Saving Energy ... Saving our Future

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Sulingen

Lower Saxony

Map of Lower Saxony showing cities including Cuxhaven, Stade, Norden, Wilhelmshaven, Bremerhaven, Emden, Varel, Rosengarten, Lüneburg, Oldenburg, Dannenberg, Delmenhorst, BREMEN, Soltau, Uelzen, Verden, Cloppenburg, Sulingen, Celle, Meppen, Wolfsburg, Nordhorn, Lingen, Diepholz, HANNOVER, Braunschweig, Schüttorf, Osnabrück, Wolfenbüttel, Hildesheim, Salzgitter, Hameln, Seesen, Göttingen

Sulingen

Our School
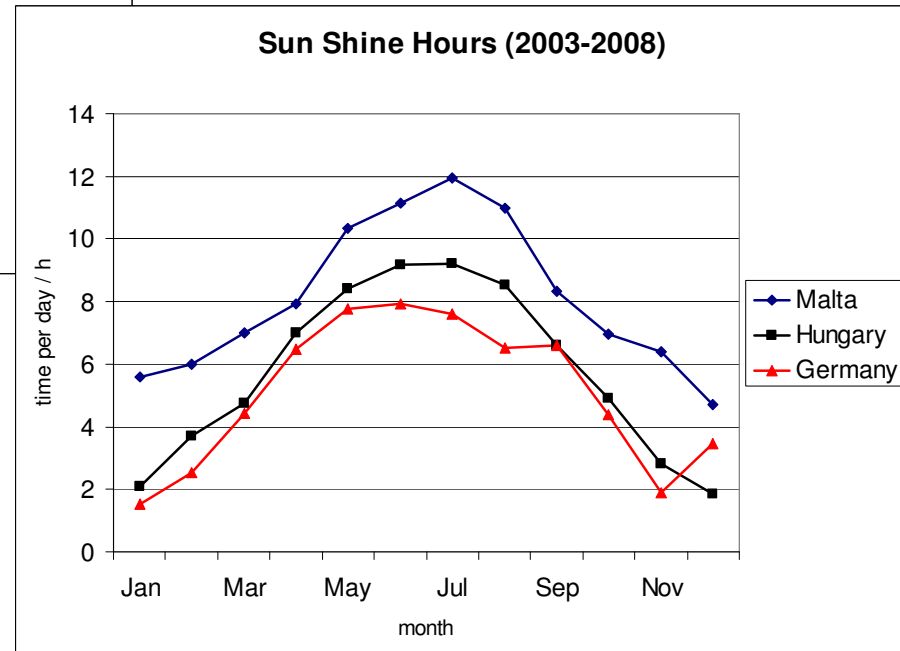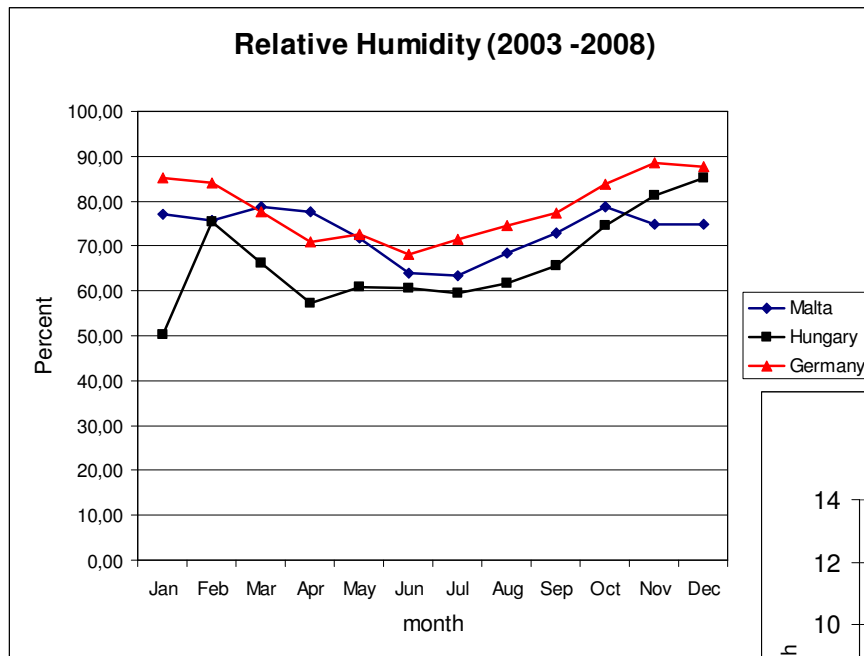
Climate and weather data

monthly values for the 5-year period 2003 to 2008 for mean temperature, mean precipitation, average wind speed, mean relative humidity and hours of sunshine
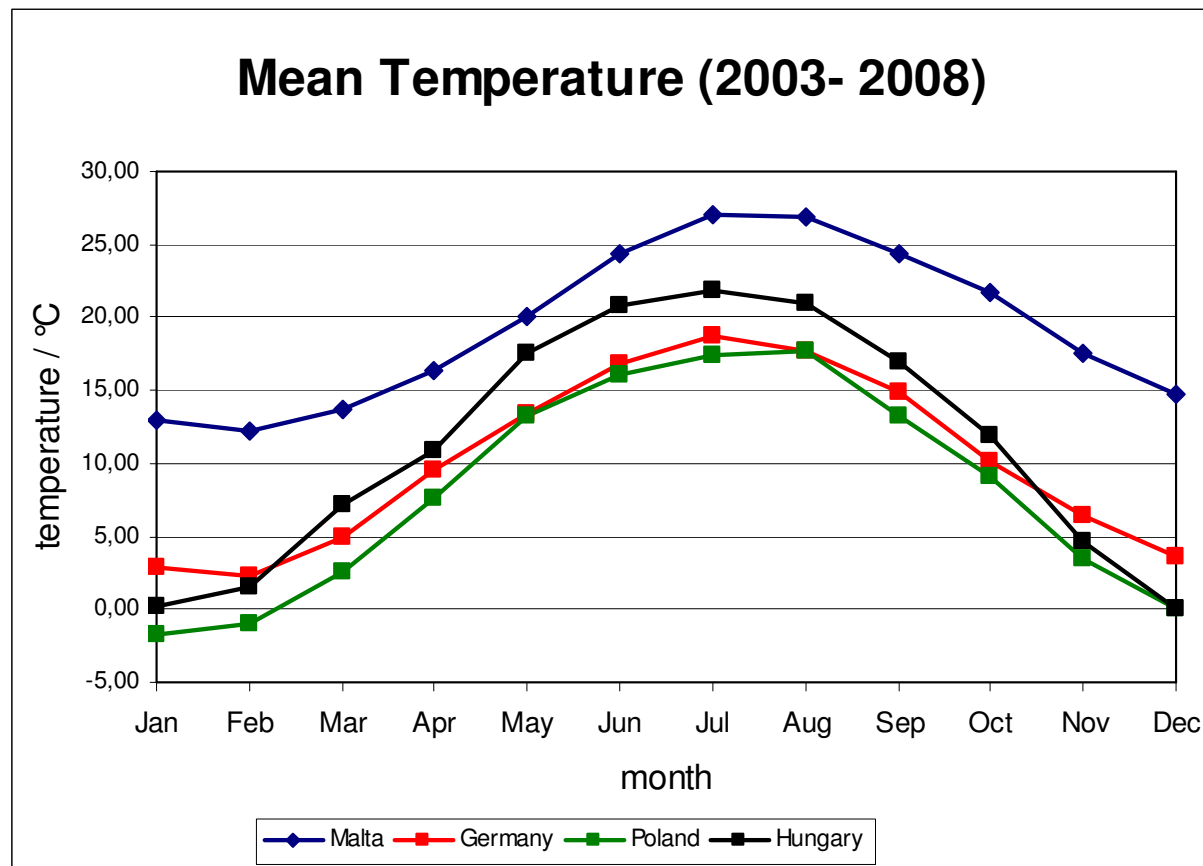
Climate and weather data
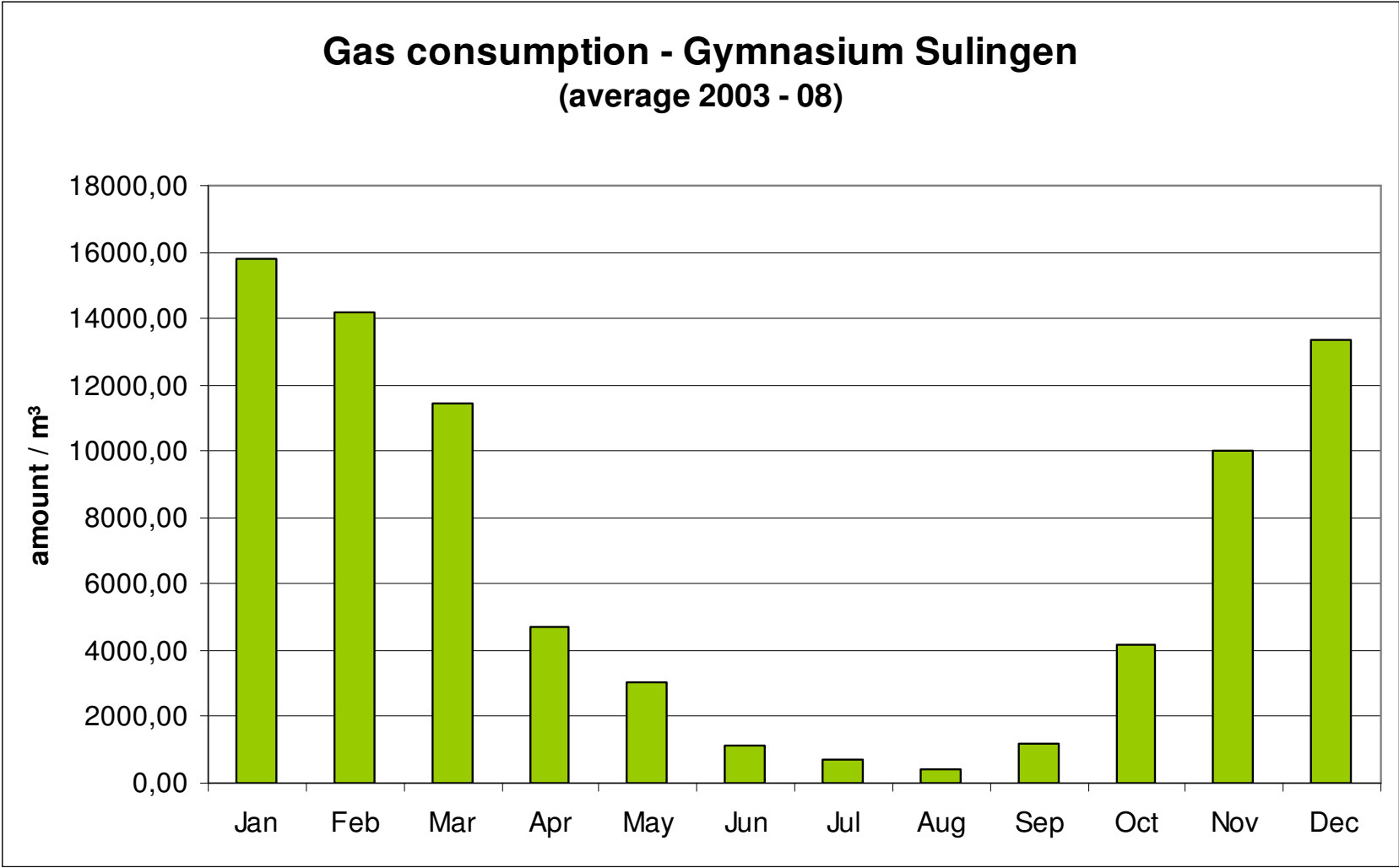
Energy consumption

Gas consumption - Gymnasium Sulingen
(average 2003 - 08)

Energy consumption
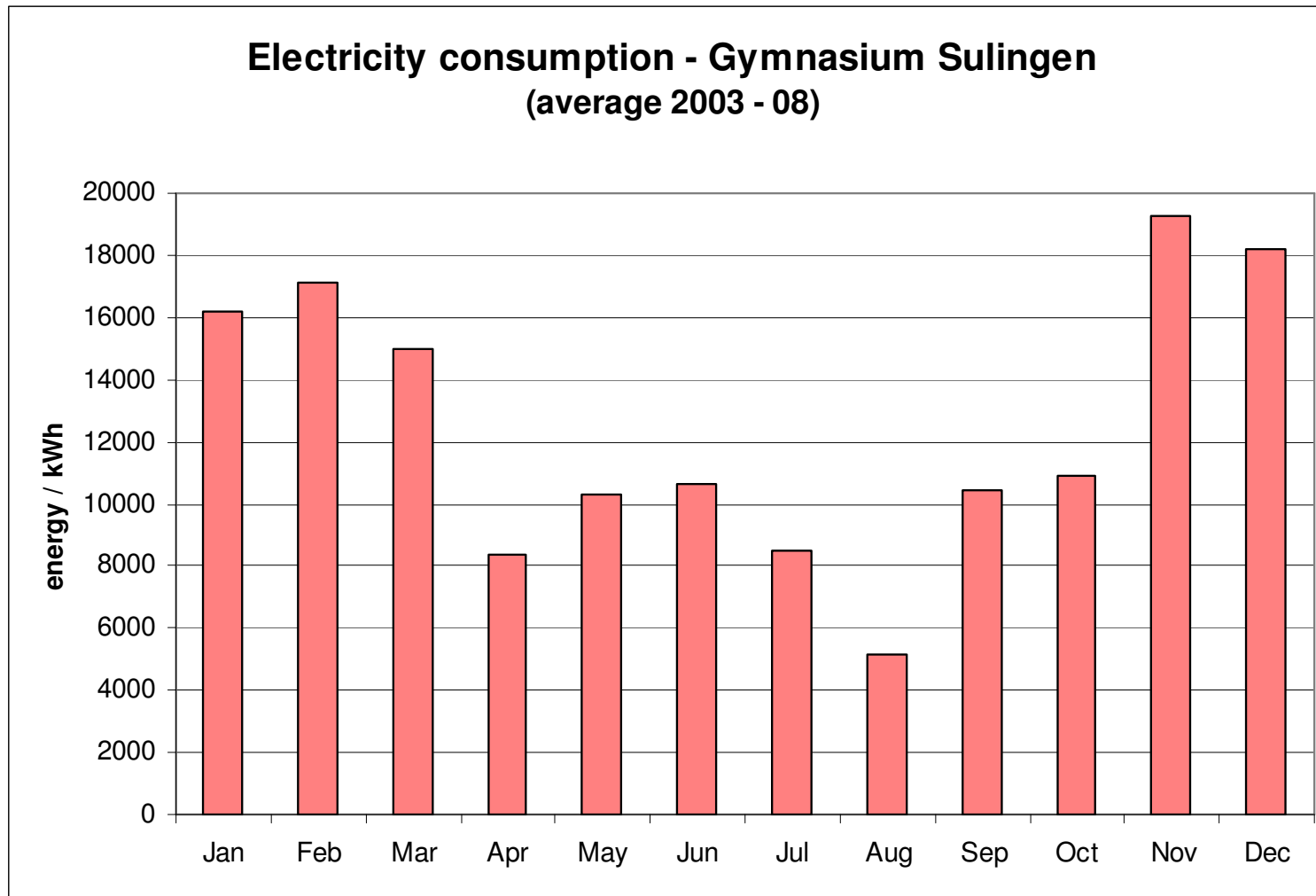
Electricity consumption - Gymnasium Sulingen
(average 2003 - 08)

Energy consumption

comparison between gas consumption at Gymnasium Sulingen and air temperature
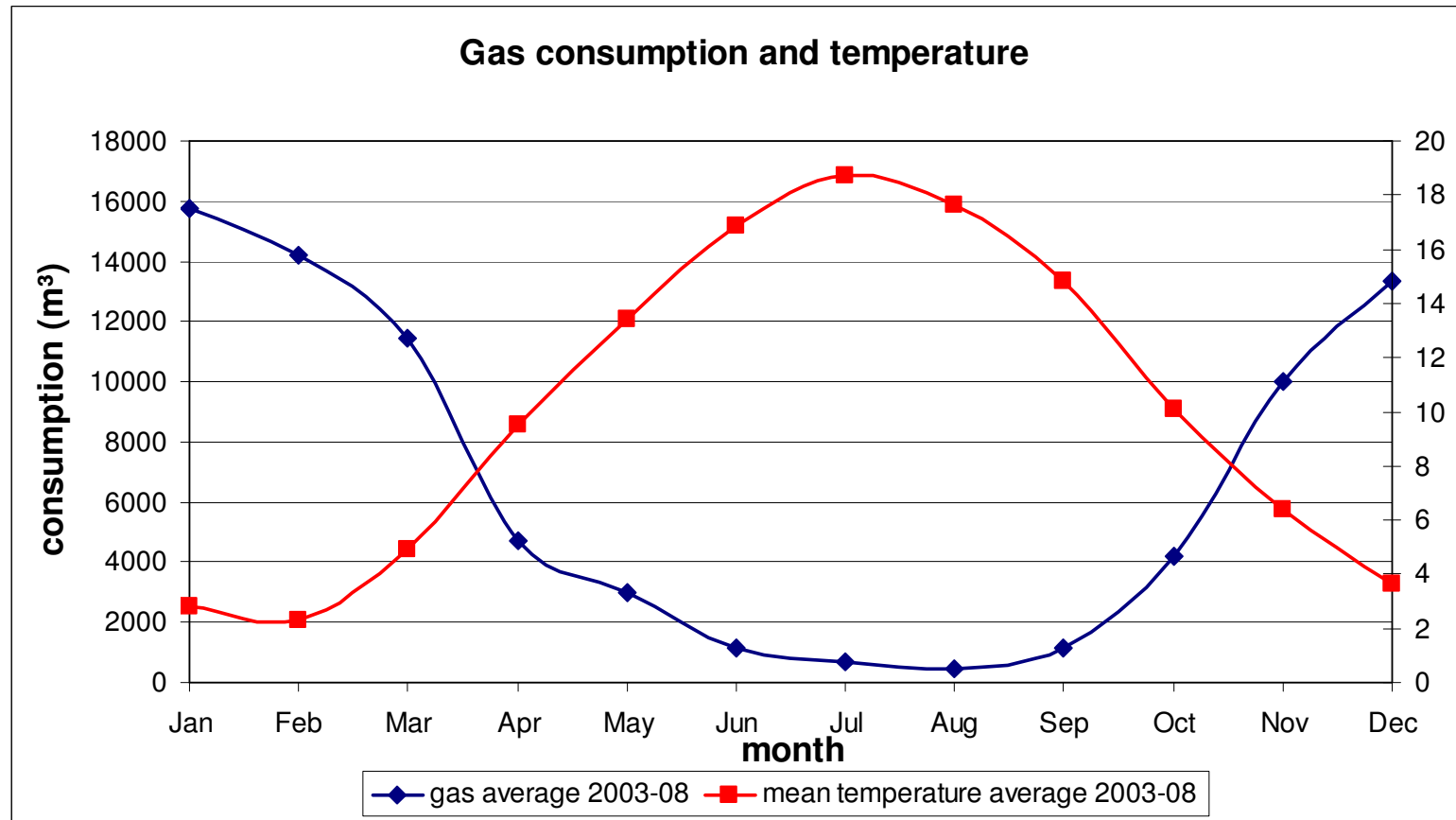
Energy Consumption

Electricity consumption by different source
(average of 16 German households)
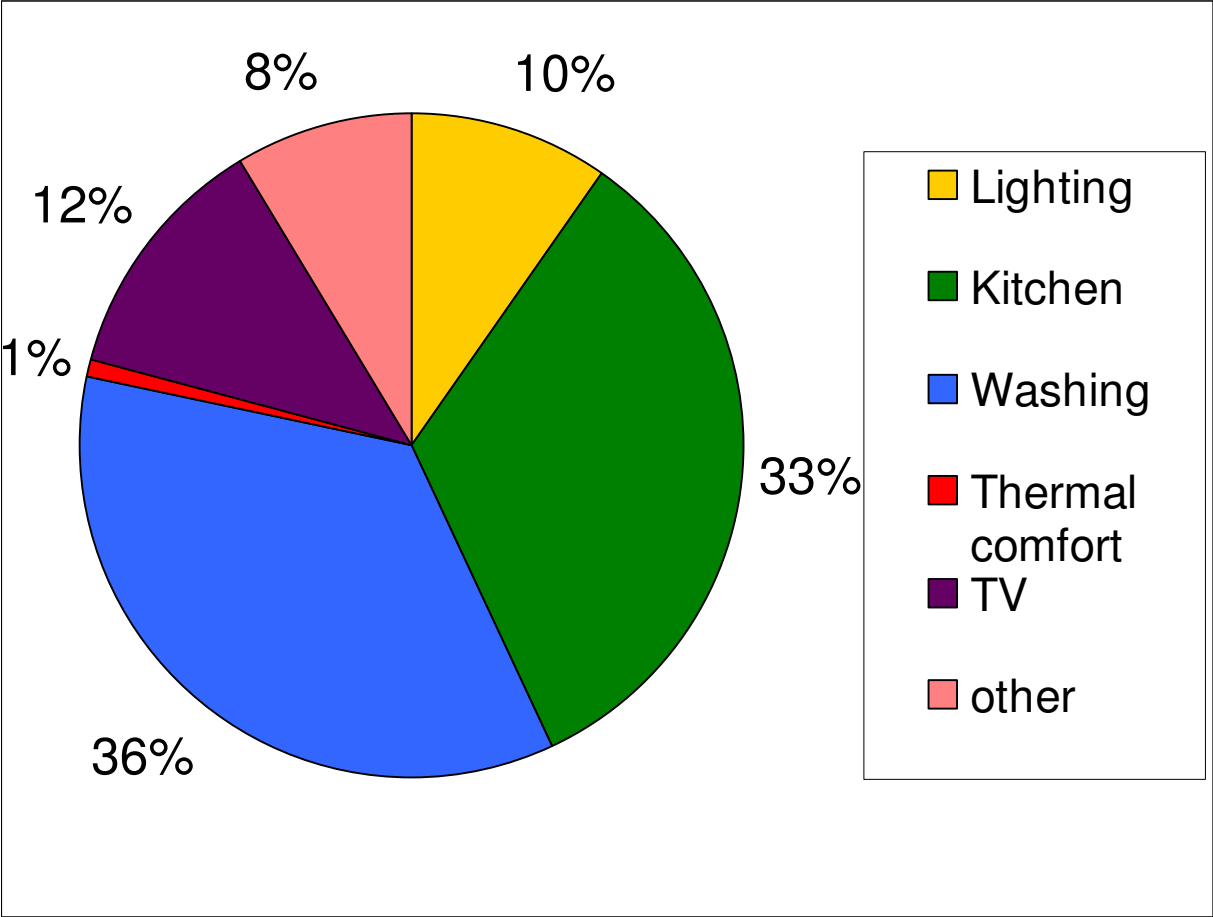
average
consumption per
week:

68,1 kWh

Pie chart:
- 8%
- 10%
- 12%
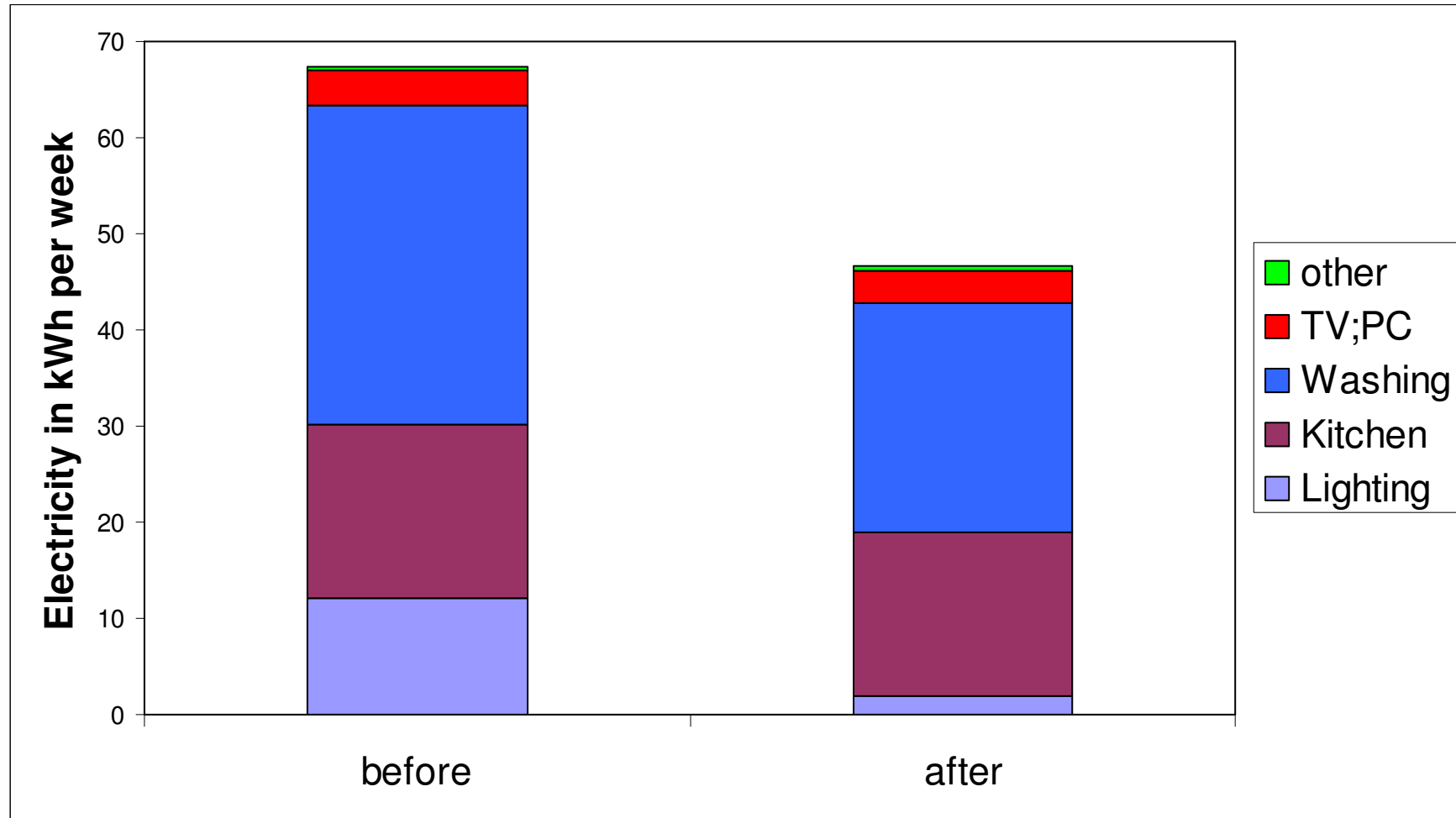- 1%
- 33%
- 36%

Legend:
- Lighting
- Kitchen
- Washing
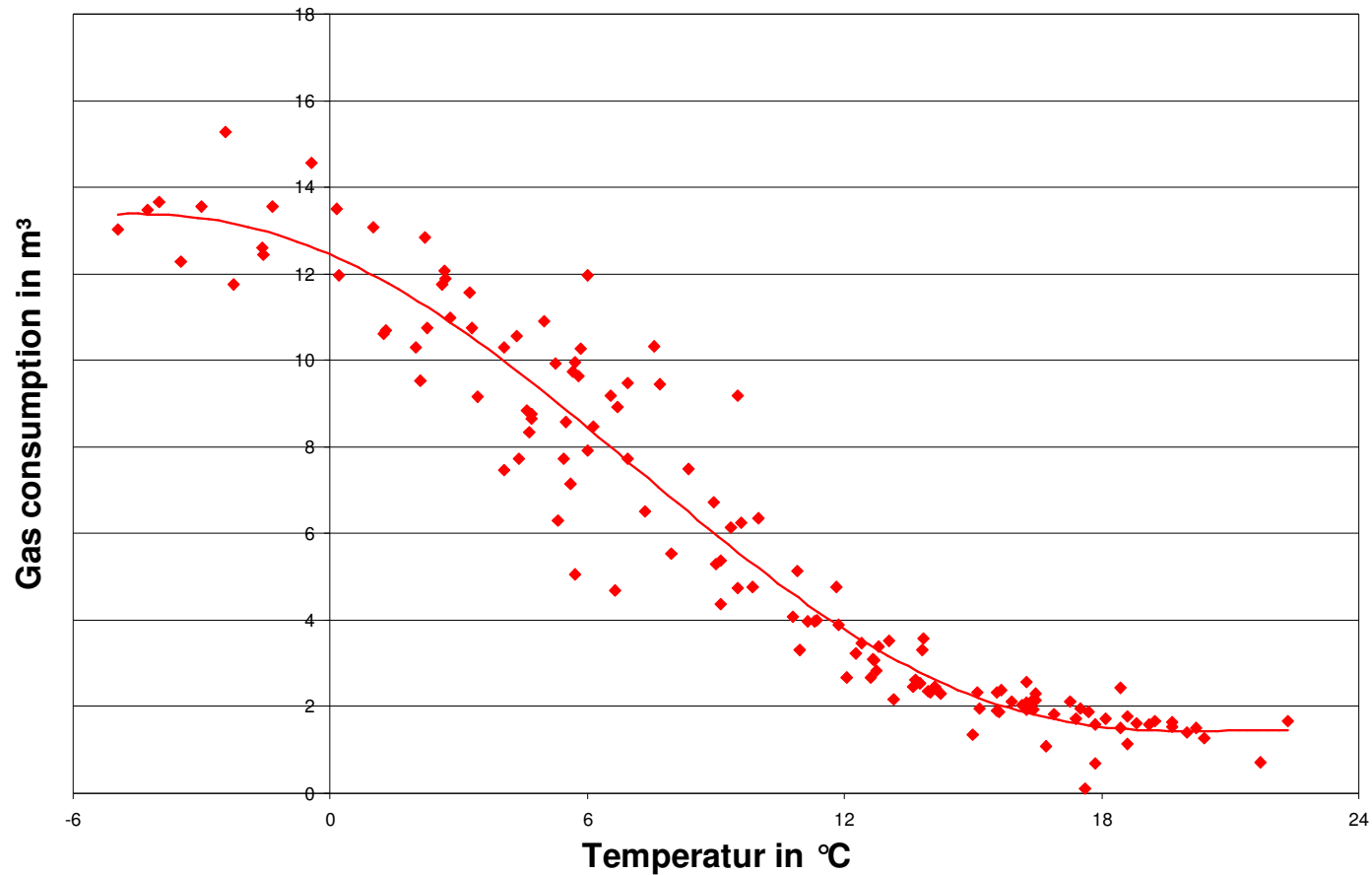- Thermal comfort
- TV
- other

Energy Consumption

Theoretical case study for one houshold

Energy consumption

Longterm monitoring of gas consumption:
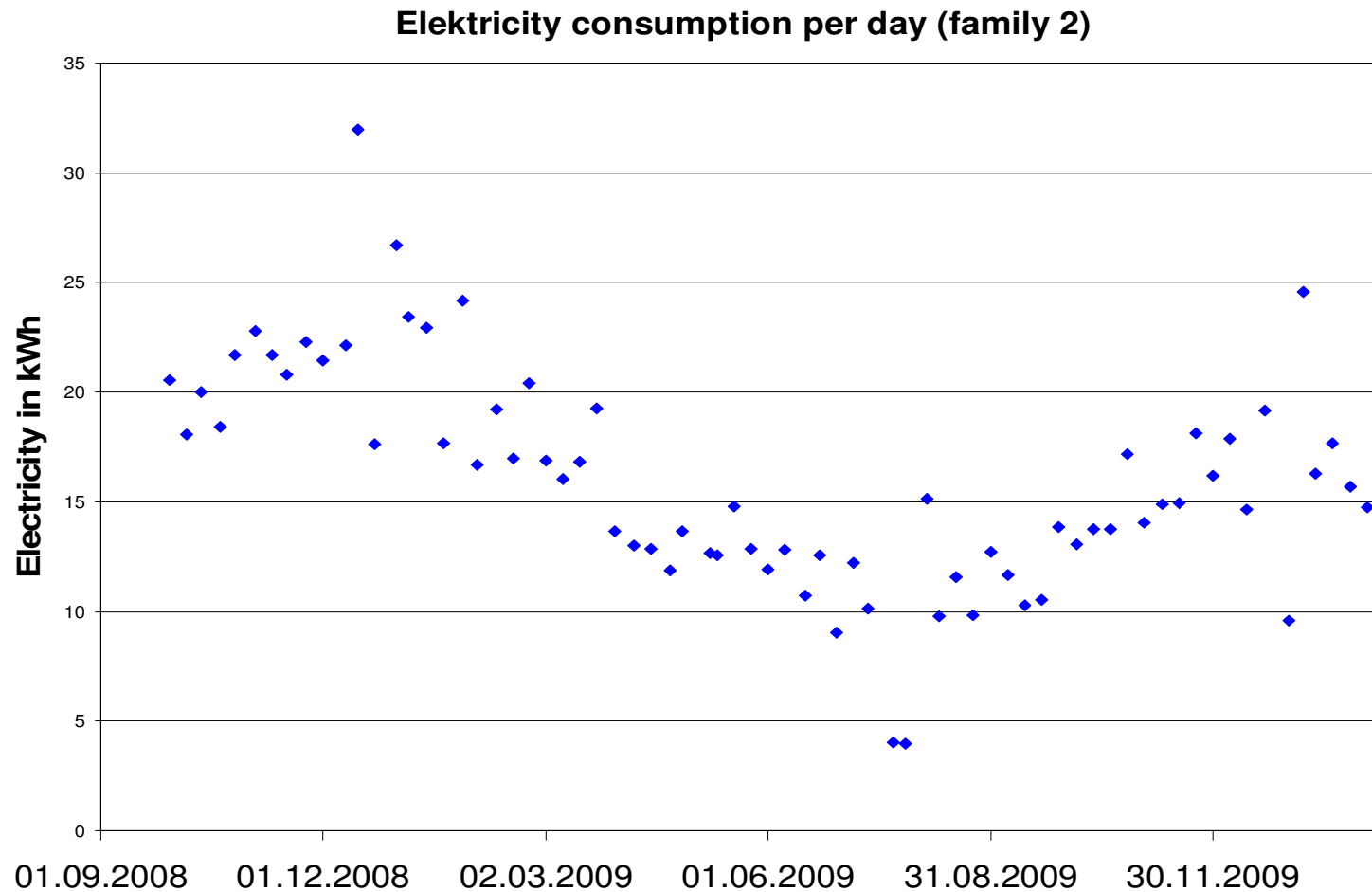
Daily gas consumption vs. air temperature (family 1)

Energy consumption

Longterm monitoring of electricity consumption:

Elektricity consumption per day (family 2)

Energy consumption

Daily electricity consumption before and after implementation of energy saving measures   family 1

Daily electricity consumption vs. air temperature

Before:

132 kWh per week
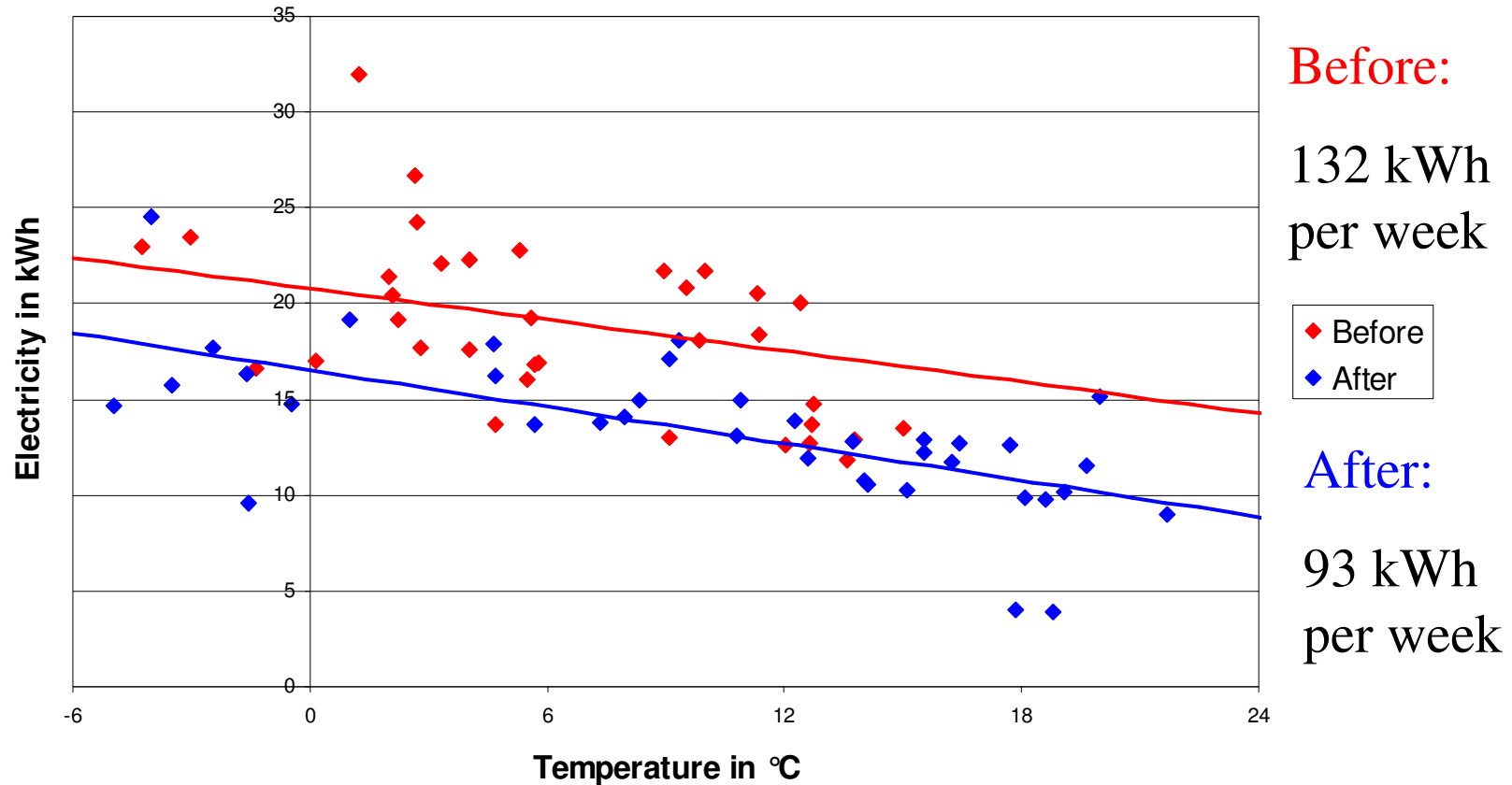
After:

93 kWh per week

Energy consumption

Daily electricity consumption before and after implementation of energy saving measures   family 2
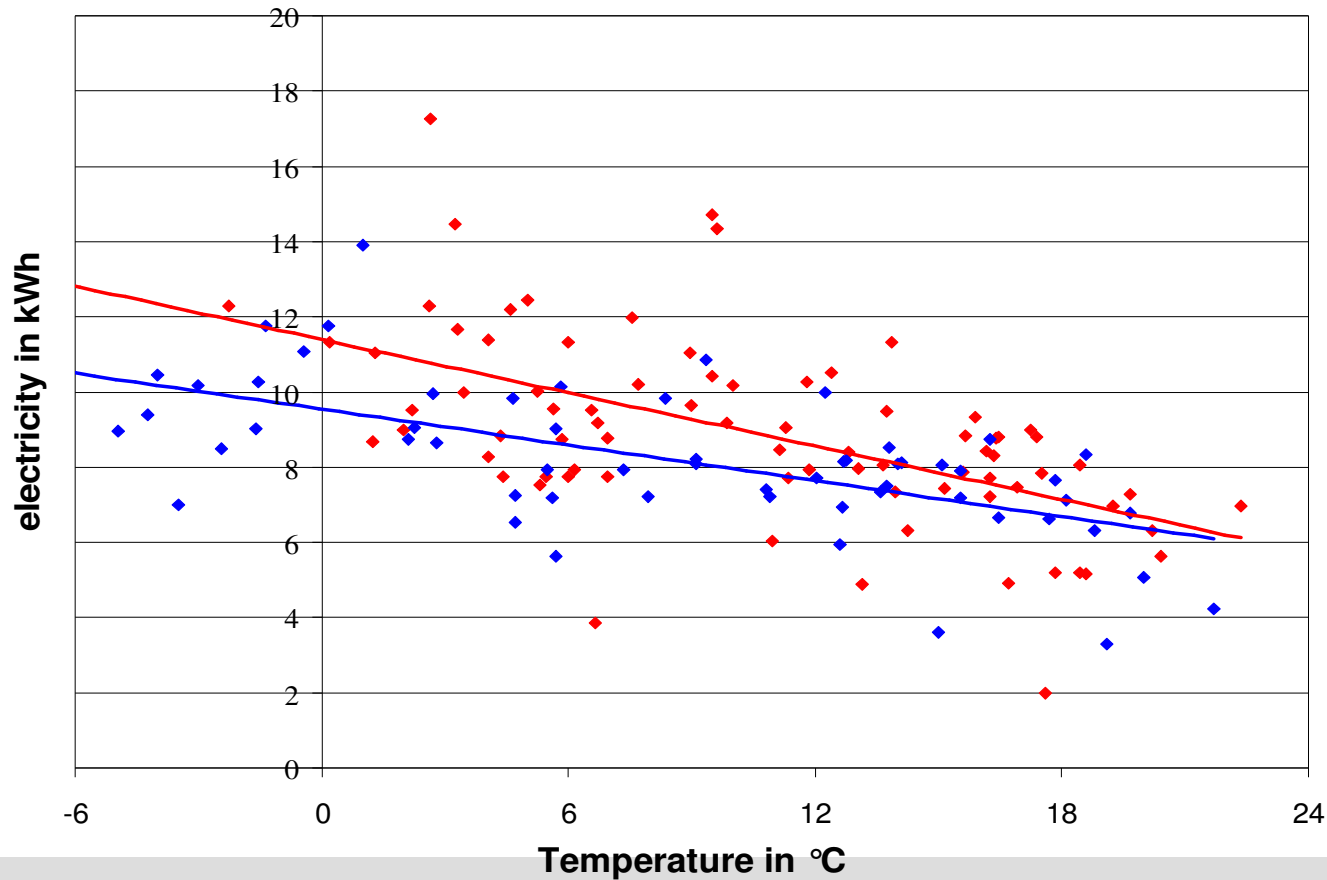

Daily electricity consumption vs. air temperatur

Energy Mix

Electricity production in Germany: Energy Mix

nuclear	23%
brown coal	24%
black coal	20%
oil	2%
natural gas	13%
waterpower	4%
wind energy	6%
biomass	4%
solar	1%
other	3%

GD Bildung und Kultur
Programm für lebenslanges Lernen

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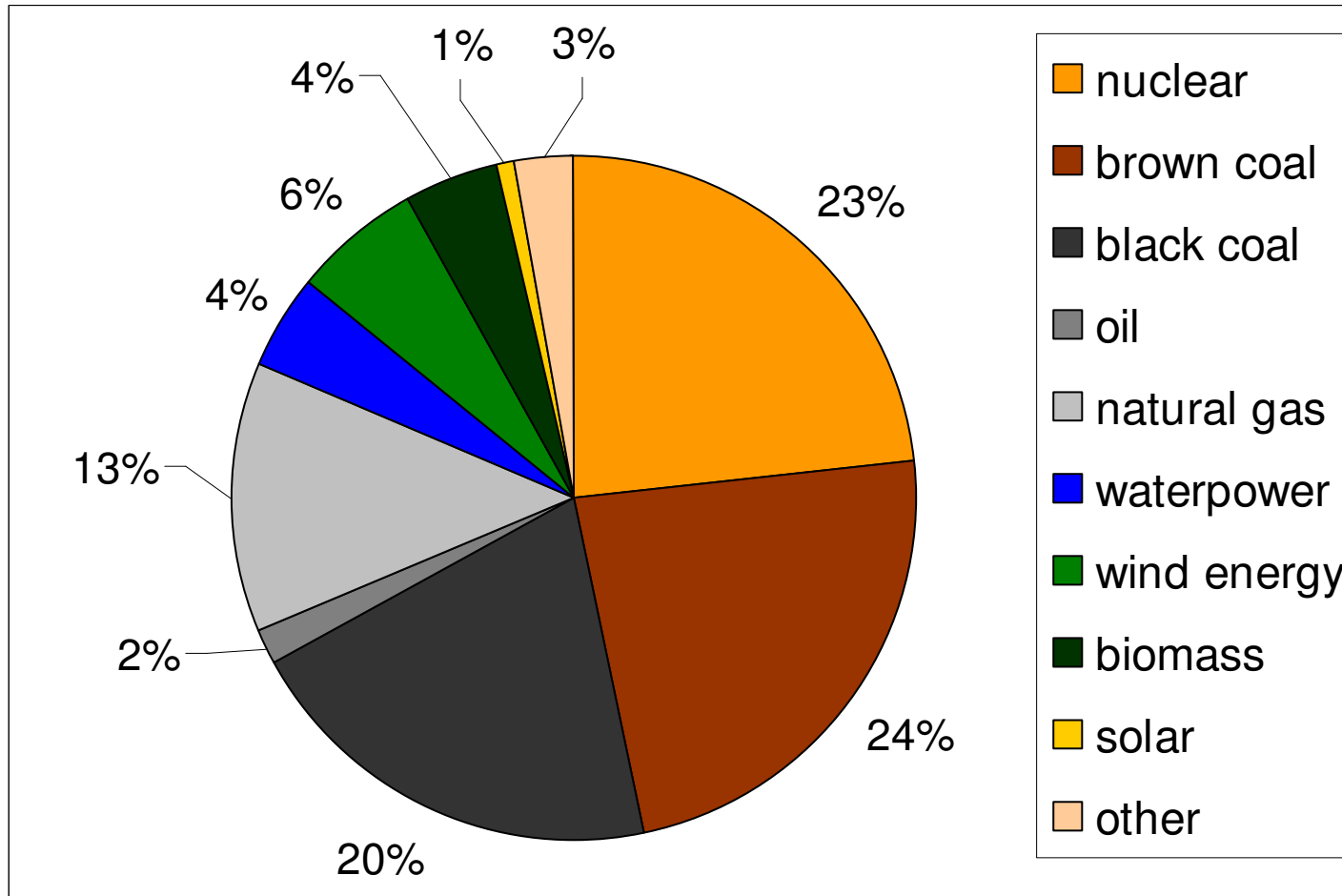
Energy Mix

Germany (mean) and energy supplier Sulingen (EON-Avacon)

15%   24%

61%

22%   33%

45%

nuclear

fossile

renewable
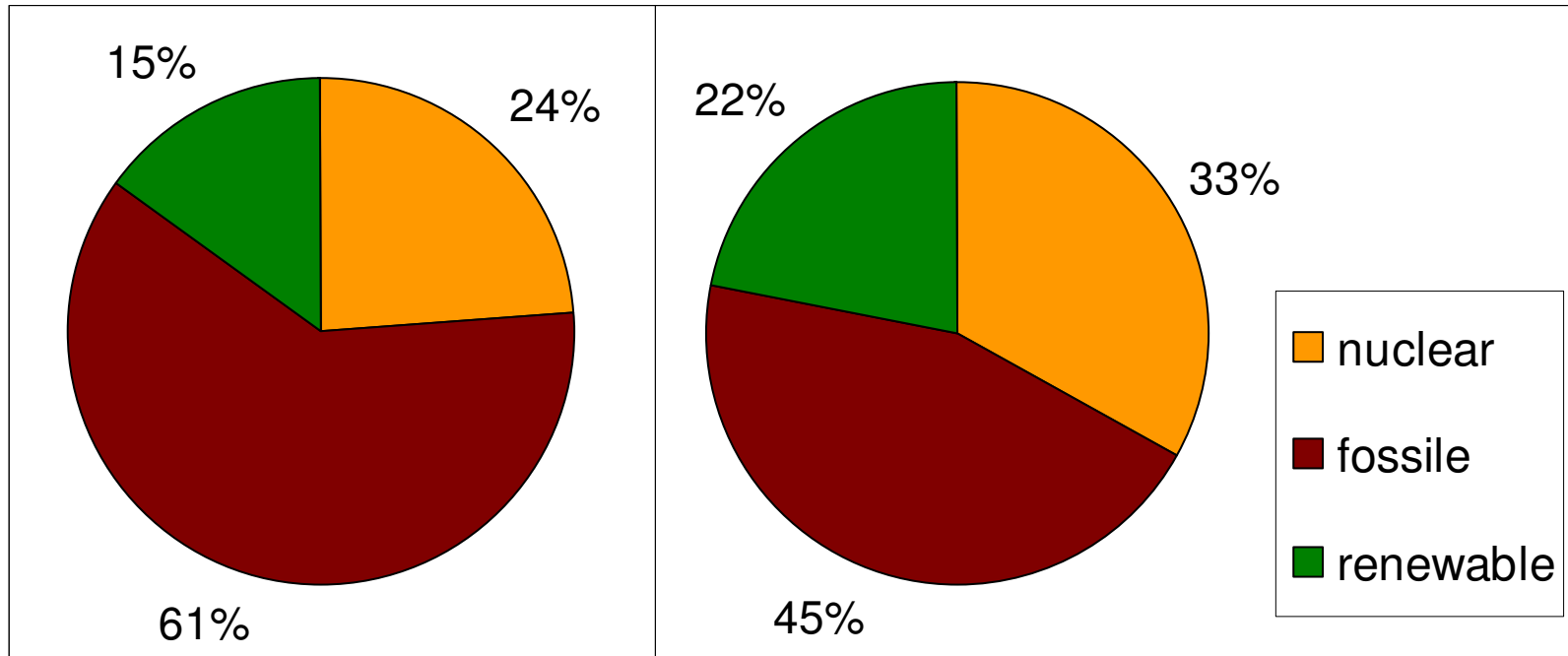
CO2 emission Germany (mean):   **541 g/kWh**
Sulingen (region):   **386 g/kWh**

Energy Mix

gross inland energy consumption in 2007 in MWh per person
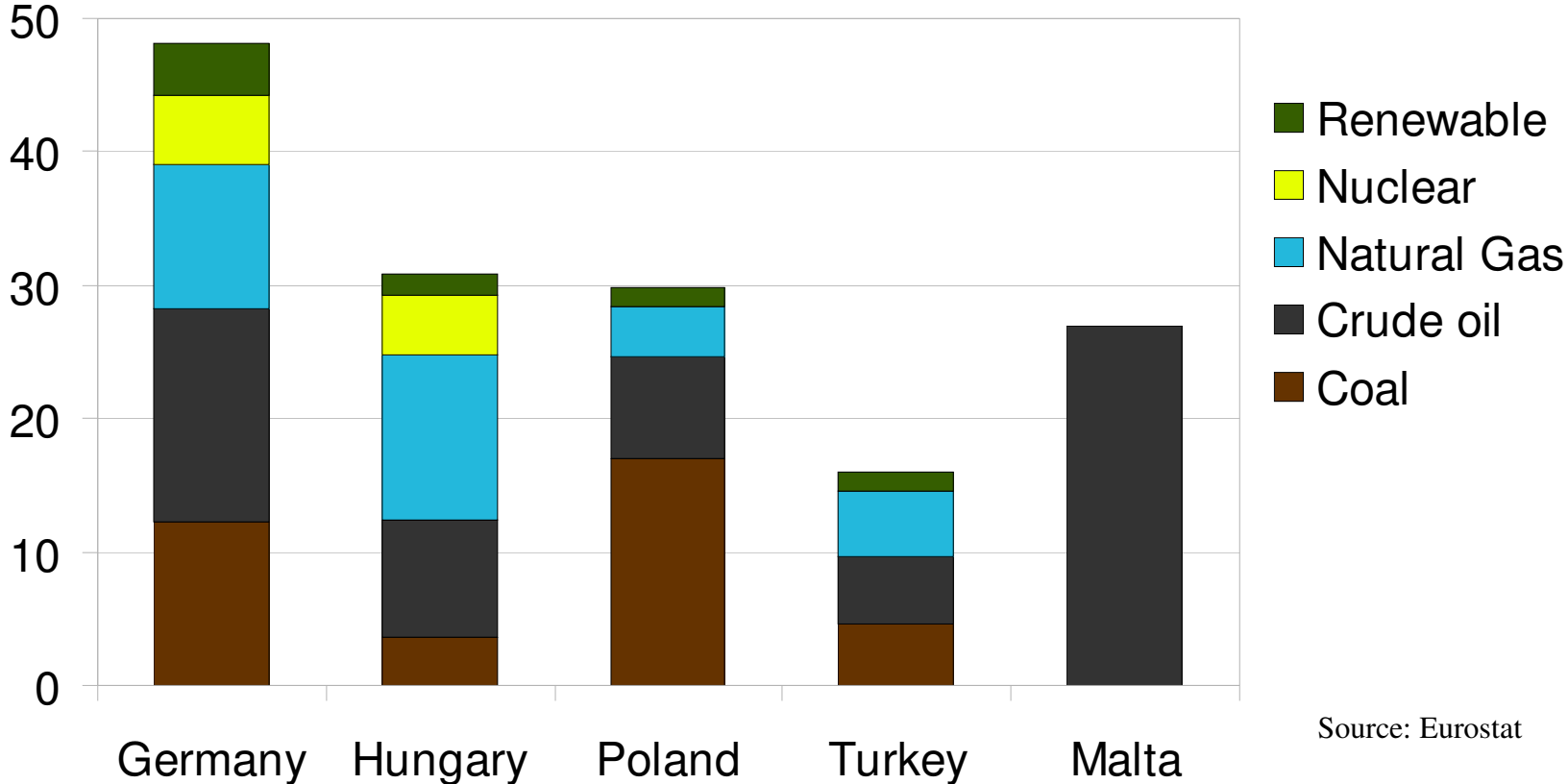
Source: Eurostat

Energy Mix

gross inland energy consumption in 2007

Legend:
- Renewable
- Nuclear
- Natural Gas
- Crude oil
- Coal

Countries: Germany, Hungary, Poland, Turkey, Malta

Source: Eurostat

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Energy Mix

Greenhouse gas emissions per person in tons
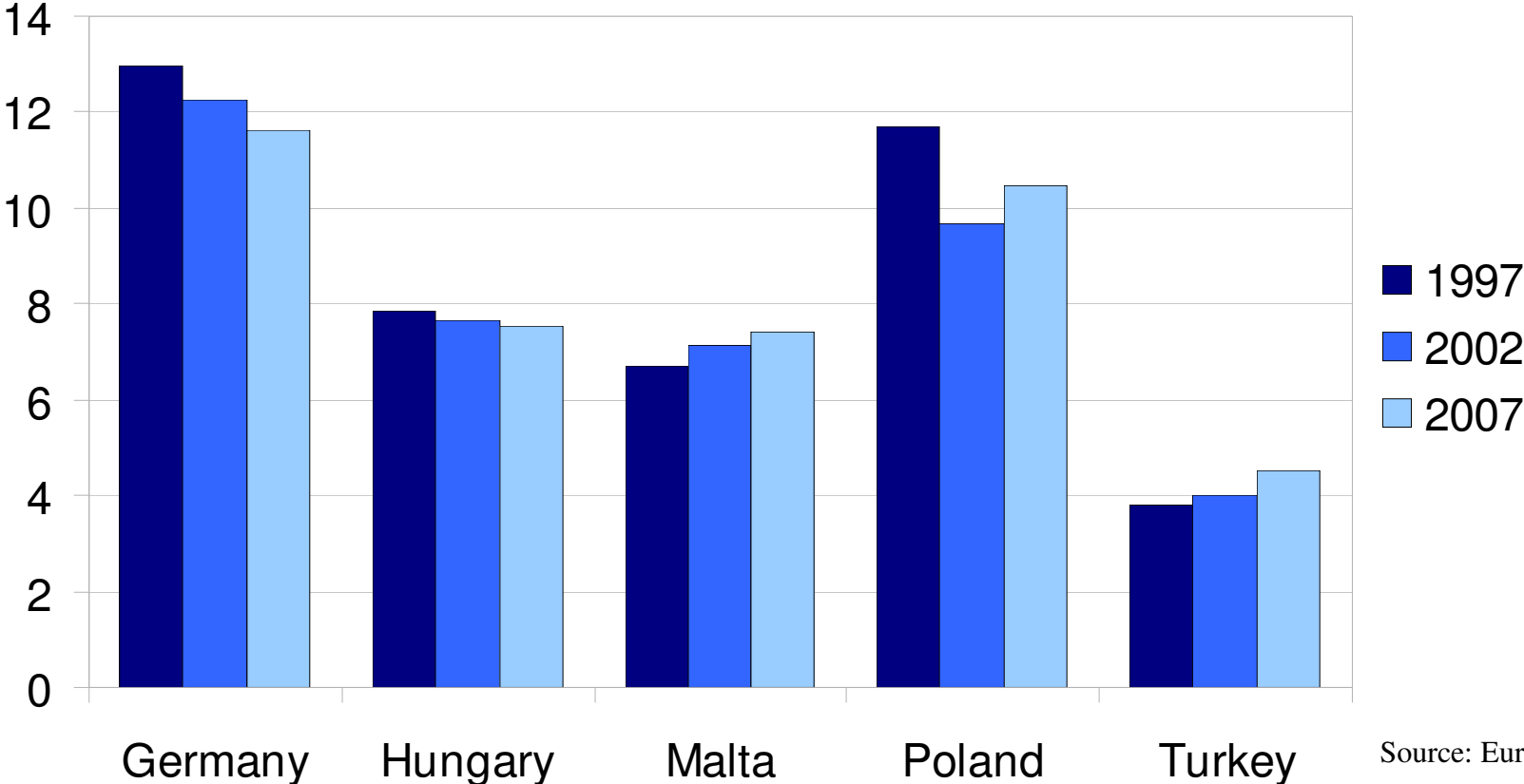
Source: Eurostat

Saving Energy

Energy Saving Tips:

- **Unplug:** Even when a charger is not connected to the appliance, it still consumes electricity.

- **Switch off:** Do not leave appliances on standby. Use the „on - off" function.

- **Only boil as much water as you need:** Avoid boiling water unnecessarily.

- **Use energy-saving-bulbs:** Energy-saving bulbs can reduce your lighting costs and avoid CO_2 emissions.

- **New devices:** More energy efficiency at home reduces energy consumption.

- **Don´t use the dryer:** Put the clothes on the clothesline.

Saving Energy

Save energy and reduce CO_2 emission:

PC and Monitor:

stand-by power per day:	$10\ W \cdot 21\ h = 210\ Wh$
energy saving per year:	**76 kWh**
reduce CO_2 emission per year:	**41 kg**
all students in our school:	approx. **40 tons**

Energy-saving bulb 11 W/ light bulb 60 W

power difference per day:	$49\ W \cdot 4\ h\ = 196\ Wh$
energy saving per year:	**71 kWh**
reduce CO_2 emission per year:	**38 kg**

approx. 200 km by car (8 ltr. / 100 km)

→   **40 kg CO_2**

Saving Energy

Save energy and reduce CO_2 emission:

Condenser Tumble-Dryer:

efficiency C rated: 4,48 kWh / cycle

4 washes per week: 18 kWh

energy per year: 936 kWh

2 washes per week: 9 kWh

energy saving per year: **468 kWh**

and in addition

efficiency A rated: 1,9 kWh / cycle

2 washes per week: ~   4 kWh

energy saving per year: **728 kWh**
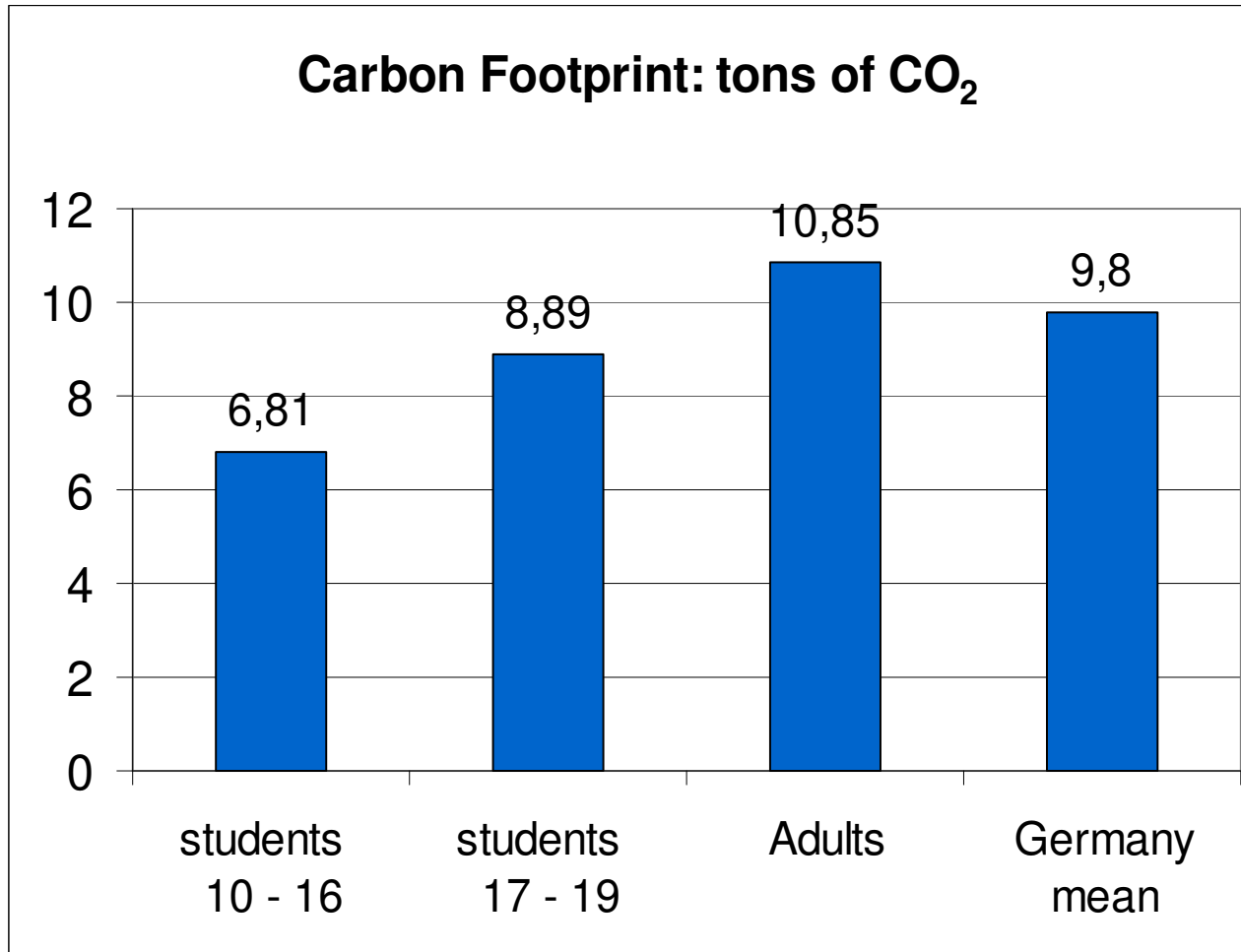
reduce CO_2 emission per year: **390 kg**

Carbon Footprint

CO$_2$ emissions at Gymnasium Sulingen

Carbon Footprint

students; age 17 - 19 (average: 25 persons)

- House 31,7%
- Flights 10,4%
- Car 7,2%
- Bus & Train 2,6%
- Secondary 48,0%