



School project “Grasping of Climate in Theory and Practice” *Norrbottnens Energikontor NENET, Sweden*

Summary



The main goal of the project was to develop an understanding how use of energy impacts our environment and climate, and how our individual choices in everyday life are of importance for the future. This was done by inspiring and development of methods for educators to work with their pupils in thematic projects. Teknikens Hus is one of Sweden's largest and most renowned science centres. The complementary knowledge and experience in the partnership between Norrbottens Energikontor (NENET) and Teknikens Hus in Sweden, NEF in the UK and RAEE in France made it possible to carry out the task in a successful way. The combination of exhibitions, training of teachers and pupils with new pedagogic methods has been really successful in the three participating regions in three countries. All together there has been a successful and established pedagogic methods of combining interactive exhibition and dramas together with theory and practical experiments will be used as a model. The National Energy Foundation in UK is more specialised in teaching children about energy issues and complement therefore Teknikens Hus in a good way.

Interactive exhibitions and dramas will be set up. After the project period it will be possible for others to rent the exhibitions. A teacher inspirational guide, in English and Swedish, summarising experiences and ideas collected during the project will be produced.

End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

Context

The starting point was when the Swedish government presented a proposition in 2001, the aim of which was to assemble all the Swedish, EU and international climate-policy related measures in a single national climate strategy. According to the government, the objective was to bring about an active climate policy that would involve the entire society.

The proposition pointed to the climate issue as one of the largest global environmental problems. The necessity for individual efforts - not least among young people - was emphasised, as was the importance of international co-operation.



The emphasis on the role of youth and the importance of international co-operation was what induced the Norrbottens Energikontor AB, Norrbotten Energy Network (NENET), to contact the region's science centre, Teknikens Hus, in Luleå.

The idea was for NENET, with its expertise and international and national networks in the field of energy and environment, and Teknikens Hus, with its experience of public exhibitions and learning activities for children and adults, to combine their resources in a joint climate initiative.

Objectives

Increase the awareness and knowledge among teachers and pupils about how our lifestyle has influence on the environment and climate, and in theory and practice show how they by small changes in their daily behaviour can have influence on the development to a climate neutral, sustainable, and to a resource solidarity in the society in coordination international and national environment- and climate objectives. The project also aims to increase pupils' interest for energy- and environment issues in common.

Process

A lot of activities have been carried out in the project aiming to inspire teachers and pupils to work with energy issues in the classroom and provide them with tools and ideas for how they can do it.

- Production of interactive Exhibitions in Sweden, UK and France for children and young people.
- Development of interactive dramas
- Teacher in Service training
- Seminars for teachers
- Pedagogic activities, development of new methods.
- Tour to schools in a lot of communities
- Creation of an informative and inspirational guidebook with new pedagogic tools for teachers in Swedish, English and French.

Planning and construction of the exhibition were done in close collaboration with experts in the fields of energy, environment and transportation. The Swedish, French and English partners were active during this phase. The exhibition in Sweden was built in three interconnected sections. In the first, which acts as a framework for the entire exhibition, the visitor is given an insight into the energy principle and how our current use of fossil fuels such as oil, coal and natural gas influences the greenhouse effect and the Earth's climate. The second part of the exhibition features technical solutions and personal choices related to food, transportation, electricity consumption, etc. In the third and final part of the exhibition, which consists of a combined theatre and film-viewing room, visitors watch a Canadian-made animated film featuring, among other things, several sheep that are evidently worried about what humans are doing to the climate. This room is also used for staging interactive drama with the participation of teachers and small groups of children and youths.

During this phase of the project, NEF concentrated its efforts on renewing and adapting the existing mobile exhibition "The Green Energy Machine", which features many interesting and topical exhibits, including a game that shows students how much carbon dioxide their energy use creates, a bicycle with which visitors attempt to generate as much electricity as possible, as well as a display that demonstrates how choice of colour can influence the heat absorption capacity of a surface exposed to sunlight.

In collaboration with teachers and education authorities, RAEE built its own small climate exhibition, much in the same spirit as that of Teknikens Hus in Sweden. The French exhibition, entitled CLIMATTITUDE, La planète chauffe et moi je Fais Quoi, illustrates the connection between ongoing climate change and the choices we humans make on a day-to-day basis. It comprises a number of interactive displays consisting of a house and garden surrounded by a plastic dome symbolizing the greenhouse effect, a solar-powered model train, a model wind-power generator, PC stations with a multi-image presentation from the Swedish exhibition and a CD, about renewable energy sources, that RAEE had produced previously.

**Exhibition Grasping the climate**

In Sweden Teknikens Hus in Luleå arranged a teacher-training programme in climate and lifestyle issues. In England, NEF conducted teacher training in climate and lifestyle issues in close collaboration with Norfolk County Council's environmental education group and Oxfordshire County Council. Experiences of the project's teacher-training programmes in Sweden and England were adapted to French conditions and subsequently used by RAEE in its own region, in order to implement seminars for teachers.

The interactive drama production was played for different school groups of students aged 10-18, of which the majority were 10-12 years old. Teknikens Hus uses interactive drama as a means of activating children in a setting in which they learn many new things without feeling they are being taught. NEF chose to develop an interactive play that had been produced earlier in the context of the Green Energy Machine project. Depending on the age of the students, different components of the play can be added or removed. The RAEE selected role-plays used in the Region and inserted them in the French guidebook for teachers put at disposal on the internet.

Pedagogical activities in the form of three different workshops for students in the age groups 13-15 and 16-18 were carried out in Sweden. In England, students were able to try out NEF's new demonstration facilities for renewable energy. In England, different forms of educational activities were also arranged in about half of the locations visited by The Green Energy Machine during this period.

In France, a selection of pedagogic activities and pedagogic sequences has been made and put at disposal in a guidebook for teachers on the internet. The tools for visiting the exhibition (for teachers and children) have also been used during the school year 2004-2005.

The overall response from teachers involved in the project has been positive. During autumn 2004 Teachers teachers in Norrbotten were offered a series of seminars and lectures, some of which were mini-workshops for teachers working with pupils aged 9 to 12. During these workshops, teachers were given the opportunity to test a number of practical exercises, for example, capturing solar energy.

In collaboration with local authorities and organisations, NEF has arranged seminars on renewable energy, energy efficiency and climate change for teachers active in schools that have a reputation for working with sustainable development in their teaching.

In France, a main seminar for the teachers was organised by RAEE in cooperation with the academy reaching 150 teachers interested in the topic of climate change.





Financial resources and partners

Total budget for the project was 852 500 Euro

The project has been carried out during the period January 2003 - June 2005 with a total budget of 852500 Euro. In addition to funding from the EU, the Swedish part of the project has been financed through support from the Swedish Energy Agency, Svensk fjärrvärme (a trade association of district heating companies), the Swedish Road Administration, Banverket Northern Region (the national Swedish rail administration), the County Administrative Board of Norrbotten and the City of Luleå. Many other national and regional organizations in Norrbotten (among them, Luleå University of Technology) have also contributed ideas, funding and equipment to the project's interactive exhibition, "Grasping of Climate - a sunny story".

The French part of the project has been funded by Région Rhône-Alpes and Direction Régionale de l'Environnement Rhône-Alpes (DIREN). In England, the Government Office for the East of England (GO-East) has assisted the project financially. Other co-operative partners in England have included the Environmental Education Managers in Norfolk, Suffolk and Cambridgeshire, and the Milton Keynes Museum.

Partners:

Teknikens Hus
Luleå, Norrbotten County, Sweden. Established: 1988

Mandate: Regional Science Centre whose objective is to stimulate interest in science and technology in primarily children and teenagers. An educational resource for the schools in the region.

NENET (Norrbottens energikontor AB, NENET, Norrbotten Energy Network)
Luleå, Norrbotten County, Sweden. Established: 1997

Mandate: Regional energy agency whose task is to promote the use of renewable energy, rational use of energy and environmentally adapted technology in Norrbotten.

NEF (The National Energy Foundation)
Milton Keynes, England. Established: 1990

Mandate: Independent educational charity whose objective is to work for the more efficient, innovative, and safe use of energy and to increase public awareness of energy in all its aspects.
Website: www.nef.org.uk

RAEE (Rhônalénergie-Environnement)
Lyon, Rhône-Alpes, France. Established: 1978
Mandate: Regional energy efficiency office whose task is to promote the use of renewable energy, energy efficiency and environmentally sound technology in Rhône-Alpes.

Results

In the three participating countries the exhibition has really been a success, more than 123 000 visitors during the period of about six months. And the exhibitions are still attracting people long after the project is finalized. In Sweden the exhibition is booked in different cities for some years forward.

New pedagogic tools were used in the project for example interactive dramas and role-plays with more than 7000 pupils with good results. And more than 10700 pupils have been activated in other pedagogic activities.

Based on experiences in the project an inspirational guidebook for teachers was produced in Swedish, English and French with contribution from all project partners. The guidebook is focussed on that it should be fun to work with comprehensive subjects and for the whole humanity important issues like climate and lifestyle. The guidebook has been disseminated to teachers in the three participating countries.



Norrbottens Energikontor (NENET) together with Teknikens Hus won the County Councils annual environmental award for the most important work for the environment in the county of Norrbotten for the project "Grasping Climate" in 2005

Lessons learned and repeatability

We have been told that most of the teachers who had the possibility to take part in the project (over 1000 teachers) would wish that they had a possibility to learn even more about the climate problems than the project could offer. They would have liked to work more concentrated with the issue with the aim to learn more about the complexity and connections of the climate issue, mostly in order to increase their own competence and understanding about how the climate issue and also other for the future important but complicated questions of survival in the future can be implemented in school education. Another lesson learned from the project was that it is important to work subject integrated with issues like sustainable energy, environment and climate issues even if it is not happening today, but it is a tricky task, and there is a need for development of methods and training for that.

Teachers also expressed interest for participating in international projects, and understand the importance of cooperation and compare notes between school classes from different parts of Europe. For teachers in common there is almost impossible to manage that without help from outside school, and the participation in the project made it possible for some teachers in a small scale, and we understand that there is a greater need for more international contacts.

Contact for more information:

Project Web Site: www.graspingclimate.net

Organisation / Agency: Norrbottens Energikontor AB (Norrbotten energy network, NENET)

Main contact: Tord Pettersson, Fred Nordström

Address: Västra varvsgatan 11

Tel: +46(0)920 94121, +46(0)920 94120

Fax: +46(0)920 94125

E-mail: info@nenet.nu

Web Site: www.nenet.nu

Printed reports or other literature available:

Title: Grasping of Climate- an inspirational guidebook for teachers