

a green concern  
**Greenenergy**

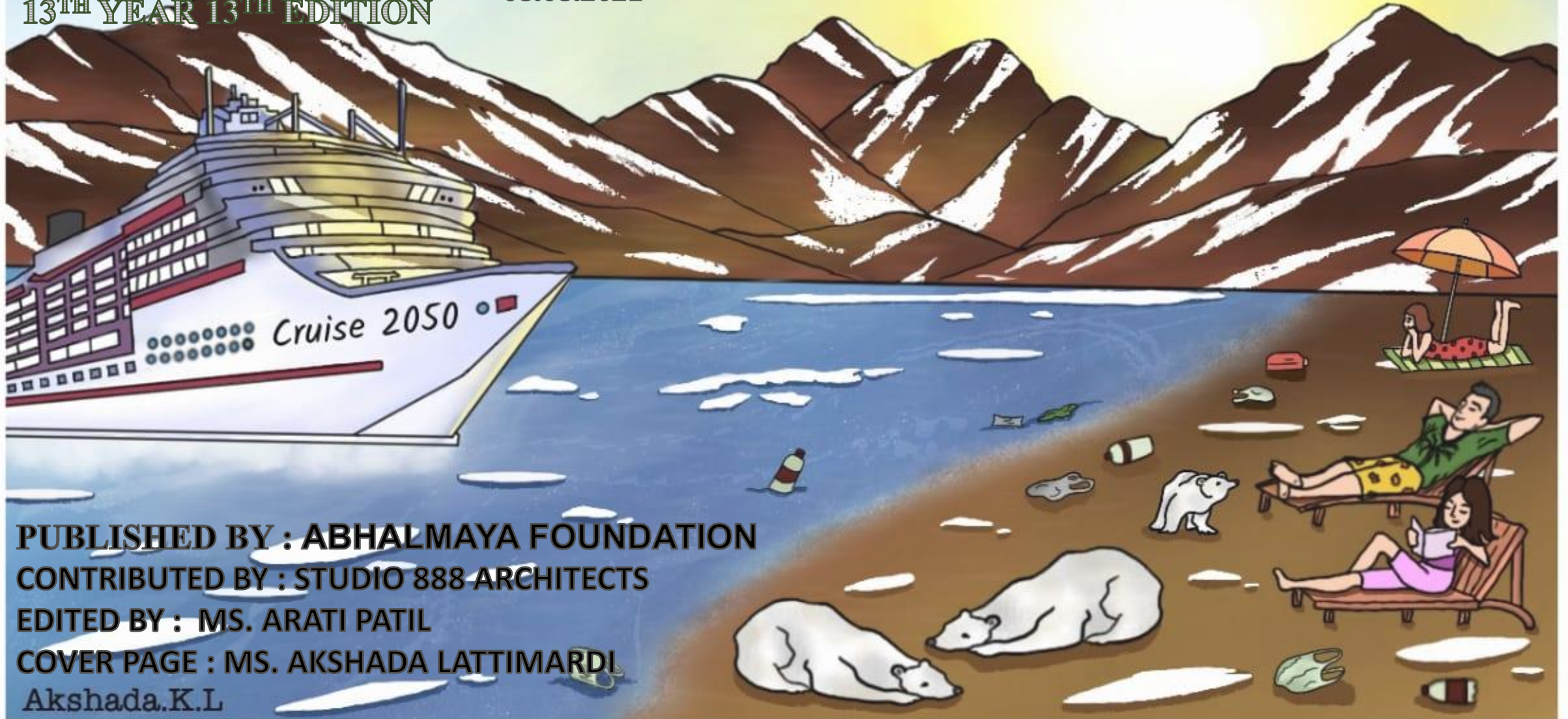
e-MAGAZINE

13<sup>TH</sup> YEAR 13<sup>TH</sup> EDITION

# THE FINAL SNOWDOWN

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**CONTRIBUTED BY : STUDIO 888 ARCHITECTS**

**EDITED BY : MS. ARATI PATIL**

**COVER PAGE : MS. AKSHADA LATTIMARDI**

Akshada.K.L

## FROM EDITOR'S DESK

Remember childhood?...Long summer vacations..playing whole day in hot sun..enjoying ice-creams and snow cones (which we call *golas*) having calming effect in the heat outside...returning home and sleeping in the cool environment after the “day’s work”..Well, for our planet the place which makes it a home to all the species, which helps it relax and cool itself from solar radiations, a central temperature controlling system are the poles i.e. polar ice caps.

With the increasing global warming and carbon emissions, these polar ice caps are melting at a greater pace which not only will affect life forms there but also lifeforms from all over the planet..and though we may find some people in denial state..but IT IS GOING TO AFFECT ENTIRE HUMAN RACE!!..

This magazine will give you a glimpse of what all of this is about, the ground reality..and what is needed to be done ..so lets start our journey to POLAR ICE CAPS...!!!

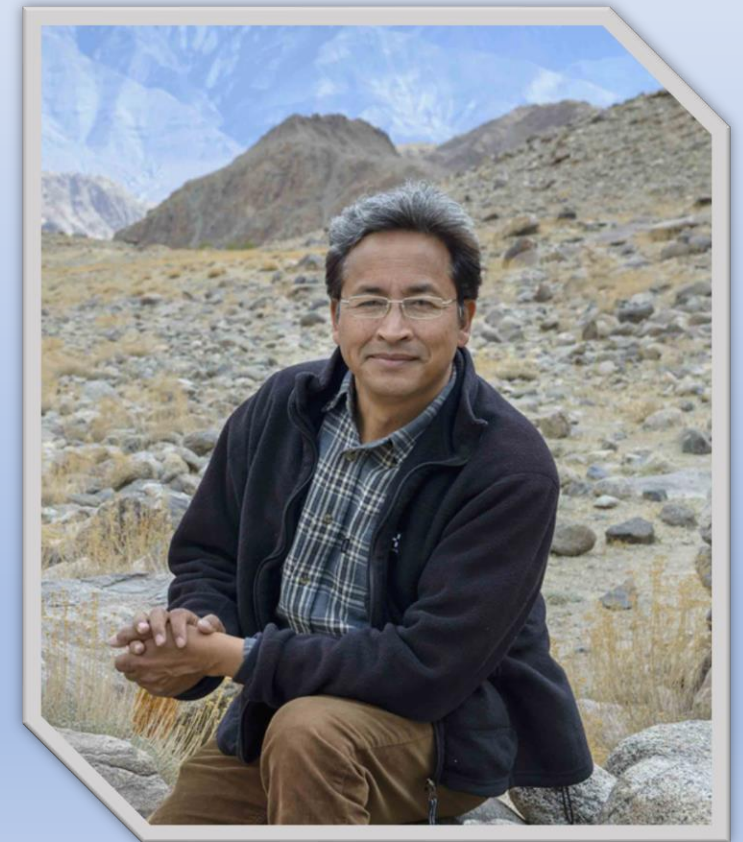
- MS. ARATI PATIL

## GREEN SALUTE

### **The planet doesn't need money, it needs behavioral change: Sonam Wangchuk**

Sonam Wangchuk – inventor, engineer, innovator, and an educational reformist – hails from the mountainous region of Leh. The Co-Founder of SECMOL in Ladakh, who recently won the prestigious Rolex Award for his creation ‘The Ice Stupas’, Sonam has only one valuable and solid piece of advice for the young innovators of India and the world today, “Keep it simple.”

This renowned innovator and Magsaysay Award-winning environmentalist feels smart crease is an indulgence one can do in order to help the planet. Sonam Wangchuk has stopped ironing his clothes. As he says, the power saved from ironing his clothes could power four rural households. Ladakh doesn't need the same kind of industrialization as rest of India, he says.



Some of his innovations:

Solar powered military tents - Sonam Wangchuk has been in the service of India's brave defenders at the country's border in Eastern Ladakh. Wangchuk, who the beloved character of Phunsukh Wangdu in the hugely popular Bollywood hit, 3 Idiots, was modelled of, has developed a solar-powered portable military tent to protect India's border forces from the chilly winter in the mountains. The fact that it is solar-powered means that India's troops will no longer need to carry kerosene to keep them warm, making the innovation a zero-pollution alternative.

Ice stupas - Climate change is real and a number of places around the world are bearing the brunt of it; one among those is Ladakh. The glaciers in this Himalayan region shrunk and made rainfall and temperatures unpredictable. Because of this, farmers in the high altitude regions have to face difficulties due to the water crisis. Keeping in view the issues in farming, the famous engineer and innovator Sonam Wangchuk invented the Ice Stupas (an artificial glacier created by piping mountain streams).



**SOLAR POWERED TENT**



**ICE STUPA**

The dynamic engineer has also founded a school called SECMOL- the Students' Educational and Cultural Movement of Ladakh. His aim is to make learning fun and practical rather than being about cramming textbooks. The school is for kids who are deemed as a failure by societal standards. He believes that memorising kills learning and, in turn, the confidence of a student.

Sonam Wangchuk the co-founder of Himalayan Institute of Alternatives, Ladakh, believes that as his homeland enters a new phase as Union Territory, it will need sensitive handling because solutions made in New Delhi often do not work in the fragile ecosystem of the trans Himalayan land. The final goal? Let the simple, almost-childlike, solutions that actually work solve the problems of a very complex world.

- MR. PAWAN THOMBARE

# GREEN UPDATES

## TURKEY WILDFIRES

TURKEY GRAPPLES WITH ITS  
WORST FIRE CRISES IN A DECADE  
30-07-2021

From past week, southern part of turkey is facing with wildfire. Italy's national fire service said, it had to deal with more than 1,500 flare-ups across the country on Sunday. Tourists have been evacuated from beaches in south-western Turkey, where raging wildfires are now threatening hotels and homes. At least 8 people have been killed in the wildfires.

*Source: The UnEarth Bulletin*



## **POLLUTION      TURNED      ARGENTINA LAGOON BRIGHT PINK**

RESIDENTS OF COUNTRY HAVE LONG COMPLAINED OF FOUL SMELLS AND OTHER ENVIRONMENTAL ISSUES AROUND THE RIVER AND LAGOON

30-07-2021

**Trelew, Argentina:** A lagoon in Argentina's southern Patagonia region has turned bright pink in a striking, but frightful phenomenon experts and activists blame on pollution by a chemical used to preserve prawns for export. The color is caused by sodium sulfite, an anti-bacterial product used in fish factories, whose waste is blamed for contaminating the Chubut river that feeds the Corfo lagoon and other water sources in the region, according to activists.



# GREEN COVER ARTICES-

1. ROLE OF ICE IN REGULATING GLOBAL TEMPERATURES

- MS. ASHWINI S. , MS. CHINMAYI M.

2. WHAT IS HAPPENING TO GLACIERS IN POLAR REGION TODAY?

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5. OUR DUTY

- MS. ASHWINI S. , MS. CHINMAYI M.





## ROLE OF ICE IN REGULATING GLOBAL TEMPERATURES

Our earth and our oceans are protected from the harsh solar radiations with the help of ice. The ice is present in two forms on the earth, first is the glaciers which is the ice present on the land . The second type of ice present is sea ice which is found in oceans. The melting glacial ice increases the sea levels.

The ice which is white in color reflects the excess heat into the space hence keeping the earth cooler. Because of this the poles remains colder than the equator as more of the heat from the sun is reflected off the ice.

Since the early 1900s, many glaciers around the world have been rapidly melting. The main root cause for this is human activities. Specifically, since the industrial revolution, carbon dioxide and other greenhouse gas emissions have been increased. This has led to the global warming. As a result, glaciers are rapidly melting.

These glaciers could be several hundreds to thousands of year old. So by studying them the scientists gain valuable information about the global warming. In current scenario about 10% of land area on Earth is covered with glacial ice. Out of which 90% is present in Antarctica continent, whereas the remaining 10% is in the Greenland ice cap and Arctic continent. Because of the global warming the glacial melt in Antarctica and Greenland are influencing ocean currents. As massive amounts of very cold glacial-melt water enters warmer ocean waters the ocean currents slow down.

It was analyzed that the polar ice caps are melting six times faster than in the 1990s. The average annual loss of ice from Greenland and Antarctica in the 2010s was 475bn tonnes . Which is six times greater than the 81bn tonnes which was the loss in the year 1990s. In total the two ice caps lost 6.4tn tonnes of ice from 1992 to 2017 out of which 60% was melted from Greenland.

Snow and ice have long played a vital role in moderating Earth's climate and helping to maintain a comfortable temperature for life on the planet. It is important to remember that ice sheets absorb a great deal of the sun's heat and reflect the sun's rays, which keep the Earth cooler. If the amount of the ice caps reduces a decent reflective and solid heat absorptive shield of earth will be reduced. Because of this the troposphere will further rise in temperature. As a result, the melting of the polar ice caps will accelerate global warming, which will, in turn, cause more rapid melting. So the loop is formed where warming causes ice melt and the ice melt causes warming. This process is also called 'Arctic amplification'.

This cycle has to stop somewhere. Otherwise it will lead to rapidly changing climate. So, steps towards well being of the earth should be taken as it is the only planet we got!

- MS. ASHWINI SHINDE , MS. CHINMAYI MALI

## WHAT IS HAPPENING TO GLACIERS IN POLAR REGIONS TODAY?

- **Glaciers**

Glaciers are large pieces of dense ice which constantly and slowly move over the land. In today's time, nearly 10% of area on earth is enclosed with glacial ice. Antarctica covers maximum mass of it, about 90% and 10% in Greenland area.

- **How long glaciers have been on earth? Are they from ice age?**

It is thought that glaciers are breathing on our planet from Ice age. First minute traces of glacial ice were found to be around 34 million years ago.



Glaciers have been shaping our earth for millions of years. These are slow-moving huge ice and are classified into two general types: Alpine Glaciers and Ice sheets. Glaciers may act as indicators of global warming and climate change.

But as climate change warms the planet, glaciers are disappearing and this is changing the oceans, weather, and life on the planet. As we all are aware that Glaciers are rapidly melting on earth since the early 1900s and we, humans, are considered to be the root cause of this concern.

- **General Types of Glaciers**

Glaciers are classified into two types namely, Alpine Glaciers and Ice Sheets. Alpine glaciers are formed on the mountains and usually slide downwards through valleys, whereas ice sheets spread and cover everything around them with thick layer of ice.

- **What's the color of Glaciers?**

The glaciers seem blue in color as they can only absorb and transmit blue light-waves or blue light-wave penetrates ice, thus creating a cool shade of winter azure.

According to WWF, *Even if we significantly curb Emissions in the coming decades, more than a Third of the world's remaining glaciers will melt before the year 2100. When it comes to **sea ice**, 95% of the oldest and thickest ice in the Arctic is already gone.* The level of carbon dioxide and greenhouse emissions has risen due to excess industrialization and urbanization, causing an imbalance in nature.



This has also lead to liquefying glaciers at the rate of 267 Gigatonnes of ice per year, resulting in one-fifth of sea-level rise. It is predicted that the Arctic pole may lose its glaciers by 2040, as a result of the continuous rising of atmospheric and oceanic temperatures.

- **Unknown Facts**

The largest glacier is *LAMBERT*, which is 270 miles in length and 60 miles in width.

Oldest ice is 8,00,000 years old.

Glaciers consist of nearly 69% of the World's freshwater.

The largest ice sheets are called continental glaciers.

Glacier size requirement : Proper glaciers must be a minimum of 0.1 square kilometers—that's almost 25 acres, or nearly 19 football field

There are around 100,000 glaciers in Alaska, covering 28,000 square miles.

Glaciers Can Move At a Rate of Over 50 Feet Per Day.

If emissions continue to rise, the sea level may rise by 20 feet.

Unfortunately, the consequence of melting glaciers has already resulted in rising in sea level. Melting of glacial ice liquefies into the sea, raising its level, which in turn, is an invitation to several disasters such as extreme flooding, coastal erosion, coastal storms like hurricanes and typhoons.

As ice sheets melt, they raise the sea level, adding freshwater to the ocean each day. This also reduces the amount of freshwater available for animals and plants. Melting of permafrost causes polar bears, whales, penguins, seals, walruses, marine life, and other species to struggle for their survival.





As these animals require low-temperature conditions and depend on sea ice for their survival, they will have to adapt to changing environment caused due to climate change or they will all soon perish. We as human, must take a high-impact, achievable step to stop climate change and the melting of glaciers, which will not only enhance the environmental conditions but also help in the survival of innocent animal species.

**STAND UP, RAISE YOUR VOICE TO TAKE ACTION AGAINST CLIMATE CHANGE BY HELPING COMMUNITIES AND CONSERVING FORA AND FAUNA. YOU CAN START INDIVIDUALLY BY SWITCHING TO METHODS THAT USE GREEN TECHNOLOGY AND PROMOTE SUSTAINABILITY.**



- MS. VEDANTHI JOSHI  
Email: vedanthij\_23@yahoo.com

## WHAT WILL HAPPEN IF POLAR ICE CAPS MELT?

- **Antarctica**

Antarctica is the southernmost continent and is the fifth-largest continent on earth. Nearly, 98% is enclosed with ice with 1.9km in thickness. The average drop in temperature during the winter season is  $-63\text{ }^{\circ}\text{C}$  ( $-81\text{ }^{\circ}\text{F}$ ). This place experiences Tundra vegetation.

Antarctica consists of 90% of the world's ice and 70% of the world's freshwater.

- **Organisms surviving in Antarctica**

Various types of organisms live in Antarctica under extreme temperatures include Algae, Bacteria, Fungi, plants, Protista and other marine animals such as whales, polar bear, seals, penguins, walruses, nematodes.

Nearly 99.5% of permafrost ice mass is present in form of ice sheets and glaciers. Antarctica has nearly 30 million cubic kilometers of ice. This continent has the largest ice sheet containing freshwater in the world and covers approximately 8.3% of Earth's total land area.



Due to climate change, the temperatures are rising and snow is melting rapidly in Antarctica. Antarctica has already lost 3 trillion tonnes of ice in the past 25 years. Most of the mass loss is driven through ocean melting and iceberg calving. In February 2020, this coldest continent recorded the highest temperature of  $18.3\text{ }^{\circ}\text{C}$  ( $64.9\text{ }^{\circ}\text{F}$ ) since March 2015.

- **Types parts of Antarctica**

This continent is mainly divided into two parts, namely, Transantarctic Mountains and West Antarctica, remaining East Antarctica.

- **Unknown Facts**

It is the driest place on earth.

There is no Antarctica time zone

Every way /direction is north

Antarctica has active volcanoes

This continent has a sub-glacial lake that flows blood red, known as Blood Falls.

Diamond dust floats in the air

Less concentration of oxygen is available to breathe in Antarctica than on any other continent.

Melting of ice in Antarctica has contributed to sea-level rise by **0.49 – 0.73 mm yr<sup>-1</sup>** during 2012-2017. The average ice-sheet integrated surface mass balance of Antarctica is **+2418 ± 181 Gt yr<sup>-1</sup>**.

Changes in global ice volume are often expressed in *gigatonnes* per year (yr<sup>-1</sup>). A **Gigatonne** is 1,000,000,000 tonnes. 1 km<sup>3</sup> water = 1 Gt water

And, 361.8 Gt of ice will raise global sea levels by 1 mm.



It is predicted that if total ice in Antarctica, Greenland, and other glacial ice melts down, the sea-level would rise by 230 feet overall (70 meters). The ocean water will occupy many maximum coastal places, turning the land area into an underwater area.



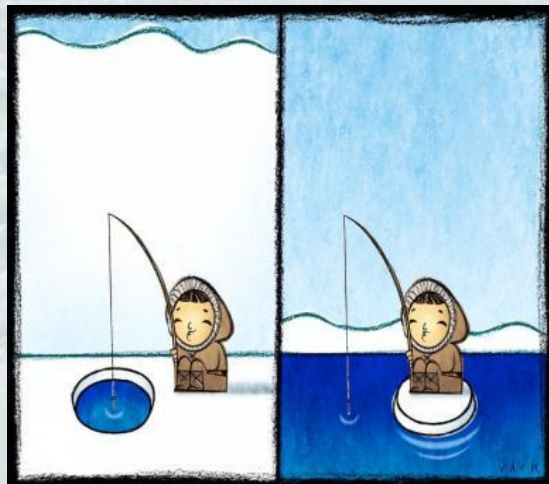
- **Unknown Facts**

Few places in Antarctica haven't received rain or snow in 2 million years.

Most of the meteorites are found in Antarctica than anywhere else in the world.

The largest recorded iceberg was bigger than the whole island of Jamaica.

The lowest temperature ever recorded is -**144 °F (-98 °C)**



It is believed by some scientists that many cities including Northern America's eastern coast cities will be submerged underwater. In fact, all seven continents will be partially underwater. This is just a prediction.

Due to this, billions of people from the entire world would have to migrate to safer places and millions of people may perish. The countries may face economic crisis to a great extent.

Metropolitan cities such as London, Mumbai, Sydney, and Miami would face extreme flooding and will destruct the infrastructure and property of the people.

We can take action by following practices, suggested by UN ENVIRONMENT PROGRAM (UNEP):

- Fly less
- Cut your waste
- Insulate your home
- Clothes that last
- Walk and cycle more
- Seasonal and local
- Dial it down
- Talk to friends
- Drive electric
- Switch your energy
- Speak up at work
- Eat more plants
- Get solar
- Plant more trees
- Minimize the use of water
- Repair and re-use
- Tell your politicians



Millions of species will become extinct that will disturb the cycle of the ecosystem resulting in an imbalance in the environment.

It is unknown that millions of dangerous viruses and bacteria are trapped in ice in Antarctica and will revive if they get scattered in the sea after its melting. Then, the world will have to face a challenging pandemic.

Eventually, the situation on our planet will be devastating and will lead to mysterious and adverse situations, thus, affecting the survival of humans as well many species. These all are predictions and thoughts of specialists.



However, few experts believe that Antarctica is extremely cold and will not melt, considering an approach studied in the past, whereas others believe that it will take nearly 5000 years to completely melt, under adverse climatic conditions. About 1, 25,000 years ago, Earth experienced the same climatic conditions. At that time, the sea level rose by 13-20 feet.

But, one thing is sure that if Antarctica melts down, it will definitely worsen the condition of our planet, in turn, our lives.

We need to stop the factors affecting climate change and global warming.



- MS. VEDANTHI JOSHI  
Email: vedanthij\_23@yahoo.com

## OZONE HOLE - ANTARCTICA

The ozone layer which is present in the stratosphere acts as an efficient filter for harmful solar Ultraviolet rays. In recent years (since 1985), scientists have measured a seasonal thinning of the ozone layer primarily at the South Pole. This phenomenon is being called the ozone hole. In 1980, British scientist discovered that there is depletion of ozone layer over Antarctica in each spring. It has been found that during every southern spring, stratospheric ozone is destroyed at a height of 15-24km above Antarctica, creating pockets. This phenomenon is termed as the 'Antarctic Ozone Hole'.

Ozone is highly reactive and easily broken down by man-made chlorine and bromine compounds. These compounds are found to be most responsible for most of ozone layer depletion. The ozone depletion process begins when CFCs (used in refrigerator and air conditioners) and other ozone-depleting substances (ODS) are emitted into the atmosphere.

The maximum ozone depletion occurs at Antarctica because of its unique weather conditions. In winter a powerful swirling vortex of westerly winds is formed. Temperature drops below  $-85^{\circ}\text{C}$ . clouds of ice particles named 'polar stratospheric clouds' are formed. These clouds trap and concentrate chlorine compounds on their surface. Thus the Chlorine atoms get frozen and locked within ice particles. With the first rays of the spring, chlorine atoms are released into the atmosphere. The highly reactive chlorine atoms breaks down the ozone particles into oxygen. Thus the hole is observed in every spring.

The ozone depletion occurs over the Arctic as well. But the arctic stratosphere is warmer. Hence it is less vulnerable to chlorine attack. In the Antarctic ozone hole the recent ozone levels have dropped to as low as 33% of their pre-1975 values.

The ozone hole occurs during the Antarctic spring, from September to early December, as strong westerly winds start to circulate around the continent. Within this polar vortex, over 50% of the lower stratospheric ozone is destroyed during the Antarctic spring. This leads to reduce the protective layers of the glaciers and the rate of melting is increased.

so to save the earth from this crisis in 1987, representatives from 43 nations signed the Montreal Protocol and the International cooperation, agreement to phase out ozone depleting chemicals was done. At Montreal, the participants agreed to freeze production of CFCs at 1986 levels and to reduce production by 50% by 1999. After a series of scientific expeditions to the Antarctic produced convincing evidence that the ozone hole was indeed caused by chlorine and bromine from manmade organ halogens.

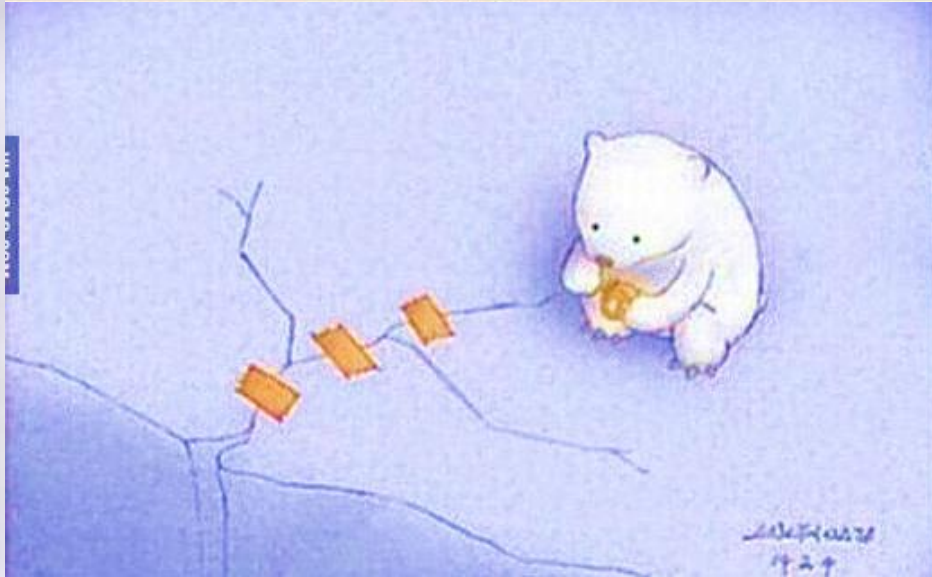
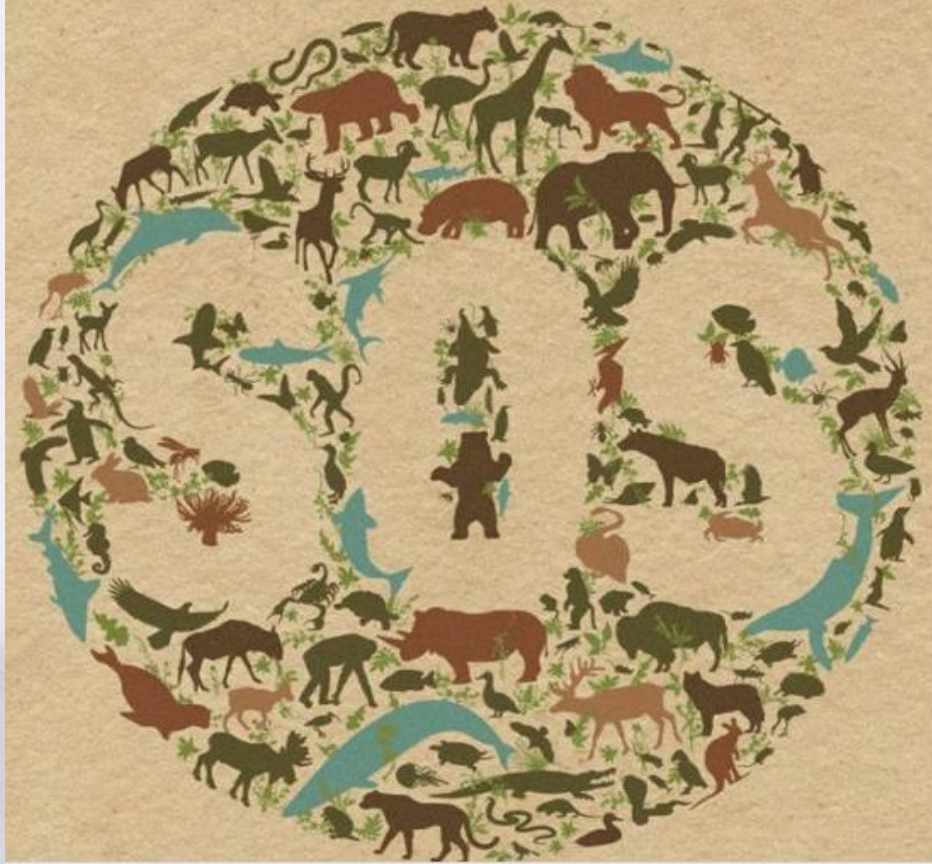
'Antarctic Ozone Hole' is been controlled and reduced with the cumulative global actions taken since 1987. But even today the chlorine and bromine compounds created by man are affecting the ozone layer. The glaciers at the Antarctic are still getting effected by it.

- MS. ASHWINI SHINDE , MS. CHINMAYI MALI

Your indifference...



**If We Don't talk for them who will?**



**Please stop Global Warming**

## OUR DUTY

We are doing our duty each and every day to make sure to reduce our impact on global warming by decreasing our greenhouse gas emissions. To reduce climate change, we must get to the root of the problem by trying to find new solutions, such as to solve the climate crisis - pollution and the increasing carbon dioxide levels has to be considered and also to preserve the polar ice caps for all life within the biosphere innovation in green technology, is required. So, to save some amount of precious polar and glacial ice, we need to avoid the temperature rise of over 3 degrees Celsius that the UN says is inevitable if governments don't step up climate targets.

There are some policies to reduce global warming which we have to consider. The first policy is, mitigation policy, which focuses on different ways to reduce emissions of greenhouse gases, as most emissions come from the burning of fossil fuels for energy and transportation, much of the mitigation. So, this policy focuses on switching to less carbon-intensive energy sources (such as wind, solar, and hydropower), to improving energy efficiency for vehicles, and supporting the development of new technology. And the second policy is, adaptation policy, which seeks to improve the ability of various societies to face the challenges of a changing climate. For example, some adaptation policies are devised to encourage groups to change agricultural practices in response to seasonal changes, whereas other policies are designed to prepare cities located in coastal areas for elevated sea levels.



We don't have to underestimate the gravity of the situation and that will affect all life on Earth. In addition to the melting of the polar ice caps, glaciers are melting around the world. To reduce the environmental impact we have to stop consumption of fossil fuels such as coal and petroleum, By using non conventional (renewable) energy sources . Also we have to stop polluting the atmosphere with global warming-inducing carbon .

***“Future generations are not going to ask us what political party were you in. They are going to ask what did you do about it when you knew the glaciers were melting.”*** This is a quote on the future of glaciers from an American actor Martin Sheen and it seems real.

Now we have time to take action for protecting our valuable ice sheets from melting due to global warming. Once these will vanish, we can't avoid the consequences. So, let's assemble and be aware of how much CO2 we are contributing to global warming.

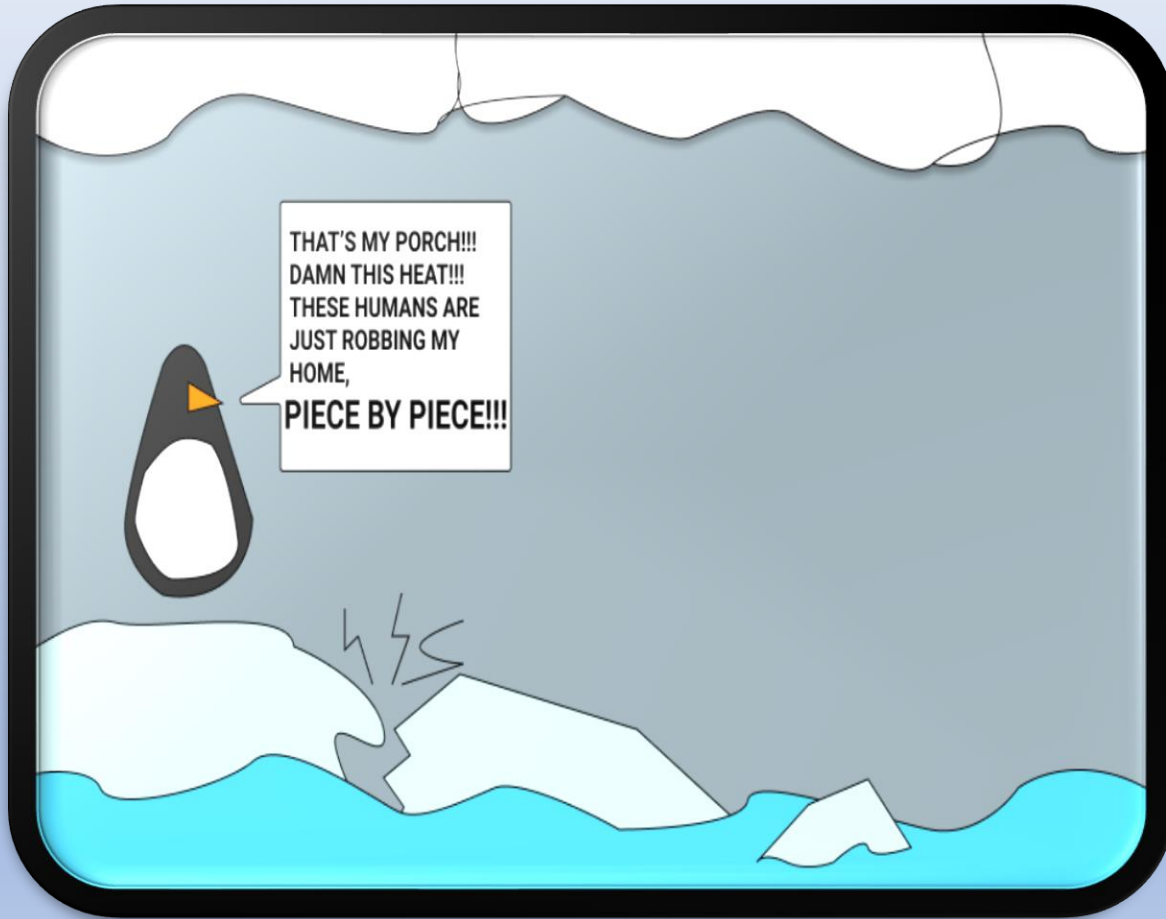
So, this is all about glaciers and icebergs melting due to global warming.

***Glaciers are disappearing but not gone. Society must act fast if it intends to save them ! It is time for us to spread awareness before it is too late !***

- MS. ASHWINI SHINDE , MS. CHINMAYI MALI



# GREEN TOONS



# GREEN-O-PEDIA

## Did You Know That?

The Arctic Ocean is the smallest of the earth's five major oceans, but it still covers 14 million square kilometers – that's almost twice the size of Australia!



The Arctic is home to scores of seabirds, but not penguins! If you have your heart set on seeing a parade of penguins you need to travel south!



Temperatures as low as  $-70^{\circ}\text{C}$  have been recorded in northern Greenland. Despite the freezing-cold temperatures, approximately four million people call this wintery wonderland home! Amongst these are the indigenous people of the Arctic, called the 'Inuits'. They've found ingenious ways to survive in one of the harshest environments on our planet

**POLAR BEARS ARE ACTUALLY BLACK, NOT WHITE.**

Polar bear fur is translucent, and only appears white because it reflects visible light. Beneath all that thick fur, their skin is jet black.



**Studio 888, C S No 13700  
Local Board Colony, Near Udyog Bhavan  
SANGLI-416416  
MAHARASHTRA, INDIA  
+91 888 842 4888  
abhalmaya888@gmail.com**

