

Sweden is one of a handful of Organization for Economic Co-operation and Development (OECD) countries in which fossil fuel plays a relatively small part in the total energy supply. On the other hand, total Swedish electricity consumption is 140TWh, 90% of which is generated by

Renewable energy Sweden

hydro or nuclear power plants. As a signatory of the Kyoto Protocol, Sweden views climate change as a global issue and believes that solutions require a commitment from all countries.

As part of its strategy to build these solutions into the fabric of its own society, Sweden's closure of a nuclear power reactor has speeded up the conversion of the energy system towards the use of renewable energy sources.

The electricity market was deregulated in 1996, leading to increased competition and pressure on prices, followed in 1999 by the closure of one of Sweden's twelve nuclear power reactors, with a resulting loss of 5TWh of power. The resulting push to discover renewable sources of energy led to the identification of bio-fuel as a viable alternative for some of the lost energy.

Lately, the government of Sweden has stepped up funding to support an ecological sustainable development involving the adoption of such renewable fuel sources: for the current period 2000–2002 one half of the total allocated funds of 1.2 billion Swedish kronors (SEK) (\$190 million) will be directed to new-energy projects supporting renewable energy and energy efficiency. This amount is up from one third for similar projects between 1998–2000.

A current seven-year government program (ending in 2004) has targeted SEK 9 billion for research and development to promote energy efficiency and the use of renewable energy to generate electricity. Current projects are mostly involved with the use of bio-fuel for district heating systems.

Alternative power: market overview

Although wind power accounts for only a small portion of Sweden's total energy supply today (0.4%), the potential exists for wind to be a powerful source of energy in the future — exceeding 10TWh. The goal of the National Energy Authority is wind power production of 10–15% of the country's total power and it has directed funds toward research and development of wind power.

Photovoltaic energy sources have a limited use. Current research efforts at the Ångström Solar Centre are focusing on thin-layer solar cells, to be market-ready in ten years.

Artificial photosynthesis is also being examined in a research project.

Further development of large-scale hydro power is limited by a government ban on any further exploitation of national rivers and other hydro resources. However, opportunities remain for small-scale hydro power projects and refurbishment of existing hydro power plants.

Currently, natural gas accounts for only 2% of the total energy supply, via its distribution network in the south of Sweden. Through a recent EU directive, the natural gas market is being opened up to competition. However, with the current price of natural gas hindering further development, any future investment in gas infrastructure must be

financed on strictly commercial terms and driven by market forces. It should be noted in this context that Sweden does not consider natural gas to be an environmentally friendly energy source.

Fast facts on climate change

- The EU countries are tasked with reducing greenhouse gas emissions to 8% below their 1990 level by 2008–2012.
- Sweden produces 0.3% of the world's carbon dioxide emissions, originating largely from the transportation sector.
- Sweden seeks to attain a level of greenhouse gas emissions representing 104% of its 1990 levels. It introduced a carbon dioxide and energy tax as early as the mid-1970s (bio-fuels and peat are currently exempt).
- In terms of minimizing climate change, Sweden recognizes the importance of co-ordinating international economic policy, focusing on the energy sector and the environment. Energy-intensive industries such as iron and steel foundries and pulp and paper mills will play a key role in developing solutions to both energy consumption and environmental concerns.

Market opportunities

- renewable energy technologies (including bio-fuel production);
- energy efficiency measures;
- technologies that support improved efficiency and use of resources in industrial processes;
- technologies that reduce vehicle emissions and reduce air pollution;
- information and communication technology (ICT) solutions that support all of the above.

Market access considerations

A Swedish partner is advisable to facilitate dealings with local authorities when it comes to bid documents and certifications and an understanding of local legislation and regulations. English is, however, widely spoken as a business language.

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