

Energy and the environment

India is the world's fifth largest wind power generator! Alternate energy options such as solar are becoming cheaper. If we make the right choices and invest in efficiency, the earth could be a safer place for tigers and for humans. This will reverse the problems caused by dams drowning forests, leaks from nuclear reactors and pollution from coal mines and thermal plants. Meanwhile, kids can do a lot to make a difference today.

AIM: To instil nature protection into the value systems of children by showing how it encompasses all areas of their lives.

OBJECTIVE: To help children understand energy and think about the energy choices ahead of them. To take up a specific project to reduce the school's electricity bills and opt for safer energy alternatives.

INTRO: Everything needs energy. Plants get it from the sun. Animals get it by eating plants. Some animals (like reptiles) get it directly from the sun by soaking up heat. When you use a light bulb, electricity is



Children are quick to pick up and communicate environmental concepts and values.

consumed. When you travel to school by bus, petrol or diesel is consumed. When you are hot and switch on the fan, electricity is consumed. You must eat food to fuel your everyday activities. To produce electricity, dams drown forests, thermal plants pollute the air and water. The fuel from vehicles also pollutes the air, which can even cause such serious diseases as cancer. By reducing the amount of energy we consume, we “walk lightly on the earth”. But NO ONE can live without using energy. The secret is to use energy wisely and not waste it.

CONTENT: There are six types of energy: **Chemical energy** – stored in the bonds between atoms in molecules. **Electrical energy** – when electrons move. **Light or solar energy** – radiation or electromagnetism. **Mechanical energy** – used when objects move. **Nuclear energy** – produced when the nuclei of atoms are split or combined (for instance by the sun). **Thermal (heat) energy** – when molecules move or vibrate.

METHODOLOGY:

- 🐾 Where and how do we get energy? E.g. food (chemical).
- 🐾 Where did the food we eat obtain energy from? Sun (solar)?
- 🐾 Photosynthesis. Green plants are converters.
- 🐾 Where does the sun get energy from ? (nuclear)?
- 🐾 Emphasise the importance of green plants; how herbivores feed on plants. And how the tiger feeds on herbivores. The presence of a healthy population of tigers indicates that the energy balance of its forests is in equilibrium.




AIDS: Light bulb. Fan. Air conditioner. Solar calculator. Water pump. Cycle dynamo. Small hand-mirrors that every child should bring to school on an appointed day. Electric meter in the school (under the strictest supervision).

BLACKBOARD: ○ List conventional energy sources and their side effects. ○ List alternative energy options and their benefits.

EVALUATION: ○ Is there a real possibility of turning your school into an ‘Energy Smart’ school by reducing energy consumption and opting for clean energy alternatives? ○ Have you been able to save money for

the school by implementing strategies to cut electricity bills through improved energy practices? ○ Have students understood the connections between their energy choices and pollution? Reduced energy consumption and saving forests? Do they 'feel good' about being a 'Green School' the learning environment of schools through day lighting, better temperature control, better air quality and other elements related to buildings and bus fleets? ○ Are students and other teachers more aware of energy and related issues, such as improving efficiency, reducing pollution, choosing newer technologies? ○ Are they aware of the connections between climate change and energy choices? ○ Have they made the connection between millions of families consuming less energy, therefore fewer dams, therefore fewer tiger forests drowned?

ACTIVITY:

-  *Do an energy audit in your school.* First find out how much electricity is consumed and the cost each month. In which months are bills lowest? In what way can you help reduce monthly electricity bills at school? At home?
-  *Help save fossil fuels.* How much petrol is consumed when you travel from home to school? If roads were safe and you could cycle to school, how much money would your family save on fuel each month? What if all students used buses rather than cars?
-  *Use natural light and air.* Shut all the doors and windows in the class. Switch off all lights and fans. Is it difficult to read? Is it stuffy? Now open one window and door at a time. Is it easier to see? Less stuffy? Now use hand mirrors to 'catch' light from outside the class and reflect this light onto the walls or roof of the class. Does the light improve? Is it easier to read now? If the school permanently stationed large reflectors strategically, would it mean fewer bulbs? Can more natural light and air be let into all the classrooms in the school?

