

Global Conference on Environmental Taxation
Munich, 18 - 20 October 2007

INFRAS

Design options for an energy tax in Switzerland – what can be learned from existing approaches in Europe?

Dr. Rolf Iten, INFRAS Consulting Policy Analysis and Research

Content

- 1. Aim and Focus of the study**
- 2. Procedure and Methodology**
- 3. Results**
- 4. Conclusions for Switzerland**

1. Aim

1.	Systematic evaluation of European experiences
2.	Evaluation of ecological and economical impacts
3.	Identification of crucial factors of an efficient tax scheme
4.	Identification of success factors for implementation
5.	Lessons learned relevant for future Swiss Eco-tax policy

1. Focus

- › **Instrumental** focus: Energy and CO2 taxes
-> Motivation energy policy/climate change protection
- › **Geographical** focus: 15 “old” member states plus Norway

2. Procedure and Methodologies

1. System analysis

Definition subject of investigation & parameters analysed



2. Survey of the state of the art

Energy and CO2 taxes implemented in Europe



3. Selection of interesting cases

For in-depth analysis by a defined set of criteria



4. In depth-analysis

For selected countries based on a even more sound analysis



5. Cross-section analysis

Focus on the relation between tax design and impacts

3. Results

EU Policy

- › Since the early 1990s, a **variety** of energy and CO2 taxes have been introduced in Europe at the national level.
- › Most non-fiscal energy and CO2 taxes have been created within the scope of the **EU directive on energy taxation**.
- › Since 2005, the focus of EU climate policy has been on the **European emissions trading scheme**.
- › The “Green Book” emphasises the role of **energy and CO2 taxes** in the future EU energy and climate policy mix.
- › They should suitably **complement** emissions trading in the area of small-scale and private consumers.

Current status by country

Country	Name / type of instrument	Tax rate (as of 2 nd quarter 2006)		Proportion of GDP (in %)
Denmark	CO ₂ tax	Heating oil, coal, gas	12 €/t CO ₂	0.5%
		Motor fuels	12 €/t CO ₂	
		Electricity	1.2 €/ct/KWh	
Germany	Ecological tax reform	Heating oil Gas	8 €/t CO ₂	1.1%
		Motor fuels	59 €/t CO ₂	
		Electricity	2.1 €/ct/KWh	
Finland	CO ₂ tax, electricity tax	Heating oil	18 €/t CO ₂	2.3%
		Gas	8 €/t CO ₂	
		Motor fuels	18 € / tCO ₂	
		Electricity	0.7 €/ct/KWh	
Netherlands	Regulatory energy tax, CO ₂ tax	Heating oil, coal	4 €/t CO ₂	0.4%
		Gas	53 € / t CO ₂	
		Motor fuels	4 € / t CO ₂	
		Electricity	5 €/ct/KWh	

Current status by country (continued)

Country	Name / type of instrument	Tax rate (as of 2 nd quarter 2006)		Proportion of GDP (in %)
Norway	CO ₂ tax	Heating oil Coal	24 €/t CO ₂	0.6%
		Motor fuels	24-27 €/t CO ₂	
Sweden	CO ₂ tax, energy tax	Heating oil Coal	19-22 €/t CO ₂	1.3%
		Motor fuels	96-148 €/t CO ₂	
		Electricity (households)	2.8 €/ct/KWh	
		Electricity (industry)	0.1 €/ct/KWh	
		Gas	83 €/t CO ₂	
UK	Climate change levy (energy tax for industry)	Coal	7 €/t CO ₂	0.1%
		Gas	11 €/t CO ₂	
		Electricity	0.6 €/ct/KWh	

General Findings

- › A **variety** of energy and CO2 tax schemes are in use that have proved to be effective over a number of years.
- › These tax schemes primarily focus on **climate protection** and on **energy** policy objectives.
- › The taxes often target **individual** energy consumers and CO2 sources such as private households, road users and small and medium-sized companies.
- › Large-scale consumers have been integrated into market-based energy and CO2 policy since the introduction of the European **emissions trading scheme**.

Specific Findings

- › The **basis** for the tax differs according to the declared objective (energy or CO2 target).
- › **Input energy** and **output energy** can be taxed. In the existing tax systems, it is only end energy that is taxed (-> EU energy tax directive).
- › **Tax rates** vary considerably both from country to country and between energy source within a country:
 - › In some cases the rates are in the region of 30 percent of the end user price.
 - › Though in most countries included in the study, they range from 5 to 15 percent.

Specific Findings (continued)

- › Introducing taxes and charges on a **step-by-step basis** enables taxable entities to adjust themselves to the changed circumstances over a clearly defined period.
- › In most of the countries included in the study, a large proportion of the revenue is **redistributed** to industries and private households.
- › Experience has shown that it is possible to largely eliminate negative effects on the **competitiveness** of industries by implementing special regulations.

Impacts: Overview

	CO₂ impacts	Impacts on employment	Impacts on GDP
Denmark (CO₂ tax)	25% reduction of specific CO ₂ emissions between 1990 and 2000	Positive long-term impact on employment	Positive short-term effect (0.02% of GDP), Slightly negative effect (-0.03%) five years after introduction
Germany (ecological tax reform)	3% reduction in CO ₂ emissions between 1999 and 2010	Positive impact on employment (plus up to 0.75% in 2003)	Two Studies: First: Positive impact on GDP: private consumption + 0.5% higher, state consumption + 0.6 to 0.8% Second: Slight increase in GDP (0.1%) between 2000 and 2005
Finland (CO₂ tax and electricity tax)	7% reduction in CO ₂ emissions between 1990 and 1998	no data	Separation of economic growth and CO ₂ emissions between 1990 and 2001

Impacts: Overview (continued)

	CO₂ impacts	Impacts on employment	Impacts on GDP
Netherlands (regulatory energy tax)	Ex ante expectation: 1.5 % reduction in CO ₂ emissions between 1996 – 2000	no data	Additional tax revenues (value added tax, company tax)
Norway (CO₂ tax)	Slight increase in overall CO ₂ emissions, 11% reduction of specific CO ₂ emissions between 1990 and 1999	Slightly positive impact on employment (ex ante estimate)	Separation of economic growth and CO ₂ emissions between 1990 and 2001
Sweden (CO₂ tax)	2% reduction in CO ₂ emissions between 1990 and 2002	no data	Separation of economic growth and CO ₂ emissions between 1990 and 2002
UK (climate change levy)	2,3% reduction of CO ₂ emissions between 2001 and 2010	No impact on employment	Positive impact with estimated GDP growth of 0.06% by 2010

Impacts

- › In all countries investigated the energy and/or CO2 taxes contributed towards a **reduction in CO2 emissions**.
- › In all existing energy and CO2 tax schemes, a reduction in CO2 emissions was observed **without posing a threat to economic growth**.
- › In three cases it was noted that the taxes contributed towards a **decoupling** of economic growth and CO2 emissions.
- › In three out of seven cases, the taxes resulted in slight to strong **positive impacts on employment**.
- › **None** of the taxes have had a **negative impact on employment**.

4. Conclusions for Switzerland

The following factors increase the **chances for implementing** energy and/or CO2 taxes:

- › Clearly defined **step-by-step** introduction with acceptable levels of increase in rates.
- › **Redistribution** of revenue to the economy and possibly to private households.
- › **Earmarking** part of revenues for programmes aimed at promoting energy efficiency and renewable energies.
- › **Offsetting** measures for internationally exposed energy-intensive sectors and/or companies.
- › **Compensation** measures to cushion undesirable social distributional effects.

4. Conclusions for Switzerland

The following aspects have proved to be important for enhancing the degree of **effectiveness** and **efficiency**:

- › The tax-basis should be as **broad** as possible.
- › Tax rates should be **increased gradually** to a level at which significant incentive effects are created.
- › **Redistribution** of revenues to the industries and to private households by reduction of non-wage labour costs.
- › Special regulations for **energy-intensive sectors or companies** with target agreements and commitments for exempted sectors and companies.