



REGERINGSKANSLIET

Memorandum

8 April 2002

Ministry of Industry, Employment  
and  
Communications  
Stockholm, Sweden

IEA CERT

## Facts and News from Sweden

### 1. Energy Policy Developments

#### 1.1. Government Energy Policy Bill “Collaboration for a Secure, Efficient and Environmentally Friendly Energy Supply” (2001/02:143)

On the 21<sup>st</sup> of March, the Government presented their Energy Policy Bill “**Collaboration for a Secure, Efficient and Environmentally Friendly Energy Supply**”. No major changes in the energy policy are presented, but proposals are made for new instruments to influence and direct the developments towards a safe and environmentally sound supply of energy at competitive prices.

One of these new instruments is a quota-based Swedish certificate system to promote production of electricity based on renewable energy sources (see 4.1. below) to be implemented by January 2003. Additional measures to promote energy efficiency through further support of local investment programs (see 1.4 below) as well as electricity market related measures are proposed.

Adjustments are proposed to the taxation on Combined Heat and Power in order to improve competitiveness.

The possibility of reaching an agreement between the Government and Industry for the phase-out of nuclear power will be explored. The line of action will be similar to the approach used in Germany.

An English translation of a summary of the Bill will be available later in the month. Links in Swedish:

<http://www.naring.regeringen.se/fragor/energi/omstallning/index.htm>

[http://www.naring.regeringen.se/propositioner\\_mm/propositioner/index.htm](http://www.naring.regeringen.se/propositioner_mm/propositioner/index.htm)

#### 1.2. Government Bill on a Swedish Climate Change Strategy (2001/02:55)

On 30 November 2001, the Swedish Government presented their Climate Bill “A Swedish Climate Change Strategy”.

In this Bill, a long-term climate strategy is formulated, building on the existing energy and transport policy decisions as well as on the Government’s Bill on Infrastructure and the Energy Policy Bill presented in spring 2002 (see 1.1. above).

Emissions of greenhouse gases in Sweden shall be reduced by four per cent by 2010. The national goal is to be achieved without using carbon sinks or flexible mechanisms. In connection with a review in 2004 the Government can propose a complementary goal that includes flexible mechanisms

In order to attain these objectives, the Government and the Left Party propose a number of measures, among others:

- Climate investment programmes in the municipalities. The local investment programmes will be replaced by support for climate projects in municipalities in 2002.
- Information to increase awareness of the climate issue.
- A strategy for alternative fuels.
- The promotion of electricity from renewable sources of energy through the implementation of a system of green certificates.
- The Environmental Objectives Council introduced on the first of January 2002 will coordinate the climate work of the national authorities.
- Government property owners will be instructed to describe possibilities of increased energy efficiency and reduced dependence on fossil fuels.
- A Commission will be set up to analyse the areas in which the efficiency of fossil fuels can be improved or where they can be replaced by other fuels.

[http://www.miljo.regeringen.se/propositionermm/propositioner/pdf/p200102\\_55.pdf](http://www.miljo.regeringen.se/propositionermm/propositioner/pdf/p200102_55.pdf)

[http://www.regeringen.se/galactica/service=irnews/owner=sys/action=obj\\_show?c\\_obj\\_id=42685](http://www.regeringen.se/galactica/service=irnews/owner=sys/action=obj_show?c_obj_id=42685)

### **1.3. The Environmental Quality Objectives Bill (2000/01:130)**

The Swedish Government is proposing time-limited measurable targets in order to achieve the fifteen environmental quality objectives within one generation. Concrete measures and strategies to reach these targets by 2010 are also proposed. More funding will be allocated to environmental protection, and resources will be increased by 70 per cent between 2001 and 2004. The Swedish Energy Agency will be responsible for the energy related aspects of three of these fifteen specific goals for quality of the Swedish environment, i.e. Reduced Climate Impact, Clean Air and Natural Acidification.

[http://www.regeringen.se/galactica/service=irnews/action=obj\\_show?c\\_obj\\_id=41557](http://www.regeringen.se/galactica/service=irnews/action=obj_show?c_obj_id=41557)

### **1.4. Climate investments in Budget Bill (2001/02:1)**

In the Budget decision for 2002, a programme of support for Local Climate Investment Programmes was introduced as a replacement for the Local Investment Programmes initiated in 1997.

The programme has been allocated a budget of 900 MSEK, corresponding to about 100 million Euros, for a three-year period beginning 2002. The measure is designed to support local governments' investments that will reduce the greenhouse gas emissions in Sweden.

[http://www.regeringen.se/galactica/service=irnews/action=obj\\_show?c\\_obj\\_id=41543](http://www.regeringen.se/galactica/service=irnews/action=obj_show?c_obj_id=41543)

### **1.5. National Communication (NC3) to the UN-FCCC**

The Swedish Government adopted the Third National Report in November 2001. It can be downloaded from <http://miljo.regeringen.se/pressinfo/pdf/NC3/omslag.pdf> (290 pages PDF)

## 2. Energy Research and Development Strategy

### 2.1. Evaluation of the Long-Term Energy Policy Programme

The Swedish Energy Policy Programme of 1997 contains a seven-year long-term energy RD&D programme to run in the period 1998 – 2004. The Swedish Government in December 2001 decided to set up an Expert Committee to review these long-term RD&D activities. The objective is to propose guidelines for a new programme starting in 2005 to contribute to the transformation to an ecologically sustainable energy system.

### 2.2. Energy Foresight Sweden in Europe

In view of the crucial role energy plays in the development of society, the Royal Swedish Academy of Engineering Sciences (IVA) has initiated a special Energy Foresight project. The point of departure for the project will be to take a look at the Swedish energy system in both a European and a global, holistic perspective, with emphasis on the European dimension.

The objectives are

- to initiate an in-depth discussion about energy systems and energy-related activities in industry and society in relation to the images depicted in the Technology Foresight reports,
- to create insight into and visions about developments in the energy field in Sweden with emphasis on the international aspects. The project will focus on the next 10–20 years with a brief look at scenarios for the next 50 years,
- to help the different players in the energy field understand and learn from each other and to illustrate how developments in this field take place in interaction with other sectors of society. A holistic approach will be applied,
- to demonstrate how different future scenarios described in the Energy Foresight project should affect education and R&D with a view to improving preparedness and enhancing the competitiveness of Swedish industry, and
- to provide a sound basis for information and discussion about opportunities and obstacles to sustainable development in Sweden

<http://www.iva.se/energiframsyn/index.asp>

## 3. General information on the Swedish energy situation

### 3.1. Rational Use of Energy

In most of the Swedish Energy Agency's working areas, energy efficiency is an important issue.

Over the period 1998-2001, an average of euro 50 millions per year has been devoted for the purpose of R&D and introduction concerning energy efficiency. Now the successful programme for technology procurement of appliances and methods, meeting performance requirements regarding cost-efficient minimum energy efficiency standards, has been completed.

The Swedish Energy Agency has recently elaborated a report on its Energy Efficiency activities over the last four years. However, due to difficulties with baselines (what would have happened anyway) it has not been possible to assess the over-all results except in very rough figures. The 87 p. report is available in Swedish language only.

[http://www.stem.se/web/biblshop.nsf/FilAtkomst/ER202.pdf/\\$FILE/ER202.pdf?OpenElement](http://www.stem.se/web/biblshop.nsf/FilAtkomst/ER202.pdf/$FILE/ER202.pdf?OpenElement)

### 3.2. Swedish Electricity Market Report

Electricity generation capacity in Sweden is described in the STEM publication Electricity Market 2001. This booklet can be downloaded from the web site <http://www.stem.se/> >Search: Electricity Market.

The table below gives a summary of some key data for Swedish electricity production in the year 2000. It is a compilation of data taken from the Electricity Market 2001 report.

Swedish Electricity capacity and generation in 2000					
	Installed gen. capacity (GW)	Generation per year (TWh)	Corresp operation (hours/year)		
TOTAL	30 894	141,8	Incommensurate		
Hydropower	16 229	78,0	4 800 (maximum)	Normally 4 130 hrs	
Windpower	241	0,4	2 000	(Capacity 31 Dec.)	
Nuclear pwr	9 439	54,8	5 800	Normally 6 900 hrs	
Other thermal	4 985	8,6		Normally 10 TWh	
CHP in DH s	2 264	4,3	1 900	Normally 2 500 hrs	
CHP industry	932	4,2	4 500		
Condensing	448	0,1	A week or two per year	(Back up only)	
Gas turbines	1 341	0,0	A few days per year	(Back up only)	

Direct electric heating in Sweden is still less expensive than heat from any fossil fuel. The total tax on electricity paid by a typical end consumer is about 89% on the total price for production and distribution, annual connection fee included. Environmentally related taxes are paid by the electricity producer.

Because the year 2000 was a very rainy year, the Swedish electricity generation in 2000 was based on renewable energy sources at a rate of 59% of total electricity generated. CHP in District Heating plants can be optimally used for electricity production in the winter. There is still a considerable potential to use more biofuel for CHP in municipal DH systems. CHP in industry is normally 10% cogeneration from annually 40 TWh of heat (100% biofuel) from burning black liquor in the Swedish cellulose industry.

### 3.3. Sweden became a net exporter of electricity in 2001

The large amount of rainfall in 2001 resulted in Swedish hydroelectric power stations producing record amounts of electricity once again. The year 2000 saw 78 TWh electricity produced, 22 percent more than during a normal year. For the year 2001, production is expected to reach 79 TWh. In addition, higher electricity prices have made nuclear production more profitable. This has led to Sweden becoming a net exporter of electricity. On an annual basis, net exports are expected to reach almost 6 TWh in 2001.

## 4. Financial Incentives

### 4.1. Green Certificates

A proposal (SOU 2001:77) was delivered in October 2001 to the Swedish Ministry of Industry, Employment and Communications, suggesting a design for a new market based system to support an increased electricity production based on renewable energy sources through a system for trade with "Green Certificates". Previous investment grants schemes have sometimes turned out to increase margins for the producers rather than to press prices for the end consumers. The report has formed the basis for the proposal for a Green

Certificates system in the Government Energy Policy Bill "Collaboration for a Secure, Efficient and Environmentally Friendly Energy Supply" (2001/02:143)

[http://www.regeringen.se/galactica/service=irnews/owner=sys/action=obj\\_show?c\\_obj\\_id=42040](http://www.regeringen.se/galactica/service=irnews/owner=sys/action=obj_show?c_obj_id=42040)

#### **4.2. Combined Heat and Power from biofuel**

The programme for investment grants to CHP based on biofuel in the period 1998 to 2002 has resulted in an Increased electricity production capacity in municipal DH plant by nearly 290 MW up until 2001.

Total installed CHP capacity today is about 3 484 MW where 57% is CHP production based on biofuel. The investment grants were basically 325 Euro per installed MW electricity production capacity based on biofuel, but not more than 25% of total investment cost. These grants will according to the Government Energy Policy Bill (2001/02:143) be replaced by market based Green Certificate incentives (see 1.1 and 4.1).

#### **4.3. Windpower**

The programme for investment grants to windpower installations during the period 1998 to 2002 has reached its 2002 goal. The production is more than 0.5 TWh of electricity *per annum*.

Typical installation cost is around 930 Euro per installed MW windpower on land. The present investment grant for land based windpower plants corresponds to 70 Euro per MWh annual capacity. These grants will according to the Government Energy Policy Bill (2001/02:143) be replaced by market based Green Certificate incentives (see 1.1 and 4.1). The Environmental Tax Exemptions for electricity from windpower will be phased out over a seven-year period.