

KESCH

Energy Reduction at School Sustainable Development in Practice



Mainz, Germany

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Structure

- IGS – a comprehensive school in Mainz
- Mainz – a member of the Climate Alliance
- KESCH – a program to save energy
- climate protection – a geography project
- sustainability – a practical approach
- evaluation

IGS Mainz



Comprehensive School:

- grades 5 - 13
- 6 classes per grade
- 1,432 students
- 120 teachers



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



Mainz – the city

A member of the Climate Alliance of European Cities (1993):

- reduction of CO₂ emissions by 50 % by 2010
- reduction of the emissions of all greenhouse gases
- promotion of energy saving measures:
 - low-energy housing
 - renewable energies
 - climate consulting in public buildings



<http://www.mainz.de>

KESCH



Utility costs for urban schools:

33 % of the electricity

27 % of the water consumption

54 % of the heating costs

Energy Efficiency Program

A cooperation of the city and the school

KESCH - what is the program about?

Objectives:

- energy reduction and efficiency
- emission reduction
- economic profit

Measures:

a refund of the savings

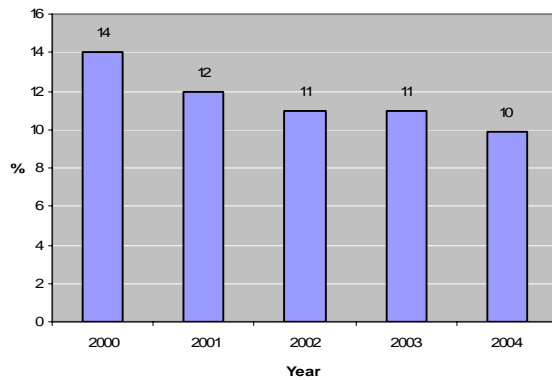
- 40 % for the school in cash
- 40 % for energy equipment
- 20 % for energy equipment in public buildings



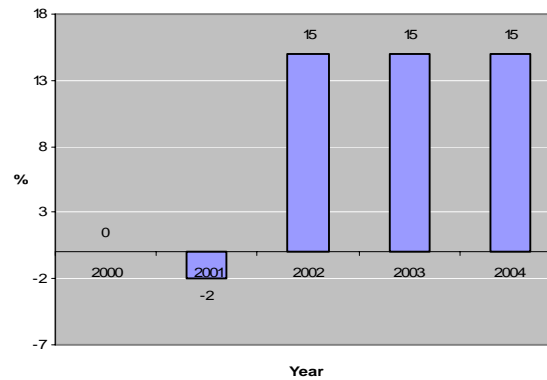
- Each year 25 schools save as much energy as 400 private households would use.
- Since the late 90s energy costs of €460,000 have been saved.

What are the results?

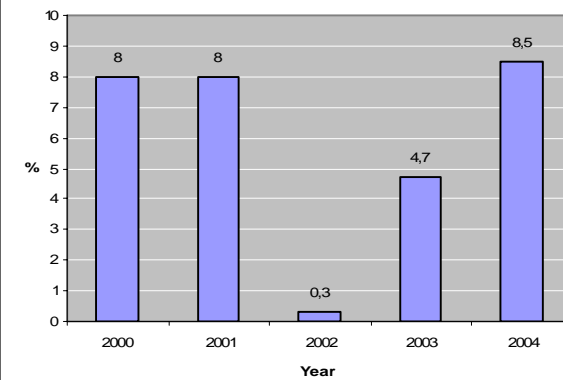
Reduction of Electricity (%)



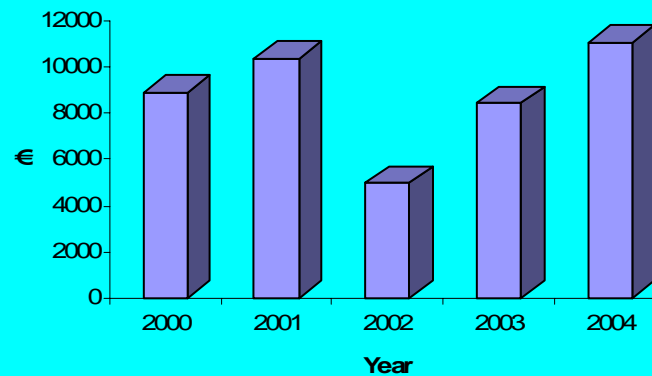
Reduction of Water (%)



Reduction of Heating (%)



Energy Savings per Year in Euro



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 water taps of the classrooms
- time clocks for instant water heaters

■ Goal II: renewable energy

■ a photovoltaic plant :

Installation in October 2001

92 modules

estimated energy production:

3,500 kWh/a



What makes the program so successful?

The participation of the entire school body:

→ projects in various classes and courses



Geography Project: Climate Protection

Steps:

- 1. the climate warming – a webquest**
- 2. the effects - experiments**
- 3. the global energy problem – debating**
- 4. energy check at school - measures**
- 5. behavioural change at home - slogans**
- 6. documentation – poster exhibition**
- 7. final evaluation**

1. The climate change – a webquest

<http://www.espere.net>

1. Man-made climate change?

How do we know that people have affected the climate?

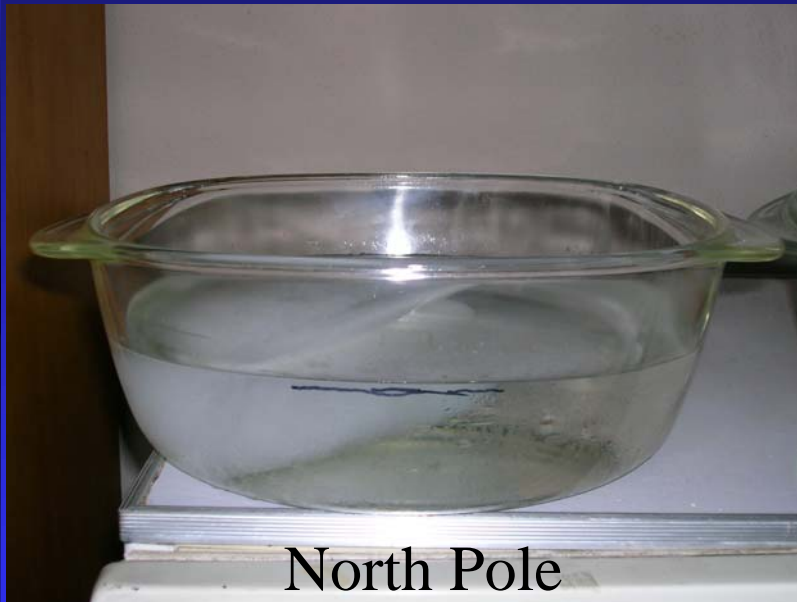
2. What will a warmer world be like?

3. What can we do about it?



2. Experiments on the effects

The melting of ice worldwide



North Pole



South Pole

Results:

Melted ice from continents and the thermic expansion of the oceans will cause a rise of the sea level.

→ → → severe flooding of low-lying areas

3. Why should we tackle the problem?

Global warming effects all nations:

- damage to economy, ecology and humanity
- industrialized countries have a social responsibility
- poorer nations are likely to be those most affected
- fossil fuels are limited

Efforts:

- Kyoto Protocol
- German Climate Protection Program
- Climate Alliance of Mainz
- KESCH
- individual actions?

4. Energy Check at School



Here: measuring light intensity and temperature

4. What can we do to save energy at school?

1. posters, signs
2. rules:
 - Turn off lights when not needed
 - Set the heating at 20 °C
 - Close the windows before leaving
 - Stop taps from dripping
3. energy guards
4. competition:
 - many prizes
 - for many classes
 - for the most possible motivation



5. What can we do to save energy at home?

SLOGANS:



Be Miss Watt



Take 1,000 steps



Sing a short song



Let the sun shine



Top your roof

6. Documentation

KESCH: sustainable development in practice



Tell me, and I will forget.
Show me, and I will remember.
Involve me, and I will understand.
- Lao Tse -