

## SAUCE Schools at University for Climate and Energy



## WP 3: Programme development

D2 of WP3 of the SAUCE project

1<sup>st</sup> draft

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Written by:

Karola Braun-Wanke, Berliner Energieagentur GmbH

With contributions by:

Lukas Kranzl, Nanna Sagbauer, Manfred Duchkowitsch,  
Vienna University of Technology

Leif Henriksen, Aalborg University

Kjaer Tyge, Thomas Budde, Tina Gliese, University of Roskilde

Nicholas Watts, London Metropolitan University

Maarten Arentsen, Julia Kotzebue, University of Twente

Diana Sulga, University of Latvia

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### **About SAUCE – Schools at University for Climate and Energy**

For the EU project SAUCE, seven European universities and the Berlin Energy Agency have joined forces to develop and promote university programmes for schools as an innovative educational tool aiming to make younger generations adopt intelligent energy behaviour. From 2009 until 2011, each university offers a series of one-week on-campus education programmes for pupils aged 10-13 on the topics of energy efficient behaviour, renewable energies and climate change in an exciting new learning environment.

The programmes are complemented by activities reaching out to the pupils' teachers. Successful and effective teaching materials and information sources are made available, energy education experts and their teaching approaches are introduced to the teachers, and the exchange of knowledge and ideas between schools, academics and educators is facilitated. SAUCE thus contributes to improving teaching and curriculum on energy efficient behaviour.

SAUCE is supported by the EU Programme Intelligent Energy Europe. This programme aims to promote energy efficiency and renewable energy sources. It helps all of us to produce and use energy in more intelligent ways and to increase the use of renewables.

For more information on SAUCE: [www.schools-at-university.eu](http://www.schools-at-university.eu)

### **Contact**

Karola Braun-Wanke, M.A.  
Berliner Energieagentur GmbH  
Französische Straße  
D-10117 Berlin  
Germany  
Ph. +49(0)30 -293330 - 17  
[braun-wanke@berliner-e-agentur.de](mailto:braun-wanke@berliner-e-agentur.de)  
[www.berliner-e-agentur.de](http://www.berliner-e-agentur.de)

### **Project coordination**

Annette Piening, M.A.  
Freie Universität Berlin  
Otto-Suhr-Institut für Politikwissenschaften  
Environmental Policy Research Centre (FFU)  
Innestrasse 22  
14195 Berlin  
Germany  
Ph. +49 30 838 544 91  
[annette.piening@fu-berlin.de](mailto:annette.piening@fu-berlin.de)  
[www.fu-berlin.de/ffu](http://www.fu-berlin.de/ffu)

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## 1. Summary - Programme Development of WP 3

What's shooting through that electricity cable? How do wind, sun and biomass get into the socket? Does a house need a hat and a scarf? What does the weather have to do with the global climate? Does the climate need protection? What does a climate researcher actually do?

All realized SAUCE programmes in 2009 gave answers on seemingly simple questions. These were answered by national and local energy and climate experts and (energy-) education experts. All programme focussed on behavioural aspects by bringing energy use into direct relation to the pupils' everyday lives.

The task of all participating SAUCE partners in work package 3 was to develop an educational programme to be offered to pupils aged 10-13 on the campus of the university as an inspiring non-school environment.

The delivery of each partner in WP 3 was to develop a programme as an interactive, interdisciplinary educational tool of the core topics of climate change and sustainable energy use and to present individual options for sustainable energy behaviour in daily life. The scope of each programme was:

- to raise children's awareness of intelligent energy and mobility behaviour
- to raise pupils' interest in green sciences and green technologies
- to broaden pupils' horizons regarding the international dimension of climate protection and intelligent energy use
- to strengthen pupils' problem-solving competences in regard to climate change and energy topics

All SAUCE partners developed and realized 2009/2010 programmes relying on the principles of participation and personal emotional involvement which affects positive and emphatic learning. The overall thematic focus of all programmes was linked to the social, every day life and technical dimensions of energy efficient behaviour. Interactive methods are used to get the message across: engaging the pupils in hands-on activities, in role plays and in thinking about solutions, and fascinating them with experimental sciences and arts.

The SAUCE lecturers were recruited from the university, the local community and among national climate and energy education experts. All SAUCE partner universities have been establishing new ties to the local community and developing the environmental education network.

## 1.1. Period to assemble the programme structure

To ensure the educational quality of the programme, WP 3 was always a well discussed topic during the partner meetings in Berlin (October 2008 and January 2009), in Aalborg (June 2009) and Vienna (January 2010).

The first phase spanned the period in 2008/2009 to assemble the guidelines and basics for the programme development. This regarded the building up a local and university in-house network, to realize the structure of the educational tool according to the local conditions, and to develop the campus as an exiting learning environment.

During the meetings in Berlin, WP 3 Leader Berliner Energieagentur (BEA) gave different inputs to define and to identify suitable interactive elements and approaches for the first SAUCE programmes:

- BEA handed out a checklist including necessary research needs and steps to build up an active local and university network and presented best practice of concrete workshops and lecture examples revealing an interactive approach.
- To grasp the atmosphere and special character of an interactive approach, WP leader BEA presented (via photos) the experiences of the pilot project “Schüleruniversität Energie und Klima” realized in 2006.
- To bring forward the productive meeting discussions, WP leader BEA delivered a failure-success analysis of the Berlin pilot programme in 2006 as an orientation for the programme structure and the development.

To identify further opportunities for an interactive approach, external partners like “Wilder Wind” from Vienna and UfU e.V. from Berlin was invited to the meetings in Berlin and Vienna and presented best practice examples and recommendations on proven playful and interactive approaches.

The following questions reflect the starting point of the intensive intercultural exchange of the partners and characterized the open assembling process of the programme development:

- **SAUCE and the role of university**  
Which role can university itself play in SAUCE education? How can university itself develop methods and capacities to translate the SAUCE idea into practice? Is university more an educational networker who unites external educators and scientists on campus under the umbrella SAUCE? How can university itself and university staff be convinced to take part in SAUCE programmes? What does the university already offer in the field of green education and are these approaches transferable to the local SAUCE programme?
- **SAUCE lecturer recruitment:** Where do the lecturers come from? From university itself or from other local institutions? How can we ensure the quality of presentations by the involved lecturers, professors, and teachers?
- **SAUCE playful, interactive approach:**  
What kind of playful approaches do already exist to communicate the SAUCE idea? Are the different interactive methods and experiences transferable to the different local/cultural backgrounds? How can we learn from each other? How can we find the right balance between playfulness and the transfer of knowledge?

- **SAUCE programme structure:**  
What is the right size of the lectures and workshops to ensure interactivity with the audience? Is there an interrelation between size of the audience and quality of communication? How can we find an appropriate way toward a well-balanced programme which covers technical, social and political elements? How can we structure the single days for pupils? Should we involve the pupils in a closed programme schedule? Or do we offer a more open programme which allows the single teacher a more individual choice according to the special or current interest of the class?
- **SAUCE and Campus**  
How can the campus be developed as an inspiring non-school location?
- **SAUCE network**  
How necessary and fruitful is it to set up a local network for the SAUCE implementation process?
- **SAUCE obstacles:**  
Which organisational obstacles will handicap the SAUCE implementation?  
e.g. reconstruction works
- **SAUCE local differences and similarities:** What is the common base for all SAUCE programmes? Which differences are allowed? How strong does the cultural background and local school circumstances interact with the programme structure? Which role does the more rural or metropolitan context of the partner universities play? How do the school curricula influence the structure and content of the programme?

## 1.2. Characteristics of the assembling period:

### 1.2.1 The role of university:

At the very beginning, it became obvious that each SAUCE programme would be an expression of the local circumstances, the respective regions schools' curricula and the cultural background of the greening education approach of each partner.

The first programme discussions and draft programmes distilled two main types, which define the role of each partner university in the SAUCE implementation and education process:

- 1) University focused mainly on the role as an innovative environmental education networker who establish new ties to the local (agenda 21) community and unite environmental education from external and in-house sources/players on campus. With the innovative educational tool of SAUCE, university opens its doors for interdisciplinary co-operation with the local education community to promote and to implement the approach of education of sustainable development in schools.
- 2) University focused mainly on the role facilitator for an innovative, interdepartmental scientific SAUCE in-house network who guarantees the quality of the SAUCE education by concentrating on scientific in-house capacities and knowledge. The project SAUCE combines and develops in-house capacities and opens the university itself for a new target group bonding the younger generation with the university as an educational institution.

Universities situated in larger cities like Berlin, London and Vienna can revert to a wide range of environmental and cultural local educators which congenially suit the playful

and interactive approach of SAUCE. Therefore these universities focused their role on innovative environmental education networker who brings together on the campus external local and in-house environmental activities. The role as a networker allows to embed proven methods from external players to get the SAUCE message across and to offer an interdisciplinary programme with a balanced mixture of topics regarding the social, political, technical and cultural aspect of the interdisciplinary topic climate protection, energy efficiency and energy savings and its implications for daily life.

In line with type number 2, the programmes of Aalborg, Twente, Riga and Roskilde are mainly based on SAUCE interdepartmental activities from university itself. The idea of this approach is to ensure a high quality of SAUCE education. Therefore the university staff itself developed suitable workshops and experiments to realize the SAUCE idea. The pupils get in close contact with University and its energy researchers and academics. But there are also pragmatic organisational reasons for this in-house approach

- the mentioned SAUCE partners could not as easily revert to external activities of an environmental community like the metropolitan partners London, Berlin and Vienna,
- the SAUCE partners have not enough financial fundings to engage external educators like the partners in Berlin and Vienna where additional fundings through sponsoring allow further engagement.

### **1.2.2. Characteristics of the programme structure**

In the reporting period two types of programme structures took a definite form:

The larger part of the SAUCE partners from Twente, Roskilde, Riga, Aalborg and Vienna decided from the very beginning to offer a more closed programme cycle with an introduction at the beginning, parallel workshops and a get-together at the end of the day to ensure a more emphatic learning and involvement of the programme day's participants.

Beside the underlying educational concept, this cycle model is also a reaction to the more rural traffic conditions, i.e. in Aalborg, Twente, Roskilde which forces the organizers to offer proper long time events for school classes (especially for classes which came from outside).

The SAUCE partner, who have good public traffic conditions like Berlin and London (?) are able to offer a more open programme structure which allow a flexible avenue to the campus and a more individual schedule for each class. In bigger cities like Berlin, where the model of "Kinderuniversität" or "Schüleruniversität" is common and highly accepted by teachers and the communication between schools and organizers is established, the Berlin open SAUCE model works very well.

## **2. Programme development: Country reports**

Since March 2009 six SAUCE programmes were successfully held at the partner universities in Aalborg, Berlin, London, Vienna and Twente. Two programmes of the

first programme cycle were postponed. One was held in Riga in January 2010, the second one will be held in Roskilde in May 2010.

On the base of questionnaires the individual programmes were evaluated and improved. The process of the ongoing programme development of each SAUCE partner is characterized by revision, improvement and enlargement of the programme elements. The intensive exchange of experiences about the realized programmes during the meetings in Aalborg and Vienna effected that the single SAUCE partners share ideas and implemented proven examples of others in their own future programmes.

The following Country reports describe the programme finding process of each partner. To find a clearly arranged way to describe the characteristic and the difference of each programme the consortium decided in Aalborg in June 2009 the following structure of report:

- Approach of the SAUCE programme
- Target Group of the SAUCE programme
- Programme structure and characteristic in relation to local circumstances
- Thematic focus of the programme
- Local network building to establish the SAUCE idea

To give an authentic overview of the programme development the following country reports were written by the SAUCE partners themselves.

## **2.1. Program development: Aalborg University, Denmark**

*The input of WP 3 was written by Leif Henriksen, Department of Development and Planning, Aalborg University, Denmark.*

The Aalborg SAUCE programme called SKUB (Studier i Klima på Universitet for Børn) has been developed by a governing group which is made up of the 4 university employees running the project, 3 teachers from local schools and a teacher working at the local school administration as a consultant of science teaching.

### **2.1.1 Approach of the SAUCE programme**

Because “Schools at University” or “Children University” is unknown in Denmark, it took some time to engage university teachers in the programme. Some university teachers were interested from the beginning, but many had to be contacted several times with information and persuasion.

The information office at the university has been involved and was supportive in developing and running the programme.

The lecturers are faculty members and students from departments of the faculty of “Engineering, Science and Medicine” and experts from “Energitjenesten” (= Energy Service) which is a local NGO.

The department of Development and Planning is responsible for the programme.

The participation of the teachers in the planning group has had an impact on the structure of the programme. It is probably so that teachers would not be interested in coming for just one lecture or activity and the programme should therefore contain more than just that.

The idea was to find researchers and students at Aalborg University working in the field of energy and climate influences. To get enough lectures and workshops we had to simply take what was possible within the university. There has not been financial

possibilities for employing outside contributors except the NGO, “Energitjenesten”, which works for nothing.

### **2.1.2 Target Group of the SAUCE programme**

We planned the programme for 5. and 6. classes these are children of 12 – 13 years.

We invited all schools in the “Region North Jutland” which has 11 municipalities and 580.000 inhabitants.

Only schools from Aalborg (200.000 inhabitants and about 50 schools) participated probably for logistic reasons.

### **2.1.3 Programme structure and characteristic in relation to local circumstances**

The programme ran for 5 days and each day 6 classes took part in a short common introduction in a lecture hall and after that each class had a workshop of 1 hour before a break and then a second workshop for another hour.

We had to have some time in between workshops because of the distances to be covered in the campus and the lecturers called for their class at the lecture hall.

The teachers could choose the day but not the subject of the workshops.

Only one class (= 15 - 25 children) was attending each workshop at a time and in some cases the workshop was divided into stations covering part of a class.

A total of 30 classes approximately 700 children attended the programme.

### **2.1.4. Thematic focus of the programme**

The workshops dealt both with the purely technical aspects of energy and climate and the use of energy in society and the consequences:

- Show with demonstrations on energy and climate
- How to make electricity from the sun.
- The climatic effects of the production of provisions and other goods
- Utilization of wave energy
- Wind becomes electricity
- How is your house heated?
- Touring the Energy Laboratory: electric cars, high voltage discharges, robots
- Fuel cells
- The energy systems of the future
- How to supply the island of Samsø with energy solely from renewable sources
- Can our need for energy be met by wind?

### **2.1.5. Local Network-building to establish the idea of SAUCE:**

So far we have primarily managed to create an interdepartmental network at the university of researchers in different fields.

Also the employees of Energy Service are included in this.

Furthermore the municipal administration of schools in Aalborg and teachers and administrators of the individual schools.

## **2.2. Programme development: Roskilde University, Denmark**

*The input of WP 3 was written by Thomas Budde Christensen, Tyge Kjær and Tina Gliese, Roskilde University, Denmark*

### **2.2.1 Approach of the SAUCE programme**

The first SAUCE programme at Roskilde University will run in May 2010.

The purpose of the programme will be to introduce children to the basic components of the climate problem and illustrate how problems can be solved by reorganizing patterns of production, consumption and energy generation.

The programme will primarily be targeted the teaching in the 'nature and technique' (Danish: nature og teknik) curriculum at the primary schools.

Roskilde University is responsible for the SAUCE programme. Lectures will mainly be given by university staff, but external sources will also be utilised.

We have made arrangements with a primary school teacher who is experienced in teaching "climate and energy" to students at the same age as the target group for the SAUCE programme. He will coach the pedagogical aspects of the SAUCE programme at Roskilde University.

We have furthermore made arrangements with a group of artists who will perform a small climate show, inspired by the Berlin SAUCE programme.

### **2.2.2 Target Group of the SAUCE programme**

The target group is pupils at the age from 10-13 years from primary schools in the area around Roskilde University.

### **2.2.3 Programme structure and characteristic in relation to local circumstances**

Each day begins with an explanation of the climate problem as a basis to understand the themes in subsequent sessions. The introduction is followed by two thematic sessions in which the pupils will be given the opportunity to dig deeper into a specific topic related to climate and energy. The thematic sessions varies from day to day. The thematic session's covers a wide range of topics such as renewable energy sources, energy savings, global climate changes, transport, housing etc. The programme also includes a climate show in which a group of actors will present a special event in order to facilitate an alternative way of teaching climate and energy.

The structure of the programme makes it possible for the teachers to select a day in which the topic of the thematic sessions can be integrated into the ongoing teaching activities at the schools. Hopefully the teachers will use this opportunity to apply the thematic sessions as examples to illustrate how climate and energy issues relate the curriculum at the primary schools (mainly focussed on the nature/technique curriculum).

The University will furthermore host an exhibition on climate technologies, the foyer, which can be visited after the sessions. The exhibition will have staff available to answer questions from teachers and pupils.

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### 2.2.4 Thematic focus of the programme

The SAUCE programme at Roskilde University is based on three basic elements of the climate problem: causes, consequences and potential solutions. Every day at the course will be related to these three basic elements.

*The cause of the climate problem:* The climate problem is caused by emission of greenhouse gases into the atmosphere. Greenhouse gases retain solar radiation and cause the global average temperature to rise. This phenomenon is called the greenhouse effect. The primary reason for the increase in concentration of greenhouse gases in the atmosphere is the burning of fossil fuels such as oil, coal and gas. The largest source of emissions is energy production. In Denmark, the emissions are particularly high as the energy system is mainly based on coal-fired power plants.

*Consequences:* The consequences of global warming many and varied. When scientists talk about global warming they refers to an average temperature of the globe, but in reality, different continents and regions will face very different impacts of global warming. Climate change also affects a wide variety of systems and circuits, such as ocean currents, rainfall, biodiversity etc.

*Solutions:* The solutions are typically divided into two main categories: mitigation and adaptation. Mitigation means the reduction, and deals with the activities that aim at preventing further emissions of greenhouse gasses. Mitigation can be achieved by phasing out the burning of fossil fuels to the benefit of renewable energy sources or by reducing emissions through changed consumption patterns. Adaptation deals with how we adapt our societies to the impact global warming brings.

The programme runs over one week. Each day begins with an introduction to the climate problem and is followed by to lecture blocks that deals with the following selected topics.

- Climate changes in Denmark
- Peak oil (or biofuels)
- Energy consumption and energy savings
- Wind mills
- Transport and energy
- Energy and housing
- Renewable energy
- Cars and energy
- Global climate changes
- Climate show

### 2.2.5 Local Network building to establish the idea of SAUCE:

The SAUCE programme at Roskilde University is mainly based in-house university staff in order to ensure a high quality and in order to ensure that the 'schools at university' approach is met by allowing the primary school pupils to meet the climate and energy researchers at the university.

A network to teachers at primary schools has been established in order to ensure recruitment of pupils and to make sure that the content of the SAUCE programme is integrated into the ongoing teaching at the primary schools.

## WP 3 SAUCE Programme development

The network will be expanded during August 2009 when details in the exhibition on climate technologies are planned. This planning initiative includes contacts to NGO's, GreenTech companies and the Roskilde music festival.

### 2.3. Programme development: Freie Universität Berlin, Germany

*The Berlin input for WP 3 was written by Karola Braun-Wanke, Berliner Energie Agentur GmbH, Berlin*

#### 2.3.1 Approach of the SAUCE programme

The first programme of the Berlin "schools at university Klima + Energie" was held according to plan from 2nd to 6th March 2009 at Freie Universität Berlin. The programme was modelled and improved on the 2006 pilot-project called "Schüleruniversität für Energie und Klima". The first programme in March 2009 was developed as an interactive, interdisciplinary educational tool on topics of energy and climate change. It was designed by Berliner Energieagentur as a set of 36 events doubling a big number of workshops and lectures to accommodate a larger number of audiences. In five days we offered 12 larger and 24 smaller events for 3000 children:

- 2 action-theatre shows for 400 pupils each
- 10 interactive lectures for 150 – 200 pupils each
- 24 creative workshops for a maximum of 25 pupils each
- A small exhibition in the foyer (for all visitors)

The second SAUCE programme took place from 28 September to 1 October 2009. We offered 45 different lectures and workshops and reached 2.400 children. On the base of the last programme evaluation we replicated the successful events and implemented the following new elements:

- We offered 2 circus theatre shows entitled "Taborka Wasserreich" and combined the climate artistic show with 10 activity workshops for 20 pupils each
- In cooperation with future teacher students (social and political sciences at Freie Universität Berlin) we offered a vision-workshop for pupils where a petition was elaborated under the topic: pupils making politics
- We offered a guided study trip on the University campus where the pupils visited a solar facility on the roof and the boiler room in the basement.
- We offered a SAUCE video conference with our SAUCE partner in Vienna: Games, quizzes between Berlin and Vienna transmitted the SAUCE European idea and the global challenge of climate protection. The elaborated resolution of a common petition was discussed and handed over to the political representatives from Berlin.

The next programme will take place from 15th to 19th March 2010. New elements were scheduled as a result of the intercultural exchange during the last meeting in Aalborg and Vienna. According to the best practice in Roskilde, Vienna and London the Berlin programme offers every day introductions in the topic climate change at the beginning of each day.

Characteristics of the SAUCE Berlin ongoing programme:

- The amount of events is continuously increasing towards small interactive workshops
- Due to the positive response from students and teachers art, theatre, film and other cultural inputs has become a steady feature of the SAUCE programmes

or the transmission of SAUCE topics and knowledge on efficient energy behaviour.

- The positive response of pupils, teachers and the local educators affirm the Berlin SAUCE approach.
- The SAUCE network is continuously expanding and brings forward the SAUCE idea in the local community.
- With SAUCE Freie Universität Berlin is establishing an innovative educational tool to bring forward the idea of education of sustainable development (esd) in schools uniting it as an interdisciplinary network on the campus of university.

### 2.3.2 Target Group of the SAUCE-programme

The SAUCE programme reached pupils in the age from 10-13 years from all primary schools and some secondary schools in Berlin.

### 2.3.3 Programme structure and characteristic in relation to local circumstances

The Berlin approach follows a more open structure. Between 36 – 46 different workshops, lectures and events were offered during the last programmes. The single teacher can participate with one class in one or two workshops during the whole event. The programme is based mainly on offers from external local educators and energy experts which was model for the SAUCE project idea. Meanwhile 25 players from the local community are involved. But the organizers want to increase the interdepartmental university input. Currently, four interdepartmental offers (Earth Sciences, Political Science Dept., Physics Faculty, and the administration's Technical Dept.) are involved in the programme.

But as a result of the consortium's development workshops, the Berlin organizers took up ideas from the SAUCE partners and embed these as a new input. To properly react to the large demand by teachers, the SAUCE programme allows teachers an individual choice of one workshop and an open number of lectures during the whole event.

### 2.3.4 Thematic focus of the programme

All presentations sensitised pupils to the topics of sustainable energy use and motivated them to realize climate protection activities and energy savings in their own daily lives. Berlin took advantage of the present vivid environmental external education players in Berlin, and included many experienced local key climate and energy education players in the SAUCE programme. The proven methods guarantee an exciting, inspiring and motivating atmosphere which brings the SAUCE idea across.

The programme covered different energy and climate topics:

- Global climate change, its causes and effects
- energy behaviour and energy efficiency in daily life (mobility, food production, architecture, electricity use)
- Renewable Energies (technique and understanding)
- Climate protection and global fairness/ethics

### 2.3.5 Local Network-building to establish the idea of SAUCE:

To realize the engaged programme at the Freie Universität Berlin the Berlin energy agency established a network of 25 different educational local and university education players. The experienced speakers and lecturers are:

- local energy educators
- public local officials
- academics and scientists of (different) faculties of Universities
- employee from science laboratories for pupils (from University and local institutes)
- employees from environmental NGOs (i.e. world wildlife fund)
- employees from youth-organisations of environmental NGOs (BUND Jugend)
- research and consulting associations
- private architects
- students from different Berlin universities
- Berlin artists
- Cabuwazi circus theatre and ATZE music theatre

## 2.4. Programme Development: London Metropolitan University, UK

*The UK SAUCE programme 2009 ran at the North Campus of London Metropolitan University, London. The UK input for WP3 was written by Nicholas Watts*

### 2.4.1 Approach of the SAUCE programme

In 2009 London Met offered a SAUCE programme of interactive lectures, workshops, and participatory events in the arts and musical and dance performances for 2.700 pupils. From 23 to 26 June 2009, the pupils were engaged, first, in an interactive plenary session about climate change principles and energy saving, showing them how to engage with sustainable behaviours (Islington Sustainability in Schools - ISIS, or the Centre for Alternative Technology, Powys: [www.cat.org.uk](http://www.cat.org.uk)). They were also shown films introduced by the film-makers, themselves activist environmental educators. In smaller groups, they engaged in kapoeira dancing (linking to the culture and issues of rainforest peoples in Brazil), a workshop describing the work of Cape Farewell Education ([www.capefarewell.com](http://www.capefarewell.com)) including group mime of climate related experiences and events; food making (including food miles and seasonality); making jewellery and flowers from waste materials (embodied energy, re-use for sustainability); participation in a music event (Streetperformers 'A change is gonna come', with the International Educational Handshake – children either design a 'handshake' logo, or write a verse about climate change for inclusion in the song when it is released this year); science demonstrations (Dr Andrea Sella of University College London, including using liquid nitrogen to make ice-cream). There were also opportunities to discuss with experts the effect in other regions and changes the pupils could make in their behaviours (the above plus ActionAid) and to improve their understanding of energy saving and renewable energy sources. There were some opportunities to engage in workshops experimenting with wind power and solar. solar, hydro, biomass and wind energy technologies

The UK SAUCE 2009 programme's core idea was to:

- Show pupils that in studying school disciplines in the arts and social fields as well as natural sciences they can make a difference
- Enthuse pupils about being in the university and showing something of what the university can offer

- Bring into the university environmental educators from across London and the UK to work together with academics to promote education for climate awareness and sustainable behaviours, including taking action
- Go beyond the experience pupils were already gaining in some of the schools in the programme (Note the partnership with the Islington Environmental Learning Partnership, now 'ISIS', which is working to promote curriculum change throughout the borough. Some school classes are much better prepared than others on arrival.).

The first UK SAUCE programme was designed by the Department of Applied Social Sciences at London Met in close cooperation with Islington Council (ISIS) and with the London Sustainable Schools Forum (LSSF) and with key environmental educators (CAT, Cape Farewell, ActionAid) and trainers. The university was responsible for the programme.

#### **2.4.2 Target Group of the SAUCE-programme**

The majority of the children participating in the first UK SAUCE programme were from Year 5, 10-11 years, with some Year 6 (12-13 years), recruited from the London boroughs of Islington and Hackney. The programme was designed for the average pupil in the age 10-13 years.

#### **2.4.3 Programme structure and characteristic in relation to local circumstances**

The London Met version of the SAUCE programme is distinguished by parallel emphases on the science and the arts of climate and energy issues, supported by interactive demonstration lectures and by performance (by artists, actors, musicians and dancers – including kapoeira, where children learn the dance moves, and 'Street Performers', where they design logos for an 'international educational handshake' with Jamaica and Sierra Leone and write lyrics for inclusion in the song 'A change is gonna come'), as well as small workshops where children engage with food preparation or making jewellery from recycled materials to link experiential learning with climate issues – and with Cape Farewell ([www.capefarewell.com](http://www.capefarewell.com)), they design their own mime performance of climate themes such as melting glaciers or the plight of the polar bear.

The UK Co-ordinator Nicholas Watts also co-chairs Islington Environment Forum (IEF), which is the body linking environmental groups in Islington with a progressive Local Authority programme for sustainability, and represents the IEF on Islington Strategic Partnership Environment Theme Board, which decides on research and action priorities for environment in the strategic partnership, as well as on Islington Sustainability in Schools (ISIS, formerly IELP).

The London location has also facilitated engagement with and of key individuals and institutions (e.g. Dr Andrea Sella of the Engineering and Physical Sciences Research Council's public understanding of science initiative; Cape Farewell; Arcola Theatre, which has its own hydrogen cell fuelled lighting system as well as a green awareness programme and also with the Centre for Alternative Technology in Wales, which provides demonstration projects and works regularly with children of the same age group.

#### **2.4.4 Thematic focus of the programme**

We worked actively to engage children in participatory activity across 'craft' work and arts, performance and music, as well as instruction on key issues of climate and energy, to show them how there are many ways children can 'make a difference' in climate and energy behaviours. We also took full advantage of the range of resources in London and the region, and included many key climate and energy education actors in the programme, which most children found very exciting and motivating.

#### **2.4.5 Local Network-building to establish the idea of SAUCE:**

The network-building locally focuses on work with ISIS (formerly Islington Environmental Learning Partnership, now Islington Sustainability in Schools), but we plan to develop closer links with LSSF and LSx (London Sustainability Exchange) for the next 2010 programme.

Partner (university) research institutes or local energy education experts who have developed contributions to the SAUCE programme for replication in other (SAUCE) programmes

### **2.5 Programme Development: University of Twente, The Netherlands**

The Dutch SAUCE programme 2009 has run at the Campus of the University of Twente in Enschede. The Dutch input for WP3 was written by Maarten Arentsen and Julia Kotzebue.

#### **2.5.1 Approach of the SAUCE programme**

In 2009 Twente offered a SAUCE programme of interactive lectures and workshops for approximately 900 pupils. In the week between 14/04/2009 and 17/04/09 the pupils had the opportunity to watch documentaries about energy saving and renewable energy sources and to discuss with climate experts the technical, social, environmental and global aspects of energy generation, consumption and saving. Furthermore the programme offered workshops for smaller groups of 50 pupils which gave them the opportunity to experiment with solar, hydro, biomass and wind energy technologies. For instance the Solar Car Team showed pupils the function, the development and the potential of today's solar cars. Moreover in the Climate Game pupils became European and International political actors and learnt about the difficulties of the international energy and climate policies.

The core idea of the 2009 programme was:

- Offering a programme with a social and a technical component, reflecting the dual focus of the university
- Offering a programme in close collaboration with existing research groups at the university

- Offering a programme that can line up with the existing energy and environment teaching programmes for children in the age of 10-13 years.

The first Sauce programme has been organised by the Dutch members of the SAUCE consortium in close cooperation with the nature and environment education department of the municipality of Enschede. The university was responsible for the programme.

### **2.5.2 Target Group of the SAUCE programme**

The majority of the children participating in the SAUCE programme were in the age of 10-13 years. All children were from regular primary schools in the region. A small number of participating children was younger than 10 years, but belonging to the group of high potential pupils with above average intelligence. It turned out that these children were remarkably open for the knowledge and information provided in the lectures and workshops. However, the programme was designed for the average pupil in the age 10-13 years.

### **2.5.3 Programme structure and characteristic in relation to local circumstances**

The first programme of the Dutch Schools at University programme was held from 14-17 march 2009. The programme was designed according to the idea of Sauce for children in the age of 10-13 years and offered 4 interactive lectures for 150 pupils, 4 workshops for 50 pupils each and one climate game for 50 pupils.

### **2.5.4 Thematic focus of the programme**

We took a positive approach as dominant perspective. So we presented a lot of what is possible in stead of what are the risks and treats of climate change. We also used the combined technical and social science profile of the university. We had technically focused activities and we had non-technical focused activities. Most of the activities were combinations. We also tried to show the children that working on future technologies is important, but also big fun. This in particular was stressed in the presentation of the solar race team of the university. Renewable energies, behaviour, but also politics was part of the programme.

### **2.5.5 Local Network-building to establish the idea of SAUCE:**

The Dutch local network is growing steadily both inside and outside the university. Apart from schools participating in the programme, the major local partners are the Nature and Environmental education departments of municipalities in the regions. The organisations develop and provide the energy and environment focused teaching programmes for the primary schools in the Netherlands. Teacher universities and the local art school are part of the local network. In September we continue working on joint programmes and dissemination of the SAUCE concept to the curriculum of next generation teachers and the primary schools.

## 2.6. Programme Development: University of Latvia, Riga

The SAUCE programme 2009/2010 was run at the University of Latvia in December 2009 (teacher introduction seminar) and January 2010 (school student programme). Latvian input for WP3 was written by Diana Šulga.

### 2.6.1 Approach of the SAUCE programme

On January 7, 8, 13, 14, 15, 2010 University of Latvia offered a SAUCE programme of interactive presentations, workshops and demonstrations for 311 school students; 23 teachers and 2 parents attended the programme as well. They had an opportunity to take part at different interactive workshops covering technical, social, environmental and global aspects of energy generation, consumption and saving as well as issues of renewable energy sources and environmentally friendly behaviour and choices. The programme was organized in the form of concurrent groupwork which provided school students an opportunity to:

- experiment with solar, hydrogen and wind energy technologies,
- 
- simulate effects of climate change on the boreal forests,
- calculate and analyse the carbon and ecological footprint for their schools and households.

For instance, the Hydrogen Car Team showed pupils the function, the development and the potential of today's experimental hydrogen cars, Solar energy group demonstrated the construction and application of solar cells, simulation-board game simulated effects of climate change on the ecosystems of boreal forests and the workshop on carbon and ecological footprint, using the IT technologies and data collected in the respective schools, allowed to calculate, analyse and discuss the carbon and ecological footprint for participating schools and individual households.

The core idea of the 2009/2010 programme was:

- Offering a programme with a social and technical component, contributing to the science communication targeted at school students and performed by the university;
- Offering a programme in close collaboration with the research groups at the university;
- Offering a programme that can line up with the existing energy and environment teaching programmes for children and young people in the age range of 11-14 years, motivate for the further studies and contribute to the development of behavioural models among the mentioned age group.

The first SAUCE programme has been organised by the Department of Environmental management of the University of Latvia - the member of the SAUCE consortium, in close cooperation with experts of the Institute of Solid State, University of Latvia.

## **2.6.2 Target Group of the SAUCE programme**

The majority of school students participating in the SAUCE programme were in the age range of 11-14 years. Children were from regular primary schools in the Riga region as well as two schools - for children with vision disorders and some general disorders. The group of 10 year-olds was represented by one class and showed special interest and was highly participative and remarkably open for the knowledge and information provided in the lectures and workshops, typical for this age. The high involvement, interest and openness of students from special schools should be noted as well. There was also one group of school students aged above 15 – their theoretical knowledge already gained at school was well supplemented by application demonstrations offered by the participation at the programme. However, the programme was designed for the average school students of the age between 11 and 14 years (according to the school curricula in Latvia).

## **2.6.3 Programme structure and characteristic in relation to local circumstances**

The first programme of the Latvian Schools at University programme was held on January 7, 8, 13, 14, 15, 2010. The programme was designed in line with the idea of SAUCE for children and focused on youngsters of the age of 11-14 years (according to the school curricula in Latvia) and offered in the form of 4 interactive concurrent 45 minutes workshops each, involving altogether 311 school students.

## **2.6.4 Thematic focus of the programme**

Thematic focus of University of Latvia programme was based on the “state-of-the-art => traditional behaviours => alternatives/solutions” approach, putting emphasis on the CHANGE, both behavioural and technical. As it is already mentioned in the Concept chapter above, programme offered both technically more focused activities and technically less focused activities; in fact they all were combination of these two factors. We also tried to show the children that working on future technologies is important and at the same time it is also a big fun. This in particular was stressed in the presentation of the Hydrogen racing car.

## **2.6.5 Local Network-building to establish the idea of SAUCE:**

The Latvian local network is growing steadily. Apart from schools participating in the programme, the major local partner at the moment is the Institute of Solid State of University of Latvia which is a research agency with both scientific purposes and some science communication functions performed through particular projects, including those involving school students. Riga city School Board was involved in the attraction of schools to the programme as well as the National network of Ecoschools in Latvia, coordinated by the Environmental Protection Club – the biggest environmental NGO in Latvia. Experts from Physical-Energetics Research Institute and Environmental Health Inspection contributed with presentations to the Teacher training seminar. We are looking forward to some closer involvement of the Ministry of Education and Science and its former national environmental education coordinators network in the implementation of the next programmes. We continue working on eventual

improvements of the programme, however, the opinions and reflections of the first programme participants were highly positive and programme - highly appreciated.

## **2.7. Programme Development: Vienna University of Technology, Austria**

The Austrian SAUCE programme 2009 has been run in week 40 2009 at Vienna University of Technology. The Austrian input for WP3 was written by Lukas Kranzl, Nanna Sagbauer and Manfred Duchkowitsch.

### **2.7.1 Approach of the SAUCE programme**

In 2009 Vienna University of technology offered a SAUCE programme as a mixture of interactive lectures and workshops for 983 pupils. In the week from 28/09/2009 to 02/10/2009 the pupils had the opportunity to make experience with renewable energy, energy efficiency, sustainability, climate change etc. The general idea is to raise awareness for climate and energy and show concrete ways for climate mitigation options.

### **2.7.2 Target Group of the SAUCE-programme**

The majority of the children participating in the SAUCE programme were in the age of 10-13 years. All children are from fifth and sixth grade, which belongs to regular secondary schools in the region.

### **2.7.3 Programme structure and characteristic in relation to local circumstances**

Two different structures have been established:

On four days, the pupils are starting all together with a lecture or show. Afterwards, there are separated workshops for smaller groups (one class each). These workshops offer the opportunity of very in depth experience of climate and energy issues and becoming personally affected by the topic. At the end of the day all pupils are coming together again for a common reflexion of the day.

Wednesday is a "lecture" day: Several, separated lectures are held. These lectures are independent from each other and offer education and awareness raising issues for climate and energy. Each of these lectures is scheduled for up to several classes.

### **2.7.4 Thematic focus of your programme**

The Austrian SAUCE programme has a very broad thematic focus. The range includes renewables, mobility, ecological footprint, climate change, climate policies, resources and nutrition. The diversity of the programme enabling teachers to chose the event matching best with their work and of course the situation of their classes.

### **2.7.5 Local Network-building to establish the idea of SAUCE:**

The local network building comprises contact to administration (e.g. ministry of education), NGOs, experts from agencies and public authorities, artists, museums, other institutes at Vienna University of Technology and other universities. They all were included in setting up the SAUCE programme. During the teacher's preparation meeting teachers were involved in the networking activities.