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Pani Prasad Ventures to Raise Climate Change Awareness

WWF NEPAL
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A Message for You

Dear friends,

Pani Prasad is here again!!!

After taking you along on many of his exciting journeys, through dark, dense forests in the Terai to cool, icy wetlands in the mountains, your old friend Pani Prasad is back for yet another adventure.

This time as well, Pani Prasad is full of new stories to tell, wonderful places to visit and interesting people to meet. Oh yes, he has been quite busy, traveling far and wide – from the highest peak in the world to distant countries across oceans, learning more amazing facts to share with you.

Pani Prasad knows how much you all understand about Climate Change, especially after accompanying him to high-altitude wetlands like Gosaikunda and Gokyo last year.

But did you know that Climate Change is just not affecting distant places like the Arctic and the Himalayan mountains. This phenomenon affects each one of us – you, me, our families, our societies. To find out how, Pani Prasad has been visiting many different people – like Ani didi from Solukhumbu and Balram Uncle from Kapilvastu, who have shared all their captivating stories with us.

So, hop on board!!! Let us go on this extraordinary quest with Pani Prasad. Learn and at the same time have a lot of fun - Measure your footprint, play our Climate Snakes and Ladder Game and see if you can beat our tricky quizzes.

Bon Voyage!

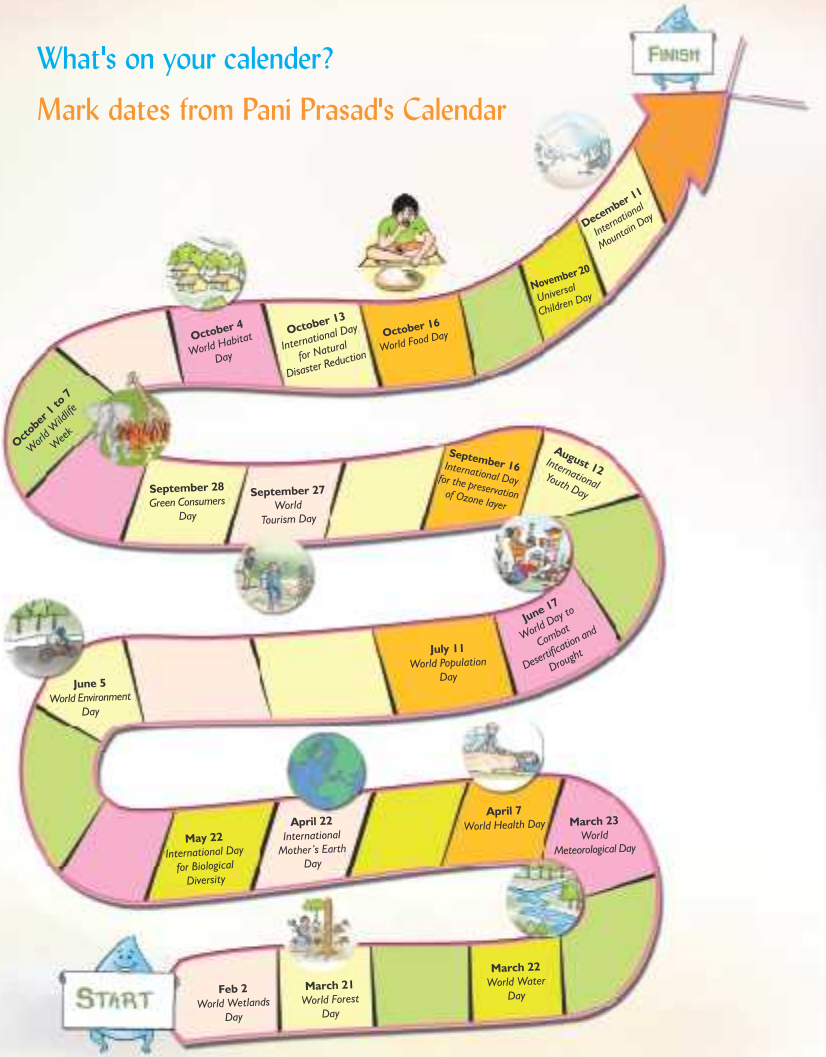
And remember, my dear Water Ambassadors, it is upto each and every one of YOU to pass on what you have learned to the wider world, so that everyone does their bit and we can all enjoy a 'healthy and living planet'.

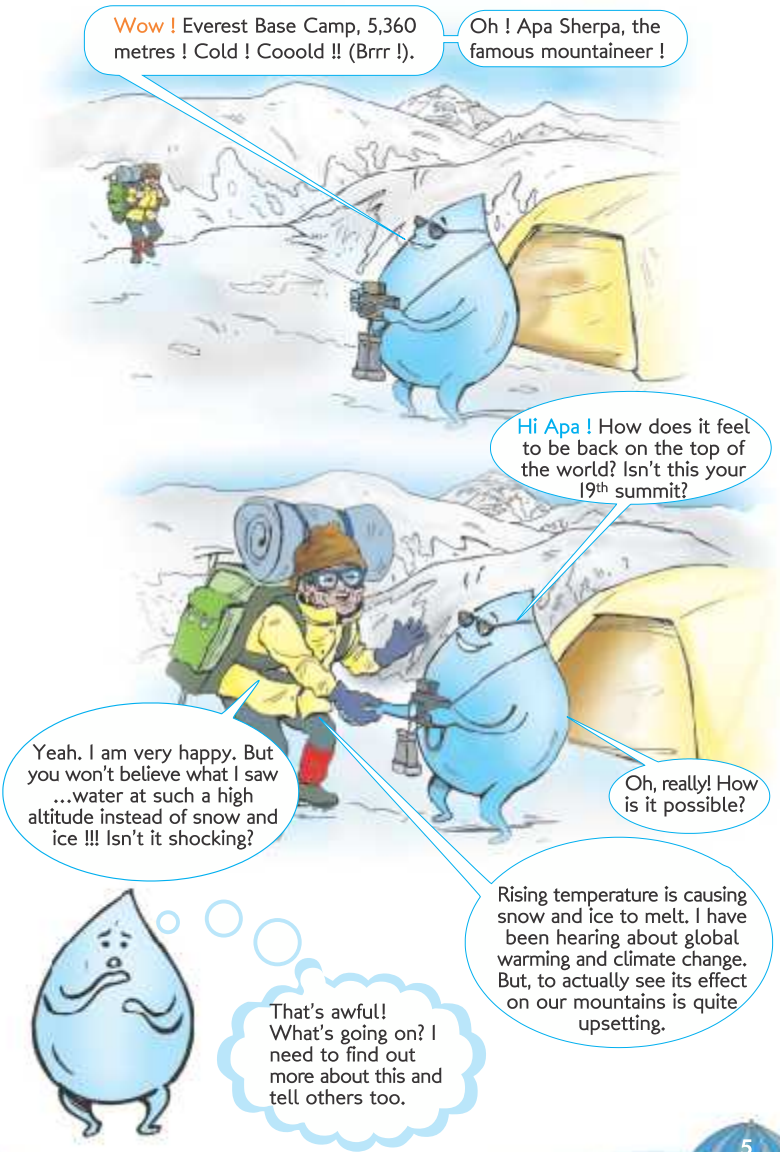
Thank you

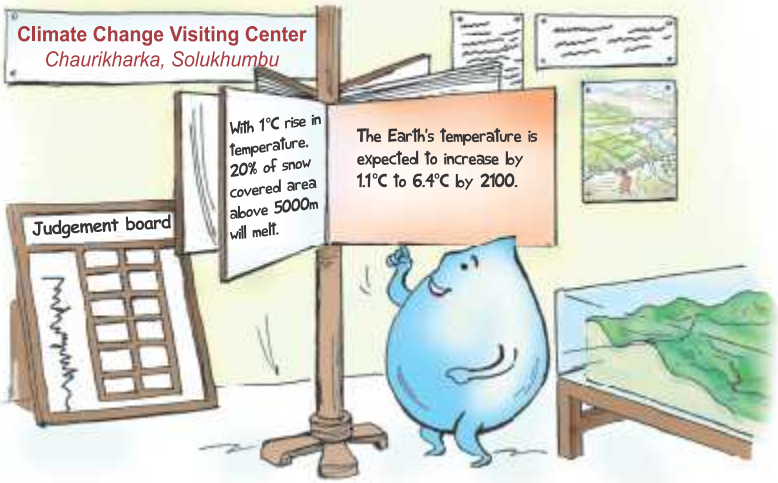
Anil Manandhar
Country Representative
WWF Nepal

What's on your calender?

Mark dates from Pani Prasad's Calendar




Wow ! Everest Base Camp, 5,360 metres ! Cold ! Cooold !! (Brrr !).
Oh ! Apa Sherpa, the famous mountaineer !
Hi Apa ! How does it feel to be back on the top of the world? Isn't this your 19th summit?
Oh, really! How is it possible?
Rising temperature is causing snow and ice to melt. I have been hearing about global warming and climate change. But, to actually see its effect on our mountains is quite upsetting.
Yeah. I am very happy. But you won't believe what I saw ...water at such a high altitude instead of snow and ice !!! Isn't it shocking?
That's awful! What's going on? I need to find out more about this and tell others too.



1998 is the warmest year of the warmest decade (1995-2005) in warmest century for the last one thousand year.

15 Glacial Lake Outburst Floods (GLOFs) have been recorded in Nepal since 1935.

Tsho Rolpa Lake has increased from 0.23 km^2 to 1.76 km^2 from 1957 to 2002.

Atmospheric carbon dioxide has increased from approximately 280 parts per million (ppm) in pre industrial times to 382 ppm in 2006.

Weather vs Climate

Uff! It's so foggy since early morning. But, it was sunny yesterday. Do you think we will be able to fly?

Don't worry, Pani Prasad. The weather might change within an hour. Let's pray for a fine weather.

Phew !!! The flight got delayed two hours because of the weather. Anyway, I enjoyed the awesome view of the snow-clad mountains.

Cold yet lovely climate, yeh !!!

I had a flight to Nepalgunj today morning. It's very hot there. Do you know that both Nepalgunj in Western Terai and Namche Bazaar in Eastern Himalayan region are at the same latitude, yet the climate is drastically different? Interesting, isn't it?

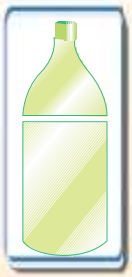
LEARN WITH FUN

Make Your Own Rainguage

A raingauge is an instrument that measures amount of rainfall.

You'll need:

- A two liter plastic bottle
- Few paper clips
- Few pebbles (small stones)
- A pair of sharp scissors
- A measuring cylinder



(Fig. I)

Step I:

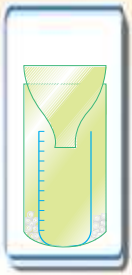
Measure about 11 cm down from the top of the plastic bottle and mark around it. Cut along the mark. (Fig I)

Step II:

Put some pebbles in the bottle to help your raingauge stand upright.

Step III:

Remove the bottle cap and turn the top part of the bottle upside down, placing it into the bottom part. Connect the two halves with paper clips. (Fig. II)



(Fig. II)

Step IV:

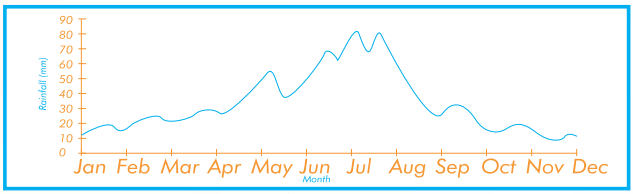
Place the plastic bottle raingauge in a location where it will easily collect rain water without impediment from surrounding trees, plants or buildings.

Step V:

Everyday at 8:45 am, measure the rainfall of that day. Consult with your teacher to convert the value into the standard one.

Now, start daily rainfall entry and make a monthly rainfall graph. You can see how rainfall changes around a year.

You can also collect the daily weather data (temperature & rainfall) from radio, television or newspapers of your city and plot a graph to analysis monthly variation. (Fig. III)



(Fig. III)

Is changing climate a serious matter?

In Nepal, we have already noticed several signs of climate change.

- Average temperature of Nepal is increasing by 0.04°C per year.
- The glaciers in the Himalayas are retreating rapidly because of increase in temperature. This increases water level in glacial lakes, which could cause floods, termed as Glacial Lake Outburst Floods (GLOFs).
- Rainfall pattern is changing. Number of rainy days are decreasing but, it rains heavy when it occurs.
- The shift in the monsoon rainfall pattern is affecting our agriculture practices.
- Climate change is causing major changes in water resources.
- All these changes will have severe impacts on biodiversity, people and their livelihood.

Bhai Pasang Sherpa runs a restaurant at Namche Bazaar, gateway to the Mt. Everest, Solukhumbu. For 20 years, he has witnessed retreating glaciers and formation of new and enlarging glacial lakes.

"Some of these lakes may burst at any moment putting many lives downstream at risk", says Bhai Pasang. "This is because the temperature of this region is increasing and the glaciers are shrinking rapidly.....", he adds.

Earth's Climate History

Earth's climate has been changing over its five-billion-year of history. Sometimes, the climate was so warm that sea level rose and covered much of the Earth's surface and sometimes it was so cold that the continents were dominated by ice sheets.

Ever heard about Wooly mammoth, Sabre tooth tiger, Ground sloth?

Explore about them

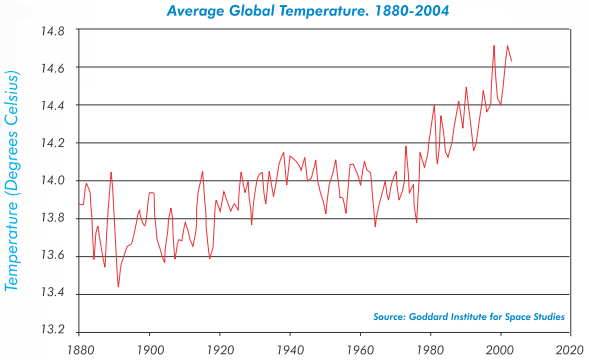
Around 34 million years ago, the Antarctic ice-sheet began to form and covered most of the Earth surface. This era is known as **Ice Age**. Some 20 millions years ago, major modern mountain ranges such as the Cordilleras, the Andes, and the Himalayan range were formed, with mammals becoming dominant.

In Medieval Warm Period, between 900 and 1300 AD, the Earth experienced relatively warm and very dry condition. During the Little Ice Age from 1350 to 1800 AD, the Earth became relatively cooler. In the mid 1600s and early 1700s, the Earth's surface temperature was close to lowest values of the last millennium.

At the end of the Little Ice Age, the world began to warm up, very slowly. An additional warm period has emerged in the last 100 years. This warming rate is higher due to increasing emissions of greenhouse gases from human activities.

The end of the ice age brought big changes on the Earth. Many plants and animals disappeared. Large number of mammals that preferred cold climate could not adapt to the warm and dry climate and they became extinct.

The average temperature of the Earth surface has already risen by 0.74°C since mid 1800s. Eleven of the twelve years from 1995-2006 are among the warmest years since 1850. Due to this, Arctic ice is disappearing rapidly. Glaciers and mountain snows are also melting rapidly - for example, Montana's Glacier National Park (USA) is left with only 27 glaciers, in comparison to 150 in 1910.



Scientists use special computer programs-climate model to find out how climate may change in years ahead. They show that the Earth may continue to get warmer. The Earth temperature is expected to increase by another 1.1°C to 6.4°C by the year 2100. According to the scientists, this warming trend has accelerated in recent decades.

Do You Know

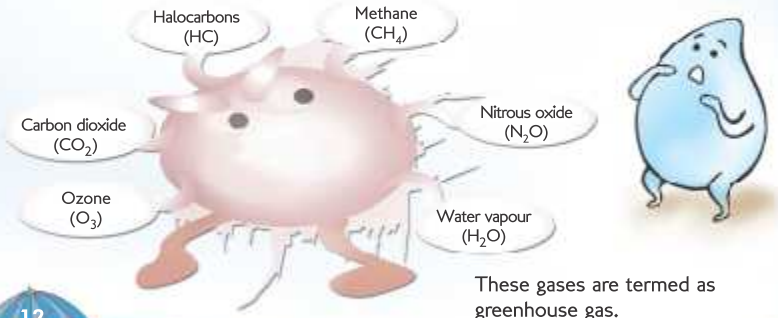
- The Arctic sea ice extent has decreased by 14% since the 1970s.
- Scientists' estimate for 20th century showed that global sea level rose at about 1.7millimetre per year.
- More than 1 metre rise in sea level will be enough to displace at least 200 million people in Asia.

How does it all happen?

Have you ever seen a small house of glass or plastic used to grow plants and flowers especially in winter season or in cold regions?

These houses are known as greenhouse where we feel warmer than outside. The glass or plastic in the greenhouse allows solar energy to enter in but traps some heat from escaping out.

Similarly, when the sun rays reach the Earth surface travelling through the atmosphere, the Earth surface absorbs some solar energy and some reflects back. Once absorbed, this energy is sent back into the atmosphere. Some of this outgoing energy passes into the space, but much of it remains trapped by some gases in the atmosphere. This process prevents heat escaping from the Earth. The phenomenon is known as greenhouse effect, which maintains the Earth temperature. Some of these gases are:

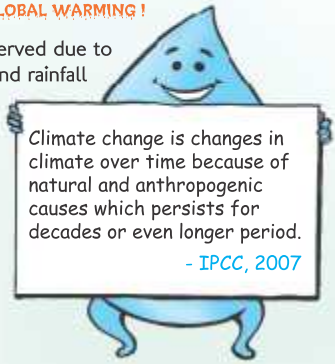


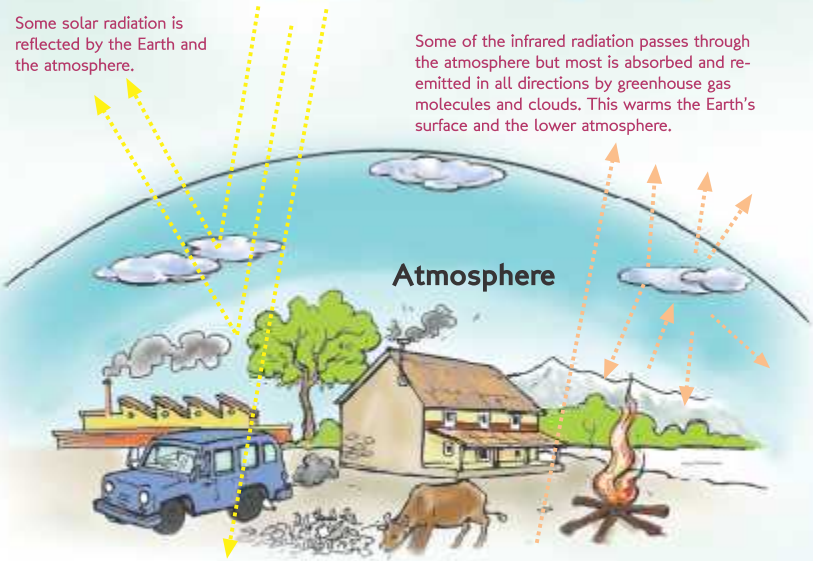
These gases are termed as greenhouse gas.

Without the greenhouse effect our earth's surface temperature will be -18°c and life will not be possible on the Earth. Thus, we should not upset the balance of these gases in the atmosphere.

Now-a-days, various human activities are producing large amount of greenhouse gases. Because of this, more heat is being trapped in the atmosphere increasing the Earth's average temperature. This is known as **GLOBAL WARMING !**

Some changes in climate have already been observed due to global warming such as change in temperature and rainfall patterns. These in turn causes 'climate change'. Climate change refers to long-term changes in average weather pattern, including average temperature, precipitation, wind, etc.





LEARN WITH FUN

S N O P G N I N T H G I L O F
H U T I D I T S Y C L O P S T
O F S A U M T B W T E R N A T
W R O R T O C E F O E Y G R H
E S R C R A N L L W B R Y I U
T T F M I S T C O S A N M T N
J G B L K W D H P U B A I A D
F E L I O G S I N T D Y T A E
T O R N A D O B O T H Y P F R
H F S I G L F L O O D U O L C
U R R A I T C R A N I A R O D
Y T I D I M U H F H S U Y I P
D S G O D O W E A T H E R O I
E M N C F R E E Z I N G N O A
R S A T M O S H P H E R E D R

Fifteen weather and climate related words are flying in the cloud above. Can you catch them all? Circle all the words hidden in the matrix. Go right, left, up, down and even diagonally. Good luck!

shower, humidity, frost, weather, thunder, flood, snow, atmosphere, rainbow, tornado, storm, rain, freezing, cloudy, lightning

Sources of Greenhouse Gases

Greenhouse gases occur naturally in the Earth's atmosphere but human activities have accelerated its concentration. The sources of Greenhouse gases due to human activities are:

Chlorofluorocarbons (CFCs) have been used in spray cans, refrigerators, air conditioners, perfumes and in making foam plastics. Though found in small quantity in the atmosphere, these gases are dangerous because they trap large amount of heat. Besides, CFCs go through complex chemical reaction with ozone which results thinning of the ozone layer.

Do You Know

A car produces 3.5 times its weight of carbon dioxide every year. A car is being built every second worldwide.

Are we responsible for CO_2 increase in the atmosphere?

Since the industrial revolution, emissions of these gases from human activities have been accumulating steadily, trapping more heat and enhancing greenhouse effect. As a result, global average temperature is rising both on land and ocean.

How are GHGs increasing in the atmosphere?

Fourth Assessment Report (2007) published by Intergovernmental Panel on Climate Change (IPCC) shows average global concentrations of the three main Greenhouse gases CO_2, CH_4, and N_2O are rising continuously. In 2005, CO_2 had increased by 35%, CH_4 by 148%, and N_2O by 18% compared to pre-industrial concentrations. At the time of pre-industrial era, the atmospheric concentration of carbon dioxide was 280 ppm and it reached 382 ppm in 2006.

What does "parts per million" mean? And why is it important?

This tells how many parts are there in one million parts of air. So, if carbon dioxide is at 382 parts per million (or ppm), that means in one million grams of air there is 382 grams of carbon dioxide.

We need to keep a close watch on this number. Carbon dioxide levels have gone sky-high in the past 50 years. Many scientists propose 350 ppm as the optimum number and that we should try to reduce use of fossil fuels to get back to that number.

Know your footprint?

Find it out by answering the quiz below.

Circle the alphabet (either A, B or C) next to the answer that best fits your lifestyle.

1. **How do you go to school?**
   - By private vehicle A
   - By school/Public bus B
   - Walking C
2. **How far do you travel by vehicle per week?**
   - More than 300 km A
   - 300 to 100 km B
   - Less than 100 km C
3. **What type of food do you eat?**
   - Meat almost everyday A
   - Meat 1 to 4 times in a week B
   - Vegetarian C
4. **Where does your food come from?**
   - Imported from other countries A
   - Produced inside country B
   - From neighborhood C
5. **How often do you waste your food?**
   - Everyday A
   - Occasionally B
   - Never C
6. **How many people live in your house?**
   - Less than 4 A
   - 4 to 7 B
   - More than 7 C
7. **How big is your house?**
   - More than 7 rooms A
   - 4 to 7 rooms B
   - 1 to 3 rooms C
8. **Where do you go for holidays each year?**
   - Out of country A
   - Another district B
   - Around home C
9. **Do you compost/recycle the waste in your home?**
   - No A
   - A little B
   - Yes C
10. **What is the major types of energy do you use?**
    - Fuelwood/coal/natural gas/kerosene A
    - Electricity B
    - Solar/wind/biogas C
11. **How much electricity does your household use? Check your electricity bill.**
    - More than 100 units/month A
    - 20 to 100 units/month B
    - Less than 20 units/month C
12. **Do you let tap running when brushing your teeth?**
    - Always A
    - Sometimes B
    - Never C

To calculate your footprint go to the next page.

Now, count the number of A, B and Cs and calculate your total score as shown:

A × 3 = ☐
B × 2 = ☐
C × 1 = ☐
Grand Total = ☐

Check your total score below to find out how large is your ecological footprint.....

0 to 12

You tread softly on our Earth and have a small footprint compared to others. Wish there were more of you around!

12 to 24

You have a medium footprint and your presence on the Earth is damaging. The natural environment cannot support many people like you.

Over 24

Lighten up! If everyone has footprints like yours, we would need several more Earths to have enough resources to meet all their demands! Is it possible?

What is Ecological Footprint ?

Ecological footprint measures the amount of land and water area required to sustain individual's consumption of food, services, housing and energy and to absorb their wastes. Ecological footprint is expressed in "global hectares" (gha) or "global acres" (ga). In present condition, the Earth has only 15.71 global hectares per person on a renewable basis. So, on the basis of ecological footprint, we can calculate how many Earths are required to sustain our lifestyle.

How safe is Nepal?

Nepal is vulnerable to climate change because of:

- Unstable and fragile geology
- Direct dependency on natural resources
- Diverse and sensitive ecosystem
- Monsoon dependent agriculture
- Glaciers and snow fed rivers
- Poverty
- Lower level of education and awareness
- Inadequate technology and infrastructure

Do You Know

- Nepal ranks 25th in Asia for richness in biodiversity.
- Eight mountains higher than 8000 m are in Nepal.
- Diverse climate of Nepal supports 35 forest types.

The livelihood of more than half of the population in Nepal depends on agriculture which is based on rainfall distribution throughout a year.

Do you know how climate change affects agriculture in Nepal?

Scientists predict that it will become drier during dry season and wetter during monsoon. Thus, the changing pattern of rainfall is likely to cause droughts during winter and floods during monsoon.

About 65% of agricultural land in Nepal depends totally on rainfall.

Laxmi aunt lives in Kapilvastu. She wants to share her heart breaking story with us.

"This year, I could not produce sufficient food for my family due to prolonged droughts and high temperature. The rainfall in monsoon occurred for few days but heavily. It caused flooding, which swept away the entire crop and deposited debris on all my farmland. I was unable to grow a single grain of crop. I had never experienced such events before. I fear if this continues, we will not be able to do farming anymore."

Climate change is not only a sorrow of Laxmi aunt. Balram uncle also has his own experience.

"I have been farming vegetables and fruits for 25 years. Since 2001, we have been facing a new problem of more flowering and less fruiting. We are harvesting less pears, mangoes, guavas, lichees, etc. and less vegetables like gourd, cucumber and beans. Many new diseases are being noticed in vegetables and fruits.

For a well-built house, we need a strong foundation.
What do we need for better agricultural production?

But over the last few years, increase in floods, hailstones, landslides along with increase of pest and diseases are affecting agricultural production which ultimately deprives more people of food.

Climate change

- Increase in disease/pest
- Drought and desertification
- Loss of local variety
- Water scarcity for irrigation
- Effect in growth and development
- Flood, landslide and erosion

Decrease in agricultural production
(Both quality and quantity)

Food insufficiency threatening Food security

IPCC projected that unchecked change in climate will cut global food production up to 40% by the year 2100.

Dil Kumari has white hair all over her head. Oh! She is telling a story about food scarcity in her village in 1972 to her grandchildren.

"The entire production of maize and wheat was destroyed because of heavy rainfall with hailstones. There was nothing left to eat in our village. The food was so scarce that many of our neighbors died of hunger. Some went to forest in search of food but we had fortunately stored some grains to escape from famine. So, my children, it is very important that we have some food stored for future."

Do You Know

- In South Asia it is projected that temperature rise and water stress will cause upto 30% decrease in crop production.
- There are more than 2,000 varieties of rice in Nepal.
- In Pokhara Valley, 17 out of the 64 traditional varieties of rice already have been lost and another 47 are under the threat of extinction.

Some of us are taking simple actions to minimize the impacts of climate change. Let's find out what Ram uncle did.

"I live in Rampur Village. For many generations, we have been growing rice. Irregular monsoon and drought have affected our rice production. So, this year I planted maize instead of rice as it requires less water. I also tried fruit farming like banana and different kinds of vegetables. To my surprise, the production was better.

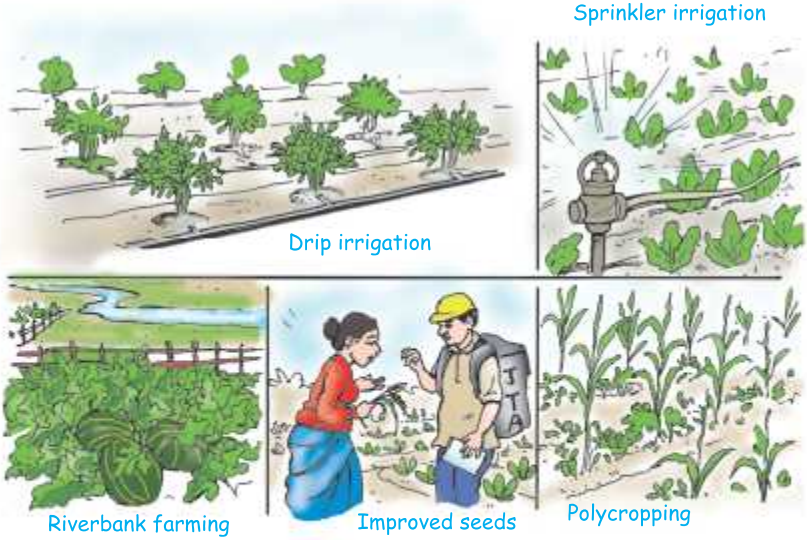
Irrigation canals have been constructed to fight the erratic rainfall. Now I can cultivate my lands for three seasons. Gabion walls are constructed to control riverbank cutting . We also started planting trees in the community and private lands which is providing fodder, timbers and fruits. These practices have reduced soil erosion too."

Drip irrigation can help to reduce water consumption by 70% and plants receive the water required for optimum growth.

Do you know other practices for minimizing climate change impacts on agriculture?

- Rama is using drip irrigation system for growing vegetables even when there is no rain.
- Gita has a big reservoir to collect rain water during monsoon. She uses the water in dry season for her livestock and kitchen garden.
- Sangita and her friends are growing crops along with trees at the same land. This is known as agroforestry.
- Mina grows millet and maize in the same field. This type of plantation is known as polycropping.
- Harka plants improved variety of rice suggested by Junior Technical Assistant (JTA). The production is better than past.
- Sharmila's family in Jhapa has treadle pumps for alternative irrigation that provides water even when there is no rain.
- Brij in Damak practices watermelon farming along the riverbank of Ratuwa River during dry period.
- Namuna Ama Samuha in Chitwan is saving money for crop insurance to compensate losses due to natural calamities.

Do you want to learn more? Ask teachers, refer books and internet.



LEARN WITH FUN

How Smart Are You ?

AGRICULTURE SCRAMBLE

What is artificial watering in agricultural fields called?

Unscramble these nine word puzzles to help you solve the answer.

F I U T R

M N I L A A

T I D S S E E C P I

M R R F E A

E R C I

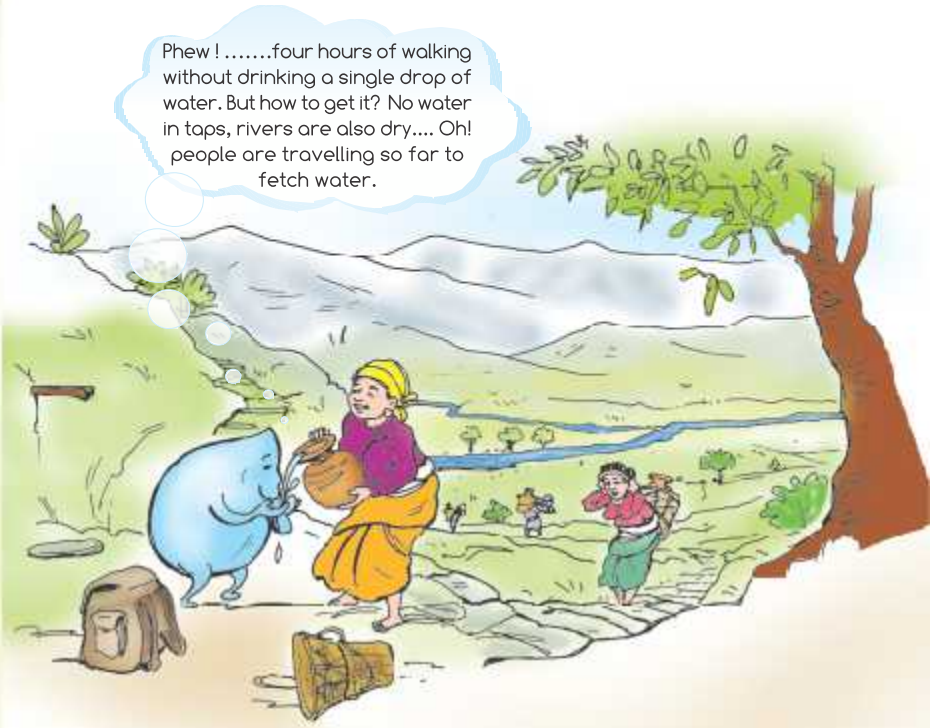
O C P R

F T R R O S E Y

G N R I A

A N R I

Your answer is: _ _ _ I _ _ _ _ O _



"You could have seen many spring spouts in my village before, which had clean water flowing throughout the year. Slowly, every year the spring water dried up until we had no water sources near us. Now, we have to walk more than three hours to fetch a single pot of water."

Do You Know

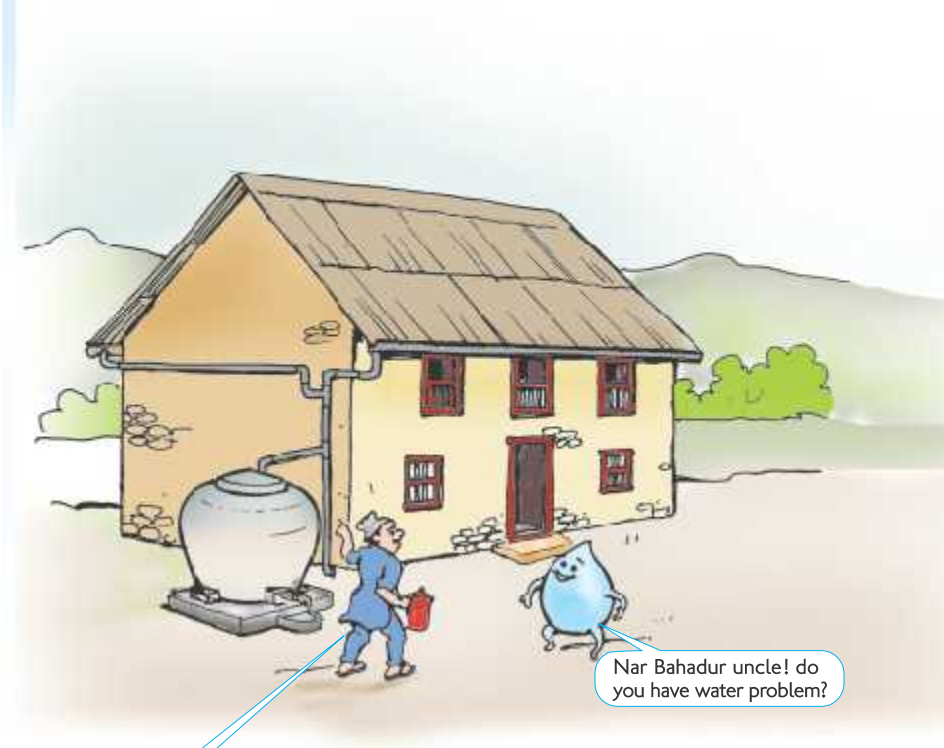
About 1.1 billion people around the world are still without access to safe drinking water.

The Himalayas provide water to 1.3 billion people living downstream. It is widely accepted that climate change is the main factor behind the accelerated glacier melting observed in the Himalayas. Continuous warming is predicted to lead major changes in freshwater system ultimately resulting massive decrease in freshwater availability in future. Perennial rivers could change into seasonal streams causing water scarcity in dry months.

This changing river flow affects on the irrigation systems, water-powered grain mills, hydropower plants and drinking water supplies.

Do You Know

1 in 3 people around the world lacks water to meet daily needs.

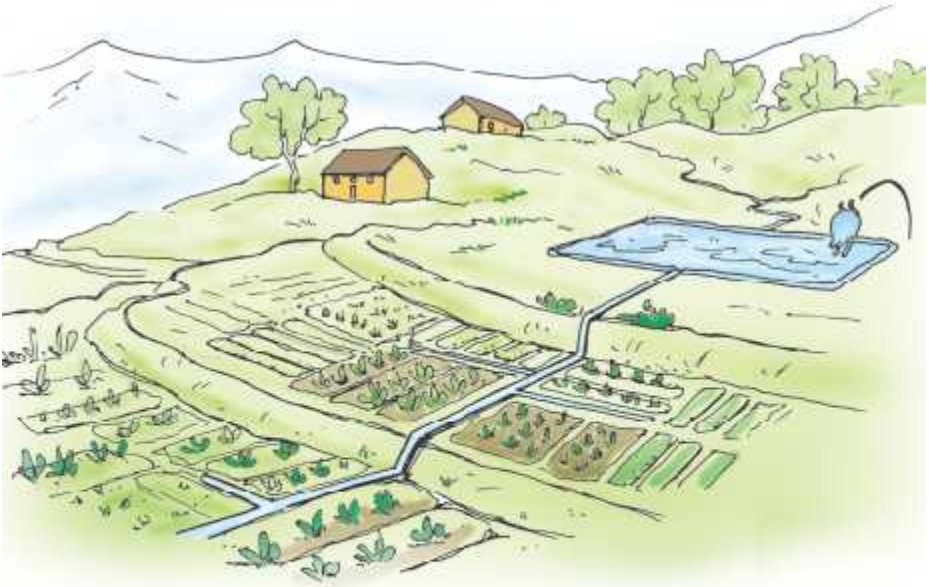


Not at all. Here is my water collection tank, which collects water from the roof when it rains. The water is sufficient for daily household uses. Waste water is used for irrigating kitchen garden. We also have a large pond in middle of our village to store rainwater for livestocks. Now, rainwater harvesting has been practiced widely throughout our Village.

Sita and her friends collect water in plastic pond and use it for growing crops and vegetables.

She lives in Homlung Village with her husband and three sons. The villagers use water from nearby spring sources collected in ponds for cultivating crops and vegetables. They use water efficient technologies like drip irrigation and micro-sprinklers.

"Because of this technique and hard work, I was able to sell fresh vegetables worth NRs 12,000 to 15,000 in less than 5 months. This was only half of the total production", Sita says. She distributes the other half of her production to her relatives and neighbors. "I am extremely pleased to share success with them. Initially, they were amazed to find vegetables in my garden but now they are also doing the same. I am proud and successful owner of my farmland", she adds.



Hydropower is a renewable source of energy with minimal operational emissions of greenhouse gases.

Nepal's energy demand is dominated by biomass resources but clean energy resources have also been explored. Electricity infrastructure in Nepal is heavily reliant on hydroelectric power; nearly 91% of the nation's power comes from hydroelectricity. Typically, the hydropower in Nepal is characterized by river run-off based so changes in the quantity and timing of river discharge together with increased reservoir evaporation will have a number of effects on the production of hydroelectricity. Moreover, heavy sediment load in rivers and reservoirs are subjected to have negative impacts on power production. Therefore, increased climate variability could affect Nepal's electricity severely.

So, we have to massively promote such renewable and clean energy resources to replace the traditional resources like petroleum and biomass, which emit more greenhouse gas.

Do You Know

- Geothermal power plants emit 1,000 to 2,000 times less CO_2 than fossil fuel power plants.
- Hydroelectric power plants generate about 16% of the world's electricity.

Some have smart idea.....

Now we shall hear from the pioneer who started biodiesel in Nepal.

"I am Keshav Karki from Palpa district. I have been using diesel from Jatropha oil in my tractor for farming since 2008. I collect Jatropha seeds and take it to local mustard mill to produce Jatropha oil. My first attempt was a huge success and many people were attracted in this alternative energy source. The news was published in many national dailies. Now, I have started a commercial plant to produce Jatropha oil. My fellow villagers are also growing Jatropha for income and use it as diesel."

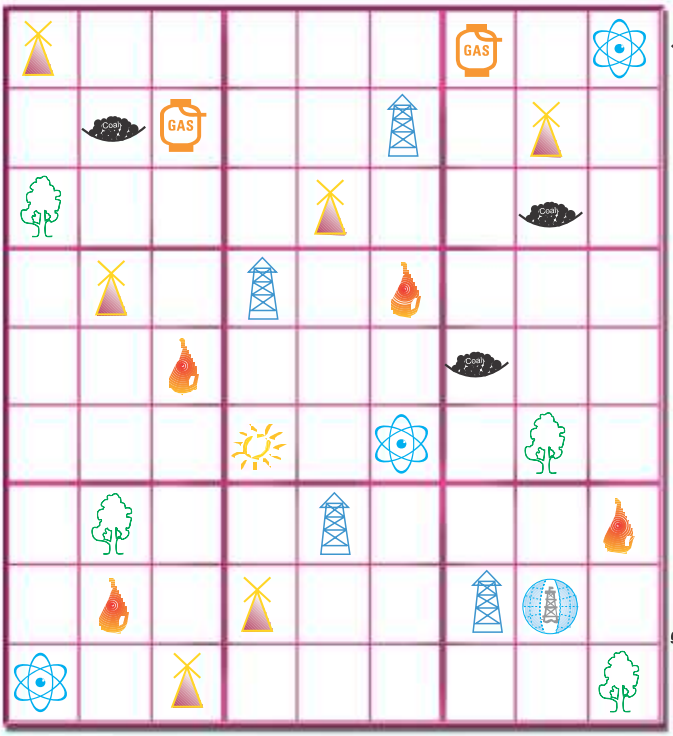
Do You Know

- Human beings are using fossil fuel 100,000 times faster than they are being made.
- The consumption of petroleum products in Nepal is increasing at a rate of about 13% per year.

LEARN WITH FUN

Energy Source Sudoku

Sudoku is a logic-based placement puzzle consisting of a 9 × 9 grid of cells. Typically using numbers, this puzzle uses energy source symbols for biomass, coal, geothermal, hydropower, natural gas, petroleum, solar, uranium and wind. To solve the puzzle, each 3 × 3 region of the grid must contain only one source symbol once. Each row and each column of the puzzle must contain only one energy source symbol. There is only one solution for this puzzle. Good luck !



Ani Sherpa runs a hotel at Chaurikharka Village, en route to the Everest region. Large number of tourists travel through her village every year. Few years ago, all villagers relied on kerosene and forest resources to meet energy demands for lighting, cooking and heating purposes. But the story is different now.

In 2007, Ghatte Khola Microhydro Project with capacity of 70 KW was completed. Now, 108 households are benefiting from this project.

"I had to use large amount of fuelwood and kerosene for my hotel 'Star Garden'. I recall there were no rules and regulations regarding the use of natural resources."

"Now, my kitchen has changed. I am using hot plates, micro-wave oven, mixers, rice cookers and room heaters ".

Hello friends! I am Bhawana from Kanya School, Bhaktapur. How do you spend your vacation? My hobby is travelling to new places. I visited 'Zero Energy House' at Institute of Engineering, Lalitpur this winter vacation. This house does not use energy from outer sources. It generates its own electricity from solar panel. There is no power cut ! Water is managed by collecting rainwater. Waste water is treated and then used for watering garden. Organic waste is separated for composting and inorganic waste is sent for recycling. Isn't it interesting? Can we transform our house into zero energy?

Do You Know

- Nepal relies heavily on traditional energy sources, which provides 93.2% of total energy requirements. Biomass comprises 86% of the total energy consumption.
- Kathmandu has approximately 600 zero-emission electric vehicles now.

LEARN WITH FUN

Saving energy = pocket money

You know how many plates of *Panipuri* can you eat by replacing convenient bulbs by CFLs at your home?

Compact fluorescent light (CFLs) bulbs use 75% less energy than convenient bulb and last up to 10 times longer. So less energy consumption means low cost.

Now, let's calculate how much energy and money you can save.

First conduct a light bulb survey. Begin by counting the number of bulbs at your home.

STEP I: Record the watts consumed by each convenient bulbs and add them all. Convert the power of bulbs in Kilowatts using the formula **Watt/1000** and put on column A of Energy use log table below.

Energy Use Log

Appliances	Power in kilowatts (KW) A	Hours used each day (hr) B	Daily energy Use (KW-hr) C = A × B	Monthly energy use (KW-hr/mo) D = C × 30	Annual energy use (KW-hr/yr) E= D × 12	Annual energy cost E × Rs 7.00
Convenient Bulb						
CFL						

STEP II: Find out how many hours each of them is used in a day (24 hours) and add them all and put it on column B.

STEP III: Find out the daily energy used in KW-hrs by multiplying A and B and put on column C.

STEP IV: Then find out monthly and annual energy used in KW-hrs.

STEP V: Then follow same process for supposing that all the bulbs in your house have been replaced by CFL on the following conversion

60-Watt convenient bulbs = 13-Watt CFL

75-Watt convenient bulbs = 17-Watt CFL

100-Watt convenient bulbs = 22-Watt CFL

STEP VI: Finally calculate the amount that your family would pay for lighting assuming the cost for 1 unit (1 kw-hr) is Rs 7.00. And find the differences.

Now can you calculate how many plates of *Panipuri* you can buy from this saved money in a year?

Nepal is prone to natural disasters. Geology of the Himalayas is young and fragile. We have been experiencing several types of weather, water and climate induced disasters such as floods, avalanches, landslides, hailstorms, and droughts destroying properties and taking lives of many people.

My Story.....

15 August 2006

"I am Pooja. I study in Shikchya High School in class 7. I have to cross Bhada River every day on my way to school. When there is heavy rainfall it is difficult for me to cross the river. The water level rises up to my waist and all my clothes are wet. I feel uncomfortable to sit in class with wet clothes. I miss most of my classes in July and August. I remember, few years ago, river water used to be only at knee level".

It is not only the case of Pooja.

"I am Anuja and I am now 14. I have been moving frequently all my years. When I was 8, a heavy landslide swept away my home. We shifted from Rumala to Ghopatar. Same incident repeated again and we are now in a temporary home at Ghurmi. I still fear that we will be hit by a similiar disaster. Seven years ago we had 2 hectares of land and production was enough to feed my family. But now, my parents and I are forced to work as porters. I have not been able to continue my studies as we have been moving frequently. I pray nobody faces problems like mine."

Do You Know

Number of deaths worldwide from weather related disasters from 2000 to 2005.

- Droughts: 1,171
- Floods: 30,988
- Slides: 4,537
- Wind storms: 15,963
- Extreme temperature: 55,279

Why Dilli sleeps soundly at night?

I used to fear when monsoon began. I could not sleep well at night as flood in Narayani could enter in my house at any moment. I do not have to worry these days because we have installed a watch-and-warn system. There is a watchman for 24 hours in a high tower who informs us about flooding through siren. In the flood of 2007, we came outside the house when we heard the siren. We took our cattle to a safe zone at Thule Chaur. We got enough time to shift our valuables.

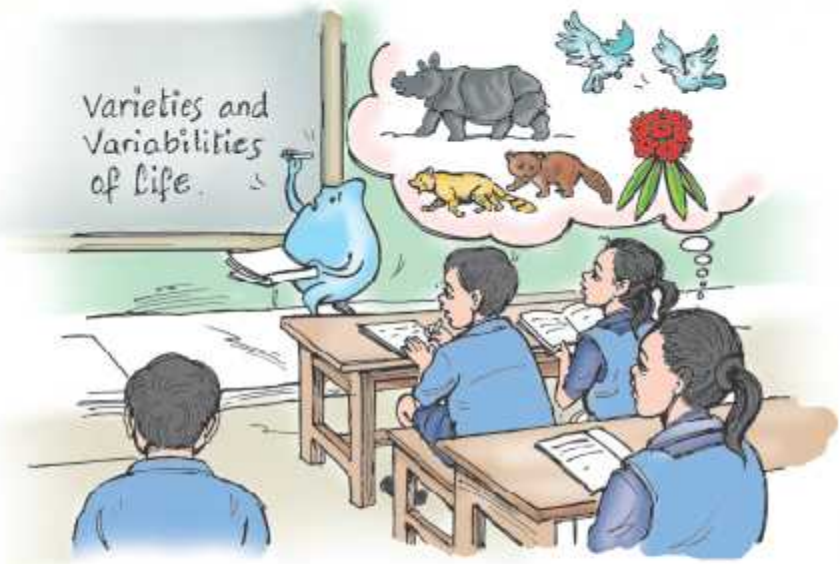
- Sarojani has insured her house. The insurance company pays her for any damage from natural disasters.
- Shivaram stores some dry food in upper storey of his house so that he can get it if his house is flooded.
- Villagers at Nawalparasi have made 1.8 km long river embankment to protect their farmland from flooding.
- At Sitapur Village, newly constructed houses have plinth level raised to protect their houses from flooding.

LEARN WITH FUN

Find the differences

Here are two different pictures of a same village taken at interval of 10 years. Find any 10 differences. **In which environment do you want to live?**

Biodiversity ....



Nepal is rich in biodiversity. Though it occupies 0.1% of the world's land area, it claims 9.3% of bird species, 4.5% of mammals, 2% of reptiles, 6% of butterflies, 1% of fish and over 2% of the flowering plant species of the world.

Forest covers about 30% of land area of Nepal. They are home to many species of flora and fauna. With the depletion of forest resources, these flora and fauna are at risk.

As average temperature increases, suitable habitat for many species will move to higher mountains or further towards the Poles. Apolo butterfly and Pika at Langtang have migrated to the upper reaches. The Golden Toad and the Harlequin Frog of Costa Rica have already disappeared as a direct result of global warming.

Using resources faster than they can regenerate, we are changing the Earth's ecosystems more rapidly and extensively in the past 50 years.

The rising temperature is increasing pest forcing farmers to use pesticides to increase their production.

Ram in Kapilvastu shares about his bee-farming practice.

"The varieties of pests and their survival rate are increasing. Farmers are using more pesticides in mustard farms harming bees and other beneficial insects. A new grass species is reducing mustard farming. It is threatening my livelihood."

How renewable energy technology saves forest?

"I am Ujeli from Chitwan. Few years ago, I used to cook food using fuelwood collected from nearby forest. We didn't care about managing the forest and the forest condition worsened. I had one bitter experience, I could not collect fuelwood to prepare morning meal and my children had to go to school without food. Then, I realized that our forest cannot supply fuelwood forever if we don't use it sustainably. I searched for alternatives, and found biogas as the best option. It is very efficient and comfortable to cook. I am using the slurry, by product of biogas plant, in agricultural fields as fertilizer. I encourage others to install biogas plant and now most of my fellow villagers are following it. Now the forest is conserved and greener than before."

Some more actions to conserve biodiversity.

- After establishment of community forest in 1993, people of Namdu Village of Dolakha started afforestation program at barren land to recover the forest.
- Government of Nepal has established different national parks and wildlife conservation areas.
- Local club of Tanahun has banned collecting rare medicinal herbs from community forest.
- Several organizations are organizing different educational program to create awareness on biodiversity conservation.

Rising temperature increasing health problems.

Warmer environment supports most of the pathogens. With increase in temperature, higher altitude are also becoming suitable habitats for mosquitoes. The risk of expansion of infectious diseases like malaria, Kala-azar, Japanese encephalitis increases. Other impacts are incidences of water borne diseases during disaster events and heat waves. Vector borne diseases are the most climate sensitive infectious disease in the world as they can outbreak easily.

Malaria is the world's most important vector-borne disease. Over 2.5 billion people are at risk, and there are estimated to be 0.5 billion cases and more than 1 million deaths from malaria per year. Very high temperature are lethal to the mosquito and the parasites but at low temperatures a small increases in temperature can greatly increase the risk of malaria transmission.

Health burdens of climate change are likely to approximately double by 2020, mostly because of increased rates of diarrheal disease and malnutrition in low-income countries.

It's happening!

"Hello! I am Jeeban, a public health worker at District Public Health Office, Kathmandu. In rainy season, we have such a huge pressure of patients that we are unable to admit all. Most of the cases are diarrheal and water borne diseases. Flooding contaminates drinking water with microbes. We should drink properly treated water."

Do You Know

Children in developing countries bear over 85% of diseases caused by climate change.

As the new health risks are increasing because of the changing climate, people need to be aware about such problems. We should start it at school. Children can teach their families and friends.

This is Arun from Dhanusha. Seven years back, my wife and son got sick. We visited a local healer because there was no health post. Unfortunately, they lost their lives along with many other villagers. Later, I learnt that it was Kala-azar. Government and other organizations conducted awareness campaigns about this disease. We then started using mosquito nets. We have been removimg small patches of ditch from our surroundings. We keep pigs far from our houses. Now only few cases of such diseases are reported. We also get regular health check up at a nearby health post.

Today Dr. Thapa is in your school. Let's hear what he is suggesting?

- Drinking water can be treated at home by boiling, filtering, chlorinating, SODIS.
- Wash your hands with soap and water properly before and after each meal.
- Arrange first aid kit ready to use at your home and school.

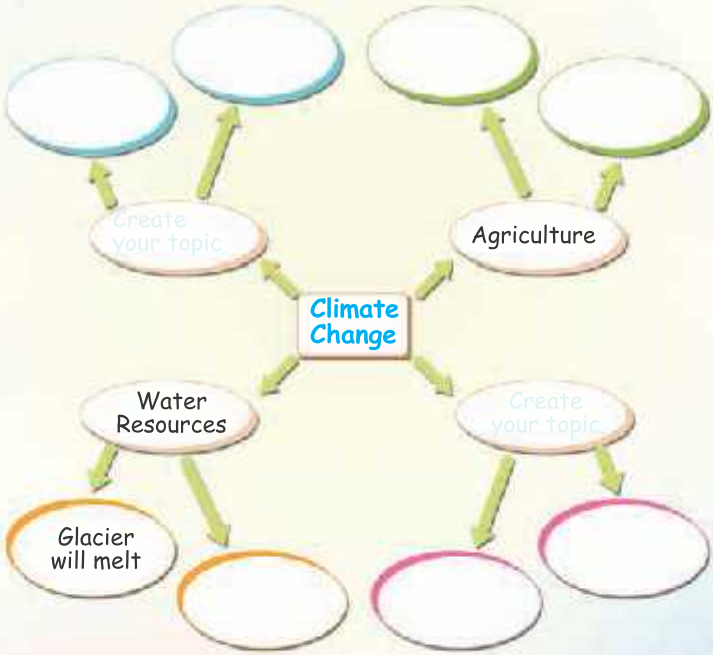
LEARN WITH FUN

BRAIN STORMING

THINK THINK THINK .....

Climate change affects our environment and livelihood.

Brainstorm for 10 minutes. Then, fill the ovals with your own topics and for each topic give 2 possible impacts of climate change which you think is most likely to happen.



Prepare a short 2-3 minute speech explaining your ideas about climate change impacts. Then, **speak aloud** in your classroom to share your knowledge with friends.

More than 30% of people in Nepal are living below poverty line and climate change is likely to affect the poorest at first and the most.

One of our important economic revenues is from tourism industry. Our panoramic mountains, lakes, waterfalls, rivers and biodiversity are under the threat due to changing climate. We may lose money that comes from tourism industry affecting livelihood of the people.

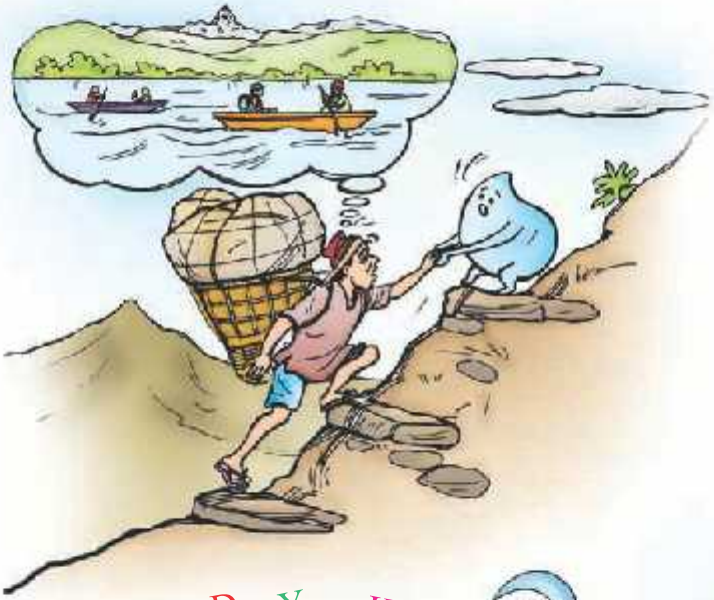
For example, if snow from mountains disappears in the Himalayan region, number of tourist will be decreased, affecting lives of people living there.

Do You Know

By 2080, climate change will place an additional 80–120 million people at risk of hunger.

This is reality...

Chandra lives at the bank of Baulaha River in Nawalparasi. He used to fish in the near by river and ferry people across till last decade. River pollution, frequent flooding and decrease in water level during winter compelled his family to change their occupation. Along with other Bote families, his family also selected agriculture as their main occupation. Unfortunately, frequent flooding regularly swept away their crops. It forced them to work as daily wage labors.



Do You Know

- At least 40% of the world's economy and 80% of the needs of the poor are derived from biological resources.
- In Nepal, 55.1% people live below US$1.5 per day.

"Hello! I am Bishnu Bahadur. I started rabbit farming a year ago as suggested by my friend. It has been a major source of income to my family. It helped my livelihood when my paddy farming production was affected by irregular rainfall pattern."

Let's find out what our friends are doing.

- A group of students in Banke have been performing street drama in their community on the Disaster Risk Reduction. Oh! Look at those costumes! It must be fun!

How smart are you

1. **The conditions of the atmosphere of a particular place over a long period of time is:**

   A) Weather B) Humidity C) Climate

2. **Which of the following is not considered as one of the six basic greenhouse gases?**

   A) Water Vapour B) Methane C) Nitrogen

3. **In the absence of the natural greehouse effect, how much cold would the surface of the Earth be?**

   A) 33°c B) -18°c

   C) It wouldn't be colder. The surface of earth would be warmer.

4. **When fossil fuels are burnt, what is the main greenhouse gas that is released?**

   A) Carbon dioxide B) Ozone C) Oxygen

5. **What does 350 ppm of carbondioxide signify?**

   A) Level of CO_2 in the atmosphere before industrial revolution

   B) A safe level of CO_2 in the atmosphere

   C) Level of CO_2 in the atmosphere now

6. **Over the last 100 years, how much global temperature has increased?**

   A) 0.74°C B) 0.074°C C) 7.4°C

7. **Which of these greenhouse gases is most abundent in the atmosphere?**

   A) Methane B) Water vapour C) Nitrous Oxide

8. **Compact fluorescent light (CFLs) bulbs are approximately how many more times efficient that standard light bulbs?**

   A) 5 times B) 10 times C) 3 times

Ans: 1: C, 2: C, 3: B, 4: A, 5: B, 6: A, 7: B, 8: A

Dear friends, now you are aware about the issues and impacts of climate change in Nepal. But it is not the issue of a single country. People all over the world are affected irrespective of their countries, religion and gender. It is a matter of global concern and we need to work hand in hand to face the challenges.

Did you know our elders have already been responding to climate change?

In 1979, the first **World Climate Conference** recognized climate change as a serious problem.

In 1988, United Nations Environment Program (UNEP) and the World Meteorological Organization (WMO) established **Inter-governmental Panel on Climate Change (IPCC)**. The **IPCC** provides the world with a clear scientific view on the current and future states of climate change so that the potential environmental and socio-economic consequences are known to the public. It publishes a scientific assessment report in every three years. It has released its **Fourth Assessment Report** in 2007.

In 1992, Earth Summit agreed to form **United Nations Framework Convention on Climate Change (UNFCCC)** with the objective of stabilization of greenhouse gas concentration in the atmosphere at a level that would prevent dangerous manmade interference with the climate system.

In 1997, **Kyoto Protocol** was adopted with the aim to reduce greenhouse gas emission and financing clean development. There are 187 member countries of this protocol including Nepal. The annual meeting among the parties is called Conference of Parties (COP) and recently they held COP 15 in Copenhagen, Denmark, in 2009.

Nepal has signed most of the major international treaties and conventions designed to reduce global impacts of climate change.

And at local level, government bodies, non-governmental organizations and international non-governmental organizations are making people aware about climate change to bring positive actions.

We can also discuss at local levels on the changing pattern of temperature and rainfall and their affects on us. We can identify and prioritize the actions needed to cope with the impacts of climate change.

We must follow win-win approaches including understanding vulnerability, establishing policy, and developing a national climate change strategy which includes reform measures and investment options through process of disaster reduction, biodiversity conservation and poverty alleviation.

LEARN WITH FUN

Role play for adaptation:

An individual alone can not work to reduce the impacts of climate change. A multi-disciplinary approach is needed to address the impacts. To play this game, gather your friends and assign at least three friends to play roles of the characters listed below. You can add or remove any character on the basis of total numbers of players.

Characters:

Farmer | Student | Local NGO/CBO member | Fisherman | Woman activist

Tourist | Shopkeeper | Tourism entrepreneur | Policy maker | Health worker

Arrange your friends in different groups and provide each group with a sheet of chart paper and a marker.

A. Discuss in group and list three problems faced by each character due to climate change.

Examples:

Farmer: 1. No rainfall in time 2. Crops damaged by floods 3. .....

Health worker: 1. Higher number of patients in monsoon 2. ..... 3. .....

Tourism entrepreneur: 1. ..... 2..... 3. .....

B. Rank them according to their severity and frequency (1 for the highest)

Examples:

Crop failure .1..... Death of animals .2..... ....

C. Identify the remedial measures so that the loss or impacts listed above can be minimized.

Examples:

1. Early warning system for flood 2. Insurance 3. .....

Now arrange all of your friends in a circle and discuss the impacts and adaptation issues listed by each group. Prepare a summary and show it to your teacher.

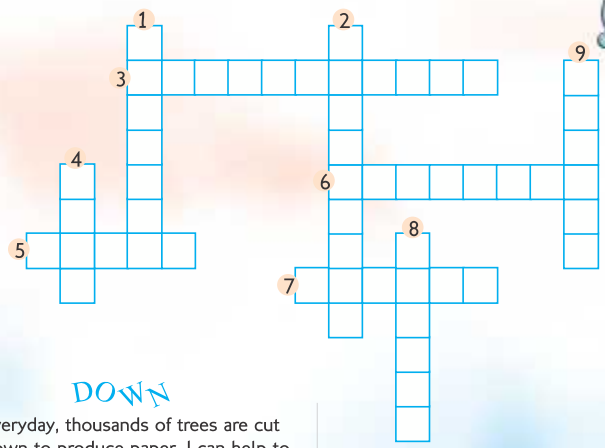
Finally, you can publish this summary report on information board of your school or eco-club.

LEARN WITH FUN

Crossword Puzzle

What can we do at our **home** and **school** to reduce carbon emission?

Find out words for each blanks then fill in the corresponding boxes.



DOWN

1. Everyday, thousands of trees are cut down to produce paper. I can help to reuse paper by giving waste paper to ……..
2. Most of the energy in the world comes from fossil fuel, a major contributor for GHGs emission. I can use …….. source of energy as an alternative to reduce GHGs emission.
4. Our food habits are also responsible for large ecological footprint. I can reduce …… consumption to reduce my footprint.
8. Electric appliances consume about 10-60% of energy even on stand-by mode. ……. them when not in use.
9. …….. is an alternative source of energy for cooking instead of fuel-wood.

ACROSS

3. One way to deal with water scarcity problem is to use water……..
5. A tap leaking at a rate of only one drop per second can waste more than 25 litres of water a day- that's about 9,000 litres a year. I do not let……. Leakage from taps.
6. Around the world we use one million tons of paper every day. Product packaging is just a waste. I make my own …….. paper for gifts from old newspaper.
7. Forest captures carbon so, I never pluck ……. or pick flowers from anywhere in the wild.

How much do you care for our Earth everyday?

Keep track of all good things that you do every day to care for the Earth. Put a tick beside each good work you do.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1. Didn't let the water running while I brushed my teeth	.....	.....	.....	.....	.....	.....	.....
2. Unplugged TV from socket when not used	.....	.....	.....	.....	.....	.....	.....
3. Turned off the lights when not used	.....	.....	.....	.....	.....	.....	.....
4. Took own bag for shopping	.....	.....	.....	.....	.....	.....	.....
5. Threw chocolate wrapper in a trash can	.....	.....	.....	.....	.....	.....	.....
6. Gave waste paper to recycling agent	.....	.....	.....	.....	.....	.....	.....
7.	.....	.....	.....	.....	.....	.....	.....
8.	.....	.....	.....	.....	.....	.....	.....

Students in Action!

One of the ways to find out information about people or places is to survey or interview individuals. Now you know more about climate change, its impacts and how to combat with its effect.

In this section you are requested to survey older population in your society.

Step I:

Take 3-5 questionnaires of climate change survey (The questionnaire is at the end of this book. You can make photocopies).

Step II:

Now go to your community and ask questions on the survey to the older population of society. Mark the most appropriate answer based on their reply on the survey form.

After the survey

Step III:

Post 10 poster boards, one for each of the 10 survey questions. List the question number and the question itself on the top of the poster board. Draw five vertical columns, one for each possible response, for students to record the responses received from the survey ("Carrot stick" marks are suggested for recording ease).

Step IV:

Using the data from the surveys, have each student prepare an essay from it.

Pani Prasad at your school....

I learnt about the various aspects of water, its importance, how its quality is being degraded and how we can take the preventive measures through Pani Prasad I and II. Pani Prasad itself is very interesting character.

***-Sabina Adhikari**, Class Eight, Siddhartha Vanasthali Institute*

The clear and easy explanation on High Altitude Wetlands, useful activities, interesting games, historical stories have made Pani Prasad II a wonderful book for the school students like me.

***-Pranita Gaggar**, Class Six, Galaxy Public School*

While Pani Prasad I has given a complete concept on water, Pani Prasad II has emphasized on what I call the 'Water Crisis'. Its charismatic way of presenting the matter is quite appreciable.

***-Binod Prasad Sapkota**, Teacher, Intensive International School*

Climate change: A common concern

Explore it

To get more knowledge on **Climate Change**, you may consult following resource materials:

Books

1. "Under the Weather, stories about climate change" by Tony Bradman
2. "Rising Above Global Warming" by B.J. DeFrancesco
3. "Gas Trees and Car Turds" by Kirk Johnson
4. " This is My Planet" by Jan Thornhill
5. "A Hot Planet Needs Cool Kids" by Julie Hall

Movies

1. The Day After Tomorrow.
2. An Inconvenient Truth
3. The Age of Stupid
4. *Jalapari*
5. Ice Age

Documentary

1. The Weeping Apple Tree
2. Eleventh Hour
3. Home
4. Planet Earth
5. Meltdown in Nepal

Websites

1. http://www.eschooltoday.com/climate_change.html
2. http://tiki.oneworld.net/global_warming/climate_home.html
3. http://globalwarmingkids.net/
4. http://climate.nasa.gov/kids/
5. http://www.epa.gov/climatechange/kids/

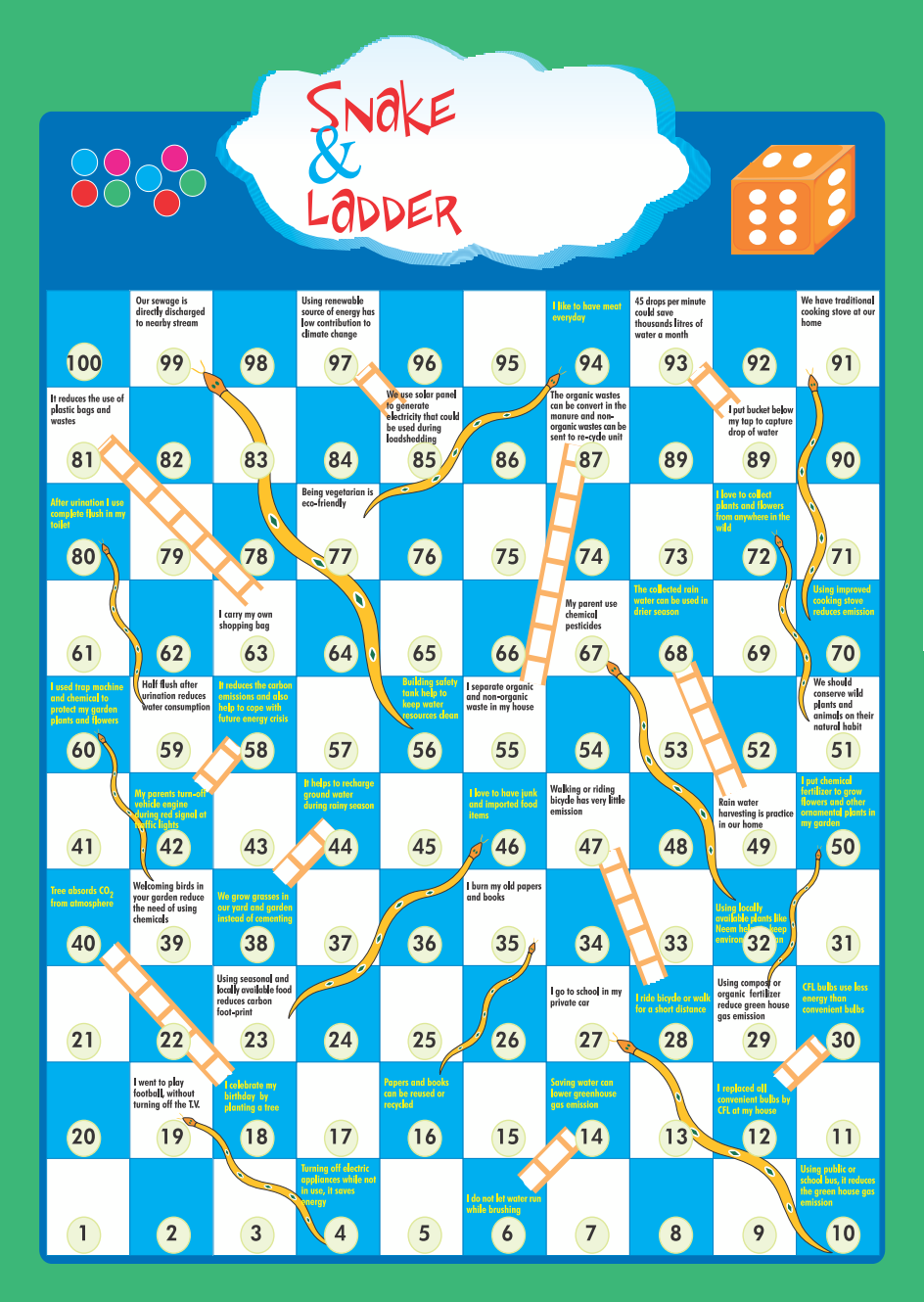
Glossary

Agroforestry	The land management practice of growing trees along with cultivating the crops on the same field.
Alleviation:	The act of reducing something unpleasant. For eg. Poverty alleviation is act of reducing poverty.
Avalanches	The massive and rapid flow of snow down a slope which occurs naturally or due to human activities like heavy movement of skiers in mountainous region.
Biodiesel	Environment friendly clean burning alternative fuel CO_2 emission & reduces dependency on fossil fuel.
Biodiversity:	A measure of the number of species and range of life forms found in an area.
Biogas:	The mixture of gases about two-third of methane and one-third of carbone dioxide produced from the anaerobic digestion.
Chlorofluorocarbons:	An organic compound that contains carbon, chlorine and fluorine which are responsible for hole in ozone layer and contribute to global warming; widely used as refrigerants, deodrants, perfumes etc.
Climate:	It is a long term average of weather, usually of 30 years.
Climate change	A change in climate over time; usually relating to changes in temperature, wind patterns and rainfall; although may be natural, anthropogenic or both.
Convention:	A large gathering of people who shares a common interest.
COP	The main body of the UNFCCC, comprising the nations that have ratified the Convention. On a yearly basis, it promotes and reviews progress in the implementation of the Convention.
Debris	Very small bits of rubbish, dust and tiny bits of rock.
Desertification:	Change of arable land into desert due to loss of vegetation and soil moisture, either by natural or anthropogenic cause.
Drip irrigation:	Method of supplying irrigation water through tubes that drip slowly into the soil at the base of each plant.
Famine:	A severe shortage of food accompanied by a significant increase in local or regional death rate.
Gabion wall	Cellular structures, i.e. rectangular cages made of zinc-coated steel wire mesh and filled with stone of appropriate size and mechanical characteristics.
Geothermal	Having to do with the heat of Earth's interior, energy extracted from this heat stored in Earth.
Glacier	A large body of ice with slow motion. Most glaciers flow along topographic gradients because of their weight and gravity.
Glacier retreat	When the tip of glaciers (tongue) moves backwards (towards it origin), it is called glacier retreat.
Global warming	The increase in Earth's average temperature.
Gobar gas	A gas produced by the biological breakdown of organic matter in the absence of oxygen.

Greenhouse effect:	Warming of Earth's atmosphere caused by some gases on it, which allows light from Sun to Earth's surface but prevent from escaping.
Grooming	Trimming and cleaning foliage of plants.
Hailstorms	Any storm that produces hailstones that fall to the ground; usually used when the amount or size of the hail is considered significant.
Heat Stress	A variety of problems associated with very warm temperatures and high humidity.
Heat waves	A period of abnormally hot weather lasting several days.
Infectious disease	Easily or readily communicated disease from one person to another.
IPCC:	The Inter-governmental Panel on Climate Change. It was established in 1988 jointly by WMO and UNEP. The United Nations scientific body that investigates the causes and impacts of climate change, and publishes special scientific reports.
Japanese encephalitis	Inflamation of brain caused by Japanese Encephalitis virus carried by mosquitoes.
Kyoto Protocol:	An international binding agreement with a target to reduce greenhouse gas emissions.
Malnutrition	A lack of nutrients needed by the body for appropriate growth and development, and adequate to meet the body's energy demands.
Monsoon	A seasonal reversing wind accompanied by seasonal changes in precipitation. In Nepal the period from June to September is monsoon.
Mortality	The number of deaths in a given time and a place.
Pesticide	Chemicals used to kill insects or other organisms harmful to cultivate plants or human health.
River embankment	An artificial bank (a levee or dike) usually to prevent flooding and inundation by a river.
Carbon sequestration	The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests or soils) through physical or biological processes, such as photosynthesis.
SODIS	Solar water disinfection. A water treatment process depending on solar energy only to disinfect small quantities of water for use mainly at household level.
Sprinkle irrigation	Irrigation water is applied through a pressurised system. The pressure causes the water to flow out through the sprinkler nozzle.
Sustainable	Referring to an activity that is able to be carried out without damaging the long-term health and integrity of natural and cultural environments.
Treaties:	A binding agreement with specific obligations for all parties. It often has penalties or deadlines to withdraw from the agreement.
UNFCCC:	United Nations Framework Convention on Climate Change. A treaty signed at the 1992 Earth Summit in Rio de Janeiro that calls for the "stabilization of greenhouse gas" concentrations in the atmosphere at a level that would prevent dangerous manmade intervention to the climate system.
Vulnerability:	The degree to which one is susceptible to harm.
Weather:	State of the atmosphere in a short span of time at a place.
Win-win:	Refers to measures that are beneficial to all the parties involved.


Note:


Note:


Snake & Ladder
100
Our sewage is directly discharged to nearby stream
99
98
Using renewable source of energy has low contribution to climate change
97
96
95
I like to have meat everyday
94
45 drops per minute could save thousands litres of water a month
93
92
We have traditional cooking stove at our home
91
It reduces the use of plastic bags and wastes
81
82
83
84
We use solar panel to generate electricity that could be used during loadshedding
85
86
The organic wastes can be convert in the manure and non-organic wastes can be sent to re-cycle unit
87
89
I put bucket below my tap to capture drop of water
89
90
After urination I use complete flush in my toilet
80
79
78
Being vegetarian is eco-friendly
77
76
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74
73
I love to collect plants and flowers from anywhere in the wild
72
71
61
62
I carry my own shopping bag
63
64
65
66
My parent use chemical pesticides
67
The collected rain water can be used in drier season
68
69
Using improved cooking stove reduces emission
70
I used trap machine and chemical to protect my garden plants and flowers
60
Half flush after urination reduces water consumption
59
It reduces the carbon emissions and also help to cope with future energy crisis
58
57
Building safety tank help to keep water resources clean
56
I separate organic and non-organic waste in my house
55
54
53
52
We should conserve wild plants and animals on their natural habit
51
My parents turn-off vehicle engine during red signal at traffic lights
41
42
43
It helps to recharge ground water during rainy season
44
45
I love to have junk and imported food items
46
Walking or riding bicycle has very little emission
47
48
Rain water harvesting is practice in our home
49
I put chemical fertilizer to grow flowers and other ornamental plants in my garden
50
Tree absorbs CO_2 from atmosphere
40
Welcoming birds in your garden reduce the need of using chemicals
39
We grow grasses in our yard and garden instead of cementing
38
37
I burn my old papers and books
36
35
34
33
Using locally available plants like Neem helps to protect environment
32
31
Using seasonal and locally available food reduces carbon foot-print
21
22
23
24
25
26
I go to school in my private car
27
I ride bicycle or walk for a short distance
28
Using compost or organic fertilizer reduce green house gas emission
29
CFL bulbs use less energy than convenient bulbs
30
I went to play football without turning off the T.V.
20
19
I celebrate my birthday by planting a tree
18
17
Papers and books can be reused or recycled
16
15
Saving water can lower greenhouse gas emission
14
I replaced all convenient bulbs by CFL at my house
13
12
11
Turning off electric appliances while not in use, it saves energy
4
5
I do not let water run while brushing
6
7
8
9
Using public or school bus, it reduces the green house gas emission
10
1
2
3

It's your turn

Climate Change Survey

Take at least 3 interviews using the following questions with your grandparents or their friends in your community. Find out their personal view regarding the changes in climate.

1. **How long have you lived in this area ?**

   ☐ Years ☐ Forefathers

2. **What is your age and occupation?**

   ☐ Age ☐ Occupation

3. **Have you ever heard about the term "climate change"?**

   ☐ Yes ☐ No

.....

How would you respond to the following statements?

4. **Temperature has increased over the last 30 years.**
   a. Strongly agree b. Somewhat agree
   c. Somewhat disagree d. Strongly disagree
   e. I don't know

5. **Temperature has decreased over the last 30 years.**
   a. Stongly agree b. Somewhat agree
   c. Somewhat disagree d. Strongly disagree
   e. I don't know

6. **There is no change in temerature over the last 30 years.**
   a. Stongly agree b. Somewhat agree
   c. Somewhat disagree d. Strongly disagree
   e. I don't know

7. Rainfall has increased over the last 30 years.

a. Stongly agree
b. Somewhat agree
c. Somewhat disagree
d. Strongly disagree
e. I don't know

8. Rainfall has decreased over the last 30 years.

a. Stongly agree
b. Somewhat agree
c. Somewhat disagree
d. Strongly disagree
e. I don't know

9. There is no change in rainfall over the last 30 years.

a. Stongly agree
b. Somewhat agree
c. Somewhat disagree
d. Strongly disagree
e. I don't know

10. There have been increasing incidences of floods .

a. Stongly agree
b. Somewhat agree
c. Somewhat disagree
d. Strongly disagree
e. I don't know

11. There have been increasing incidences of droughts.

a. Stongly agree
b. Somewhat agree
c. Somewhat disagree
d. Strongly disagree
e. I don't know

12. There have been increasing incidences of landslide.

a. Stongly agree
b. Somewhat agree
c. Somewhat disagree
d. Strongly disagree
e. I don't know

Now, write a short essay discussing the results of the survey. The essay should include similarities and differences among individual responses considering if age, education, occupation and knowledge played a key role.

Example: *A person with farming occupation could tell more about the changes rather than a person working in offfice or vice-versa. Compare the results with your friends and show it to your teachers.*

WWF is one of the world's largest and most experienced independent conservation organizations, with almost 5 million supporters and a global network active in more than 100 countries.

WWF's Mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature by:

- Conserving the world's biological diversity;
- Ensuring that the use of renewable natural resources is sustainable; and
- Reducing pollution and wasteful consumption

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