

The EcoBuild programme

Co-operation • Solutions • Self-interest

GRIP/EcoBuild 2002

ØkoBygg • The Norwegian EcoBuild Program

The EcoBuild programme



Kvernhuset Secondary School, Fredrikstad



Lena Terrace, Trondheim



Telenor Kokstad, Bergen

The EcoBuild programme is a Norwegian, five-year programme intended to increase eco-efficiency in the Norwegian building and real estate sector.

The industry itself took in 1997 the initiative to establish the programme in order to co-ordinate increasing environmental activities. Funding has been split evenly between the industry and government (four different ministries). The programme period is 1998-2002 and the total budget has been 20 million euro.

The programme focuses on:



Erik Hammer, M.Eng and programme leader of Ecobuild states that the industry has got new knowledge and tools for sustainable buildings. He also emphasizes the increased interest of environmental issues in the whole building and construction industry.

Co-operation



The programme is a co-operation between the government and the industry, involving all parties within the building and real estate industry.

A broadlymixed organisation

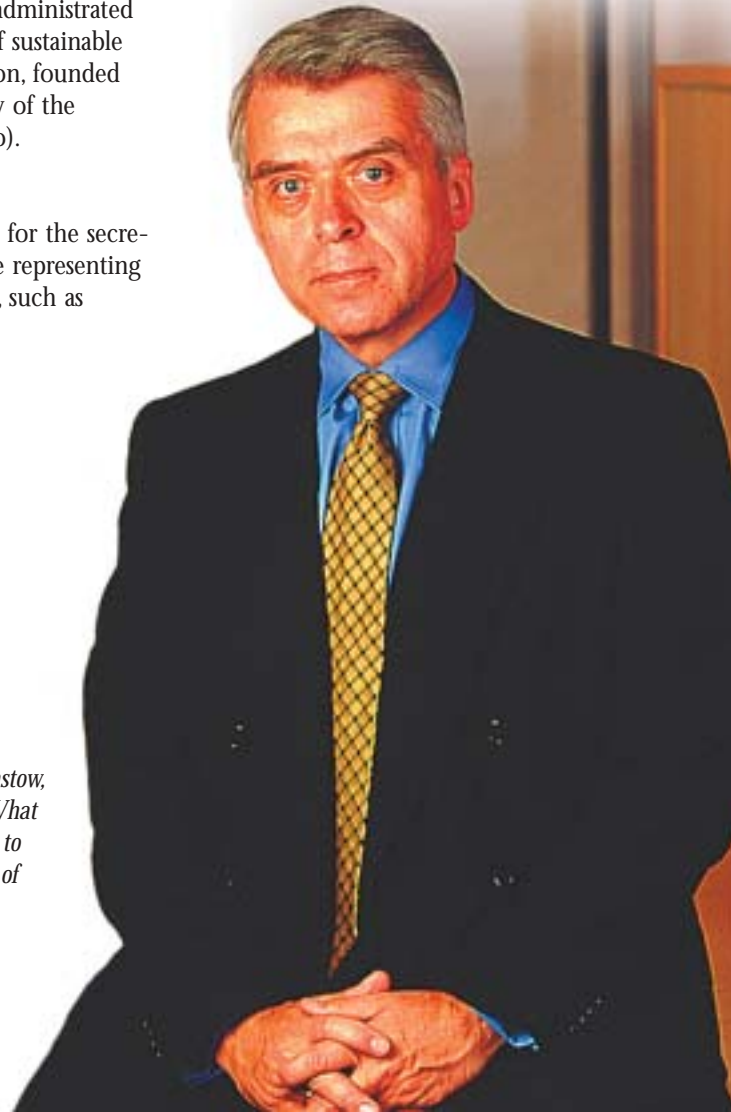
The board of EcoBuild includes leaders from all parts of the industry: building owners, architects, consulting engineers, contractors, producers of construction materials and professional associations. A government group comprising representatives of four ministries has followed the programme and has set the conditions for government funding.

The programme has been administrated by GRIP, the foundation of sustainable production and consumption, founded by the Norwegian Ministry of the Environment (www.grip.no).

A proactive secretariat

The board and the advisers for the secretariat of the programme are representing different parts of the sector, such as

building authorities, architects, consulting engineers and contractors. Five to ten have been engaged from different positions within the sector in order to contribute as advisers in the secretariat - as full-time or part-time employees. The advisers have evaluated a large amount of incoming project proposals and recommended a selection to the board. The board has made the final selection of projects. The advisers have also initiated a lot of projects and followed up the projects in the programme.



The EcoBuild chairman Per Håvard Lindqvist, who is CEO in Linstow, one of Norway's leading Real Estate companies, puts it like this: "What is unique about EcoBuild is that for the first time we have been able to involve the entire industry in a process of development, with the aim of changing our basic approach to environmental issues."

Solutions

We know that the environmental impact of the building sector is considerable.

In Europe at least, it is responsible for:

- 40 % of the society's consumption of energy
- 40 % of the society's consumption of materials
- excessive consumption of problem substances

In a Norwegian survey among business managers, 87% of the managers in the building and real estate sector agree that "Environmental problems are very serious and one of the largest challenges of the society". But instead of making the managers feel guilty by focusing on the problems, the EcoBuild programme has wished to focus on solutions and involvement.

The programme has focused on solutions for:

- energy efficiency
- material efficiency
- waste
- hazardous chemicals
- indoor air quality

The programme has comprised building design as well as building management in commercial buildings as well as dwellings and schools.

Project types

The programme has included:

- pilot projects

- training and information
- development of tools
- networking

The programme has participated in several pilot projects. These are not research projects, but projects that use current knowledge in commercial building developments. The programme has financed up to 50% of the extra costs of planning for an eco-efficient building. These practical experiences have been very important to the programme.

A lot of knowledge certainly exists, but the need for education remains no less pressing. Training and information have thus been an important part.

Considering the time constraint projects are a subject to today, there is a great need for common tools. There are now developed a selection of tools e.g. design tools, manuals of handling waste and a building maintenance manual.

Establishing networks within the building sector has also been an important issue, both formal and informal networks. Some networks are linking companies within different trades, e.g. architects, contractors, building owners and consulting engineers. Another type of network has concentrated on specific issues such as energy consumption or waste. There have also been established networks related to specific building projects e.g. developing Fornebu, the former main airport area.

Eco-efficient school

Kvernhuset Secondary School

The city of Fredrikstad has built a very special school around the concept of sustainability at all levels: in the technical specifications of the building and the pedagogical policies in the classrooms. The building is also intended to be a pedagogical example in its own right. It will use different renewable energy sources and eco-efficient cleansing systems; and all



Kvernhuset Secondary School



Telenor Kokstad

other technical operations will be explicitly designed for the use as active teaching aids. The planning process for the school has been distinctive in its emphasis on co-operation on a very large scale. Local authority professionals, architects and consulting engineers have worked closely together from Day One. They have also worked with the pupils and teachers who will take over the school when it is finished, and with parents, property owners, teams of volunteers and NGOs. It has been a time consuming process, but one which has generated great enthusiasm and engagement. In their enthusiasm, participants in this project have dared

to go probably further than ever before in Norway in trying out new architectural and technological ideas.

Telenor Kokstad

The Norwegian telecom company; Telenor took the initiative in 1998 in being environmentally responsible by planning the new commercial building in Bergen way ahead of regulations established by the authorities. Their environmental standard defines environmental requirements for building projects and provides documentation showing that environmental factors have been considered. As both builder and owner of the building, Telenor placed

emphasis on good overall economy and efficient use of resources. They achieved that through efficient use of space and flexibility regarding use of the building throughout its lifetime. Matters they took in consideration were environmentally sound materials, lowest possible consumption of energy resources, minimal pollution and emissions during its entire lifetime, including demolition, low operating costs and organization of the structure for environmentally friendly operation. They chose Lon Open System for their building operation system and the building has been given 7 awards so far. Competency requirements for the planners and training of those who use the building and those responsible for its operation was essential for its success.

Lena Terrace

Lena Terrace is an apartment complex with 120 dwellings,

constructed in 2001 in the municipality of Melhus near Trondheim (annual mean outdoor temperature 6.2°C). The contractor was Selmer Skanska AS. With financial support from the national EcoBuild programme, forward-looking energy-efficient solutions and individual metering were implemented. Hydronic floor heating is used with a thermostat in each room. Heat is provided by a ground-source heat pump (recirculating ground water), and an oil boiler for peak demand. The energy company Statoil ASA designed, own and operate the complex's central energy plant, which supply heat, oil and electricity in accordance with a long-term contract. Each apartment has individual metering of hydronic heating, domestic hot water, and electricity. Individual monthly billing give dwellers a detailed overview of their energy consumption.

Lena Terrace



Self-interest



EcoBuild focuses on the self-interest of the industry in taking into account the environment. The programme prepares the industry for framework conditions, which the government otherwise would have imposed on the industry in order to fulfil its national obligations. EcoBuild will also contribute to avoid regulations and surcharges as the industry take responsibility for the expected changes on its own initiative.

Head office of Telenor on Fornebu

National Action Plan for Construction Waste Management. The national action plan for construction waste management provides solutions for both recycling and reduction of waste related to building construction. Among other measures, a recycling scheme for glazing containing PCBs has been established.



Saving resources

Saving material, energy and transport resources usually also means saving money. The EcoBuild programme has stimulated companies to use developed technology to save resources - and money.

Saving energy with a factor 4

Energy use in the buildings housing the Norwegian telecom company Telenor in 1998 totalled approximately 14400 kWh per man-year, primarily through bought electricity and oil. In its new headquarters consumption is expected to be approx. 7000 kWh per man-year, partly because of a more efficient use of floor space. This is to be reduced from 38m² per employee in other Telenor properties to 23m² per employee.

Of the 7000 kWh per man-year energy consumption, 4000 kWh is to be taken from local renewable sources, primarily heat pumps using sea water. The remaining 3000 kWh will consist of 1000 kWh from fossil fuel for peak loads and 2000 kWh from bought electricity. Bought energy totalling 14400 kWh per man-year in Telenor's older buildings is thereby reduced to 3000 kWh per man-year.

These calculations suggest that Telenor's new headquarters in Fornebu will have achieved a

reduction in "bought energy" of more than 75% - thus qualifying as a "factor 4" building for energy efficiency.

Saving waste - and transport

Construction work at Fornebu, site of the former international airport of Oslo, has shown the environmental advantages of working together with the property owners and developers. The property owner has entered a joint venture agreement with the first developer on the use of surplus rubble from excavation works. The developer avoids the expense - and associated dumping charges - of transporting the surplus rubble away from the site. The property owner gets the material for free at a convenient location where it can either be sold to other developers or used for own projects. Both parties earn good money (about 25 million euro each) while the environmental impacts of transport and unnecessary encroachment on the landscape are avoided.

Reducing risk

Some investors are showing increased interest in the environmental initiatives taken by a company, and put a premium on reduced environmental risk. Building owners are increasingly paying attention to the health risk due to bad indoor air quality. High future

dumping charges is another reason for taking environmental care.

The EcoBuild programme has especially focused on the risk of dealing with hazardous substances. One example is CCA-impregnated timber (copper, chrome, arsenic), uncritically used on a large scale in Norway. In one EcoBuild-project the objective has been to inform that use of CCA can entail high future dumping charges, and show that there are many alternatives, instead of using these hazardous substances.

Environmental profile

One major factor in the progress towards improved eco-efficiency in the sector, is the demand for eco-efficient features and for relevant expertise. The EcoBuild programme has tried to stimulate customers, among all the building owners, to increase the environmental requirements when ordering products and services.

In one project a building classification system has been developed - a system for registering the environmental impact of a building on the external environment, and on energy consumption related to interior conditions. A potential tenant can now ask the owner of a building to submit an energy profile, which can be a deciding factor in his choice when renting a property.

The logo effect

One of Norway's largest contractors, Veidekke ASA, has set up a nationwide operation for demolition, waste collection, and recycling. The company predicts strong growth and a sizeable market, anticipating a total turnover of more than 60 million euro within a few years.

Veidekke says their motives include profit as well as social responsibility - and the opportunity to enhance its environmental profile, the "logo effect".

Results

EcoBuild has participated in approximately 120 sustainability projects. In co-operation with the industry, the EcoBuild programme has among others designed:

- a building classification system (EcoProfile for buildings)
- a design manual (GRIP Bygg prosjektering)
- sustainable school buildings (Miljøeffektive skolebygg)
- a point system helping to choose the right building materials (Miljøriktig valg av byggevarer)
- a manual for technical installations (BAS-veileder for Byggautomasjon)
- a building maintenance manual (GRIP Bygg FDVU)
- a manual for demolition (Miljøsaneringsveilederen)

These tools are unfortunately only available in Norwegian.

As a summary of the experiences in the programme period, EcoBuild has made a case study, "Eco efficiency in the Building and Real Estate Sector", as a contribution to the OECD programme on eco-efficiency. This report is available in both Norwegian and English.

After the programme is completed more specific evaluation of the programme itself will be carried out.

After 2002

The EcoBuild programme period ends in 2002. What happens then? The industry has decided to carry on a kind of EcoBuild II in order to co-ordinate the



environmental activities within the industry. The important networks established throughout the programme will hopefully be lasting and continue to work for more eco-efficient and sustainable buildings.

For more information about the programme go to www.okbygg.no. You can also call the Programme Manager Erik Hammer phone: + 47 90 98 32 75



Mediå Primary School, Grong