policy instruments	
Austria	Slovenia
<ul style="list-style-type: none"> <li>• <b>Green electricity act (consistent with NREAP):</b> provides sponsorships for chosen power generation plants based on RES (SHPP: feed-in tariffs or investment incentives – depending on the size of the plant); defines RES –type specific development goals (SHPP (including middle sized plants): from 2010-2015 increase about 350 MW)</li> <li>• <b>National water act:</b> command and control instrument which covers all water related questions (authorization process for SHP); implements the targets of the WFD (achievement of a good status of all water bodies and prevention of further deterioration)</li> <li>• <b>Nature conservation act:</b> command and control instrument which covers all nature protection related questions. These include authorization process for SHP, regulations concerning European Nature conservation areas (Natura 2000 - stricter regulations in regard to SHP authorization) and EU nature conservation directives such as Bird and Habitats Directives.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Energy Act:</b> Introduced a better way of supporting the investments in renewable energy sources through feed-in tariffs</li> <li>• <b>National action plan for renewable energy sources (NREAP):</b> Contains specific goals for electricity production from renewable energy sources and means of achieving the goal</li> <li>• <b>Act on waters:</b> Goal is to achieve good usage in combination with good state of all waters within Slovenia by implementing water concessions. The act includes the transposition of the WFD. (achievement of a good status of all water bodies and prevention of further deterioration)</li> <li>• <b>Act on nature conservation:</b> Defines the allowed interactions with natural environments for exploiting natural resources without acting harmfully on nature and natural species in the specific area (EU nature conservation directives such as Bird and Habitats Directives)</li> </ul>

Austria	Slovenia
<p><b>National water act</b> (<i>in combination with the nature conservation act</i>)</p> <ul style="list-style-type: none"> <li>• Economic development <span style="color: red;">■</span></li> <li>• Importance of Energy import independency <span style="color: yellow;">■</span></li> <li>• Political priority of case study topic <span style="color: red;">■</span></li> <li>• National legal preconditions (existing water rights) <span style="color: green;">■</span></li> <li>• Public awareness of biodiversity <span style="color: red;">■</span></li> <li>• Weak enforcement of EU environmental legislation <span style="color: red;">■</span></li> </ul>	<p><b>Act on waters</b> (<i>in combination with Act on nature conservation</i>)</p> <ul style="list-style-type: none"> <li>• Economic development <span style="color: yellow;">■</span></li> <li>• Political priority of case study topic <span style="color: red;">■</span></li> <li>• Public awareness of biodiversity <span style="color: green;">■</span></li> <li>• Strict Implementation of EU environmental legislation <span style="color: green;">■</span></li> </ul>
<p><b>Green electricity act</b></p> <ul style="list-style-type: none"> <li>• Economic development <span style="color: red;">■</span></li> <li>• Price of electricity <span style="color: red;">■</span></li> <li>• Public awareness of biodiversity <span style="color: green;">■</span></li> <li>• Decentralized, regional electricity supply <span style="color: yellow;">■</span></li> <li>• Decreasing available hydro potential <span style="color: red;">■</span></li> </ul>	<p><b>Energy Act</b> (<i>together with National action plan for renewable energy sources (NREAP)</i>)</p> <ul style="list-style-type: none"> <li>• Economic development <span style="color: yellow;">■</span></li> <li>• Price of electricity <span style="color: yellow;">■</span></li> <li>• Public awareness of biodiversity <span style="color: yellow;">■</span></li> <li>• Importance of Energy import independency <span style="color: green;">■</span></li> <li>• Fit with national legislative framework <span style="color: red;">■</span></li> </ul>

In Austria the implementation of the Water Framework Directive was significantly delayed due to the economic crisis, low electricity prices and the importance that hydro has for energy independence, as well as by national legal preconditions. Also the available hydro potential becomes low. In Slovenia the water act was not high on the political agenda, but EU environmental legislation is being in general implemented rather strict.

Crucial policy implementation factors impacting effectiveness/efficiency of policy instruments	
Austria	Slovenia
<p><b>National water act</b> (<i>in combination with the nature conservation act</i>)</p> <ul style="list-style-type: none"> <li>• Coordination among institutions <span style="color: red;">■</span></li> <li>• Transaction costs <span style="color: yellow;">■</span></li> <li>• PI consistency with Sustainable Development targets <span style="color: green;">■</span></li> <li>• Enforceability (range of interpretations) <span style="color: red;">■</span></li> </ul>	<p><b>Act on waters</b> (<i>in combination with Act on nature conservation</i>)</p> <ul style="list-style-type: none"> <li>• Motivation for environmental policy <span style="color: green;">■</span></li> <li>• PI consistency with Sustainable Development targets transaction costs/effort to implement <span style="color: green;">■</span></li> </ul>
<p><b>Green electricity act</b></p> <ul style="list-style-type: none"> <li>• Low Adaptability <span style="color: red;">■</span></li> <li>• Administrative set up &amp; Legal certainty <span style="color: red;">■</span></li> <li>• Financial feasibility (low financial incentives, cost increases due to environmental requirements) <span style="color: yellow;">■</span></li> <li>• Image <span style="color: red;">■</span></li> </ul>	<p><b>Energy Act</b> (<i>together with National action plan for renewable energy sources (NREAP)</i>)</p> <ul style="list-style-type: none"> <li>• Motivation to invest in SHPP <span style="color: green;">■</span></li> <li>• Low financial equity among technologies <span style="color: yellow;">■</span></li> <li>• Low Adaptability <span style="color: red;">■</span></li> <li>• National legal preconditions (e.g. long approval procedure) <span style="color: yellow;">■</span></li> <li>• Coordination and Management among Institutions <span style="color: yellow;">■</span></li> </ul>

In Austria the implementation of the water act saw large problems regarding the coordination among institutions, while in Slovenia no similar problems occurred. Also, in Austria the national water act leaves open potential for interpretations, in some cases impacting its enforceability. The investors of SHPP in Austria were confronted with legal uncertainty, and low financial feasibility. Legal uncertainty such as long approval procedures were main barriers in Slovenia.

Crucial interaction factors impacting effectiveness/efficiency of policy instruments			
Austria		Slovenia	
<ul style="list-style-type: none"> <li>Interaction of policy instruments pursuing either climate protection or nature protection targets (green electricity act vs. national water act, nature conservation act)</li> <li>Stakeholder interactions (conflicts) during the authorization process</li> </ul>	          	<ul style="list-style-type: none"> <li>Local interest groups encourage nature protection which may stop or delay SHPP projects</li> <li>Environment protection NGOs pledge themselves to decreasing the feed-in tariffs by any means</li> </ul>	          

In Austria there is a strong conflict between SHPP and the national water act as well nature conservation act in some cases. In Slovenia this conflict is also present but less accentuated than in Austria.

Anticipated and observed effectiveness of domestic policy instrument	
Austria	Slovenia
<p><b>National water act</b> <i>(in combination with the nature conservation act)</i></p> <ul style="list-style-type: none"> <li>Improvement of chemical/ecological water quality especially in the context of ground water protection</li> <li>Shifting of target achievements from 2015 to 2021/2027 – target achievement delay</li> <li>Several exceptions respective to targets given in the national water act (prevention of further deterioration) or in the nature conservation act (Natura 2000 areas) have been made for (S)HPP</li> </ul> <p><b>Green electricity act</b></p> <ul style="list-style-type: none"> <li>Generally: constant increase in SHP</li> <li>Specific target settings: SHPP still behind its targets</li> </ul>	<p><b>Act on waters</b> <i>(in combination with Act on nature conservation)</i></p> <ul style="list-style-type: none"> <li>Chemical condition of water bodies improved</li> <li>With the implementation of Natura 2000 rivers got more protected and are in better condition</li> <li>Behind of some of the targets (e.g. ecological conditions)</li> </ul> <p><b>Energy Act</b> <i>(together with National action plan for renewable energy sources (NREAP))</i></p> <ul style="list-style-type: none"> <li>Installed power goal of small hydro power plants (SHPP) was achieved</li> </ul>

In Austria the expansion of SHPP is still behind its targets while Slovenia is on track after several years of drawbacks, as the target for 2011 has been already reached in 2009.

Anticipated and observed efficiency of domestic policy instrument	
Austria	Slovenia
<p><b>National water act</b> <i>(in combination with the nature conservation act)</i></p> <ul style="list-style-type: none"> <li>Target achievement delayed until 2027: therefore not possible to assess entirely if the planned budget has been rightfully calculated (target achievement delays – investment uncertainties)</li> </ul> <p><b>Green electricity act</b></p> <ul style="list-style-type: none"> <li><b>Approach 1:</b> Public expenses for SHP support vs. public expenses for the support of other RES types: SHP = lowest compensation/constant increase in SHP generation</li> <li><b>Approach 2:</b> Transaction costs: In some cases</li> </ul>	<p><b>Act on waters</b> <i>(in combination with Act on nature conservation)</i></p> <ul style="list-style-type: none"> <li>Target achievement delayed until 2027, introducing additional investment uncertainty.</li> <li>Money collected in Water Fund is used for hydropower investments, although primarily intended for flood prevention actions. Some of the planned expenses have been deferred to a later date due to target delaying.</li> </ul> <p><b>Energy Act</b> <i>(together with National action plan for renewable energy sources (NREAP))</i></p>

unexpected high costs due to the hydropower related nature/climate protection conflict

- Energy Act efficient for SHPPs. Larger number of planned SHPPs
- Money spent on subsidy for generation from SHPP dropped in year 2011 due to less energy generated. Meanwhile money spent for other RES technologies increased. Biggest rise was seen for photovoltaic.

Subsidizing SHPPs is efficient in Austria and Slovenia compared to other technologies but in some cases in particular in Austria high transaction costs cause large inefficiencies.

### Conclusions and country comparisons

#### Austria

- With current expansion rates specific development goals for SHP will be not achieved - high uncertainty factors (e.g. financial feasibility, legal uncertainty) need to be eliminated, authorization procedures are currently lasting too long
- No clear guidelines how to rightfully balance the conflict between nature and climate protection targets – extends authorization processes, raises uncertainties
- Many exceptions respective to targets of the national water act (WFD) have been made for (S)HPP.

#### Slovenia

- Getting permits for building new SHP due to nature conservation and slow and inefficient work prolong the time and increase the investments in SHP
- Conflict between nature and renewable energy expansion is less accentuated than in Austria.

### Questions to stakeholders

- How could more legal certainty be provided to investors in small hydro power plants?
- Is there a need for EU guidance on when to invest in hydro? (considering the need to implement other environmental directives)
- Would interim targets for the Water Framework Directive help a more timely transposition?
- Should there be a limit for exceptions in the Water Framework Directive