



# KESCH

Energy Reduction at School  
Sustainable Development in Practice

# Outline

- IGS -  
a comprehensive school  
in Mainz, Germany
- KESCH -  
a program to save  
energy
- Climate Protection -  
a geography project  
at school and  
beyond
- ESD –  
the base of a school  
network
- ESD documents in  
Germany –  
links



# IGS Mainz



Comprehensive School:

- grades 5 - 13
- 6 classes per grade
- 1,446 students
- 120 teachers

<http://igs-mainz.bildung-rp.de>



# Mainz – The City

A member of  
the Climate Alliance of European Cities

## Goals:

- reduction of CO<sub>2</sub> emissions by 50 % by 2010
- reduction of all greenhouse gas emissions
- promotion of energy saving measures



# The Project KESCH



The City  
of Mainz

Cooperation

IGS  
Mainz



Energy Efficiency Program

# The Program KESCH

## Objectives:

- energy reduction and efficiency
- emission reduction
- economic profit

## Measures:

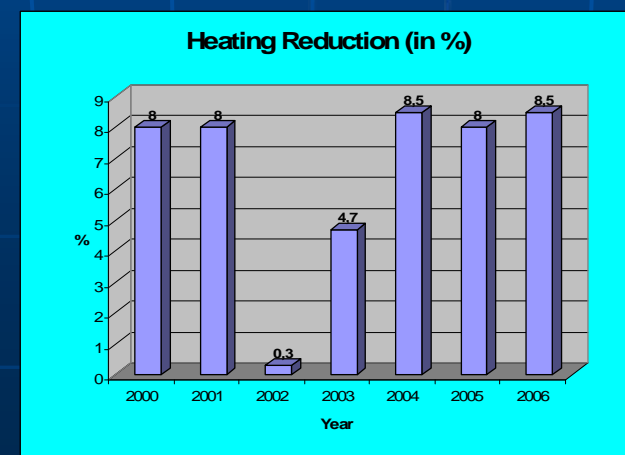
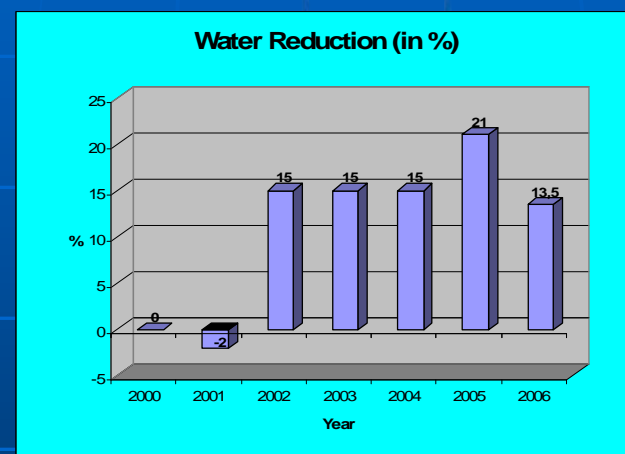
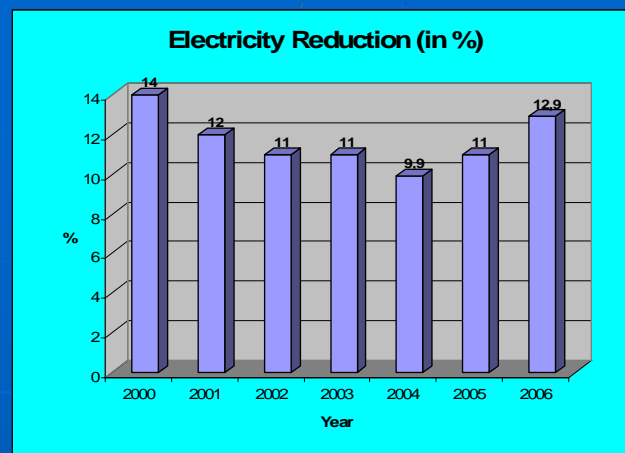
### Monetary savings

- 40 % for the school in cash
- 40 % for energy equipment
- 20 % for energy equipment in other public buildings





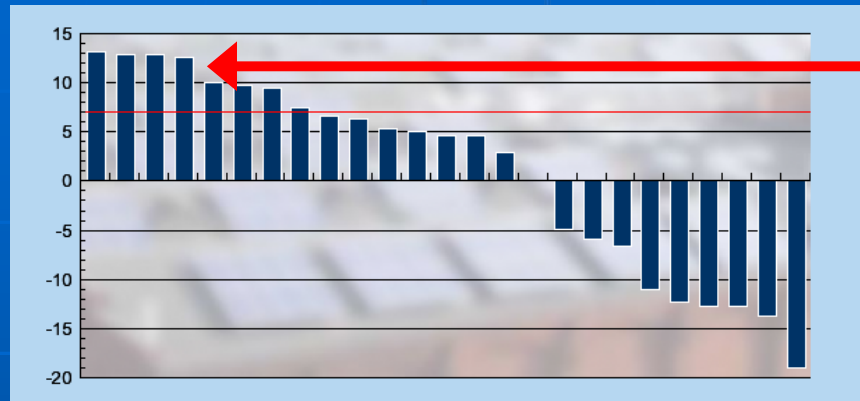
# The Reduction At School:



40,000 €

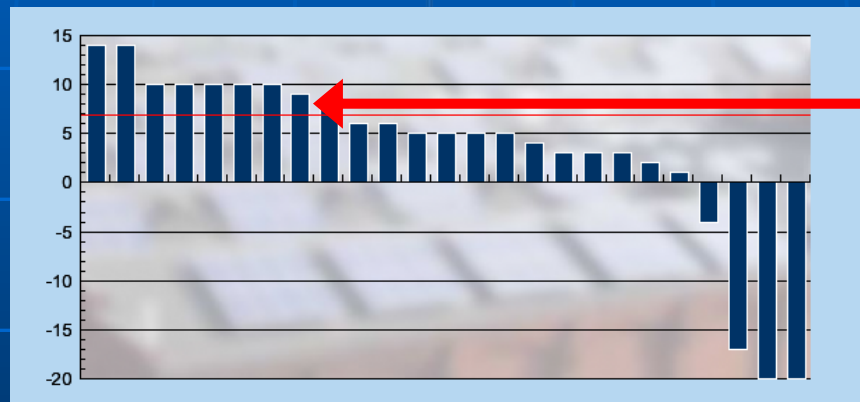
# Savings in Mainz (2005)

**Electricity**  
(average: 7.1 %)



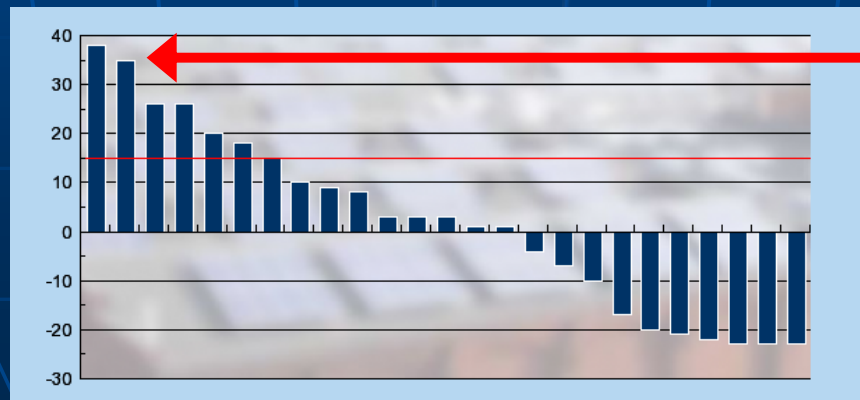
**IGS Mainz**  
(11 %)

**Heating**  
(average: 6.9 %)



**IGS Mainz**  
(8 %)

**Water**  
(average: 15 %)



**IGS Mainz**  
(21 %)



# How is the money spent?

## Goal I: energy reduction and efficiency

- thermostats for the heaters, radiators
- occupancy sensors, dimming controls
- low energy bulbs, high efficiency fluorescent lamps
- tap stops for the showers, toilets
- reduced waterflow in the faucets of the classrooms
- time clocks for instant water heaters

## Goal II: renewable energy

- A photovoltaic plant:  
installed in October 2001  
92 modules  
estimated energy production:  
3,500 KWh/a



# Essentials at School

The participation of the entire school body:

- lessons in the various subjects
- projects in classes and courses
- energy competitions at school



# Climate Protection in Geography

## Steps:

1. the climate warming – a webquest
2. the effects - experiments
3. the global energy problem – debating
4. Saving energy at school – various measures
5. behavioural change at home – slogans and a treaty
6. documentation and evaluation – poster exhibition

# 1. Climate Change – A Webquest

<http://www.espere.net>

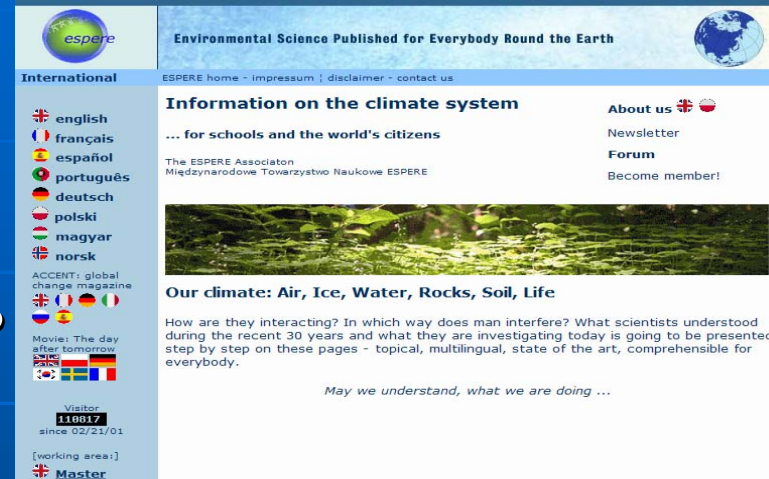
## 1. Man-made climate change?

→ The influence of human activities

## 2. What will a warmer world be like?

→ The danger of natural hazards

## 3. What can we do about it?

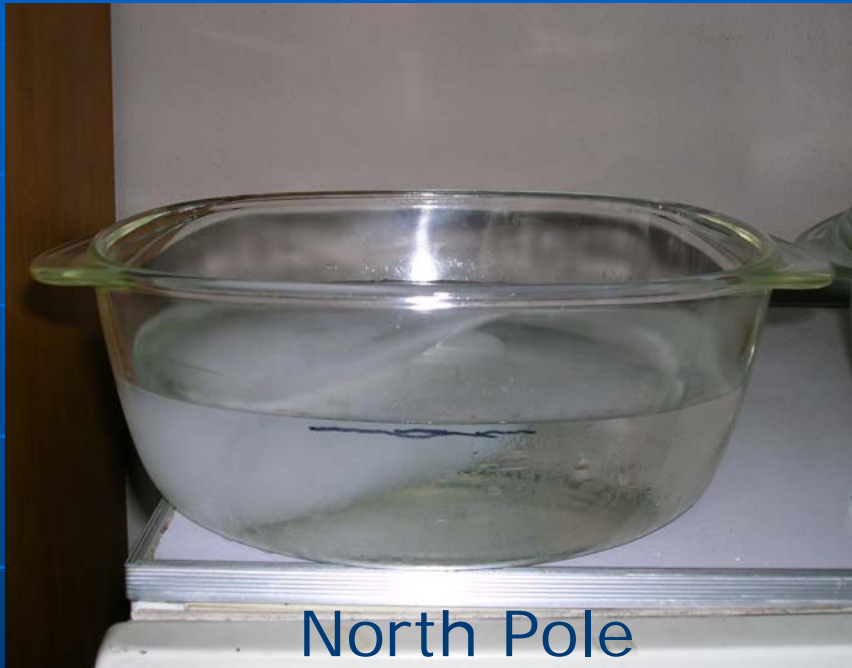


The screenshot shows the homepage of the Environmental Science Published for Everybody Round the Earth (ESPERE) website. The header includes the site's name and a globe icon. Below the header, there are navigation links for 'International', 'Information on the climate system', 'About us', 'Newsletter', 'Forum', and 'Become member!'. The main content area features a large image of a forest and the text 'Our climate: Air, Ice, Water, Rocks, Soil, Life'. A sidebar on the left lists various languages and includes a visitor counter showing 119817 visitors since 02/21/01.



## 2. Experiments on the Effects

The melting of the ice:



### Results:

Melted ice from the continents and the thermal expansion of the oceans will cause a rise of the sea level and flood disasters in low-lying areas.

# 3. Debating

Why should we tackle the problem?

## 1. Global warming effects all nations:

- damage to economy, ecology, and humanity
- affecting the poorer nations
- social responsibility of industrialized countries
- danger of international conflicts

## 2. Consequences:

- Changes in individual behavior are necessary.
- **Think global, act local!**

# 4. Saving Energy at School

## 4.1. Energy patrol



Here: measuring light intensity and temperature

# 4. Saving Energy at School

## 4.2. Rules:

- Turn off lights when not needed
- Set the heating at 20 °C
- Close the windows before leaving
- Stop taps from dripping





# 4. Saving Energy at School

## 4.3. Information



# 4. Saving Energy at School

## 4.4. Energy Competition:

- prizes which support the ecological behaviour
- for many classes
- for the most participation and motivation



# 5. Saving Energy at Home - Slogans

Be Miss Watt

Take 1,000 Steps

Sing a Short Song

Let The Sun Shine

Top Your Roof

# 5. Saving Energy at Home – a Treaty

## *Treaty "Fifty-fifty"* *(between son/daughter and parents)*

*By investigation and measurements, I will detect the superfluous consumption of energy in our family. I will plan measures to reduce this consumption and put them into practice. The reduction of the energy costs in relation to the average amount of energy used in the past will be halved between my parents and me.*

*Date: .....*

*Signature Child: .....*

*Signature Parents: .....*

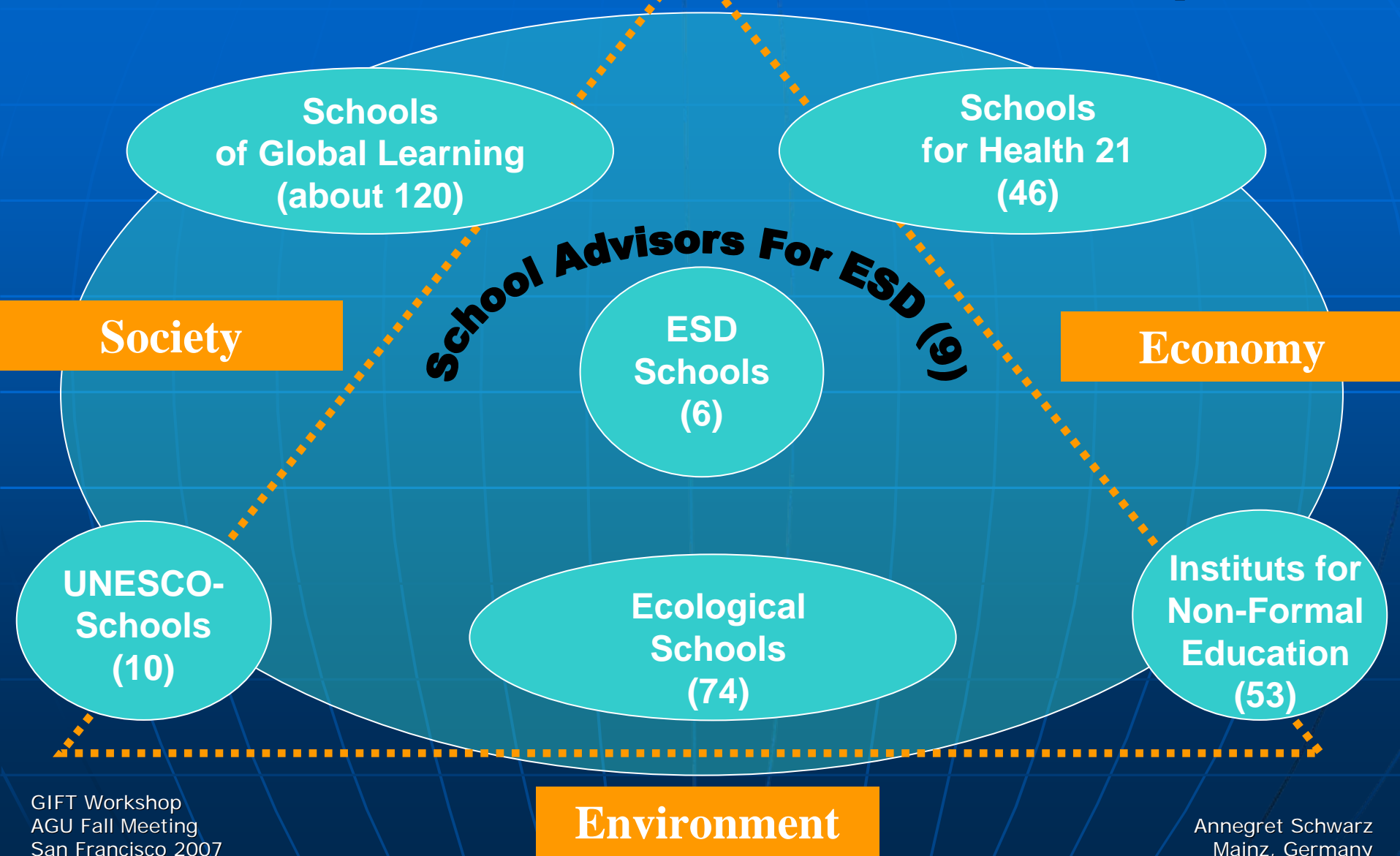
# 6. Documentation

## KESCH: Education For Sustainable Development In Practice



# The School Network of ESD

## Education for Sustainable Development



# ESD in Germany - Documents

- Guide. Education for Sustainable Development at Secondary Level:  
[http://www.transfer-21.de/daten/materialien/Orientierungshilfe/Guide\\_competences\\_engl\\_online.pdf](http://www.transfer-21.de/daten/materialien/Orientierungshilfe/Guide_competences_engl_online.pdf)
- Developing Quality at ESD Schools:  
[http://www.transfer-21.de/daten/materialien/Orientierungshilfe/quality\\_eng\\_online.pdf](http://www.transfer-21.de/daten/materialien/Orientierungshilfe/quality_eng_online.pdf)
- Lucerne Declaration on Geographical Education for Sustainable Development (The International Geographical Union Commission on Geographical Education):  
<http://igu-cge.tamu.edu/>
- World in Transition – Climate Change as a Security Risk (German Advisory Council on Global Change, 2007):  
[http://www.wbgu.de/wbgu\\_jg2007\\_engl.html](http://www.wbgu.de/wbgu_jg2007_engl.html) and  
World in Transition – Towards Sustainable Energy Systems (2003): [http://www.wbgu.de/wbgu\\_jg2003\\_engl.html](http://www.wbgu.de/wbgu_jg2003_engl.html)