

Renewable Energy Policy Review

Austria

May 2004



EREC

European Renewable Energy Council
26, rue du Trone
B-1000 Brussels

Tel.: (+32) 2 546 1936

Fax: (+32) 2 546 1934

www.erec-renewables.org

erec@erec-renewables.org

1. General information

Austria is located in southern Central Europe. Geographically, its territory encompasses both the Eastern Alps (which cover some two thirds of its surface area) and the Danube Region. Austria has a land surface of 83,858 square kilometers. Austria accounts for 2.6% of the EU total surface and 2.1% of its population. Austria lies at the geographical center of Europe, it has since immemorial time been a crossroads of travel routes between the major European economic and cultural regions. Entirely landlocked, Austria has common borders (2562 km) with eight other countries: Germany, the Czech Republic, Slovakia, Hungary, Slovenia, Italy, Switzerland and Liechtenstein.

Table1: Austrian provinces and their population

	Area square kilometers	Population	Capital
Salzburg	7,154	518.580	Salzburg
Vienna	415	1,560 000	Vienna
Lower Austria	19,174	1,550 000	St. Pölten
Upper Austria	11,980	1,380 000	Linz
Carinthia	9,533	561.114	Klagenfurt
Styria	16,380	1,190 000	Graz
Tyrol	12,648	675.063	Innsbruck
Burgenland	3,965	278.600	Eisenstadt
Vorarlberg	2,601	351.565	Bregenz
AUSTRIA	83,858	8, 1 million	VIENNA

Source: Austrian Economic Ministry

Austria is a federal country (member of the EU since 1995) with nine independent provinces (Länder) (Art.2 para.2 B-VG of the Austrian constitution).

Three levels of legislation are existing:

- the Central State ("Bund"),
- the provinces ("Länder"),
- the local municipalities ("Gemeinden").

All federal legislation has to pass the two parliamentary chambers, i.e. the National Council ("Nationalrat") and the Council of Provinces ("Bundesrat"). However, the influence of the provinces on federal legislation is rather weak, as the National Council has the right to overrule decisions taken by the Council of Provinces. Despite the dominance by the Central State in terms of federal legislation, the Austrian provinces are relatively autonomous in legislation and administration in their own matters, including fiscal policies. Regarding the energy policy, responsibilities are shared between Federal and regional government, as we will explain later.

Austria is a highly developed industrialised nation with an important service sector. The foremost industries are foodstuffs and luxury commodities, mechanical engineering and steel construction, chemicals and vehicle manufacturing. In 1997 the primary sector (agriculture and forestry) accounted for only 2.8% of Austria's gross domestic product, while the secondary sector (commodities manufacture, energy, mining) accounted for 34.8%, and the tertiary sector (services, banking, public services, commerce, transport, tourism) accounted for 62.5% of GDP.

Some 18% of Austria's surface area is covered by farm land, 27% by grassland and 47% by woods and forests. 41% of Austria's total area is suitable for agriculture. 5% of all employed persons in Austria work in agriculture and forestry. With its 20,000 organic farmers, Austria occupies a leading position in this branch of agriculture in Europe.

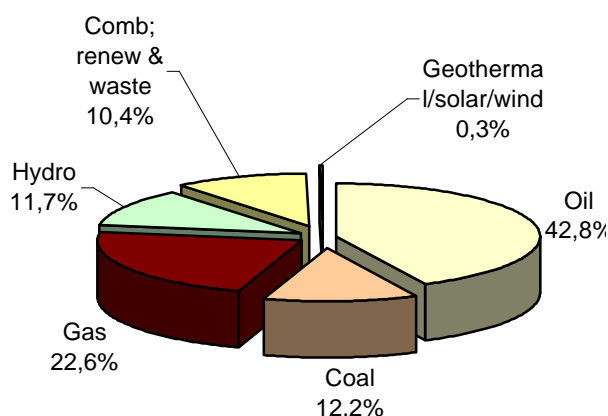
In the field of raw materials and energy generation Austria can draw on abundant resources. It has deposits of iron ore, non-ferrous metals, important minerals and earths. However, the constant growth of the industrial sector necessitates supplementary imports to an everincreasing degree. This is also true of fuels and energy and of the electricity generating industry.

2. Renewable Energy policy

Renewable energy country profile

Table 2: TPES and Gross electricity generation (2001)

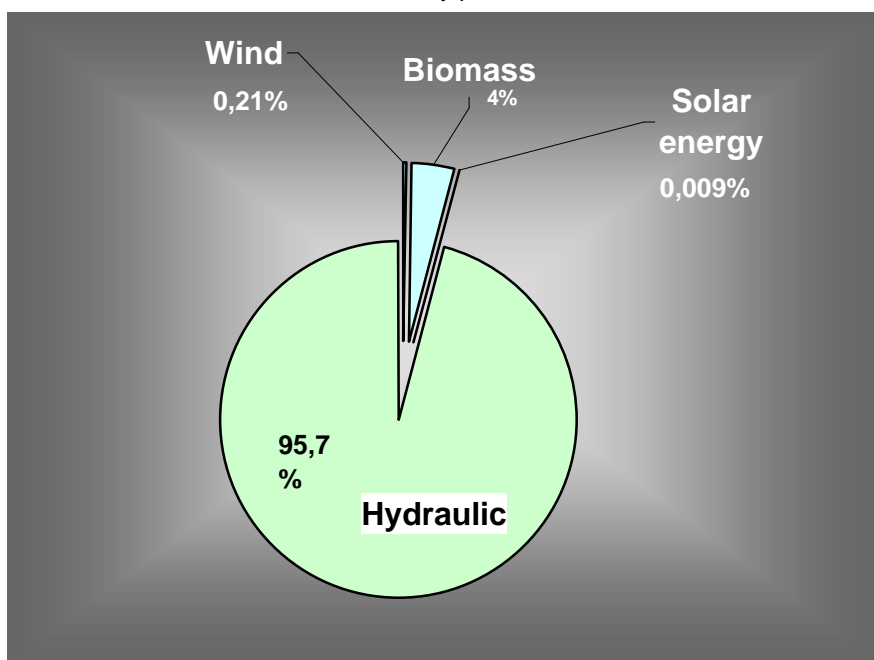
Population	8.1	Millions
Area	83,858	km ²
Total Primary Energy Supply (2002)	30.31	Mtoe
Gross Electricity Generation (2001)	64.1	TWh
by source	Fossil Fuel 18.6	TWh
of which	Pumped Storage 1.6	TWh
	RES 43.8	TWh
	Hydro 41.8	TWh
	Biomass 1.8	TWh
	Wind 0.17	TWh



Primary Energy Share 2001

Source: EUROSTAT 2001 – IEA Renewables 2003

Table 3: Share of RES in the RE electricity production



Source: EUROSTAT 2001 – IEA Renewables 2003

Austria's energy supply is based on a balance mixture of energy sources in which the role of renewables is prominent. Renewables provide approximately a quarter of Austria's energy needs - the second highest level of renewables use in the European Union after Sweden. The country's commitment to non-nuclear energy combined with abundant hydro and biomass resources and Austrian environmentally friendly orientations, have encouraged this very high exploitation levels of renewable energy resources. The first source of renewable energy (12% of its total energy supply and 67% of the gross national consumption of electricity) is hydropower. But the use of biomass and wastes is particularly high, at 10% of Austria's energy supply in 2001. The high proportion of biomass is mainly due to the great significance of wood for district heating. Heat production from renewable energy sources is also important, and was about 11% of total heat production in 2001. This prominent role of renewable energy contributes substantially to the very low emissions of CO₂ per inhabitant. 7 tonnes/year/inhabitant. (Eurostat 2003).

Despite this prominent role of renewable energy, Austria like the vast majority of the European Union Member States is mainly dependant on all imported fossil fuels which make 65% of its total energy supply. Currently oil, which is largely imported, is the largest source of primary energy in Austria, representing 40% of primary energy consumption. Gas,

which supplies 23,9% of primary energy demands, is also mainly imported. Domestic energy production in Austria accounts for nearly 35% of total energy supplies. Austria produces some 20 per cent of its gas consumption, the remainder being imported, mainly from Russia (88 per cent), but also from Norway and Germany. Domestic brown coal provides only about 11% of the total contribution of coal to the primary energy. The balance of the coal used now comes from Poland as Austria closes down its increasingly uneconomical mines¹.

Below, you will find the main achievements of Austria in the difference Renewable Energy technology

Table 4: Renewable energy technology in 2003 in capacity

ES sectors	Capacity
Photovoltaic (MWc)	
Grid connected	7.88
Off grid	2.16
Total	10.04
Solar thermal – Glazed collectors (square meter installed)	1,651,814
Average surface for 1000	203
Small hydro Power (<10 MW)	870
Biogaz (Mtep)	35
Wood (Mtep)	2.82
Wind (MW)	415

Hydro

Electricity production in Austria has historically been dominated by hydropower, which provided 2/3 of Austria's electricity in 2001. Hydropower has been promoted after world war II and the 1970 oil crisis. However, in the 1980's construction of large hydropower plants were stopped and only one more was built after that time. Utilities accounts for the majority the power generated, although there is also some auto-production. Since the 1950s, the number of small hydro systems has been growing, and made up 8% of total hydro capacity. Austria has a great number of small and very small power plants. In 2001, there were 1,700 units of small hydro power with a total capacity of 870 MW generating 4250 GW/h. 90% of these small hydro power plants are under 1 MW. There are probably an addition of 4,000 to 5,000 small stations which are not included in the statistics². Hydropower is likely to retain its dominance in Austrian electricity supply as there is room for capacity expansion: only an estimated 45% of economically exploitable for small hydropower sites are currently being exploited, leaving an additional 800 MW (4,000 GW/h) according to the Austrian Association for the promotion of small power stations.

Biomass

The use of biomass as a source of energy is widespread in Austria, and biomass accounts for 2.6% of electricity production and approximately 11% of TPES (significantly higher than the EU average). In 2001, 2.9 Mtoe of biomass (wood, wood waste, biogas and diester) were used for energy purposes. By far the most important non-hydro renewable is wood, almost all of which is used directly in the residential and agricultural sectors. Firewood accounted for the majority of biomass energy use. The use of wood chips is also increasing, and more than 20,000 heating systems using wood chips are operating. In 2000, 3,000 collective boilers using wood energy had a total capacity of 1 GW.

Biomass is used for energy in residential buildings, where it provides space heating and domestic hot water. Both individual stoves and district heating systems are used for biomass- fired heating. Biogas is produced at farms, landfills and sewage processing plants and is burned in combined heat and power installations (CHP) for heating, hot water supply and electricity generation. Over 70% of the biomass is utilized in low temperature applications, combustion of wood or wood chips in single heater or central boilers or of various biogenous fuels. The main types of biogas installations in Austria are municipal sludge digesters and agricultural installations. Biofuels showed remarkable growth in the 1990's, with output increasing to 30,000 tonnes in 2001. Biofuels started in Austria in 1987 with a large scale pilot project on biodiesel at the Federal Institute of Agriculture engineering at Wieselburg. Currently, there are more than 80 biodiesel stations selling biofuels and two major industrial plants of production. The main biofuel in Austria is pure Rape Methyl Esther (RME), which is used in diesel engines.

Wind

Wind electricity generation is small in Austria compared to the leading european countries. The wind potential in Austria is rather limited compared to the same leading european countries. Nevertheless, Prototype turbines were constructed in 1994. From then to now, the wind capacity has grown continuously. The wind capacity was 11.7 MW In 1996, 20 MW in 1997, 139 MW in 2002 and 415 MW in December 2003. If the market was growing at about 24% a year, the growth rate from 2002 2003 peaks at nearly 200%. This spectacular increase of wind capacity despite limited resource is due to a new favorable policy conditions which push conventional energy companies to get involved in wind development. There is an excellent complementarity between the use of wind power and hydropower plants because each of these technologies have peak outputs in different seasons, solving intermittency issues. (EWEA 2003)

¹ EUROREX, 1999

² Renewable Energy in Austria - MEA

Solar thermal

Solar thermal is the real Austrian success story. The solar thermal market in Austria grew considerably during the first half of the 1990s. From 1990 to 1996, the Austrian market increased seven fold. By the end of 2002, more than 150,000 Austrian households had solar domestic hot water systems. The area covered by installed solar glazed collectors reached 1.7 M (m²) in 2001 (compared to 0.6 M (m²) in 1991) approximately two-thirds for space and water heating and one third for swimming pool heating. The average installed solar collector for 1,000 habitants is 203 making Austria the second country in the EU. The annual heat output in 2001 was estimated at 583,743 MW/h. (ESTIF 2003)

Solar photovoltaic

Between 1996 and 2000, the market for solar photovoltaic energy grew in Austria at about 23% a year, which is higher than the average rate worldwide. About two-thirds of the installed PV capacity is connected to the electricity grid. The overall installed PV capacity reached 9 MW at the end of 2002. This represents a growth of 50% compared to the year 2001. Around 70% of the installed capacity are grid-connected systems (GCS), nearly 2 MW small autarkic systems (SAS) are installed with the end of 2002. Between 1995 and 2003 the average growth was about 30% per year. With an enormous increase of more than 50% in 2002 installed PV power capacity reached roughly 10 MW by the end of the year. Between 1995 and 2002, the mean growth of the total capacity was more than 30 % per year. Until the end of 1996, the off-grid sector dominated the Austrian PV market.

For new PV installations, the feed-in tariff stated in the Green Electricity Act (GEA, BGBl. I – Nr. 149/2002) is 0,6 EUR per kWh up to a capacity of 20 kW and 0,47 EUR per kWh for larger systems. The extra costs for the network operators will be compensated by additional supplements on the customer invoices. However, the limitation of 15 MW total installed capacities is stated in the law, up to which the high tariffs will be paid. To improve the situation caused by the 15 MW cap, some provinces have now reintroduced a direct subsidy system, based on grants; most of them financing about 50 % of the total installation cost. Hence again, the uniform PV supporting system is replaced by "regional puzzled" schemes. Since the revision of the Green Electricity Act is foreseen in 2005, it can be expected that the PV market will remain quite weak during 2004. (source Austria Photovoltaic technology status and prospects Hubert Fechner and Michael Heidenreich, Arsenal Research, on the IEA Photovoltaic Power Systems website, Annual Reports 2003)

RE Policy outlook

Energy security, energy efficiency and renewable energy promotion are the main pillars of the Austrian energy policy. Increased use of renewable energies is also the third measure listed as a response option in Austria's climate change policy. There is no general definition of Renewable Energy in Austria. The only legal definition of renewable energy can be found in the Federal electricity act (EIWOG), where some technologies are declared eco-electric plants among which wind, solar energy, geothermal, hydropower, biomass technologies. In this definition, only burn waste and sewage sludge are not considered renewable.

The objectives of the Austrian energy policy are the ones set out in the 1996 Energy Report:

- Security of energy supply.
- Cost-efficient energy supply.
- Environmental protection.
- Social acceptability of energy supply.

Renewable energy policy is implemented by both the Federal and the nine Bundesländer (Federal States) Governments. The Austrian government, both Federal and regional, have used a series of energy taxes and capital subsidies to promote the development of renewable energy technologies, particularly solar and biomass since the mid seventies and eighties. The major tax legislation is federal legislation but in the field of subsidies the provinces have more scope of action. At the federal level, the Ministry most concerned with renewable energy is the Ministry of Economic Affairs (MEA), although the Ministry of Agriculture and Forestry is involved in some biomass-related projects (as increased biomass use dovetails with some agricultural policy objectives) and the Ministry of Science and Research is involved in renewables-related R&D. The Federation mainly has the task to co-ordinate the policies in the field of energy. The legal power in the field of RES is mainly focused on the 9 "Bundesländer", the legal competence of the Federation is restricted to be the driving force for harmonising initiatives and policies.

At a regional level, 8 of the 9 "Bundesländer" have published provincial energy concepts or plans:

- Carinthian "Energy Concept 2001" (1991 - 2001)
- Lower Austrian Energy Concept (1997) – setting guidelines for the energy policy in Lower Austria
- Energy Concept Salzburg (1997 - 2011) – setting guidelines for the energy policy in Salzburg. One of the aims of this concept is to determine measures for the next 15 years which are relevant in the field of energy and of the environment.
- Styrian Energy Plan (1995 - 2005) – setting a framework for the Styrian energy policy, revealing the target to increase of the share of RES for the domestic energy supply to 34 %. In order to reach this target the establishment of biomass heating plants and the generation of CHP and process heat by biomass shall be promoted.
- Tyrolean Energy Concept (1993) – setting a framework for the Tyrolean energy policy, revealing the target to increase of the share of RES for the domestic energy supply (without quantification)

- Energy Concept Upper Austria (1993) – setting guidelines for the Upper Austrian energy policy, revealing quantified targets: share of RES of the energy supply for domestic purpose of at least 30 % and doubling the share of biogenous energy and increase of the share of solar energy (solar collectors) and ambient energy to 2 %)
- Energy Concept Vienna (3rd amendment, 1998 - 2005) – setting guidelines for the energy policy in Vienna
- Energy Concept Vorarlberg (1989 - 1998) – setting guidelines for the energy policy in Vorarlberg

Electricity

Targets

Targets for Renewable electricity have been defined in the latest national electricity law (Eiwog 2 – 2000) and in the Renewable Energy act (Ökostromgesetz 2002). According to these two legislations, 4% of the electricity to be fed into the distribution network should be produced by renewable energy sources except hydro. For hydro, there is an indicative target of 9% by 2007 (Ökostromgesetz 2002). The RES-E Directive sets the national indicative target for the share of gross electricity consumption to be met from renewable energy sources at 78,1% in 2010;

Table 6: Ökostromgesetz targets for 2003, 2005, and 2007

Targets	2003	2005	2007
% biomass, geothermal, solar, wind of electricity consumption	2	3	4
% hydro <10 MW of electricity consumption	8	9	9

Table 7: Renewable electricity targets for Austria in 2010

78.1%	RES-e directive	
62%	large scale hydroelectric plants(> 10 MW)	No support system
9%	small scale hydroelectric plants(< 10 MW)	FIT
4%	Wind, PV, biomass, Geothermal ³	FIT
2-3%	from other renewable sources	No support system

Source: e-control

Since 1997, incentives for renewable electricity generation have been provided by the Promotion Instrument for Electricity from Renewables. The Promotion Instrument for Electricity from Renewables (PIER) provided both a capital subsidy and a guaranteed tariff for renewable electricity fed into the grid, and R&D measures. The PIER was used to promote renewable electricity from biomass, wind and solar electricity. Projects are selected for subsidy via a public competitive tender procedure, and subsidies are awarded for each technology type on a lowest capital cost basis.

In 1998, the Electricity Act was adopted (Electricity Market and Organisation Law of August 1998 - Eiwog) to transpose the EU Electricity Directive, to introduce competition and to clarify the future structure and functioning of the market. Under the Electricity Act the compensation system in Austria for electricity produced from RES is based on feed-in tariffs. Feed-in tariffs are fixed by the federal provinces or the regional electricity utilities. All feed-in tariffs have seasonal (winter/summer) and time-of-day differentiations (day/night & weekend).

In July 2002 the Austrian Parliament adopted a new legislation to comply with the RES-E directive, the Ökostromgesetz/Green Electricity Act (Official Journal BGBl I 2002/244). This act implements a feed-in system for RES including small hydro (excluded so far). Up to then (in the Electricity Act Eiwog) there was a system of green certificates for small hydropower plants. As table 6 and 7 shows, the Green Electricity Act fixes minimum percentage targets for RES-electricity for the year 2008: 4% of “new” green electricity (without small hydro) and 9% electricity from small hydro.

These targets are in compliance with the 78.1% target of the RES-E directive for Austria.

A system of guarantees of origin was established by the Green Electricity Act. Grid operators are obliged to give an electronic guarantee of origin to the RES-producer. Since October 2001, utilities have had to disclose the production sources of the electricity they sell on energy bills. The Green Electricity Act also requires the disclosure of the overall portfolio. (percentage of the different production sources).

Regarding grid access, Austria has not taken the necessary measures to ensure that grid system operators guarantee the transmission and distribution of RES-E. No priority access to the grid has been given to RES-E either. RES producers have to bear the costs of all technical adaptations, such as grid connections and grid reinforcements. If the grid operator claims the grid is not strong enough, it is impossible connect to it. There are no clear and transparent rules for the procedure of grid connection, which is a serious problem for wind power operators. Most grids are not strong enough for the capacity of the planned wind turbines.

So far no legal framework has been put in force setting up objective, transparent and nondiscriminatory criteria relating to the sharing of costs of systems installations –such as grid connections and reinforcements– between all producers benefiting. Austria has alternatively not required grid system operators to set up and publish standard rules regarding such a sharing of costs either.

³ No detailed information on the contribution of the different sources

The favorable feed-in tariffs paid in some federal states and the new green-electricity law "Ökostromgesetz" regulating the feed-in tariffs for electricity from renewable energy sources on a national level already are already leading to an a significant increase of new PV installations and wind farms (+ 200% between 2003 and 2002)

Heating

Using renewables other than to produce electricity is also encouraged, both for heat production (via federal subsidies), and solar collectors and heat pumps (via provincial subsidies). The capital investment subsidies that were in place for district heating schemes via the *District Heating Promotion Act*, including those based on biomass, were stopped at the end of 1996. Promotion mechanisms on the regional level are in place partly.

Transport

The use of liquid fuels is regulated by (Kraftstoffverordnung, BGBl 1992/123). The quality requirements for rape oil methyl ester and fatty acid methylester are established in a pre-standard (ÖNORM Vornorm C1190 and C1191). In 1995 the Austrian Government adapted the taxation of mineral oils in Austria (Mineralölsteuergesetz 1995, BGBl 1995/630) to the Community law. Though, to support the production and the use of bio-diesel in Austria bio-diesel is subject to remarkable tax reductions. If bio-diesel is used in a pure form the exemption from the tax on oil is 100 %. If the content of biogenous fuels in a blend is up to 5 % the tax for the entire biogenous share is refunded. The production of bio-diesel in small scale plants from agricultural co-operatives is totally free of mineral oil tax, as far as the fuel is exclusively used in farms. Further tax relief exists for bio-ethanol blends.

Climate change

Austria' most important energy related environmental issue is its commitment to the Kyoto protocol. The federal parliament ratified the protocol in March 2002. Under the EU's burden-sharing system, Austria has a national target of reducing carbon dioxide emissions by 13 per cent by 2008-2012, compared with their 1990 levels. This commitment remains a major challenge considering that CO2 emissions increased 9% over the period 1990-2000. In 2002, CO2 emissions which make up over 80% of total GHG emissions, were approximately 4% above 1990 levels. Some predictions (EC trend to 2030) evaluate that by 2010, the CO2 emissions will be 10% above the 1990 levels.

The finalisation of a comprehensive climate change strategy "Klimastrategie" in 2002 is an important step forward. This strategy covers all relevant sectors. Adopted with the participation of the federal government and the Länder, this Klimastrategie addresses the emissions reduction in six categories. Flexible mechanisms have been included in the plan. To reduce the level of CO2 emissions, Austria should quickly implement the measures included in this Climate strategy plan.

Research and Development

They can be:

direct subsidies from the Federal Ministries (research contracts) or from the provinces;

- The fund for the promotion of scientific research (Fonds zur Förderung der Wissenschaftlichen Forschung - FWF);
- The research promotion fund of the industry (Forschungsförderungsfonds für die Gewerbliche Wirtschaft - FFF);
- the jubilee fund of the Austrian National Bank (Jubiläumfunds der Nationalbank);
- the innovation technology fund (Innovations-Technologie-Fonds - ITF); plus the subsidies by national or regional administrative bodies

PRODUCT	FLOW	TIME	1980	1985	1990	1995	1999
Million US\$ (2002 prices and exchange rates)	4.1 Solar Heating & Cooling		3.438	0.319	0.095	1.285	0.655
	4.2 Solar Photo-Electric		1.021	1.272	0.175	1.025	1.062
	4.3 Solar Thermal-Electric		1.083	0.282	0.134	0.067	0.092
	Total Solar		5.542	1.873	0.404	2.379	1.810
	5. Wind		0.136	0.115	0.018	0.456	0.331
	6. Biomass		4.854	2.475	1.464	4.531	6.612
	7. Geothermal		0.365		0.071	0.022	
	9.1 Large Hydro (>10 MW)					0.311	0.120

9.2 Small Hydro (<10 MW)				0.259	0.222
Total Hydro				0.570	0.342
TOTAL RENEWABLE ENERGY	10.897	4.463	1.957	7.959	9.095
TOTAL OTHER TECH./RESEARCH	3.795	6.826	0.666	1.638	2.945
TOTAL ENERGY R&D	43.358	44.073	11.841	24.519	26.041

Source IEA 2003: National Budget RD&D in

The public expenditure on energy research development and demonstration has increased from 10 million EURO in 1990 to 23,3 million EURO in 2000. The public expenditures dedicated to renewable energy RD&D has risen from 1,6 million EURO) to 6,5 million EURO during the same period. In 1990 16,5 percent of RD&D expenditure was dedicated to renewable energies, in 2000 the share was 28,0 percent with an all time high of 35,9 percent in 1998.

Approximately 30% of Austria's Federal energy R&D budget in 2000 was allocated specifically to renewable sources split half of it for biomass for biomass and 25% for solar, with the remainder spent on wind, geothermal and hydro.

3. RE highlights

Biomass district heating

Austria has a decentralised population structure and a densely wooded landscape, and has been using wood as an energy resource for centuries. Decentralised heat production from biomass is accepted and promoted by the local and regional authorities. The local council implements planning decisions at the local level. There can be initial opposition to district heating proposals. In some cases where this occurred, public authorities took the lead and established connections to public buildings to demonstrate the benefits. Austria has extensive forestry and other biomass resources that are used as energy resources. Between 1993 and 1998, it achieved significant increases in its level and rate of use of biomass for heat production in general and especially for district heating purposes. Austria's large biomass resources play an important role in increasing the use of renewable energy. The government and, in particular, the regions provide active political support for biomass energy.

Success factors:

- **Political: National and regional support to expand the use of biomass**
- **Fiscal: Energy taxes favour renewable energy schemes**

Austria introduced an energy tax on the use of gas (EUR 0.0435/m³ (cubic metre) + 20 % VAT) and electricity (EUR 0.003/kWh + 20 % VAT) in 1996. The tax applies to small-scale as well as industrial users. Part of the tax revenue is made available to the Länder and to the communities for the implementation of energy saving and environmental protection measures, including measures to promote renewable energy.

- **Financial: Public grants and subsidies for biomass installations**

Support is provided at both the national and regional level for biomass installations, particularly for district heating schemes. Eligible regions have also benefited from EU Structural Funding support targeted at renewable energy schemes including biomass.

The support includes:

- subsidies of 10–30 % of eligible costs through a national environmental support programme;
- regional support plans that provide subsidies of up to one third of the costs;
- local and regional support targeted towards private households to subsidise the cost of connection to heating networks;
- special support programmes by the farmers' association to encourage farmers to invest in biomass plants.

- **Administration: Long history of public support for and use of biomass as a fuel resource**

- **Technological development: Indigenous manufacturing expertise**

New technological developments for biomass production processes are supported both within Austrian universities and in association with industry. There is already a well-established local industry that developed to meet the demand for new biomass district heating plants, including boiler and pipework manufacture, and installation services.

- **Information, education and training: Long history of use of biomass as fuel, benefits to key local economic actors from biomass projects, promotion of benefits from biomass use by energy agencies**

Biomass use is very well established and accepted in Austria, both at the local level for small scale applications and at the industrial level, due to the country's extensive wood-based industries. At the larger-scale and industrial level, farmers are supportive of new biomass projects because of the additional income that will be generated. Wood users such as sawmills also benefit because they have an additional market for their wood wastes. These actors, in particular the farmers, have been key in increasing public acceptance of biomass projects. At the local level, most regions carry out active dissemination activities to promote the economic and environmental benefits from using biomass as a fuel by individuals or communities. These activities are usually coordinated through regional or local energy agencies, which place strong emphasis on the importance of institution building and on activities in the information, communications and training sectors. The overall result of these activities is that the general public is well informed about the benefits and use of renewables.

Regional Best Practice

The case of Upper Austria

A very pro-active regional government put into place a regional energy strategy in 1994. It continued in 2000 with a second phase called «Energy 21» which sets complementary objectives, consisting of 25 concrete measures following a time-table. Thanks to this programme, the share of renewable energy sources (RES) increased in Upper Austria from 25 % in 1993 to more than 30% of the current primary energy consumption.

Implementation:

The implementation of the action plan is done by the regional energy agency O.Ö. Energiesparverband, which is very close to the market actors. Besides the environmental benefits, the energy strategy also brings clear economic advantages for the region. Currently more than 10,000 jobs are secured by renewable energy sources. A network of companies working in the field of sustainable energy has been established in the region, where 133 partners are co-operating. These green business actors achieve a total turn-over of more than 235 million and employ around 2,000 people.

The approach taken in Upper Austria can serve as an example for other regions and countries in Europe that a strategic approach based on a strong political commitment and a clear action plan can lead to a significant change in energy production and consumption.

The main results are:

15,100 modern wood heating installations (852 MW)
 32 % of all Austrian wood chips installations
 200 biomass district heating plants
 4,500 wood pellets central heating installations
 27 % of all Austrian wood pellets installations
 12 large pellet producing companies
 15 companies producing biomass boilers & stoves
 650,000 m² solar thermal collectors (7/2003), 470 m²/1000 inhabitants
 600 PV plants (2,600 kWp)
 > 500 small hydro power plants (< 10 MW)
 17 wind power plants (7/2003), 14.4 MW
 > 30 biogas and > 30 sewage gas plants
 geothermal energy (50 MW), one plant for electricity generation

Success Factors:

Creating «demand» for sustainable energy products and services: energy information and awareness raising, energy advice (15,000 energy advice sessions annually), seminars, conferences...

Supply side: training & education, R&D programme, regional TPF-programme, quality control.

4. Websites

Name	Description	Website
Ministry for Economic Affairs	The ministry most concerned with renewable energy	http://www.bmwa.gv .
Ministry for Agriculture and Forestry	Involved in some biomass projects	http://www.lebensministerium.at/
E.V.A. - The Austrian Energy Agency (Energieverwertungsagentur)	Austrian national energy agency	www.eva.ac.at
Energy in Upper Austria	Upper Austria on the E.V.A website	http://www.esv.or.at/cinformation/energie_ooe/index_e.htm
Europa website	EU Commission website	http://europa.eu.int
European Commission – Directorate General for Transport and Energy		http://europa.eu.int/comm/energy/index_en.html
Managenergy	Information Services for Local and Regional Energy Actors	www.managenergy.net