

THE ENERGY STORY



FOREWORD

Without renewable and energy and its responsible consumption there can be no sustainable development. The fact that the provision of access to affordable, reliable, sustainable and modern energy for all is one of the UN's Post-2015 sustainable development goals, shows that these two areas are inherently connected. Therefore energy is also one of the key factors for sustainable development in accordance with Plan International's, and ASSIST Asia's approaches. While most would agree that renewable energies and energy efficiency are mainly related to the issue of a sustainable use of resources and the reduction of environmental damages e.g. air and water pollution, they are in fact closely connected to almost every one of Plan International's **eight core areas**:

The landscape of **education** has changed rapidly during the last years. Digital learning has become a major element of development strategies around the world. While devices and technologies that enable the use of digital content have steadily become more affordable and easy to use, they are still limited to those areas with a working power supply. Small and medium scale renewable energy generation can provide knowledge and empowerment to even remote communities with electricity and enable digital learning.

In particular, hydropower has become an interesting perspective for energy generation on a grassroots and community-level during the last years thanks to micro and pico-hydropower. These new technologies could harness the use of hydropower without the often devastating effects of large-scale dam projects.

Moreover the usage of water as a source of energy will strengthen the understanding of the value **water** has, aside from its everyday use. Moreover, renewable energy has the potential to make communities less reliant on central instances of power generation; therefore strengthening their **economic autonomy and security**. This applies even more in case of **emergencies**, where the access to power can save lives.

Consequently, a reduction of pollution caused by the excessive use of fossil fuels means an important step towards improved **health**, especially of young people in highly urbanized areas that suffer most from various health-issues caused by smog and pollution. But also in rural areas, where smoke from open cooking fires inside houses poses a health risk, safe and energy-efficient technologies can contribute to a better health for many.

Last but not least, renewable energies can be a valuable chance for the furthering of **child participation**. Teaching young people about the possibilities renewable energy offers for their future will inspire them to explore these possibilities and to make use of them. This way, they will become important agents of change for their families, communities and the world of tomorrow.

Since 1990, the energy demand in Southeast Asia has increased by two-and-a-half times and it is still growing at one of the fastest rates in the world. Combined with the demographic trend of rapidly growing populations in almost every country in Southeast Asia and a rising per capita use of energy, there is a major challenge emerging for the region: the increasing scarcity of energy resources and the environmental impact associated with its generation. Regarding the dwindling traditional energy sources like oil, coal, uranium and gas; renewable energy and energy efficient technologies will be significant for the future of Southeast Asia's energy supply.

In order to be successful, the large-scale use of renewable energy and energy efficient technologies will have to be accompanied by measures to raise awareness about these technologies and the fundamental challenges connected with the everyday use of energy and resources. In accordance with Plan International's Child Centered Climate Change Adaptation (4CA) approach, this booklet aims to provide those who will play a major role in tackling the energy challenges of the future: children and young people.

Renewable energy might not be present in the everyday life of many children in Southeast Asia; however, this generation will be the one affected by the problems caused by an increasing use of energy in combination with finite resources. Creating awareness among them is therefore of major importance.

Keeping this in mind, this book created through a cooperation of Plan International and ASSIST aims to teach children aged 8 to 14 about the fundamentals of Energy, its sources and ways to save energy through small changes in everyday practices.

ABOUT THIS MANUAL

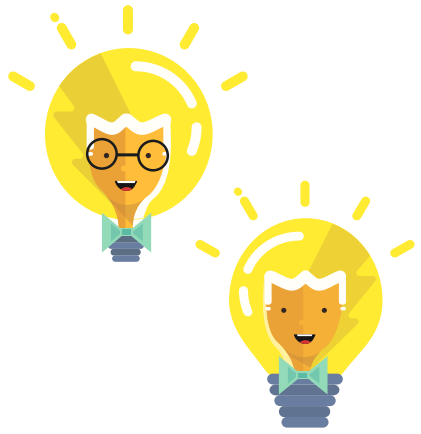
This manual is the result of a partnership between Plan International and the Asia Society for Social Improvement and Sustainable Transformation (ASSIST). The fundamental idea was to create a manual that informs about the basic concepts of renewable energy and energy efficient technologies in a child-friendly manner. The aim was to create a balance between informative yet engaging content on the one hand and materials that inspire activities beyond the classroom on the other.

Therefore, teachers and instructors are encouraged to use this booklet as a toolkit for classroom activities and student-run projects, according to their needs and curriculum.

Chapter 1 to 3 offers an array of basic information on energy, energy efficiency and renewable energies. Teachers and instructors may add complementary materials related to specific topics and are encouraged to engage in discussions with their students after each chapter to ensure optimal understanding and learning. The multiple choice quiz is suggested to be conducted afterwards to ensure understanding of the content from Chapter 1 to 3. Chapter 3 can also be concluded with the survey from Annex 5. This will provide students with the possibility to assess and apply the concepts of energy saving to their own everyday-life. The projects and activities from Annex 2 to 4 should be conducted with guidance from the teacher/instructor as seen fit for the respective context.

Plan International and ASSIST Asia wish you an engaging and informative experience with this manual. The overall design has been chosen carefully to match the needs and preferences of pupils from different countries in Southeast Asia; and to make it more than just another lesson on renewable energy and energy efficiency.





Hello! We're **Mr. and Mrs. Bright** and we're here today to talk to you about the amazing world of energy.

⚡ WHAT IS ENERGY?

Energy is the ability to do anything.



Everyone uses energy. We use energy every day, often without realising it. We use it when we get out of bed in the morning and turn on the light or cook breakfast. We use it when we take the bus and charge our mobile phones. But it is also energy that makes the trees grow, the birds fly and the fish swim. Energy literally makes the world move!

The most powerful source of energy is the sun. It provides the Earth with energy for plants to grow and heat for animals and humans to survive.

When our body needs energy, we eat meat and vegetables grown under the sun. Energy makes our lives safe and convenient. When we cook food and heat water, heat energy kills bacteria that could make us sick. We use electric energy to light our streets and houses to avoid any accidents in the dark that could endanger us.

Did you know that we couldn't live without **ENERGY?**



But how was
ENERGY
discovered?



Energy has been used by humans for thousands of years in different ways, for example when the early humans needed to make fire to keep warm. Rubbing two wooded sticks together caused friction that created heat energy and led to fire. Using wood for building fires was our first major energy source.

Today, we get most of our energy from burning fossil fuels like coal, oil and natural gases. Most of these fossil fuels come from plants and animals that died millions of years ago when dinosaurs still roamed the earth. These materials composted over millions of years beneath the ground where they slowly became today's fossil fuels.



Did you know that in the last 100 years, **1.6 trillion barrels of oil** have been used up? If we continue on our current consumption patterns, we will only have enough oil to last **40 years**.



Hmm.. so what kind of **energy** should we use?



However, burning fossil fuels creates pollution that leads to smog, acid rain and gases that drive climate change. They also negatively impact our health, the economy and the environment. They are scarce and non-renewable. This means that once they are used up, they are gone forever. Our future generations can no longer use them.



We can use
**RENEWABLE
ENERGY!**

Renewable energy is energy that comes from sources that are replenished by nature such as sunlight, wind, hydropower, organic matter and the Earth's heat.

Renewable energy is also known as **cleaner energy** because no pollution is created when we use them. The type of renewable energy that can be used depends on location.



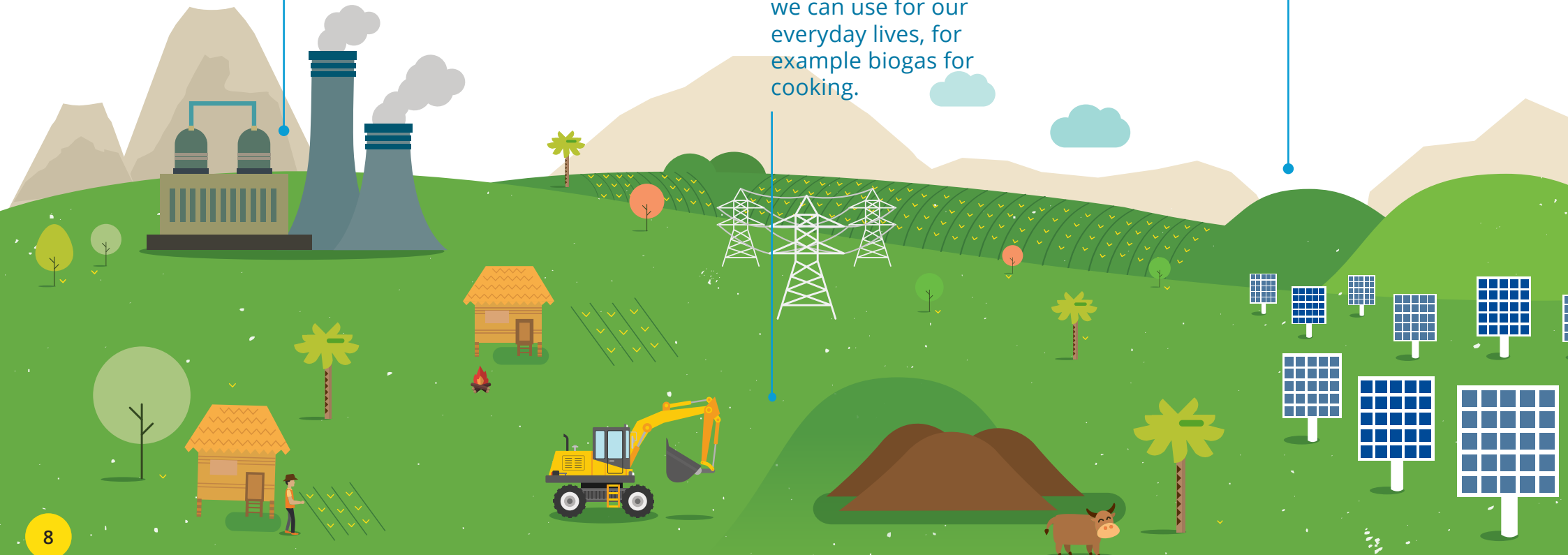
Geothermal energy uses the heat from under the ground and is commonly found in areas near a volcano.



Biomass energy can be used anywhere. When organic waste decomposes, it releases gases that can be captured to produce energy that we can use for our everyday lives, for example biogas for cooking.



A hot and sunny climate can use solar power.



Did you know that the idea of using the sun's power is not new? **Solar energy** was already used **2000 years ago** by the **ancient Chinese**. They lit fires using mirrors to concentrate the sun's energy.



A place with strong and gusty winds can use wind energy.



Hydropower can be used if you live near a waterfall or a river.



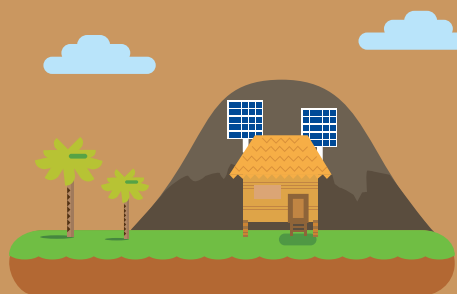
Tidal and wave energy can be harnessed near a sea or ocean.



All these possibilities allow us to use more and more renewable energy. With your help we can use even more of it in the future by developing new and local technologies to make them cheaper to use!



But for now, let's see how current **clean technologies** already work..



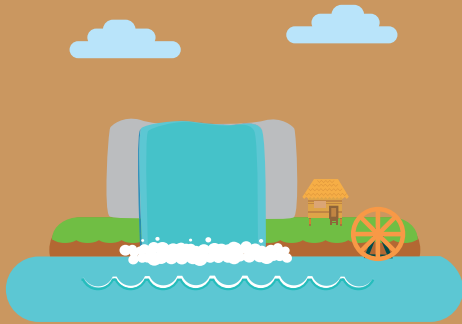
SOLAR POWER harnesses the energy of the sun with the help of solar panels that are installed on the roofs of houses and buildings. Solar energy can be used to heat up hot water for our baths and for electricity. It is also the cleanest and most abundant renewable source available.



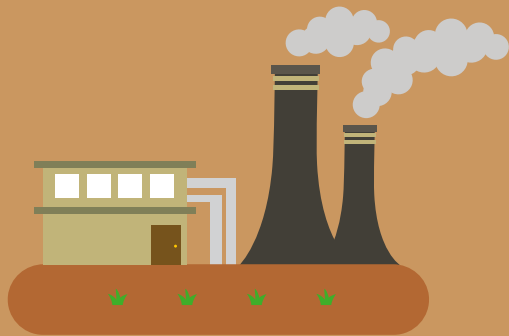
WIND POWER is collected when wind pushes against the blades of wind turbines to make them spin around. When it is windy, the blades spin fast switching on a generator inside the turbine to create electricity.



Did you know that **75%** of the world's volcanoes are present around the Pacific Ocean called the **Ring of Fire**.



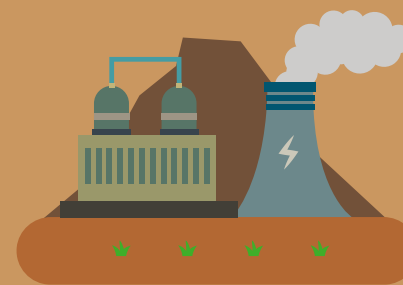
HYDROPOWER is created by the movement of water. Waterfalls and river currents create energy that can be converted into electricity for us to use. To harness the energy of the water, dams need to be built. A dam is a wall built at the end of a river to collect huge bodies of water needed to create manmade waterfalls and strong river currents. But also small rivers and currents can be used to generate electricity on a smaller scale. This is called micro or pico hydropower. Since the building of big dams often changes the flow of rivers and floods large areas, big hydropower projects can be problematic for people living in the areas it affects.



BIOMASS ENERGY can be harnessed from decomposing organic matter such as food waste. Landfills have plenty of decomposing organic matter that can be captured and turned into biofuels to be used for motor vehicles, cooking and electricity. Some rural areas also have animals and livestock that produce waste which can also be used to produce biogas. Some crops like sugarcane, corn or soybeans can be used to create Bioethanol when fermented under special conditions. Bioethanol can be used as fuel for cars or generators.



TIDES AND WAVES in the sea and ocean can be harnessed for energy. Turbines placed under the water spin around and switch on a generator to produce electricity when there are tidal current and waves present.



GEOTHERMAL ENERGY uses the heat within the Earth. The heat from a volcano's lava can be used to heat water to create steam that switches on turbines to generate electricity.



Did you know that the **sun** gives more energy to the Earth in **one hour** than the energy used by the entire world in **one year**?



GLOBAL WARMING

Since the age of industrialization mankind has been using more and more machines, factories and vehicles producing smoke and gases like CO₂. These gases are also called greenhouse gases, because they gather in the atmosphere and trap heat from the sun on the earth's surface, just like in a greenhouse. This global warming causes ice sheets to melt and the sea and water levels to rise. While scientists are still researching all the effects of global warming, they already know that it causes the weather to be more extreme in many areas. Droughts, violent storms and heavy rains are the results.

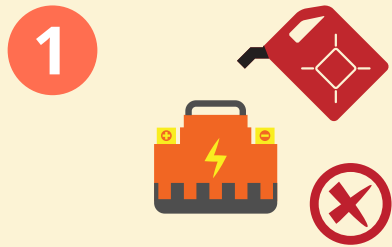
ENERGY ACCESS IN SOUTHEAST ASIA

Did you know that 134 million people in Southeast Asia, or 22% of the region's population, do not have access to electricity and around 280 million people rely on the traditional use of biomass like burning wood for cooking? That's almost half of the region's population.

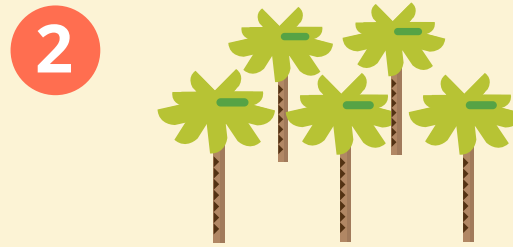
WHAT RENEWABLE ENERGY CAN CHANGE FOR YOU!



Now imagine your community, school or family has set up a small renewable energy project like solar panels or a small water mill. That means:



1 You will be using less kerosene or fuels for generators



2 You will be saving trees by needing less firewood



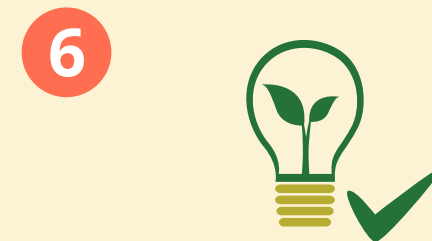
3 You will be saving money by consuming less electricity



4 You have now reliable access to electricity that allows you to, for example, set up a small business



5 You can install an electric pump giving you access to clean drinking water



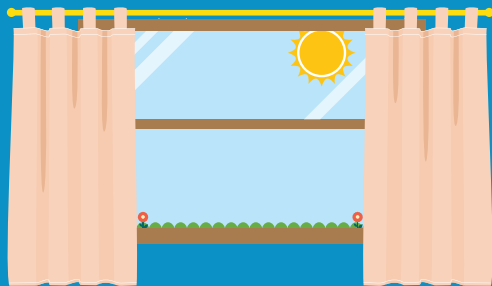
6 You are producing clean energy and won't get sick by fumes and pollution from generators

HOW TO PRACTICE ENERGY EFFICIENCY

When we waste energy, we are overusing the Earth's resources and contributing to climate change. We cannot eliminate using electricity and fossil fuels in our lives because they make our lives convenient and safe. However, we can use energy more efficiently so that energy is not wasted and pollution is reduced.

We can become more energy efficient by making simple changes in our everyday lives. Energy efficiency starts with us! When everyone practices it we make the world a better place.

BRIGHT TIPS!



1 Use natural light as much as possible. During the day open windows to cool down the house and provide sunlight to do work. Use curtains made out of light fabrics like cotton or linen that allow cool air to enter and keep harsh sunlight out.

2 If your house is getting hot during the summer, give it some shadow by planting trees next to it

Safety Tip: Check which trees are growing in the area and how to nurture your trees. Also ask your parents and neighbors for permission first. Make sure the trees are planted in the right position to provide maximum shadow for your house.

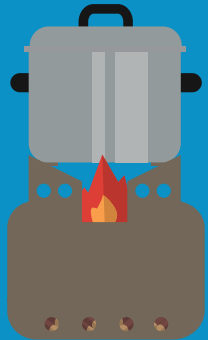
3 Try to walk or cycle to places nearby. It improves our health through exercise and improves the health of the planet by cutting down on pollution.

Safety Tip: Never walk or cycle alone late at night and never walk or cycle on a busy road. Use designated sidewalks.

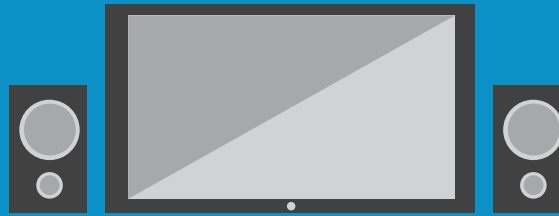


4 Take a cold shower. Reduce pollution and deforestation by not heating water.

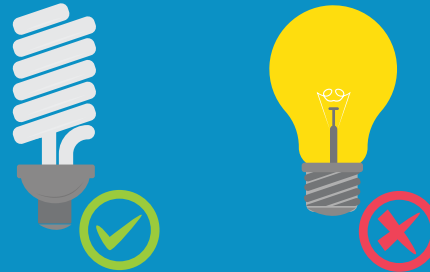
Safety Tip: Never place appliances like a fan, television or mobile phone in or near water.



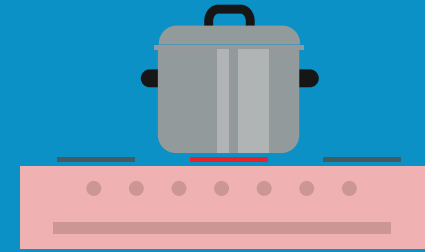
7 If you are using a traditional cooking stove, think about replacing it with an energy efficient one that uses less fuel like wood or coal. Save energy when cooking by using a “fireless cooking pot” that is well isolated to maintain heat over a long time and cook food while using minimal fuels. Use the Internet or ask your teacher about how to build one.



5 Switch off appliances like the television, lights or fan when there is no one in the room. Encourage your friends and family to enjoy the fresh air outside instead! Also make sure to unplug chargers after charging electrical appliances to avoid ‘energy leaks’.



8 Using Compact Fluorescent Lamp (CFL) bulbs rather than regular incandescent bulbs help to save energy in the long term. Although they cost more upfront, they use less electricity and last 10 times longer. This saves money and our planet! See if your local community centre will exchange of your old incandescent bulbs for CFL ones or give you money to buy one.



6 When boiling or cooking, keep the lid of pots and pans on, to conserve heat and reduce energy consumption.

Safety Tip: Take care when removing lids on cooking pots and pans as they can become very hot. Use a small towel or piece of cloth on the lid handle when removing them.



9 Reuse and reduce. The production of materials like plastic bags and cups in factories uses a lot of energy, as well as its transportation to you. Most plastics are made out of fossil fuels. Using reusable shopping bags not only saves energy but also keeps our environment clean.

ENERGY EFFICIENT TECHNOLOGIES

Fortunately, we can use technologies that help us to consume less energy. This way, we can save resources and protect our environment even when our energy comes from non-renewable sources.



ENERGY SAVING IN ACTION

EXAMPLES FROM STUDENT'S ACTION PROJECTS IN ASIA

- 1** As part of Green Club activities, a poster competition was conducted at Chang Rigphel lower secondary school in Bhutan on 11th March 2015. The main objective of the competition was to create awareness among the student community on resource efficiency, waste management and safe environment. Followed by the lecture, a competition started where the students were provided with drawing materials. The duration of the competition was for one hour and about 35 Green Club members attended the event.
- 2** The 26+ group in Da Nang ran a campaign to call for people to set the air conditioner at 26 degrees Celsius and higher in households, offices and schools. After six months of patience, the group has persuaded more than 100 businesses and many households to participate in the program. By setting their air conditioners at a higher temperature, these businesses are reducing both their greenhouse gas emissions and their electricity bills.
- 3** Lương Thế Vinh School, Liên Chiểu, Đà Nẵng city: The school has run a project that led to the use of small generators which are connected to water pipes. Whenever students pour water, a tiny bit of electricity is generated just by the flow of the water. Hydroelectricity is one of the main sources of energy in Vietnam. By seeing how water can generate power with its flow, students are reminded not to waste water and that individuals have to be responsible for the environment every day.



4 People in Mon village in Son La province of Vietnam have started replacing their old, traditional tripod stoves with new ones. These new stoves use corn cobs as fuel, which means fewer trees are being cut down for firewood. Also, they are more energy-efficient which means less pollution is produced.

Whenever you are thinking about your own project and practicing **energy efficiency**: take caution and never put yourself or others in danger!





ENERGY QUIZ!

Note: There might be more than one correct answer.

1. During which of these activities do we use energy?
 - a. Recharging our phones
 - b. Cooking and switching on lights
 - c. At both of the above
2. What is energy?
 - a. The ability to do anything
 - b. The ability to create light
 - c. The ability to create heat
3. What is the most powerful source of energy we can use on earth?
 - a. The sun
 - b. The wind
 - c. The heat within the earth
4. How did the first humans on earth discovered fire?
 - a. By rubbing two sticks of wood together
 - b. During a volcanic eruption
 - c. Through a burning meteorite
5. What problem was caused by the usage of firewood as an energy source?
 - a. Millions of trees were cut down
 - b. The fire created wasn't warm and bright enough
 - c. Gathering wood was hard for the early humans
6. How do we produce most of our energy today?
 - a. Through solar power
 - b. Burning wood
 - c. Burning fossil fuels
7. Which of these are fossil fuels?
 - a. Wood, Paper and Fabric
 - b. Glass, Plastic and Steel
 - c. Coal, Oil, Uranium and natural gases
8. What are the problems related to the use of fossil fuels?
 - a. They create pollution
 - b. They cause acid rain and accelerate climate change
 - c. There are finite amounts of them

9. When were most of the fossil fuels we use today created?

- a. Millions of years ago
- b. We don't know
- c. Hundreds of years ago

10. Give (3) three examples for sources of renewable energy:

11. What are advantages of using renewable energies?

- a. They are naturally replenished
- b. They are easy and cheap to use
- c. They create no pollution when being generated

12. Since when have human beings been using renewable energies?

- a. For more than one million years
- b. Since 1999
- c. For over 2,000 years

ANSWERS: 1. C 2. A 3. A 4. A 5. A 6. C 7. C
8. A,B,C 9. A 11. A 12. C 13. D 14. C 15. A,B,C

13. Which of these sources of renewable energy can be used everywhere?

- a. Geothermal Energy
- b. Biomass Energy
- c. Tidal and Wave Energy

14. How exactly is Biomass energy being used?

- a. Organic matter is being burned to release energy
- b. Organic matter is being pressed into pellets that can be used as fuel
- c. Organic matter releases energy when decomposing. This energy is being used

15. What is the problem with wasting energy?

- a. Using too much energy generated from fossil fuels contributes to climate change
- b. Too many people using electric energy at the same time can cause power outages
- c. Using too much energy generated from fossil fuels causes pollution

16. Give (3) three examples for energy saving:

Experimental Project: Hot water through solar power

(Kindly provided by Practical Action)

Materials and Equipment

- Cardboard panel, 2 feet wide X 4 feet long X 1 inch thick
- Aluminum foil (1 roll)
- 1 roll of tape
- Plastic bags (9); thick, approximately 2 mm, bags like compactor trash bags
 - The plastic bags should be 3 different colors and you should have 3 bags of each color.
 - You should use black trash bags, white trash bags and, one other color of trash bags.
 - The bags do not need to be identical sizes, but they should all be large enough to hold 2 liters (L) of water, and be of very similar thicknesses (approx 2mm).
- Scissors
- Thermometers (3), at least 10 inches long.
- 2-L container (1); a clean 2-L plastic soda bottle will work
- Kitchen string, cotton
- A Watch
- Pen and paper

Note: Make sure you pick a sunny day on which to try this science fair project and run the trials in the hottest part of the day with the most direct sunlight. If the project takes you multiple days, try to run the tests at the same time of day in the same spot every time.

Experimental Procedure

1. Take the cardboard panel and cover one of the large sides with aluminum foil. Tape the aluminum foil to the cardboard with tape so that the foil is securely attached to it.
2. Take three plastic bags, one of each color that you are using, and clip a small hole at the bottom of the bag with your scissors. The hole should be just big enough so that a thermometer can fit through it.
3. Carefully fit a thermometer through the holes in each of the bags. Push the thermometer through, about halfway up the thermometer (there should be a mark on your partial immersion thermometer showing how far it should be inserted into a liquid). Use tape to tape the bag securely around the thermometer. It should be tight enough that water will not leak out of the hole.
See Figure 1.
4. Now fill the 2-L container with water. Empty the water into one of the bags. Carefully squeeze the air out of the bag and tie it closed. Have an adult help you with this step. Trim off the extra plastic from the top, using the scissors.
5. Repeat step 4 with one each of the other colored plastic bags. You should now have three different-colored batch solar collectors.



Figure 1. This image shows an example of a black bag batch solar collector sitting on top of a foil-covered Styrofoam panel.

6. Place the foil-covered panel in full sunlight. Place the three colored batch solar collectors on top of the foil-covered panel, next to each other. The collectors should all be in the Sun, and none of them in shade. Check the temperature of the water in each bag. Read each of the thermometers and record the readings on paper in a table, like the one shown below. These readings are the starting temperatures of the water in the batch solar collectors.

- a. The temperature readings should be in Celsius ($^{\circ}\text{C}$) if possible. Celsius is the standard unit for temperature in most fields of science.

7. Let the three collectors sit in the sunlight for 15 minutes. Use a watch to time 15 minutes. After 15 minutes, look at the thermometers and record the water temperature for each batch solar collector in your table.

Batch Solar Collector		Temperature of Water Over Time ($^{\circ}\text{C}$)				
		Starting	After 15 mins	After 30 mins	After 45 mins	After 60 mins
Black	1					
	2					
	3					
White	1					
	2					
	3					
Orange	1					
	2					
	3					

8. Let the batch solar collectors sit in the sunlight for another 15 minutes and record the temperature for each bag in your table. Continue to take readings every 15 minutes for a total of 60 minutes. You should have 5 total temperatures recorded for each bag: starting temperature, 15 minutes, 30 minutes, 45 minutes, and 60 minutes.

9. Repeat steps 2-8 two more times, with the other plastic bags, to make sure that your results are repeatable and accurate. Always record all of your observations.

10. Does the final temperature of the water depend on the color of the bag? Did one color always heat the water the most? Which color kept the water coolest? What can you learn about the use of solar energy through this experiment? Are there ways you can use the abilities of the different colors in your everyday life?

The Wind Power Challenge

(Kindly provided by Practical Action)

Ask the students to design a simple wind turbine capable of lifting a cup off the floor up to bench height. The winning team will be the one producing a machine that lifts the most weight.

For each group set out a tray containing the following materials. You will also need at least one hairdryer. Ensure all hairdryers are of the same power rating.

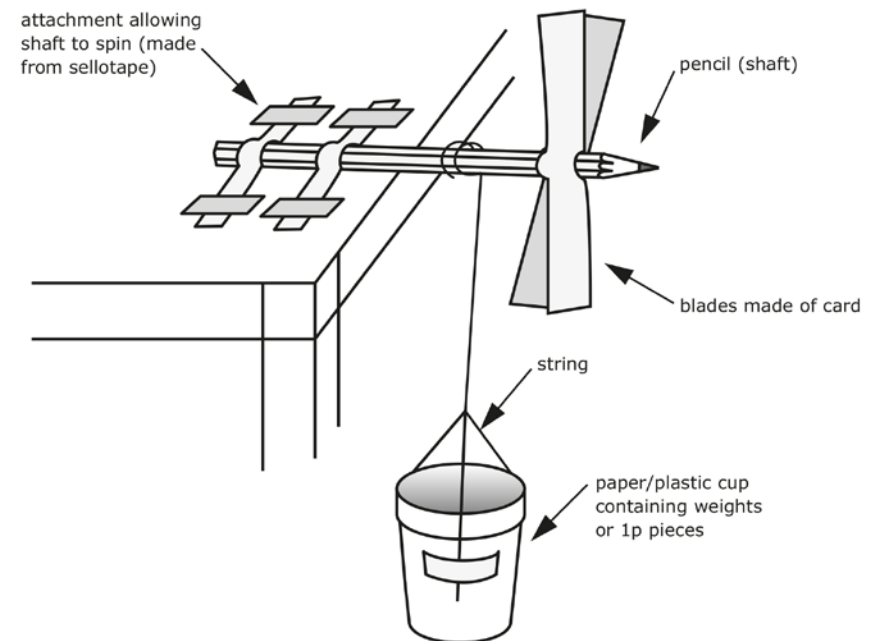
- Scrap card
- Tape
- Masking tape (optional)
- Pencils
- Scissors
- String
- Paper/ plastic cup
- Weights (gram weights or pennies)

Running the challenge:

Introduce the challenge by discussing how wind power has been used throughout history to power sailboats, mill grain for flour etc. and that now it is seen as one of the solutions to the major problem facing society. Introduce the different basic types of wind turbines, compare their design and discuss how they work. The main difference in design is that turbines producing electricity need to spin fast so have fewer (typically three), thinner blades. Those that harness wind power to drive machinery, such as water pumps and windmills, need a higher torque and to be more stable. They generally have a higher number of larger blades.

Set the challenge and discuss the variables that will be involved in making design decisions:

- Shape of the blades
- Size of blades
- Thickness of blades
- Number of blades
- How the shaft is attached to the desk



***Possible design**

Discuss how the design could be made as sustainable as possible, e.g.

- Reusing scrap material rather than new
- Reducing waste to a minimum (card, sellotape, string)
- Do they need to use a hairdryer?

You could introduce a prize for the most sustainable design as well as the one which lifts the most weight. Ask the students to think about how they want to make it a 'fair' test. This could include:

- Limiting the amount of materials (card, sellotape, string) that can be used for each group
- Ensuring all the hairdryers are of the same power rating
- Ensuring the hairdryer is a fixed distance away from the blades
- Allowing or not allowing students to touch the machine when it is operating

Discuss the design process. Students should be encouraged to research, design, build, test, evaluate then redesign. Divide the class into groups of about 4 and give them a time limit to complete the challenge, 30 minutes should be sufficient.

When time is up ask each group to demonstrate their machine in turn and briefly describe the process they went through in reaching the final design. Students could present the process they went through to a wider audience using a method of their choice e.g. in the form of a poster or a short video.

How to make your own Solar Bottle Light Bulb

(Idea taken from MyShelter Foundation)

Materials and Equipment

- 1.5 liter Soda Bottle
- 1'x1' Roof Sheet Material
- Purified Water
- Camera Film Dispenser
- Chlorine
- Rubber Sealant

Experimental Procedure

1. Fill the 1.5 liter clear soda bottle with purified water then add 3 tablespoons of liquid bleach and tightly seal the cap. Do not use tap water because this will allow the growth of moss.
2. Make a hole in the 1'x1' roof sheet material, just the same size of the bottle's circumference and insert the bottom part of the bottle leaving it exposed under the sunlight.
3. Next, make another hole on the roof of the house (same as the bottle's circumference) where you want to put the solar bulb and firmly fix the device.
4. Seal the roof with a sealant to prevent raindrops from getting inside the house. It will produce a light when the water inside the bottle bulb refracts and scatters the light inside the house.

*The solar bulb is expected to last up to two years before it needs changing.

*These lightbulbs need sunlight from the outside and will not be working at night.

Conducting a Survey on saving energy

Discuss the different types of electrical equipment you use at home. Make a list of this equipment either on the schoolboard or write it down. You can refer to this list while going through the survey at home. After you have completed the checklist, discuss it with your teacher and fellow students. Where can you save energy in your house?

Electrical Equipment	Survey Questions	Answer	Solution
Lights	How many lights do you have in your house?		
	Are there any lights left on when there is no one in the room? How many?		
	Is it possible to use natural light in your house?		
Fans	How many fans do you have in your house?		
	Is there a fan switched on in an empty room?		
	Can you open windows or doors for natural ventilation?		
Television	Do you have a television at home?		
	Is it switched on while no one is watching?		
Air-con	Do you have an air-con at home?		
	How many hours per day is it turned on?		
	Is the air-con turned on while there is no one in the room?		
	What temperature is the air-con set at?		
Stove	What equipment and fuel is used for cooking?		
	Can this equipment be replaced or adjusted to save energy?		
Other equipment	What other electrical equipment do you have in your house?		
	Are they turned on when they are not used? Which ones?		

Now think about the community you live in. What renewable energy and energy efficiency ideas do you have for your community? Try answering the following questions and discuss it with your teacher.

1. How many households in your community have access to electricity? Do you experience power outages? How often?

2. Does your community practice energy efficiency? How does this happen?

3. Where can energy efficient technologies be used to improve your community's energy efficiency?

4. Which renewable energy technologies could be used in and around your community? (Think about your community's environmental aspects. Is there a river nearby? Is it sunny most of the day? Does it get windy?)

Plan International is an independent child rights organisation committed to enabling vulnerable and marginalised children to be free of poverty. For over 75 years, we have supported girls and boys and their communities around the world to gain the skills, knowledge and confidence they need to claim their rights, free themselves from poverty and live positive fulfilling lives.

Asia Society for Social Improvement and Sustainable Transformation (ASSIST) is an international non-government organization focused on capacity building. It seeks to promote sustainable practices to address social problems in the developing world, with focus on Asia and Africa.

