

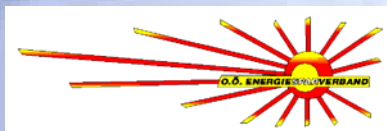
Promotional
Report

**CROSS BORDER OPET
BAVARIA-AUSTRIA**

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Energy, Environment,
Sustainable development



ZREU

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Introduction

The promotion of the wider use of clean and efficient energy technologies is the primary role of the OPET Network. Within that scope four partners coming from different regions in Bavaria/Germany and Austria have created the Cross-Border OPET Bavaria-Austria (CBO) to add value to individual initiatives, notably by identifying opportunities for joint actions, by creating information flows for the exchange of experience and know-how and by highlighting transnational technology transfer in the sectors Renewable Energy Sources (RES), Rational Use of Energy (RUE) and Fossil Fuels.

Successful initiatives were built around the following main pillars:

- Helping Austrian and Bavarian industry and local authorities to expand their international co-operation and market activities by support in dissemination and information;
- RES and Kyoto-mechanism applications in industry and local authorities;
- Promotion of energy technologies - demonstration and RTD;
- International networking and co-operation.

Within the wider context of EU energy and climate policy CBO aims to re-inforce the role that clean and efficient energy technologies will play in combating global warming and to promote European energy technologies not only within the EU member states but more widely in global markets, so contributing to the export success of EU energy companies.

The realised CBO activities supported strongly the quantitative and qualitative objectives of the European White Paper on Renewable Energies, the Strategy Paper on Energy Efficiency and the Green Paper towards a European Strategy for the Security of Energy Supply. Moreover the competitiveness of the European industry as a whole was improved and the capability of small and medium sized companies (SMEs) to create jobs and to expand their market activities from a more regional oriented market towards a EU- wide or even worldwide market presence was supported. The awareness campaigns about completed and ongoing RTD and demonstration activities carried out in the frame of the project gave a comprehensive overview on actual RTD and demonstration activities aiming to avoid overlaps of regional, national and EU research activities and to enforce the collaboration of industrial actors and end users in the exploitation of RTD results.

Due to the high expertise and due to the high sector specific and thematic know-how of the CBO experts, the dissemination, replication and multiplier activities undertaken by CBO were elaborated with a strongly result-oriented, practical and applicable approach which represents a high added value to the conventional RTD and demonstration work funded by the European Commission and fits exactly to the needs and objectives of the energy related and socio-economic policies of the European Commission's programmes. In this way Cross-Border OPET Bavaria-Austria strongly contributed to fulfil the environmental obligations the European Commission committed as result of the Kyoto Conference.

Success stories

International seminar « Innovative Solar Technologies » Technological trends on the solar collector market and the future of PV

The CBO partners O.Ö. Energiesparverband in close co-operation with ZREU organised a seminar on innovative solar technologies on 7 March 2002 in Wels, Austria which presented an overview of recent trends, technical innovations in the solar sector and outstanding solar projects worldwide. Invited speakers from different countries highlighted technological developments on the solar collector market, gave an outlook to "the future of PV" as well as presented successful solar campaigns and innovative international solar projects to the 200 participants. The seminar took place in the framework of the international conference "World Sustainable Energy Day" which attracted 550 delegates from 60 countries.



Periodical information newsletter "Energie-News" **Information dissemination of energy related issues to nearly 1,000 key actors**

The CBO-partners ZREU and O.Ö. Energiesparverband elaborated, edited and distributed a periodical newsletter announcing energy related events (incl. OPET events), presenting latest news from the energy sector, new energy related developments in the regional, national and European context, innovative technologies as well as results of successfully implemented energy projects. The newsletter was distributed via e-mail and fax to nearly 1,000 target people from the energy related industry (mainly SMEs), local authorities and relevant institutions in Bavaria and Austria. In addition the latest versions of "Energie News" were presented at the Homepages of ZREU (www.zreu.de) and O.Ö. Energiesparverband (www.esv.or.at).

Demonstration of innovative energy technologies in theory and in full scale **OPET activities in the World Sustainable Energy Day and the accompanying trade fair**

The "Energiesparmesse" (Energy saving trade fair) is one of the largest exhibitions and trade fairs on energy efficiency and renewable energy sources in the world with more than 200,000 visitors and 900 exhibitors. The CBO partners O.Ö. Energiesparverband and ZREU offered guided tours within the trade fair "Energiesparmesse" (in Wels, Austria on 07 and 09 March 2002), in English, German, French, Italian, Czech/Slovak and Spanish language to interested regional and foreign visitors. In total 115 people joined the guided tours where they had the opportunity to visit innovative energy technologies and discuss with producers & exhibitors bridging languages barriers.

During the conference "World sustainable energy day" and at the stand of O.Ö. Energiesparverband results of successful R&D projects and OPET actions have been presented and disseminated and interested people have been advised in OPET activities and tasks. O.Ö. Energiesparverband organised a 300 m² large exhibition stand, where 100 energy experts offered targeted energy advice to the visitors. A special part of the stand was dedicated to informing about the OPET network, R&D projects and results of innovative energy technology projects. Publications of the OPET network (Energy Technology Handbook, OPET folders and other promotional material) were presented to a large audience of about 200,000

visitors. Poster presentations featured innovative energy technologies and activities carried out in the frame of the OPET.



OPET biogas tour

Display of successfully demonstrated biogas technologies in Bavaria

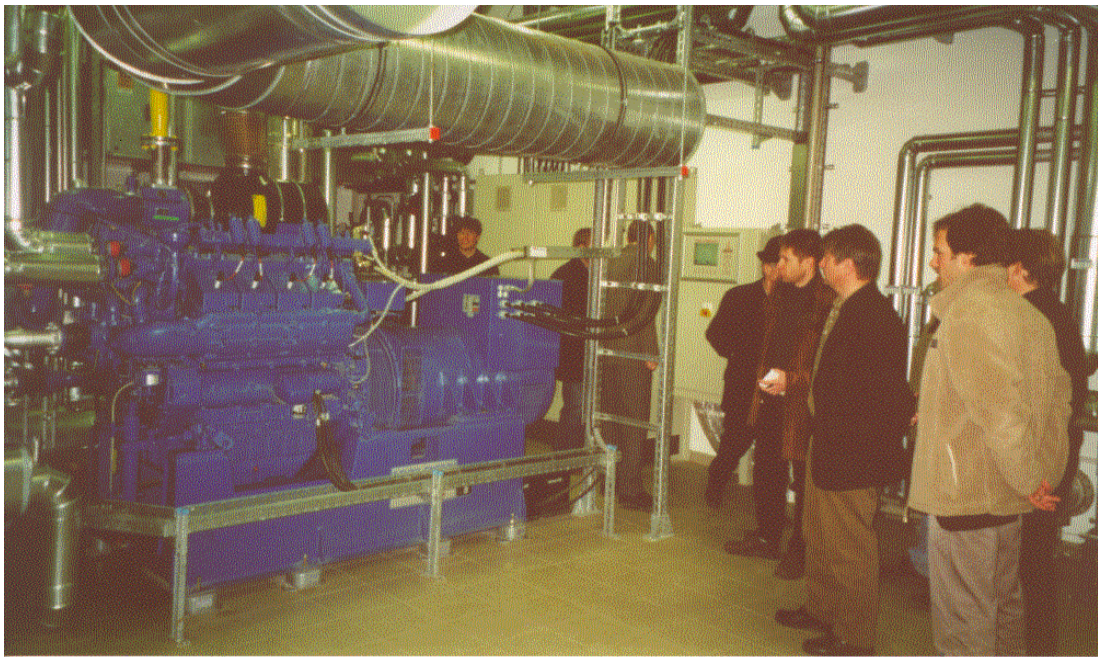
ZREU in co-operation with the local sub-contractor Awite Bioenergie prepared and organised a study tour to various biogas application schemes in Bavaria in order to acquaint selected target groups (energy advisors, energy managers in SMEs, service providers, farmers) with concrete RES technologies and their application possibilities. The one-day-tour which took place on 15 February 2002 attracted 14 participants and lead to three different locations with successfully implemented biogas applications in Bavaria: the dry-fermentation plant of Bioferm GmbH, an agricultural biogas plant as well as a thermophilic biogas plant for biowastes and biomass in the municipality of Hiltpoltstein.

The dry-fermentation plant is a new technology that allows the production of biogas from dry biowaste according to the technology supplier with dry matters of up to 60%. The visited plant is unique in Europe. The material – with an actual dry matter of 30-35%- is brought into airtight concrete fermenter boxes (1,000 –1,200 t/a). Filling and emptying can take place with existing farm machinery. The material is inoculated with fermentation liquid and fermented in a batch process. During the process the fermentation liquid is recirculating. Due to the batch process the sulphur content of the biogas is very low, decreasing to nearly 10 ppm.



The visited agricultural biogas plant (92 kW_e) comprises two fermenters, a horizontal and a vertical fermenter, and is fed with manure, food left-overs and grass (silage). In an innovative external process step the biogas is microbiological desulphurised. The biogas cogeneration plant is providing the heat needed for the desulphuration unit. A third technology presented was a thermophilic digestion plant for biowastes and biomass. The input material is digested in a 750 m³ fermenter. Through steam injection a temperature of 55°C is provided. The yield amounts to 4,000-4,500 m³ biogas/day.

All site visits were accompanied by technical staff from the premises. Therefore participants had the possibility to ask detailed questions. Besides the presentation of the realised full scale projects corresponding background information about the different biochemical processes was given and the possibilities for implementation of new and innovative biogas technologies were highlighted during the various presentations.



Training on large solar thermal installations

Series of seminars organised by Cross-Border OPET Bavaria-Austria

O.Ö. Energiesparverband developed and implemented training seminars in order to trigger large scale solar thermal installations and to overcome lack of information on concrete application possibilities and funding options in this RES sector. The one day training courses entitled "Thermische Solaranlagen im

Mehrfamilienwohnbau“ were focused on planning and installation of solar thermal collectors mainly in apartment blocks. Planning details starting from a call for tender up to operation schemes for large scale solar installations were discussed within the training courses. Three seminars were held on 30 November 01, 14 December 01 and 18 January 02 in Linz, Upper Austria attracting more than 70 participants.

Flexible Instruments in Climate Policy

Information/Dissemination on green power marketing and Kyoto mechanism applications through a workshop

Green power marketing instruments and flexible Kyoto mechanism applications gain more and more importance in the new liberalised energy markets. To overcome the barriers related to a lack of information on concrete application possibilities and marketing options the CBO partners Kommunalkredit Austria AG (KK) in close co-operation with ZREU prepared and organised a workshop on green power marketing instruments and flexible Kyoto mechanism applications in Vienna on 25 April 2002.

The action was mainly addressed towards green power producers, energy advisors, SME representatives as well as decision makers within utilities and local authorities and attracted 55 participants. The main aim was to line out the actual framework for JI/CDM projects as well as the possibilities and barriers using the flexible instruments within the Kyoto-protocol. The list of speakers comprises high level national and international experts from the European Commission, from the Austrian and Czech Environmental Ministry as well as from the industry and consultancy sector in Germany and Austria. The results of the Workshop on “Flexible instruments in climate policy” were additionally presented in the KK-publication “Ökoprojekt”, a journal on environmental issues with an edition of 7,500 copies distributed to local and regional key actors in the environmental sector.

Main conclusions/points of discussion:

- The information level on flexible instruments within business companies is very different. Only few enterprises – mainly power producers – are well informed about the instruments and their related benefits. This group expects great chances for the future in new foreign markets. But the great majority knows little about the flexible instruments and their possibilities and is sceptical about the economic affects.

- One major point of discussion concerning the draft of the EC-directive on emission trading and its implementation in the EU member states was the allocation of the emission rights (e.g. grandfathering,...) and the advantages and disadvantages of the different methods.
- Another main point was the question, if it is possible to bring in emission reduction units, which were achieved from JI – projects, in the emission trading system. The information provided was, that this possibility is not designated within the Kyoto –Protocol and its amendments. Nevertheless this was identified to be one of the major demands of the industry.
- During the seminar experiences on identifying suitable JI-projects were discussed. The conclusion was, that there are still many uncertainties based on a considerable lack of knowledge. A great difficulty was seen in the aspect, that possible project developers often do not know, who is the right contact authority for provision of knowledge in a host country or there are parallel structures often changing as a result of political changes. Especially for this assistance is needed.

Identified demands/necessary steps for a successful implementation of JI-/CDM-projects:

- awareness raising on the main differences between conventional project cycles and JI-project cycles;
- clear cost –benefit analysis of projects;
- definition of the additional transaction costs;
- sufficient and reliable assistance for project developers (to be considered within the planned Austrian JI-/CDM-programme);
- definition of clear framework conditions for the realisation of JI-/CDM-projects;
- “demystification” of flexible instruments: a bad planned project will not become positive through defining it as JI-project.

Identifying emerging markets in the biomass and solar sector in the Mediterranean region

Co-operation tour of Austrian/Bavarian experts to Catalonia

Spain, Germany and Austria have quite different approaches to RES market development and they therefore rely on varying experiences in this field. Whereas in Germany and Austria well developed markets for biomass and solar exist, the market in Spain is just emerging. The overall aim of the study tour was to assess market opportunities on the spot and thereby help to clarify which products, services and future co-operations are best to strive for future market penetration and for fostering R&D efforts. Moreover the visit tour of German and Austrian biomass and solar experts from RTD and SMEs producing and developing biomass, PV and solar thermal technologies was expected to establish new co-operation options or further improve existing co-operation liaisons in order to discover new markets in a Southern European region with a potential for large scale implementation of solar or biomass technologies to strengthen their status and position in the world market.

The CBO partners O.Ö. Energiesparverband and ZREU organised a 4 days co-operation tour (incl. technical seminar) of Austrian and German biomass and solar experts and technology producers to Catalonia/Spain. The action was the direct follow up of a successful technical visit of German/Austrian biomass experts to Finland in Autumn 2000. In order to learn from the different history of biomass and solar utilisation and in order to create concrete co-operation schemes to enable a further market penetration of best practice RES technologies (to support SMEs in the RES sector to expand their business activities from the regional markets towards other European countries) a series of successful implemented biomass, solar (and wind) utilisation schemes in Catalonia were visited.

The action was carried out in November 2001 (15th –18th) as a joint project with the OPET CRONOS (ICAEN)/Spain. 12 participants joined the study tour including representatives of 6 Austrian companies in the solar and biomass field. During the study tour visits to Spanish solar energy installations and bioclimatic architecture in Castelldefels as well as a visit to the district heating biomass plant of Molins de Rei, to the wind park "Colledetes" and to the "Caves Codorniu/Freixenet" were organised. Additionally a seminar, held and organised by ICAEN, gave an overview of the Spanish market for solar thermal and biomass (including present market situation, expected trends, technical and legal requirements for installations) and well targeted information on the domestic

housing sector (including building/retrofitting rate, split single family/multifamily houses, heating/hot water demand, present heating and hot water systems, distribution systems). Austrian and Catalonien companies were presented and the opportunity to meet during lunch with Catalonien Entrepreneurs was very much appreciated.

The study tour provided a platform for an intensive and fruitful exchange of know-how and experiences between Austrian/Bavarian and Catalonien entrepreneurs. Taking into account that no funding for travel/accomodation costs was provided to the participants the action proves the high interest of the private industry to expand their activities into this new promising market. The accompanying seminar with detailed presentation of the Spanish market (especially biomass, solar and domestic housing sector) together with the information exchange between the entrepreneurs themselves provided the basis for future co-operation activities between the different market actors. As a first direct outcome of the study tour an Upper Austrian company has already started export activities and found a Spanish co-operation partner in the concerned region. Negotiations for several additional export co-operation activities are currently under preparation.

Rural electrification in third countries and emerging economies

International PV seminar

Renewable energy options are particularly attractive for decentralised /distributed power in rural areas. Especially solar PV can contribute to the social and economic development of rural areas, where over 30% of the world's population - 2 billion people or 400 million households - lives without the benefits of electricity from the utility grid system. Within its Campaign for Take-Off the Commission highlighted PV as one of the priority technologies with strong export potential as PV represents the least-cost option for generating electricity for small-scale, grid independent applications like solar home systems, water pumping and telecommunications.

Highlighting the status and availability of photovoltaic technology in developing countries and looking at the prospects for using this technology in the light of current energy use and costs of other energy sources a one-day forum on "PV IN DEVELOPING COUNTRIES AND EMERGING ECONOMIES" (25 October 2001) was organised by CBO and its partners. The activity, which is the successor of a successful previous OPET action on rural

electrification, promoted European PV technologies appropriate for application in third countries in close co-operation with the OPET associates in Asean, Andean, African, CIS, Balkan and Caucasus region.

The forum was held on the occasion of the 17th EUROPEAN PHOTOVOLTAIC SOLAR ENERGY CONFERENCE AND EXHIBITION (22-26 October 2001) supported by the European Commission, the Bavarian Ministry for Economic Affairs, Transport and Technology, the City of Munich, and the European Photovoltaic Industry Association at the International Congress Centre in Munich. With more than 1,000 participants and further 400 delegates within the 6,000 m² covering exhibition, the event was the largest conference and exhibition on photovoltaic solar energy in Europe. This way, the forum took a profit from the attendance of European experts as well as the numerous representatives from third countries.

Key issues addressed within the forum were concepts for rural electrification with PV, (micro-) financing for PV, international initiatives for electrification measures and the role of energy agencies for the promotion of PV in developing countries and emerging economies.

The forum attracted more than 65 energy experts, project developers, government officials and representatives of energy or development related agencies from the EU as well as from developing countries and emerging economies. The forum provided the necessary background information and highlighted the questions raised whenever PV applications are being considered in the developing world. It served to identify and discuss the real needs in third countries in this field as well as introduced solutions provided by European companies, especially SMEs, in this field.



The OPET partners participating in the action sent delegates to the forum and presented the status of rural electrification in their countries as well as highlighted following enabling mechanisms required to facilitate the expansion of the rural electrification market:

- New financial resources and innovative fund flow mechanisms
- Link village electrification to income generation
- Remove entry barriers for private sector
- Encourage decentralized generation using clean, efficient and renewable energy technologies
- Adopt strict monitoring through metering
- Address energy requirements; not electricity requirements

As a result of the above presentations, following opportunities were identified and discussed where co-operation projects can be developed:

- Demonstration of successful distributed generation and alternate service/delivery models
- Investment in initiatives, linking economic activities with provision of electricity
- Partnerships in capacity enhancement at all levels to mainstream renewables into restructured electricity sector

Financing Sustainable Energy Investment

Creating a win-win situation for investors, owners and the general public

Innovative financing schemes can make sustainable energy investment become a win-win situation for the investors, the owners and the general public. Overcoming the lack of information about methods of financing for renewable energy installations O.Ö. Energiesparverband in close co-operation with the CBO partners ZREU, LEV, KK and OPET Sweden organised a seminar on financing sustainable energy installations on 8 March 2002 in Wels (AT) in order to support market penetration of renewable energy installation and thereby contributing to an improved and common market presence and competitiveness of European renewable energy technology producers. The seminar, held in the framework of the international conference WORLD SUSTAINABLE ENERGY DAY 2002 (6-8 March 2002), was attended by 150 participants; many of them also took the opportunity to join a guided tour through the energy saving trade fair offered by CBO. The seminar introduced how to calculate profitability and how to mobilize investment in sustainable energy and outlined successful financing schemes for RES and RUE projects worldwide, e.g. third party financing ("Retrofitting public building without public investment") and seed financing initiatives ("UNF ties profitability to sustainability").



Biomass and Solid waste tour visit of Chinese expert delegation in Bavaria/Germany

The potential for the utilisation and exploitation of solid waste and biomass in China is very large. Up to now, the ratio of biomass energy is less than 2% in the total energy consumption in China though the resource of biomass is quite abundant. Since lacking of funds and suitable technologies, the resource of biomass is still not explored rationally and effectively. According to a plan of the Chinese Ministry of Science and Technology, biomass should be increased to cover 30% of the total energy demand in China. To realise this ambitious aim, a series of policies mutually is worked out providing a chance for both enterprises and research entities in China or abroad to explore the biomass market in China.

In order to make Chinese experts informed of the EU latest advanced energy technologies, thus helping China to find better solutions to make effective use of biomass and solid waste as well as helping EU entrepreneurs to recognize the Chinese market of biomass and solid waste utilisation a Chinese expert delegation of government officials and researchers was hosted by the CBO partner ZREU in Bavaria/Germany. According to the specific interests of the Asian guests ZREU arranged and guided a 2 days study tour (incl. seminar) to modern waste incineration and innovative medium and large scale biomass plants in the region of Bavaria.



In the frame of the tour a dedicated seminar was held at the Bavarian co-ordinating office for renewable raw materials (C.A.R.M.E.N.) which presented an overview of the markets, technologies, support policies, initiatives and financing mechanisms to promote biomass in Bavaria serving as an example for increased biomass utilisation in China.



Through the study tour the contacts and exchanges between Chinese and Bavarian/German experts in the fields of biomass conversion technologies and waste disposal & utilisation were established and enhanced. As a follow up both sides discussed further technological co-operation possibilities, potential of fund co-operation and technology transfer in the future.

Small scale biomass and solar thermal utilisation chains Networking Bavarian/Austrian and Wales and Irish wood energy and solar thermal market actors

The best practices in small scale solar thermal technologies and biomass pellet manufacture, procurement and combustion techniques in Austria/Bavaria are of strategic importance to the development of the biomass and solar thermal industries in Wales and Ireland.

To assist Wales and Ireland develop regional strategies appropriate to their regions and to support technology transfer among the wood energy and solar thermal market actors in Wales/Ireland and in Austria/Bavaria the CBO partners ZREU and O.Ö. Energiesparverband organised and guided a 4-days study tour on 05-08 March 2002 to present Bavarian/Austrian renewable energy technologies and sites to a delegation of energy experts from Wales/Ireland. The 4-days tour presented a comprehensive overview of successfully implemented technologies and schemes of small scale biomass and solar utilisation in Bavaria and Austria in order to learn from the different history of RE utilisation in these regions and in order to further improve the developed co-operation liaisons to strengthen the status and position of European biomass technologies in the world market. The delegation was also enabled to attend the World Sustainable Energy Day and the energy saving

trade fair in Wels, Austria. The study tour already resulted in detailed plans for the first biomass plant in Wales ("the Aberystwyth plant").





Contact:

Klaus Grepmeier
Co-ordinator of Cross Border OPET Bavaria-
Austria

c/o. ZREU Ltd.
Wieshuberstraße 3
D-93059 Regensburg
Phone: +49 (0)941 464 19-15
Fax: +49 (0)941 464 19-10
E-mail: grepmeier@zreu.de