

Successful introduction of small scale biomass in the region of Bavaria

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Summary

The extensive utilisation of biomass plays a leading role for the realisation of the political goal in Bavaria to expand the share of the renewable energy sources in medium terms up to 13% of the primary energy consumption. A professed target of the Bavarian Government is to increase the share of biomass, contributing to the energy generation from approx. 3% at present up to 5 % in the near future. The major success factors for the concentrated introduction and promotion of biomass in Bavaria are: regional government support through financial grants for biomass installations, beneficial legislative aspects like premium-set tariffs for biomass or standard specifications for wood fuel, strong R&D efforts and indigenous industry capabilities, information and education. This has resulted in the establishment of a strong indigenous capability that benefits from a vibrant domestic market.



End-user area	Target Audience	Technical
<input type="checkbox"/> New buildings	<input type="checkbox"/> Citizens	<input type="checkbox"/> Energy efficiency
<input type="checkbox"/> Refurbishment of buildings	<input type="checkbox"/> Households	<input type="checkbox"/> Heating
<input type="checkbox"/> Transport and mobility	<input type="checkbox"/> Property owners	<input type="checkbox"/> Cooling
<input type="checkbox"/> Financial instruments	<input checked="" type="checkbox"/> Schools and universities	<input type="checkbox"/> Appliances
<input type="checkbox"/> Industry	<input type="checkbox"/> Decision makers	<input type="checkbox"/> Lighting
<input checked="" type="checkbox"/> Legal initiatives (municipal regulations, directives, etc)	<input checked="" type="checkbox"/> Local and regional authorities	<input checked="" type="checkbox"/> CHP
<input type="checkbox"/> Planning issues	<input type="checkbox"/> Transport companies	<input type="checkbox"/> District Heating
<input type="checkbox"/> Sustainable communities	<input type="checkbox"/> Utilities	<input type="checkbox"/> Solar energy
<input type="checkbox"/> User behaviour	<input type="checkbox"/> ESCOs	<input checked="" type="checkbox"/> Biomass
<input checked="" type="checkbox"/> Education	<input type="checkbox"/> Architects and engineers	<input type="checkbox"/> Wind
<input type="checkbox"/> Other	<input type="checkbox"/> Financial institutions	<input type="checkbox"/> Geothermal
	<input type="checkbox"/> Other	<input type="checkbox"/> Hydro power
		<input type="checkbox"/> Other

Context

Germany has seen a steady increase in the development of wood-fuelled combined heat and power plants, especially in the more forested southern regions of the country such as Bavaria. Bavaria is the largest of the German Länder, with about 35% of its surface area forested, the highest density in Germany. Wood is traditionally used for heat and increasingly for power production.

Objectives

The extensive utilisation of biomass plays a leading role for the realisation of the political goal in Bavaria to expand the share of the renewable energy sources in medium terms up to 13% of the primary energy consumption. A professed target of the Bavarian Government is to increase the share of biomass, contributing to the energy generation from approx. 3% at present up to 5 % in the near future.

Process

Political: National and in particular regional government support towards increasing use of biomass

Bavaria's energy policy is closely linked with federal policies to support climate protection. Renewable energy plays an important part in this policy and therefore the government has created targets and support mechanisms designed to encourage the development of renewable energy. The Bavarian government aims to increase the share of renewable energy use to 13%, up from the present level of 9 % of gross inland energy consumption. Of this, the biomass contribution is expected to provide 5%.

Legislative: Premium-set tariffs combined with an obligation to purchase provide a stable market for renewable electricity producers

After the success of the Electricity Feed-In Law in increasing renewable electricity from wind, renewable energy promotion is now shifting towards the direct use of biomass and the use of biomass for power and for heat production. Through the Electricity Feed-In Law and its successor the Renewable-Energy-Law there is a guaranteed market and fixed price for the electricity produced from biomass. More recently, biomass power has been one of the main beneficiaries of the revised Feed-In Law, which was implemented in April 2000 and provides more economically attractive tariffs for biomass power.

Technological development: Strong indigenous industry capabilities in biomass

Since the 1970s, a considerable amount of R&D has been carried out into biomass harvesting, fuel processing and combustion equipment. R&D support has gone to technological developments in wood pelleting systems and new small-scale biomass gasification or CHP biomass utilisation systems. The use of alternative biomass fuels such as straw and other agricultural residues has also been encouraged. Bavaria does a great deal for the development and testing of new biomass technologies. But it is not only the state research facilities that are forging ahead with these developments: the separate branches of the administration are also playing a pioneering role in their testing and use. It is the aim of the Bavarian Government "to open doors" and to create new scope for innovative and entrepreneurial personalities. Today Bavaria is an attractive location for research in both Germany and Europe. In Bavaria the proportion of expenditure on research and development as part of the gross domestic product is around 2.9 % and therefore higher than in most other comparable regions. There is a requirement to guarantee good performance levels and expertise to obtain state investment subsidies; this ensures that the overall quality of installations is high.

Information, education, training: Promotion of opportunities from renewable energy use through specialist advice centres

Apart from R&D Bavaria is attempting to disseminate available knowledge about biomass throughout Bavaria to further the transfer of know-how and technology by informing the public, initiating special campaigns and preparing training courses for multipliers e.g.. Schools and other training centres are equipped with appropriate teaching materials. Cross-Border OPET Bavaria-Austria, C.A.R.M.E.N. - the Bavarian co-ordinating body for renewable raw materials, as well as universities and research institutes are co-operating with industry and stimulating the flow of know-how between science, industry and the public.

Financial resources and partners

The Free State of Bavaria supports the installation of biomass heating and combined heat and power plants since 1990. Support is granted in the form of direct investment subsidies. As a rule the support rate is 35-40 %, in exceptional cases up to 48 % of the total eligible investment costs. Above and beyond this, Bavaria attempts to support courageous investors and creative developers especially by means of financial aid. Between 1992 and 2001 alone, grants worth more than € 158 million were approved for projects devoted to the non-food use of biomass. 70% of these funds come from the budget of the Free State of Bavaria, 15% are from the Federal German budget and 15% from the budget of the European Union.

Results

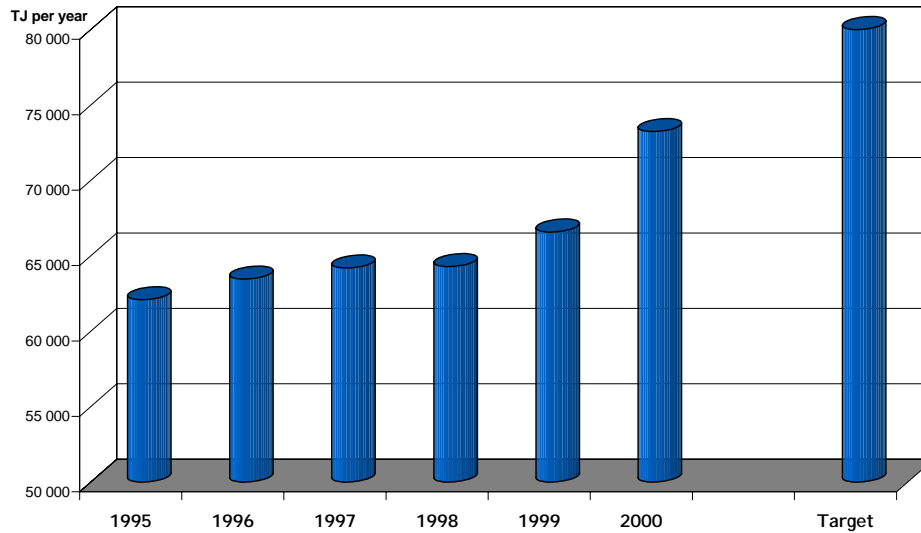
Thanks to the large-scale promotion of technology Bavaria has in recent years considerably improved the infrastructure for utilising biomass as an energy source for all product lines. Nowadays approx. 2.3 million tons of biomass are used for energy purposes in Bavaria which is equivalent to 3.3 % of the primary energy requirements. Today's infrastructure is made up as follows:

- 265 biomass heating and combined heat and power plants in operation (111 of which received financial support)
- 1.76 Mio. small combustion plants for wood and other types of biomass
- 1,650 agrarian biogas plants

Lessons learned and repeatability

The aim of the Bavarian Government is to press ahead with the use of biomass and to expand it into a mainstream technology. Technologies based on biomass and other renewable sources of energy offer excellent chances to maintain prosperity, to create new and secure jobs, to contribute to continuous growth and the preservation of a healthy environment. Surveys have shown, for example, that the rates of growth in leading-edge technologies, i.e. in all those fields with above-average expenditure on research and development are distinctly higher than growth rates in other branches of industry. Biotechnology and biomass technology are outstanding examples of a future growth market of this type.

Development of biomass utilisation in Bavaria



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