



The Energy Problem

(Resource ID: 172)

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This teaching resource is allocated to following University:

BOKU - University of Natural Resources and Life Sciences Vienna

Institution:

Firma Innovative Elektronik

<http://www.sustainicum.at/en/modules/view/172.The-Energy-Problem>



Individual work
Work in pairs



Independent of
the number of
students



4-7 lecture
units



English, German

This building block addresses the significance of energy to mankind. The building block handles the physical properties of energy as well as the global effects of high consumption levels. Sustainability strategies for the individual reduction in consumption are a central focus and the individual energy consumption situation is discussed and analyzed.

The building block "The Energy Problem" is an introductory and overview building block for the building block group Energy that is comprised of multiple in-depth blocks (Thermal Energy, Thermal Efficiency of Heating and Solar Energy Systems, Efficient Lighting, and Sustainability in Everyday Life).

The introductory building block "The Energy Problem" seeks to establish a practical basic understanding of the energy problem.

The purpose of energy use should be clearly worked out while also generating an awareness of the dramatic damaging effects of continuously high-energy consumption- particularly the long-term consequences, which degrade the conditions of existence and deteriorates the livelihoods of coming generations. It is recommended to go into details on concrete examples in order to convey the severity of the situation- in regard to the potential damage as well as in regard to the diverse possibilities for sustainable energy

This building block is an orientation tool founded on physics and inspiration for continued in-depth study and sustainable action in each student's own sphere of influence.

Overview of contents

The significance of energy to mankind
Measurements, units, energy carriers
Problems with the conventional energy supply
Austria's energy situation
Sustainability strategies
Individual scenarios

Implementing the building block

The building block begins with an introductory presentation on the energy problem. The accompanying presentation offers a suitable presentation structure and includes presentation slide and notes with background information to each individual slide. The notes also include links to noteworthy television programs related to the presentation topics. These programs can also be played in the course depending on the amount of time available or used as additional information for students wishing to go into more depth. As the presentation is designed to give a basic understanding of energy and its significance to mankind and discuss individual solutions, the students should practice what they have learned in order to reinforce and make the information more concrete. The building block sees to it that each student analyzes his or her individual energy situation (as homework), as well as searches for (and documents) opportunities to better the situation and hurdles standing in the way. In order to simplify this process a checklist (Checklist-EnergySituation.pdf) is included in the download materials, using which a systematic and comparable analysis can be conducted.

In a later course unit (after one to two weeks) the students should present (5-10 minutes) their individual results and experiences in a discussion

round. Depending on the number of students, 1-2 hours should be planned for the discussion.

Targeted insights for students

The energy problem is decidedly serious and affects everyone. Everyone has manifold possibilities to behave in an energetically sustainable way.

Accompanying materials

Presentation slides with accompanying notes are available, in which a comprehensive presentation structure exists. A checklist for the analysis of individual energy situation for the interactive portion of the building block, as well as an energy measuring device for electrical appliances are available for use.

Teaching Tools & Methods



Mini-project Written material

Learning Outcomes

- Communicate a basic knowledge of energy supply and the energy problem
- Establish an understanding of the relationship between energy and material welfare
- Generate knowledge of the environmental impacts of energy supply
- Give an overview of the potential and methods of energy efficiency
- Stimulate interest in a sustainable energy supply

Relevance for Sustainability

The building block concentrates on the elementary question of a sustainable energy supply.

Related Teaching Resources

No specific previous knowledge / related resources required

Preparation Efforts

Medium

Access

Free

Sources and Links

IEA, Key World Energy Statistics 2009

Bmwfj, Energiestatus Österreich 2010

Bmwfj, Energiestatus Österreich 2012

Niels Jungbluth, „Umweltfolgen des Nahrungsmittelkonsums“, Dissertation ETH-Zürich, 2000

Internet:

<http://www.e-control.at> (Vergleich von Energieversorgern)

<http://www.topprodukte.at> (Vergleich Stromverbrauch E-Geräte)

<http://www.bmwfj.gv.at/ENERGIEUNDBERGBAU/>

<http://www.rag-stiftung.de/ewigkeitsaufgaben/was-sind-ewigkeitsaufgaben/>

<http://www.youtube.com/watch?v=YLS24QB-CzA> (Uranbergbau, nano 2008)

http://www.youtube.com/watch?v=i-S1Nm_dxCg (Uranbergbau, attac)

<http://www.youtube.com/watch?v=qyElezLKnEc> (Endlagerung, Quarks&Co)

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