

100 COMMUNITIES - RES Partnership

LÜCHOW (DE)

The European Commission Campaign For Take-Off to promote the use of renewable energies has set itself the task of identifying "100 communities" with the aim of obtaining an energy supply using exclusively renewable energy sources, preferably combining several technologies. As one of the first regions in Europe, the Landkreis Lüchow-Dannenberg district authority signed the partnership agreement. In October 2000, the district received the Award 2000 for being the best rural region.

THE REGION

The Landkreis Lüchow-Dannenberg district has an area of 1,220 km² and is located on the eastern fringe of Lower Saxony (Niedersachsen), directly on the Elbe river, which formerly formed the boundary between west and east Germany.

51,000 people live here. This results in a low population density of 43 persons per km². The wonderful landscape with the Elbe valley floodplains and dense forests makes upon the visitor the impression of a romantic, unspoiled part of the world.

The key economic activities in the district are: agriculture and forestry, food processing, metal and plastics processing, crafts, trade, services and the Gorleben special facility for nuclear waste disposal.



CONTEXT

In late 1997, the Lüchow-Dannenberg district authority took a unanimous resolution in its district council to implement locally the goals of Agenda 21. A working group on climate protection and energy elaborated a proposal seeking to meet the entire energy demand of the district from renewable sources. At first this proposal appeared utopian to many but in the meantime it has become clear that, with its large agricultural and forestry areas, the region has an excellent potential to achieve this goal.

The project builds on a win-win approach: In addition to reducing environmental impacts, it seeks to increase the value added in the region. The money expended externally for energy supply could remain in the district in the future. This would not only give farmers and foresters a second source of income, but would also profit local crafts enterprises and engineering companies. This is a highly attractive perspective for a region plagued permanently with above-average unemployment rates due to its peripheral location. Building upon contacts to universities and supra-regional research institutes, sustainable jobs could be created in the energy planning and management spheres. Establishing innovative know-how and retaining the associated human resources in the region is enormously important particularly for rural areas.

Due to the planned final repository for nuclear wastes, the local population is sensitized to energy issues. Training in the various renewable energy technologies and permanent public awareness-raising activities will stimulate people to take part in the "energy turnaround".

EXPERIENCE OF LÜCHOW-DANNENBERG

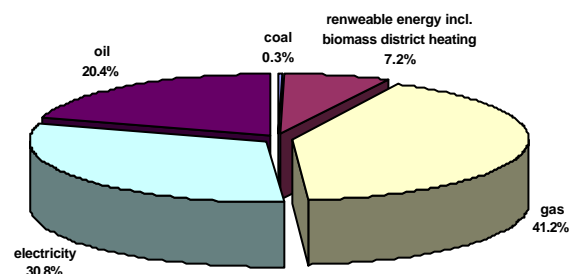
The potential for an energy turnaround exists

Since April 2001, the various potentials are being identified in detail with support from the Altener Programme of the European Union. A conversion scenario is being drafted for the year 2015.

The district authority of Lüchow-Dannenberg coordinates these activities. Its close contacts to municipal authorities and to the public assures good prospects for implementation. Through cooperation with the regional energy supplier as well as with various institutions and companies in the renewable energy field, know-how and experience is concentrated locally in order to address the complex issues.

Present energy sources

Percentage of energy sources Region of Lüchow-Dannenberg



100-percent renewable energy supply

The intensified use of renewables is taking place in parallel with an increase in energy efficiency. Improved thermal insulation and electric appliances with enhanced efficiency more than compensate for the growth in the number of consumers. The goal is to reduce the present energy consumption level by 20% by 2015. As a marketing measure for this, an energy conservation competition is held; at a public event, stock is taken once a year and prizes are awarded to participants.

According to an appraisal of potentials, in the electricity sector wind and biogas alone can in future meet more than 90% of demand. In Lüchow-Dannenberg 8 wind turbines with a total rated capacity of 4.8 MW are currently in operation. They produce some 7 million kilowatt-hours electricity annually. According to the present state of planning, on the designated priority areas the erection of a further 85 wind turbines is possible. Taken together, these could meet 50% of today's electricity demand. Thanks to the German Renewable Energy Act (EEG) with its fixed feed-in rates, profitable operation is safeguarded for the investors.

Biogas, an opportunity for farming communities – From farmer to energy producer

The production and sale of heat and power from biomass can safeguard and enhance farmers' incomes over the long term. Biogas technology provides an alternative to traditional agricultural production and will give new impulses for development in the district.

The potential analysis identified the substrates suitable for fermentation in biogas installations. A total installable capacity of 20 MW was identified. This would suffice to meet 42% of the electricity requirement of the district.

In addition to on-site biogas facilities at farms, centralized facilities are also suitable which could co-ferment substrates from farms at suitable locations. Near the town of Lüchow, directly next to the starch factory, a biogas installation is being built which shall produce electricity for 5,000 households. This utilizes the waste products of the starch factory (potato juice and pulp), as well as maize and cattle and pig slurry which is delivered by the 75 farmers who hold shares in the installation.



The heat produced here shall be utilized fully within the facility to reduce by vaporization the fermentation substrate. This substrate is returned to the farmers for use as fertilizer. As the reduction reduces the volume greatly, this can prevent truck traffic.

Wood as a fuel

Wood is a fuel which has a potential to increase levels of regional value-added greatly and to create important jobs in the structurally disadvantaged region. The forest timber potential in Lüchow-Dannenberg suffices to produce 270,000 MWh heat and 30,000 MWh power annually. Even today, 14% of the building stock is heated entirely with wood.

At commercial sites with large heat requirements, too, the use of wood is expedient. An analysis has been conducted for a spice drying plant, which, within the context of an expansion of the company facilities, could substitute its present energy source – natural gas – by wood. The existing gas boiler could continue to be used to cover peak load.

The transport problem

It is in the transport sector that switching from fossil fuels to renewable energy sources is the most difficult. The first planned larger rape oil mill in Lüchow will mill 1 million litres of rape oil, enough to meet the requirement of about 1,000 diesel vehicles. However, in the district a total of 35,000 vehicles are registered.

To achieve sustainable mobility it is essential to build above all upon traffic prevention. For the journeys that remain, public transport services should be used as much as possible, and cycling for short trips. In order to provide sufficient services to the dispersed communities, the deployment of a dial-a-bus system is envisaged. The resumption of rail services on tracks that are currently out of service is also being considered. Expansion of the cycle track network – both for tourists and for the local population – shall be continued. For the remaining journeys, emissions can be reduced by means of more efficient vehicles and drive systems using renewables.

EVALUATION AND OUTLOOK



In principle, the potential is available in all areas to build a 100-percent renewable energy supply system in the Lüchow-Dannenberg district. This goal can be achieved most readily under present framework conditions in the electricity sector. Continuous expansion of wind and biogas installations is to be expected; these alone have the potential to meet more than 90% of the electricity requirement of the district. In the heat sector, it is a drawback that there are almost no local or district heat networks in the district. There is also a lack of large consumers which could make it cost-effective to tap the geothermal potential. The logistics for wood supply (chips or pellets) from the region are currently being established. Education and awareness-raising activities need to be continued steadily in order to remove still prevailing reservations among the public concerning the reliability of renewable energy supply; the RES Partnership Award has provided a fresh impetus in this respect.

The poor budgetary situation of public authorities is an impediment. In order to implement efficiency measures in public buildings, the district authority has therefore concluded a contracting arrangement.

FURTHER INFORMATION

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