

The Sustainable Buildings Programme in Upper Austria

Christiane Egger, O.Ö. Energiesparverband
Christine Öhlinger, O.Ö. Energiesparverband

1. SYNOPSIS

The Sustainable Buildings Programme for new and retrofitted single-family houses in Upper Austria combines financial incentives with an information and motivation element.

2. INTRODUCTION

In the region of Upper Austria, a comprehensive building programme has cut energy consumption in 95% of all new single-family houses by more than 30% since 1993. This was achieved through an innovative programme, which combines a financial soft loan with an information element (energy advice session). This programme is operated by O.Ö. Energiesparverband, the regional energy agency.

3. PROGRAMME ELEMENTS

In Austria, public support is provided for the construction of new housing and for retrofitting older dwellings, usually in the form of soft loans (called "Wohnbauförderung") for a large percentage of all buildings. The amount of this soft loan varies from region to region, in the region of Upper Austria it is between 40,000 and 70,000 _ for a single family house.

Step 1: The sustainable buildings programme for new buildings ("energy efficient housing")

In 1993, the Upper Austrian Energy Plan defined concrete goals to reduce fossil fuel consumption by increasing both energy efficiency and the use of renewable energy sources. The underlying motivation for setting-up such an energy plan was on the one hand environmental concerns, especially about climate change, and on the other hand the economic opportunities such an energy plan could offer in terms of employment and innovation. This energy plan started the sustainable buildings programme for new single/double family houses, which included for the first time "energy efficiency criteria".

The criteria to be met are:

- An overall energy index for the whole building (at the moment: 65 kWh/m_ "useful heating factor", this factor was already decreased twice: January 1993-July 1995: 75 kWh/m_, August 1995 - December 1996: 70 kWh/m_). This energy index is reached mainly by additional insulation and smart windows.
- Participation in an obligatory, individual energy advice session; each future home owner spends one hour with a trained energy advisor discussing his/her individual house and the possibilities to save energy in addition to the a.m. requirements.
- For every house owner an "Energieausweis" (energy label) is issued. The energy label for buildings is using the same lay-out as the one for household appliances.

If the criteria are met, the house owner receives an additional loan of about 3,500 _.

Parallel programmes for energy efficiency criteria and building labels connected to financial support exist for multi-family housing.

Step 2: Sustainable buildings programme for low energy houses

Due to the success of this programme, it was extended to "low energy buildings" in 1999. The same procedure (energy labelling, energy advice session) is applied but the amount of money granted is increased to 7,200 _ if the energy co-efficient is below 50 kWh/m_a.

Sustainable buildings programme for retrofitting of single-family houses

Based on the programme for new buildings, in 1998 the region of Upper Austria introduced "energy efficiency criteria" into the programme for retrofitting single/double family houses. In order to be eligible for this programme, a number of criteria have to be met, among others the following:

- the building permit has to be older than 25 years.
- the annual income of the homeowner has to be under a certain (quite high) level, more than 90 % of all homeowners are below this threshold.
- an overall energy index (or co-efficient) for the building shell of 65 kWh/m_, which is calculated based on the transmission losses through external surfaces (walls and roofs), solar gains, internal thermal gains, climate factors, ventilation losses and the heated surface of the buildings.
- participation in an obligatory, individual energy advice session (normally 1.5 hrs), usually held on-spot in the relevant house.

If the energy criteria are met, a support payment is given, both for re-paying the loan and for the interest (35 % of the annual annuity instead of 25% if the energy criteria is not met). For a 38,000 _ loan (based on the 1998 interest rate and a 15 year period for repaying the loan), the capitalised support payment is 5,300 _. That means, over a period of 15 years the homeowner has to pay back less than 38,000 _.

What is special about this programme is, that the energy advice session takes place at the respective building site, which ensures that the advice service is well directed towards the needs of the building owners.

Energy advice session

Both programmes, for new buildings and for retrofitting, combine the financial incentive with a strong informational aspect. In addition to this housing programme, energy advice services are offered to private households that are on the point of making a decision about an investment, e.g. installation of a new heating system, insulation or electric household appliances. Annually more than 10,000 energy audits for private households are conducted.

Supplementary to energy advice for households and building owners, other consumer groups have the opportunity to get a free energy advice session once a year as well.

4. RESULTS

The sustainable buildings programme had the following results between 1993 and 2000:

Number of single/double houses:	25,000 houses
Influenced building space:	4,412,500 m_
Energy savings:	119 million kWh/year
CO ₂ reduction:	24 million kg/year
Total programme expenditure:	104 M_

The support programme covers all additional costs home owners need to fulfil the energy requirements. The costs of saved energy amount to 1.82 c_/kWh (least cost planning). The total programme expenditure of 104M_ is to 100% invested in the region.

The main monitoring mechanisms for this programme are on-site controls by the relevant government offices. Spot checks ensure that the data given by applying for the financial support are correct, e.g. the insulation thickness is the same as stated by the house owner. In addition to that, the energy label issued encourages monitoring of the own energy consumption. Free-ridership is low because people normally only fulfil the requirement stated in the respective law or regulation.

Additionally the information aspect led to numerous supplementary investments in energy efficiency (e.g. household appliances) and renewable energy sources (e.g. heating system, hot water supply). Among other, the following installations in Upper Austria were triggered by this and other support programmes:

- 500,000 m² thermal solar collectors,
- 400 grid-connected PV-installations,
- 13,400 modern wood heating installations (including 29% of all wood pellets installations and 35% of all wood chip installations in Austria).

The programme is financed by the regional government of Upper Austria and implemented by O.Ö. Energiesparverband and the relevant government offices.

5. OUTLOOK

Due to the successful implementation of this building programme, another programme enlargement started in 2001. The so-called "Passive House" programme supports extremely low energy buildings which assure a comfortable indoor climate in summer and in winter without needing a conventional heating system. "Passive Houses" have an exceptionally good thermal envelope, preventing thermal bridging and air leakage. The building's annual demand for space heat is not allowed to exceed 15 kWh/m²a. Such buildings are supported by 14,535 € and again the support payment is combined with an advice session.

Additional financial measures

Boiler exchange programme

The regional government supports the installation of small-scale biomass heating systems. The subsidy for private households is around 1,500 €. In 1998 and 1999 a special programme to promote modern, efficient boilers was implemented: if an old fossil-fuel boiler is exchanged for a modern biomass boiler an additional support payment of 870 € is given. In total 15,000 installations have been supported (1998-2/2001) triggering 315 Mio kWh/a energy savings and achieving 69,000 t CO₂ reduction annually. The programme expenditure amounts to 7.27 Mio € and caused 72.7 Mio € investment of regional businesses.

Third party financing programme (TPF)

Innovative financing mechanisms, such as third party financing (TPF) can contribute significantly to the market penetration of energy efficiency and renewable energy sources. However, examples from many countries have shown that there are several barriers that hinder the market development of TPF, mainly the lack of information and understanding of this complex instrument as well as legal questions. In order to overcome these obstacles, a regional TPF programme was established, managed by O.Ö. Energiesparverband and two banks.

The programme provides detailed information, advice and guidance to local authorities interested in TPF throughout the whole process - the main element of the programme. From a financial point of view the programme supports the interest ESCOs have to pay for the loan they take up for financing the relevant energy efficiency investment. In addition to making the investment cheaper, this support payment gives a signal to local decision makers that this could be an interesting option for their municipality, too.

Presently more than 45 TPF-projects are under preparation, in the municipalities Marchtrenk, Wels, Linz, Altmünster, Ebensee, Mettmach, Freistadt and Vöcklabruck TPF-projects have already been successfully implemented.

One of the so far most interesting TPF projects was that of the city of Freistadt, a town in the northern part of the region with about 7,500 inhabitants. In co-operation with ABB, Kommunalkredit Austria AG, O.Ö. Energiesparverband and with support from the TPF-programme seven public buildings (schools, kindergarten, indoor pool, street lighting etc.) were retrofitted. The investment of 400,000 € was financed by the ESCO and is covered by the annual energy saving of 24% (about 65,400 €). The city benefits from newly renovated buildings - with no direct investment from their side! - and upon expiration of the contract, it will also profit from lower energy costs.

6. CONCLUSIONS AND RECOMMENDATIONS

The sustainable buildings programme so far showed very promising results, but it is necessary to continuously "keep the programme going" and adapt it to recent building trends. That is why it has been extended recently to low energy houses and is also continuously evaluated. Besides that the energy criteria have already been decreased several times (the programme started in 1993 with 75 kWh/m₂a and now stands at 50 kWh/m₂a!).

Although financial incentives are a good method to direct investment, the combination with an energy advice session proved to be very effective and raised the overall energy efficiency achievements. Besides written and electronic information tools, personal contact during an energy advice session and the possibility for home owners to discuss "their individual housing dream" with a trained expert who does not necessarily want to sell anything, is one of the key elements of success.