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CONTENTS

CHANGES IN THE ENVIRONMENT SINCE THE LOCKDOWN IN INDIA

Abhijit Mondal (1945004), Papia Biswas (1945032), Shreyasee Mondal (1945003), Semester-5

The Covid-19 lockdown is healing the planet in a way never seen before in living history! We have here some of the most vital environmental changes seen in India after the Covid-19 lockdown.

Human beings often forget that we are largely dependent on Mother Nature and become ignorant towards taking care of it. We have been so reluctant to the preservation of natural resources and sustainable development that we had forgotten the beauty of the Earth completely. The Covid-19 lockdown imposed throughout the world has struck a chord in every one of us and it has made us thinking how nature is so important for our day to day living. The tangible improvements in nature have made us believe that the Earth can be saved. It has made us see that our actions can very well impact the Earth's sustainability. For breathing pure air to greener trees, spotting various wildlife into the cities here are some important environmental changes that we have seen for corona virus lock down in India:

1. Air quality improve in Delhi

New Delhi was ranked as the most polluted city in the world by WHO in May 2014. The usual air quality of India's national capital according to the air quality index used to be 200. When the pollution level hit its peak, the pollution level soared to 900 and sometimes, off the measurable scale. While 200 itself is 25 percent above unsafe level as deemed by World Health Organization, but as Delhi's 11 million registered cars were taken off the roads and factories and construction were ground to a halt, AQI levels have regularly fallen below 20. The skies are suddenly a rare, piercing blue. Even the birdsong seems louder.In the capital of New Delhi, government data shows the average concentration of PM 2.5 plunged by 71 percent in the space of a week – falling from 91 micrograms per cubic meter on March 20, to 26 on March 27, after the lockdown began.

New Delhi, India, from above on November 1,2019

New Delhi, India, from above on April 20, 2020.

2.`Gangetic dolphins' spotted At Kolkata Ghats after 30 Years

About 30 years ago, this waters had an unusual event to meet animals. They were regular visitors of Calcutta, but gradually, they moved away from the city due to industrial pollution. According to the report, the population of Gangetic Dolphin worldwide is between 1200 to 1800. In an interview given to the TUI, a senior environmental activist said that he saw some dolphins in Kolkata's Babughat. He said that due to the countrywide lockdown and low humanitarian activity, the quality of water has greatly improved and it is "one of the main reasons for returning dolphins" .

Representational Image

3.The number of flamingos increased in Mumbai

As a result of the lockdown imposed due to Covid-19, tens of thousands of flamingos have gathered in the city of Navi Mumbai. The birds normally migrate to the area every year, but residents have reported that this year they have seen a massive increase in their numbers.

While BNHS researchers were obviously unable to conduct field research to count the flamboyance of flamingos in person, they utilized a method of dividing large-scale photographs into grids to estimate the number of birds digitally. In the end, they concluded that more than 150,000 flamingos made Mumbai their home in April, creating a small silver — or rather, pink — lining in these otherwise difficult times.

Representational image

4.Ganga fit for drinking in Haridwar

With industries that discharge effluents in Ganga shut and ghats closed to the public, the waters of the holy river at Rishikesh and Haridwar — twin cities that record pilgrim rush throughout the year — have seen a significant improvement in quality. In fact, for the first time in decades, the water quality at Har-ki-Pauri has been classified as "fit for drinking after chlorination". Data accessed from the Uttarakhand Environment Protection and Pollution Control Board (UEPPCB) indicates that all parameters of water assessment at Har-ki-Pauri have significantly improved since the lockdown was put in place. "There is a 34% reduction in fecal coliform (human excreta) and 20% reduction in biochemical oxygen demand (a parameter to asses the quality of effluent or wastewater) at Har-ki-Pauri in April," chief environment officer of UEPPCB, SS Pal, said. Pal added that due to the lockdown, water in Har-ki-Pauri has Ranked in Class A for the first time in Recent history. "The water has always Been placed in Class B since Uttarakhand Formed in 2000," he said.

Image : PTI (After Lockdown in Haridwar)

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ANTHROPOGENIC DISASTER: VISAKHAPATNAM GAS LEAK

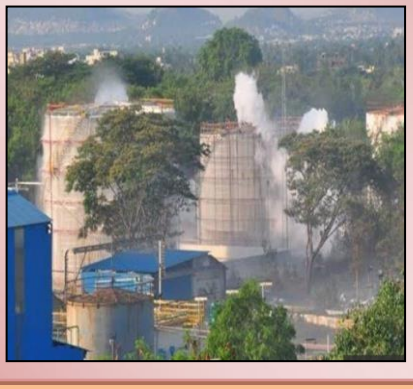
NAME: Lucky Hira ROLL NO : 1945038 SEMESTER: 5

INTRODUCTION:

The Visakhapatnam gas leak also known as the Vizag gas leak, was an industrial accident that occurred at the LG Polymers chemical plant in the R. R. Venkatapuram village of Gopalapatnam neighbourhood, located at the outskirts of Visakhapatnam, Andhar Pradesh, India, during of early morning of Thursday, 7 May 2020. The gas reportedly spread over a radius of about 3 km. The leak at the site owned by South Korean company LG Chem.

DETAILS OF THE INCIDENT:

A little past 3 a.m. on May 7,2020, people woke up smelling something different in the air. Feeling unsettled and a little afraid. Hundreds were taken ill and rushed to hospital, while thousands were evacuated from surrounding villages. The total death was 11 people including 4 women, 2 children, both girls and 5 men. More than hundreds people were admitted in hospital but were stable.



AFFECTS OF STYRENE EXPOSURE ON HUMAN:

- Breathing air contaminated with styrene vapours can cause irritation of the nose and throat, coughing and wheezing, and create a build-up of fluid in the lungs.
- Exposure to larger amounts can result in the onset of "styrene sickness", the signs and symptoms of which include headache, nausea, vomiting, weakness, tiredness, dizziness, confusion and clumsy or unsteady motion (known collectively as central nervous system depression).
- In some cases exposure to styrene can also result in irregular heartbeats and even coma.
- Several epidemiologic studies suggest there may be an association between styrene exposure and an increased risk of leukemia and lymphoma though the evidence is inconclusive.

CAUSES:

- The possible reason for gas leak is stagnation and changes in temperature inside the storage tank that could have resulted in auto polymerization (chemical reaction) and vapourisation of the styrene.

STYRENE:

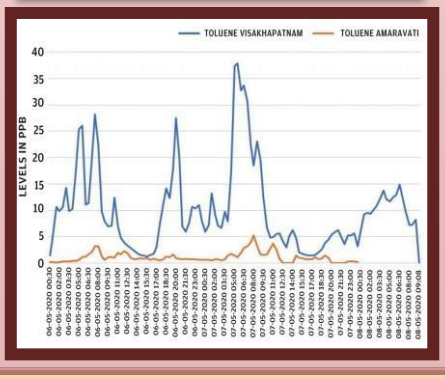
I. Description-
- Styrene is an organic compound with the formula C_8H_8.
- It is derivative of benzene (C_6H_6).
- It is stored in factories as a liquid, but evaporates easily, and has to be kept at temperatures under 20° C.

II. Sources-
- Styrene is found in vehicle exhaust, cigarette smoke, and in natural foods like fruits and vegetables.

III. Uses-
- It is a flammable liquid that is used in the manufacturing of polystyrene plastics, fiberglass, rubber and latex.

STATE OF CHEMICAL DISASTER RISK IN INDIA:

- According to the **National Disaster Management Authority**(NDMA), in the recent past,over130 significant chemical accidents have been reported in the country.
- Further, there are thousands of registered hazardous factories and unorganized sectors dealing with numerous ranges of hazardous material posing serious and complex levels of disaster risks.
- There are over 1861 Major Accident Hazard (MAH) Units spread across 301 districts 25 states and 3 Union Territories in all zone of country.



PRECAUTIONS TO TAKE DURING A GAS LEAK ACCIDENT:

- Move away from the accident place as soon as possible.
- Wear a wet cloth or wet mask to cover nose and mouth.
- The only way to treat the effect of the gas is to wash the skin and eyes with copious amounts of water and provide breathing support in case of ingestion.
- Consume milk, bananas, or jiggery to neutralize the effect of the gas .
- Do not consume uncovered food or water.
- If you are experiencing breathlessness, vomiting sensations, stomach ache, etc. please reach out for medical attention immediately.
- First step to bring the situation into control is not panic and shout this could cause the lungs to get suffocated.
- Running in fear can tire the body and worsen the situation.
- If there are any unidentified children, take them to the nearest police station.

SOURCES: The Hindu, 8:30 IST, 8 May, 2020; BBC News; Indian Express, 9 May, 2020, 12:24:32 P.M.

LAWS TO PROTECT AGAINST CHEMICAL DISASTERS IN INDIA:

The Environment Protection Act,**1986**: It gives powers to the central government to undertake measures for improving the environment and set standards and inspect industrial units.

The Public Liability Insurance Act,**1991**: It is an insurance meant to provide relief to persons affected by accidents that occur while handling hazardous substances.

The National Environment Appellate Authority Act,**1997**: Under this Act, the National Environment Appellate Authority can hear appeals regarding the restriction of areas in which any industries, operationsor processes or class of industries shall be carried out subject to certain safeguards under the Environment(projection) Act,1986.

National Green Tribunal,**2010:**It provided for establishment of the National Green Tribunal for effective and expeditious disposal of cases related to environment protection and conservation of forests.

1. According to PRS legislative , any incident similar to the Bhopal gas tragedy will be tried in National Green Tribunal and most likely If under the provisions of Environment(protection) Act,1986.
2. if an offence committed by a company then every person directly in charge and responsible will be deemed guilty, unless he proves that the offence was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such an offence.

CONCLUSION:

Gas leakage is a serious and dangerous problem so, have take it as major problem Government make tough and strict rules for those types of industries because the effects of incidents is not just effect in present but also effect the future generation .Accumulation those of accidents and case study in details, try to understand the mistake which is the cause of the incident not repeat in future .All workers aware about the chemical disaster and known what are the primarily work to do ,so those are some steps which we can work on it . Otherwise all laws are there but we have to implement strictly and make simple and understandable advisory for common people. As common people we can do that if those types of incidents happen do not panic.

NATURAL RESOURCES DEPLETION IN INDIA

Name : Purnima Das, Semester: 5 , Roll : 1945018

INTRODUCTION

Natural resources are provided by Mother Nature to enable the survival of living things and the sustenance of the ecosystem. Depletion of natural resources is the increased consumption of resources that overlaps the replenishment of those resources. The depletion of natural resources occurs due to significant increase in the dependents of the natural resources without an increase in the sources of resources. It can be a devastating problem to the ecosystem because the resources necessary for survival and depletion will cause significant loss of living things.

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NATURAL RESOURCES IN INDIA

India is a country rich in natural resources of all types. In fact it has the world's second largest deposits of coal, the third largest deposits of manganese and the fourth largest deposits of iron. It also has the world's 2nd largest population of 1.35 billion People who need to utilize those resources to survive. Oil, coal, natural gases, metals, stones and sand are natural resources. Other natural resources are air, sunlight, soil, and water. Animals, birds, fish and plants are natural resources as well.

CAUSES OF DEPLETION OF NATURAL RESOURCES IN INDIA

OVERPOPULATION

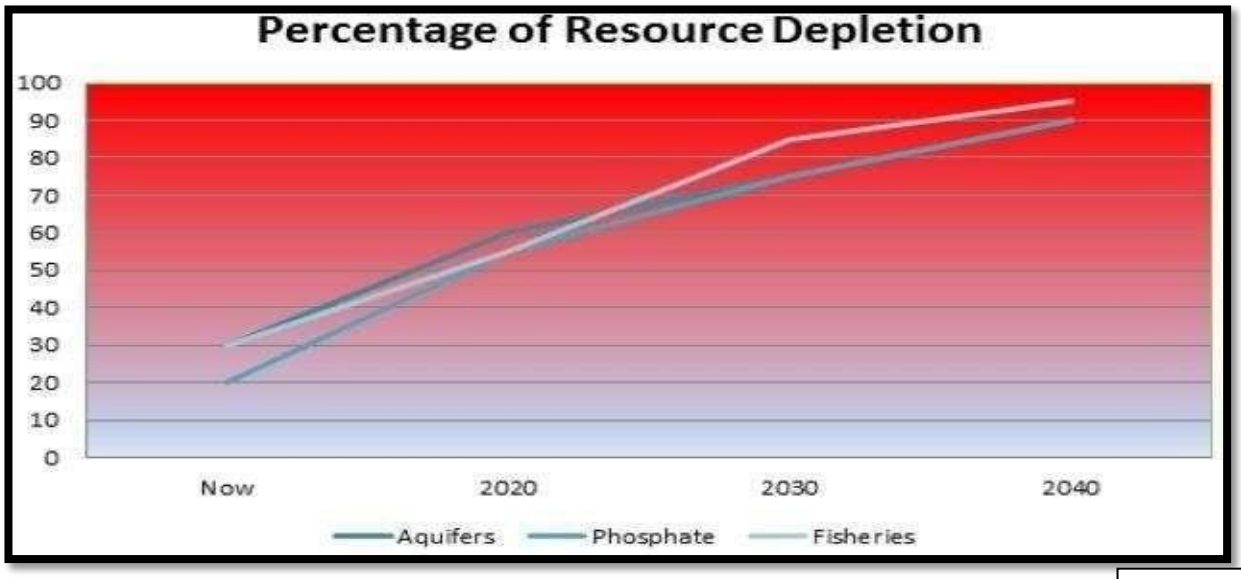
This is a situation whereby the number of people living in a place falls below the number of resources available in that community. The implication is that natural resources get consumed faster than they can be produced.

DEFORESTATION

One might be quick to assume that deforestation only affects trees. This is however far from the truth. Deforestation reduces animal life expectancy and more importantly, it destroys our ecosystem thereby affecting other natural resources.

POLLUTION

Pollution of various kinds damages natural resources making it difficult for the resources to be produced in good condition. For instance, soil pollution affects plant life making it difficult for trees to grow.

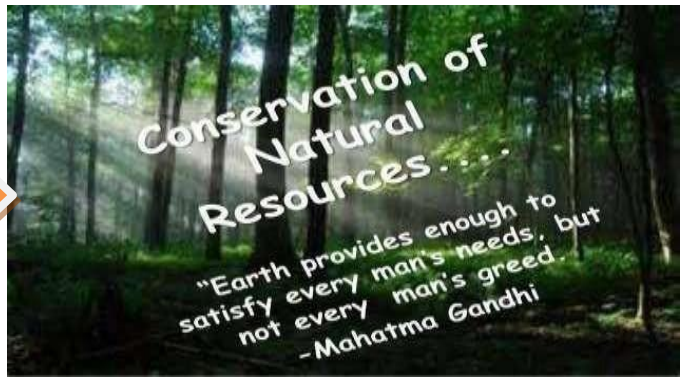


EFFECTS OF DEPLETION OF NATURAL RESOURCES IN INDIA

- **Water Shortages:**
  Poor farming practices, deforestation and pollution are major causes of water resources depletion due to contamination, wastage and the destruction of natural water catchment areas.
- **Oil Depletion:**
  Oil is an essential commodity in manufacturing, planting, mining and transportation among many activities and its depletion would be devastating. The adverse effects of oil depletion include the fall of the business, the high cost of living in developing countries and uncertainly in the transport sector.
- **Loss of forest Cover:**
  Approximately 18 Million acres of forest covers are destroyed annually. This means that half of the world's natural forest cover has already been cleared.

PREVENTION OF DEPLETION OF NATURAL RESOURCES IN INDIA

- **Recycle more and improve recycling system**
- **Promote sustainable fishing rules**
- **Use more renewable energy**
- **Promote sustainable forest management**



CONCLUSION

It is true that there would be no life on earth if we do have the natural resources available to us. However, at the same time, it is also true that it is we who have to ensure that we utilize the resources carefully. Depletion Of natural resources is surely an environmental concern that we all should be serious about. There was a time when switched from cleaner to fossil fuels. Now is the time perhaps to go back in history and rewind our life.

We should think of the solution available to us such switching to cleaner resources which can easily be replenished in nature. Moreover, the use of resources such as fossil fuels which are on the verge of extinction should be reduced. As we understand that the Depletion of natural resources is a very serious concern in terms of human survival and environmental sustainability, it's high time that we take necessary steps to avoid the natural resources from depletion.

India is diverse not only in its peoples and culture but also in the type of resources it has. Unfortunately the sheer size of the population means that these resources are going to be exhausted soon. If we want to preserve the progress we have made we need to move away from non-renewable resources and turn our attention to renewable resources, otherwise the depletion of our natural resources will not only continue, but also escalate.

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RIVER BANK EROSION OF GANGA IN MURSHIDABAD

NAME : ARITRAJIT GHOSH ROLL NO. 1945011 SEMESTER- 5

INTRODUCTION

River bank erosion occurs when water wears away at the banks of a river or stream. While river erosion is a natural phenomenon but human activities increase it gradually. Mainly there are two primary process of stream bank erosions are: Fluvial erosion & Mass failure erosion. Fluvial erosion is the direct removal of soil particles by flowing water. Mass failure occurs when the weight of a stream bank is greater than soil, this process dependent on the internal strength of soil.

PROCESS OF RIVER BANK EROSION

- FLUVIAL EROSION
- MASS FAILURE

LOCATION

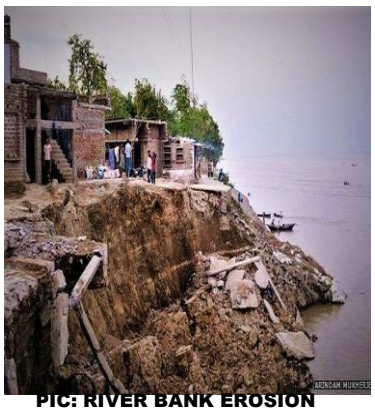
Recently huge river bank erosion has been occurred in Samserganj block of Murshidabad, West Bengal, India. Mainly three villages Dhanghara, Dhusaripara, Natun Shibpur and their surrounding areas are most affected.

PIC: SAMSERGANJ BLOCK

RIVER BANK EROSION OF GANGA FINDS NEW VICTIMS IN MURSHIDABAD

Erosion along the banks of the Ganga in the Samserganj block of Murshidabad district in West Bengal is a totally new issue. Sub-Division officer also informed that they have no any data on erosion in this area in last decades. Most residents of Dhanghara, Dhusaripara, Natun Shibpur three villages of Samserganj block are most affected due to unpredictable bank erosion. Many houses, agriculture land, temple, primary schools, mango–litchi orchards are completely submerged with everything in the waters of the Ganga.

PIC: RIVER BANK EROSION



PIC: RIVER BANK EROSION

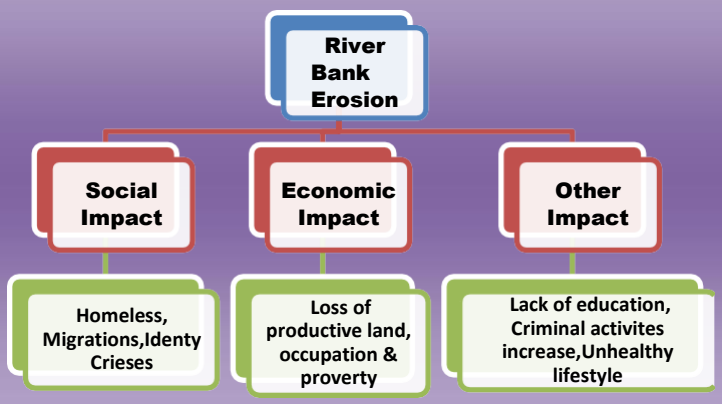
Ganga Anti Erosion Division, Murshidabad confirmed that bank erosion of three villages are very recent and around 2.7 km. along the Ganga are totally washed away. According to the 2020–21 Murshidabad District Disaster Management informed that more than 65000 families have become refuges for this degradation.

According to local residents that 395 houses are drowned at Dhanghara and first erosion has noticed at Dhusuripara village from september 23, as a result 20 to 40 bighas of land engrossed. At Natun Shibpur 2 to 5 homes are collapsed in every alternative day along the river and multiple cracks noticed in Nimtita area which can be drowned anytime. Moreover they speculate that the Farakka Barrage is the main reason for this because after made this dam the hit of current along the left bank of the river has greatly increased and often it discharge huge amount of water in river.

Block Development Officer ensured that Irrigation Department Officers visited affected area and made a project report about this incident which forwarded to higher authority already. Local M.L.A of Samserganj told that all displaced families shifted in safe side already and provided essential food, cloths, medicine and tarpaulin among them. He communicated with our Chief Minister and told her about current situation and how much properties are wasted. After this disaster she has confirmed for the immediate rehabilitation of those who have lost their homes, as well as some financial grants.

PIC: RIVER BANK EROSION

IMPACT OF RIVER BANK EROSION



CONTROL STRATEGIES

- Plantation of native trees along the river bank which is the most effective to protest erosion in a natural way
- To build up strong brick wall along the affected area of bank
- Coir geotextile fabric consists of woven fibers of coconut which plays a very important role to prevent of soil erosion. Sometimes vegetation can be established on this to do this more strongly.
- Have to examine the strength and texture of soil at intervals of a few days
- Areas that may be eroded should be identified first and appropriate action taken accordingly
- No construction work can be done along the river bank without government permission.

CAUSES OF RIVER BANK EROSION

Multiple causes of river bank erosion depend on mainly two indicators; those are Natural & Manual. The various factors are as followed —

NATURAL

- River bend or Meandering of river
- Weak strength and texture of bank soil
- Changing the speed of currents or tide
- Intense rainfall
- Flooding

MAN-MADE

- Erosion along the Ganga rises alarmingly after construction of Farakka Barrage
- Clearing vegetation away from the river bank
- River redirection around infrastructure or debris in the channel
- Unplanned stream and land use management
- Construction work specially houses unlawfully along the river bank
- Uncontrolled of soil lifting

CONCLUSION

River bank erosion is very serious incident. For this occurrence lots of people had been homeless, many fertile lands and mango-litchi groves were washed away. So, Govt. Have to should give more attention about this. First of all recognize the affected area and take to action accordingly; like build up a strong brick wall along the affected area and then plantation of native trees along the river, which root enter deeply in the earth. According to modern technology, Geotextile can be the most effectiveness process to protest soil erosion. Lastly, it is important to ensure that there is no construction along the river, as well as have to take rehabilitation for displaced households. After that should focus those areas that have never been affected before or have no past records of erosion; just like Samserganj block of Murshidabad district which have no past experience of this serious incident.

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GROUND WATER SCARCITY IN TAMIL NADU

NAME : DHRUBAJYOTI DAS ROLL NO. 1945005 SEMESTER: 5

INTRODUCTION

Tamil Nadu is the southernmost state of India, delimited with, Indian Ocean on the south, Bay of Bengal in the east and on the west, north and east by Kerala, Karnataka and Andhra Pradesh states respectively. With the geographical area of 130,058 km^2, this state covers 4% of the total area of India, 7% of population and 3% of water resources.

Total water resource of Tamil Nadu is 46.52 km^3/814 TMC groundwater potential. Due to the poor water resources coupled with changes in the hydrologic cycle, pollution of water etc. This state is facing severe water stress in many years.

FAVOURABLE WATER SECURITY PATHWAYS TO TAMILNADU

The ideal pathways to attain water security to Tamil Nadu are :

1. Artificial ground water recharge
2. Waste water management
3. Water saving in agriculture
4. Micro irrigation
5. Desalination of seawater
6. Arresting seawater intrusion
7. Enhancing irrigation efficiency
8. Rejuvenation of water bodies

1. Artificial ground water recharge :

Since groundwater is the "democratic resource" of people, there is heavy extraction over and above the recharge. Hence, there is depletion and seawater ingress in the costal aquifers in many nations including in Tamil Nadu.

2. Waste water management :

By treating and recycling the wastewater for non-domestic purposes like toilet flushing, cooling, washing, gardening, irrigation etc, about 100 TMC of fresh water can be conserved. By industrial effluent management, the state can conserve about 20% water.

3. Water saving in agriculture :

Cultivation practices like off-season tillage, System of rice intensification (SRI), Sustainable sugarcane initiative, Crop substitution, Micro irrigation techniques, could bring water saving, besides other benefits.

Fig : TAMIL NADU

Fig : WATER BODIES OF TAMIL NADU

4. Micro irrigation :

Micro irrigation techniques are used for many crop types. Under this technique, irrigated dry crops and sugarcane are considered now for Tamil Nadu. At 150 mm per ha about 50 TMC of water can be conserved from 1,000,000 ha of irrigated dry crops and at 650 mm per ha about 69TMC of water can be saved from 300,000 ha of sugarcane area.

5. Desalination of seawater :

Currently there are more than 18,000 desalination plants in operation worldwide in 130 countries. About 90 million m3 of desalinated water per day is under production and used for various purposes and this quantity works out to 32.85km^3 per annum.

6. Arresting seawater intrusion :

Due to heavy groundwater pumping in many costal region countries, exceeding the replenishable capacity of the aquifers, there is huge depletion sea water ingress and salinisation of aquifers. In Minjure and Mouthambedu well fields located north of Chennai city, the fresh groundwater aquifer has been salinised to a length of about 20 km from the coast with a seawater migration rate at 427m per annum.

PER CAPITA WATER IMPROVEMENT WITHOUT INTER-BASIN WATER TRANSFER

By the above exercises, it is possible to generate about 1,113 TMC or 1,000 TMC of water in Tamil Nadu. However, to achieve this target, continuous efforts for two decades with huge fund are necessary. Along with the additional water resources generated it is possible to improve the per capita annual water resources to 956 m^3 from the present 590 m^3 and in 2050 to 684 m^3 from the 416 m^3. But, these exercises cannot improve the per capita annual water resources of this state to the Falkenmark Water Stress Indicator level at 1700 m^3 without inter-basin water transfer. However, these approaches are necessary to bridge the water supply and demand gap to the extent possible.

WATER SUPPLY DEMAND GAP IN TAMIL NADU

Water demand for the existing Tamil Nadu 76.66 million population at 1,700 m^3 per capita per annum is 4,602 TMC. At the above per capita, for the anticipated 104.75 million population in 2050, this state needs 6,289 TMC. Deducting the available water resources 1,643 TMC, the present water supply demand gap is 2,959 TMC and in 2050 the gap will be 4,646 TMC. To bridge the demand, the state needs to generate 1,33 TMC water per annum up to 2050.

BENIFITS OF INDIAN INTER-BASIN WATER DIVERSION

Inter-basin transfer (IBT) of water schemes are not a new phenomenon. Since the beginning of dam building that marked the last half of the 1900s more that 364 large-scale inter-basin water transfer schemes (IBTs) have been established that transfer around 400 km^3 / 1,4125.80 TMC of water per year (Shiklomanov, 1999). IBTs escalating water demands. One estimate suggests that the total number of large scale water transfer schemes may rise to between 760 and 1,240 by 2020 to transfer up to 800 km^3 / 28,251.60 TMC of water per year (WWF Germany, 2009).

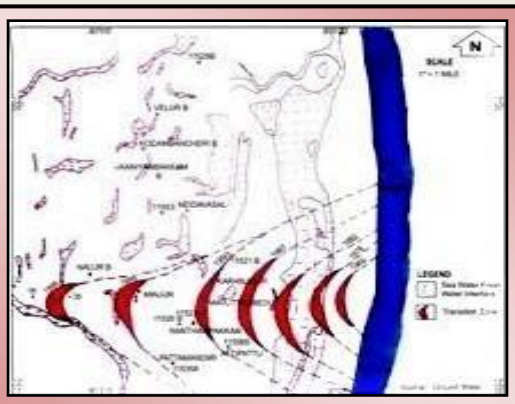

Fig : SEAWATER INTRUSION MAP

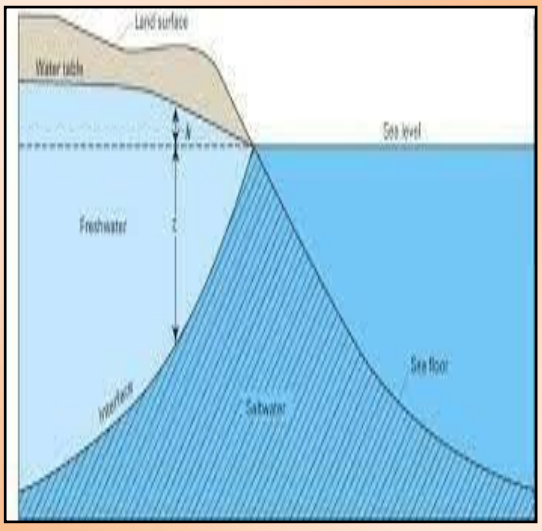

Fig : GHYBEN-HERZBERG RELATION

TAMIL NADU FOOD AND WATER SECURITIES ARE UNDER THREAT WITHOUT WATER

There was an 82.64 lakh metric tonne of food grains production in Tamil Nadu in 2011. In 2014-2016 the food grain production was 127.95 lakhs tons. For the projected 104.5 million population, this state needs 235 lakhs tons in 2050.

In the last 10 years, cultivable land has shrunk by five-lakh hectares in this state owing to urbanisation and industrialisation, resulting in agriculture and allied sectors registering 0.69% growth in the first four years of the 11th plan (2007-12) against the targeted 4%. Because of shrinkage of farmland coupled with monsoon failure in future as in 2015-2016 crop year, it may not be possible to achieve the above foodgrain production target. Hence, the food security of the state is under threat.

FUNDS TO IMPLEMENT THE WATER SECURITY PROJECT IN TAMIL NADU

Since water scarcity is a disaster, the Indian Disaster Mitigation Fund should be utilized to improve the per capita annual water resources of Tamil Nadu to the Falkenmark Water Stress indicator standard at 1700 m3 by water management and water sharing.

CONCLUSION

There are several approaches to improve the water resources and stop Tamil Nadu water miseries. However, transbasin water diversion is the permanent option. It is sad to state that in the 70 years of independence, appropriate action has not been taken to save the water resources of this state and this is the reason for the existing water miseries and thesad occurrence of farmers' suicides. Therefore, the minimum basic demand of 50 litres per capita per day clean water cannot be supplied to the people and hence mothers, sisters and daughters of this state are spending much of their prime time to bring waterfor the daily use of their family without economic activity.

Who is going to bell the cat and arrest the water woes of Tamil Nadu? Perhaps the Water Resources Organization, Government of Tamil Nadu along with the stakeholders' participation has to initiate action to implement the water security pathways, including inter-basin water transfer suggested in this paper by an „Action Plan'.

Hence, for water misery free and water related socioeconomic divide free India, water sharing is the need of the hour. Indians should understand that the water resources of India would get secular and democratic status only by sharing among the people.

Therefore, Indians should untie to share the excess water toarrest the water miseries. For the successful water sharing, a strong political will and legal intervention of India are necessary, at least now after 70 years of independence.

Fig : KAVERI RIVER

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DEVASTATING CYCLONE AMPHAN

Super cyclonic storm Amphan was a powerful and catastrophic tropical cyclone that originated from the Bay of Bengal in May 2020. It is considered the first super cyclonic storm in the Bay of Bengal since the 1999 Odisha cyclone.

THE SUPER CYCLONIC STORM AMPHAN

NAMING :

Thailand has given the name of the cyclone – AMPHAN , which is pronounced as 'UM-PUN'.

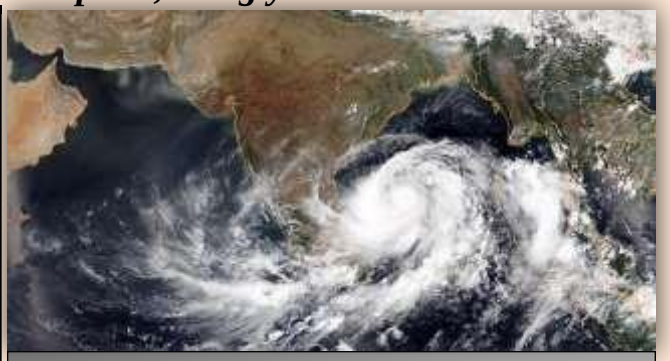
ORIGIN OF AMPHAN :

Amphan originated from a low pressure area persisting a couple hundred miles (300 km.) east of the Colombo. Sri Lanka on 13th May, 2020. On 20th May between 10:00 and 11:00 (UTC), The cyclone mode landfall in West Bengal. It's highest velocity was 240 km./h. – 260 km./h.

EYE OF CYCLONE :

The cyclone is shaped like a ring around the eye of the storm with strong winds circulating in anti-clock wise around the eye. It is passing mainly over North and South 24 Parganas , Midnapore , Hoogly and Kolkata.

TIME	SPEED	LOCATION
WEDNESDAY 20 MAY, 2020 5:00 AM	75 KNOTS	22.2 , 88.3
WEDNESDAY 20 MAY, 2020 5:00 PM	50 KNOTS	24.3 , 88.8
THURSDAY 21 MAY, 2020 5:00 AM	30 KNOTS	25.4 , 89.1



THE ORIGIN AND THE EYE OF CYCLONE - AMPHAN

CAUSES :

Amphan took 40 hours after its formation to become a super cyclone. The main reason behind this was the high sea surface temperature of 32-34 degree Celsius in the Bay of Bengal. General long term warming of the Bay of Bengal was leading cause of rapid intensification , according to experts.

DAMAGE :

$ 13.7 Billion US (2020)

AFFECTED AREAS:

The areas likely to be affected by Amphan cyclone include parts of Andaman and Nicobar islands , odisha , West Bengal , Puducherry , *Tamilnadu and Andhra Pradesh.*

- ***Mainly North 24 Parganas , South 24 Parganas and Kolkata are so much affected by the cyclone .***
- ***Other countries like Bangladesh , Sri Lanka and Bhutan are also affected by the super cyclonic storm.***

IMPACTS :

- Cyclone Amphan, hit West Bengal on May 20 , claming 86 lives so far and affecting over 10 million people in the eastern Indian state. The powerful storm ripped through eastern India and neighbouring Bangladesh.
- The storm in West Bengal caused Massive damage to standing crops, thousands of trees were uprooted and power and water supply was interrupted in the state capital Kolkata. Many in the state have lost their entire homes as well.

IMPACT OF AMPHAN

RELIFE WORKS :

❒ West Bengal's Chief Minister has requested the Centre to declare it a national disaster and pays the losses and damage at Rs. 1 lakh crores.

❒ India's Prime Minister is on a town of West Bengal and Odisha, and he announced Rs. 1000 crores for the West Bengal and Rs. 500 crores for odisha and he also announced two lakh rupees compensation to the families of the each victims killed in storm related incidents.

RELIFE WORKS

It is a memorable super and stronger cyclonic storm which can not be forgotten. Whereas so called 'AMPHAN' recalls everybody that science is nothing when it comes to the nature. So it can be said,

" NATURE IS BUILDER AS WELL AS DESTROYER"

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www.ndtv.com
www.amphan.in

DEBADRITA DEY, ROLL NO – 1945025, Sem-5
SHRESTHA NANDY, ROLL NO – 1945030, Sem-5
PRERONA SAHAJI, ROLL NO –1945054, Sem-5

PLASTIC POLLUTION

Plastic is the general common term for a wide range of synthetic or semi synthetic organic solid materials suitable for the manufacture of industrial products. Plastics are typically polymers of high molecular weight, and may contain other substances to improve performances and/or reduce costs.

The Problems Of Plastic:

Plastic is a polymeric material that is, a material whose molecules are very large. Natural polymers such as rubber and silk exists in abundance, but nature's " plastic'' have not been implicated in environmental pollution, because they do not persist in the environment. Since synthetic plastics are largely non-biodegradable, they tend to persist in natural environments. Instead , they are in properly disposed of at or near the location where they end their usefulness to the consumer. Indeed, landscapes littered by plastic packaging have become common in many parts of the world . (Illegal dumping of plastic and overflowing of containment structures also play a role).

5.25 Trillion:

ESTIMATED NUMBER OF INDIVIDUAL PLASTIC PIECES IN THE OCEANS AS OF 2020

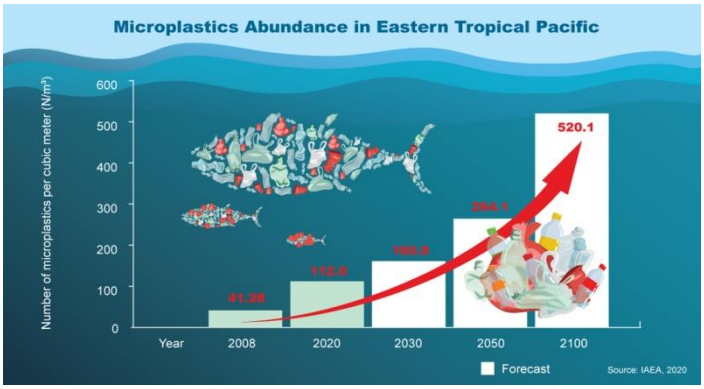
There is now 5.25 trillion macro and micro pieces of plastic in our ocean and 46 thousand pieces in every square mile of ocean , waging up to 269,000 tonnes. Everyday around 8 million pieces of plastic make their way into our oceans.

"According to a report by the world Economic forum, there could be more plastic by weight than fish in the world's oceans by 2050"- **Victoria Rome at NRDC.org**

Plastic Pollution In Oceans And On Land:

Since the ocean is downstream from nearly every terrestrial location, it is the receiving body for much of the plastic waste generated on land . Several million debris end up inthe world's oceans every year, and much of it is in properly discarded plastic litter.

Plastic pollution was first noticed in the ocean by scientists carrying out plankton studies in the late 1960s and early 1970s, and oceans and beaches still receive most of the attention of those studying and working to abate plastic pollution. Floating plastic washed has been shown to accumulate in five subtropical that covers 40 percent of the world's oceans . Located at earth's mid latitude ,these gyres include the north and south pacific subtropical gyres, whose eastern "garbage patches'' (zones with high concentrations of plastic waste circulating near the ocean surface) have garnered the attention of scientists and the media.



Pollution By Plastics Additives:

Plastic also pollutes without being littered – specifically , through the release of compounds used in its manufactured. Indeed, pollution of the environment by chemical leached from plastics into air and water is an emerging area of concern. As a result ,some compound used in plastic ,such as Phthalates, Bisphenol(BTA), and Polybrominated dithelyl ether(PBDE), has come under closed scrutiny and regulation.

Solving The Problem:

- **Plan ahead. Keep a water bottle or reusable coffee mug with you have your own utensils for on-the-go meals , and carry a reusable shopping bag.**
- **Donate unwanted plastic items such as furniture and dishware to local charities ,or offer them online to your local freecycle programme, instead of trashing then.**
- **Use and reuse plastic as long as you can, then get creative and reuse it for something else.**
- **Clean up your neighbourhood. Every piece of plastic you pick up is one less piece in nature.**

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NAME - SHREYASEE MONDAL, ROLL-1945003, SEM- 5

NAME - PAPIA BISWAS, ROLL- 1945032, SEM- 5

NAME - ABHIJIT MONDAL, ROLL- 1945004, SEM- 5

CLIMATE CHANGE: CLIMATE CRISIS

"The Earth will not continue to offer its harvest, except with faithful stewardship. We cannot say we love the land and then take steps to destroy it for use by our future generations." --- John Paul II[1]

The third decade of 21st century has begun and the environmental challenges we have ahead of us, set out in the UN's 2030 Agenda for Sustainable Development, are many. The global plan of action adapted in 2015 puts forward specific measures to achieve a world that fairer, more prosperous and more respectful of the environment within ten years. In this regard, the UN itself warns that we are running late and question now is whether we still have time to save the planet.

Below we sum up the main global environmental problem **'Climate Change'.**[1]

CLIMATE CHANGE: A GLOBAL THREAT

UNEP Report: To limit temperature increase to 1.5°C, we must drop our greenhouse gas emissions 7.6% each year between 2020 and 2030. This will take an all-hands-on-deck effort.[2]

Climate change occurs due to rise in the global warming which happens due to the increase in temperature of the atmosphere by burning fossil fuels and the release of harmful gases by industries.[3]

The carbon dioxide equivalent of greenhouse gases in the atmosphere has already exceeded 400 parts per million (NOAA). The UN office for the Coordination of Humanitarian Affairs (OCHA) has stated "Climate change is not a distant future threat. It is the main driver behind rising humanitarian needs and we are seeing it's impact." Since 1895, the average temperature in the United States has increased by between 1.3°F and 1.9°F, with most of the increase taking place since around 1970.

Fig 1: Carbon emissions

The climate crisis is causing tropical storms, hurricanes, heat waves and flooding to be more intense and frequent than seen before. Temperature rise is accelerated by climate feedback. If efforts to minimize future warming are successful, some effects will continue for centuries, including rising sea levels, rising ocean temperatures and ocean acidification.[4]

Scientific Consensus on Climate Change:

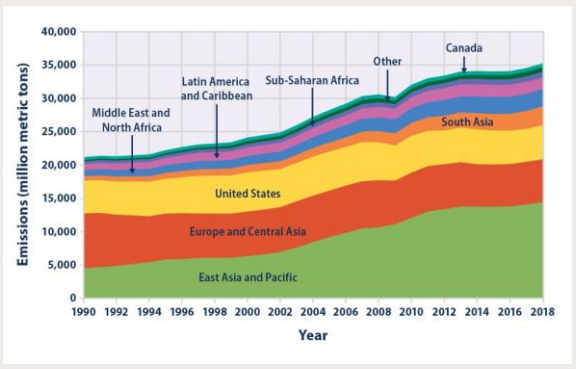


Fig 2: Graphical representation of CO_2 emission

There is currently a strong scientific consensus that this warming is mainly caused by human activities. This consensus is supported by various studies of scientists' opinions and by position statements of scientific organizations, many of which explicitly agree with the Intergovernmental Panel on Climate Change (IPCC) synthesis report.[4]

At the **2015 Paris Agreement,** the world had agreed to limit the global temperature rise in this century to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. But this IPCC report shows that the emissions of greenhouse gases from human activities are responsible for approximately 1.1°C of warming since 1850-1900, and finds that, averaged over the next 20 years, global temperature is expected to reach of exceed 1.5°C of warming. There will be increasing heat waves, longer warm seasons and shorter cold seasons. A statement from IPCC said, for the first time, the Sixth Assessment Report provides a more detailed regional assessment of climate change, including a focus on useful information that can inform risk assessment, adaptation, and other decision-making and a new framework that helps translate physical changes in the climate-heat, cold, rain, drought, snow, wind, coastal flooding and more into what they mean for society and ecosystems.[5]

IPCC is an intergovernmental body of the United Nations. The IPCC produces reports that contribute to the work of the United Nations Framework Convention on Climate Change (UNFCCC) the main international treaty on climate change.[4]

How much India is vulnerable?

Climate scientists say that India especially vulnerable to climate change because of its various ecologies which include rivers, coasts, mountains, deserts, semi-arid regions etc.[1]

The latest IPCC report emphasizes increase in extreme weather events in South Asia, including India. It highlights that heatwave will become more intense and frequent in the 21st century; summer and monsoon precipitation will also increase and become more frequent.

"Indian subcontinent will have a 20% surge in extreme rainfall events. The projections suggest that rainfall will become incessant and erratic leading to floods, depressions, and cyclonic events will become more frequent across eastern and western coasts, "Mohanty said.

"Further, heat extremes and drought events will be the new normal across South Asia and India," he warned. The IPCC report also concludes that the global mean sea levels will continue to rise over the 21st century, even in the lowest emissions scenarios because of the warming of the ocean, as well as the melting of ice over 7,500 kilometers, this will mean a significant threat to those living in areas vulnerable to the impacts of sea-level rise. For instance across six Indian port cities--- Chennai, Kochi, Kolkata, Mumbai, Surat and Visakhapatnam---28.6 million people could be exposed to coastal flooding if sea levels rise by 50 centimeters and the assets exposed to flooding will be worth about $4 trillion.

Fig 4: IPCC report

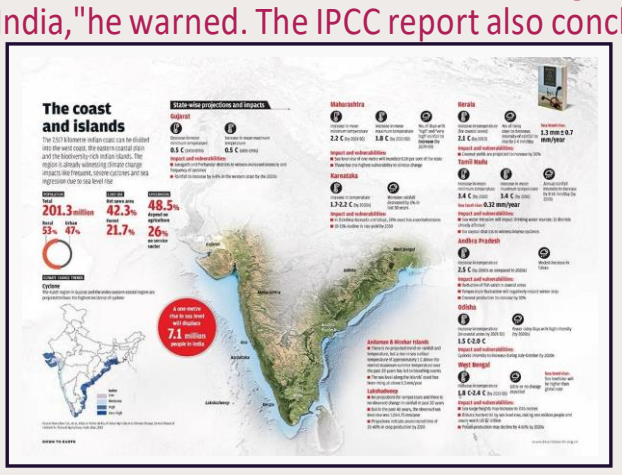


Fig 3: India's climate change

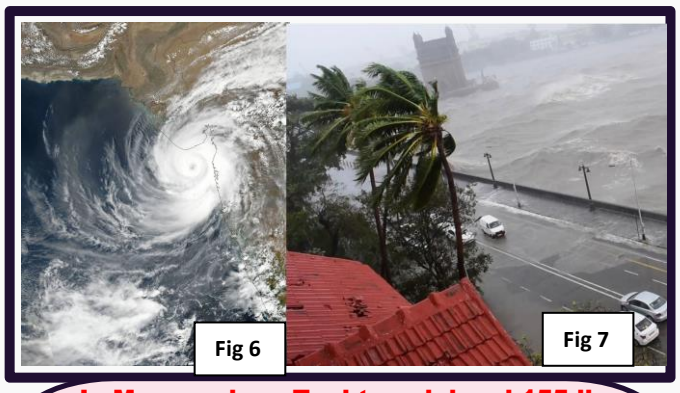
Unless there are immediate and large-scale reductions in greenhouse gas emissions, limiting global warming to close to 1.5°C or even 2° C over pre-industrial times will be beyond reach, the latest report by the IPCC.[5]

Here's a look at how climate change has shown itself in India this year, and how experts think this will look like in the days to come.[6]

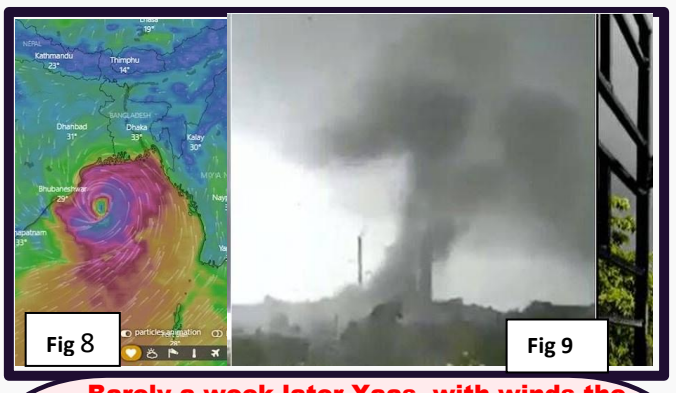
ROUND-UP OF INDIA'S WORST CLIMATE CHANGE EVENTS IN 2021

In the first seven months of this year alone the impoverished nation of 1.3 billion people has experienced to cyclones, a deadly glacier collapse in the Himalayas, a sweltering heat wave and killer floods.[7] Here's a look.

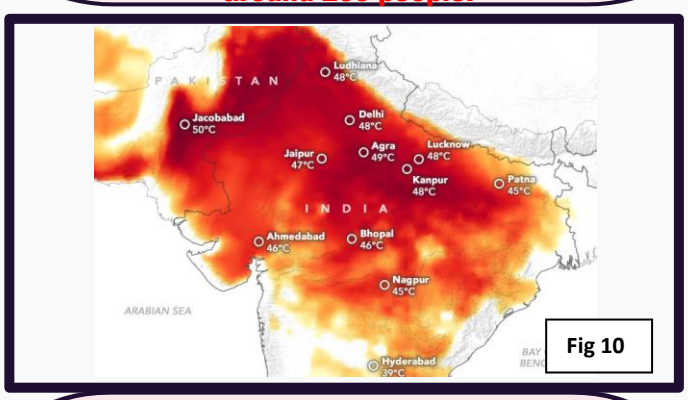
In February, a ferocious flash flood hurtled down remote Indian Himalayan valley, sweeping away home, a hydro plant and around 200 people.



In May, cyclone Tauktae claimed 155 lives in western India. It was the fiercest storm to hit the area in several decades.



Barely a week later Yaas, with winds the equivalent of a category- to hurricanes, killed at least 9 people and forced the evacuation of more than 1.5 million in the east.



In early July, tens of millions of people sizzled in just the latest heat wave across northern India. India's weather department has declared a heat wave almost every year.

Climate change is making the monsoon more erratic and violent. Torrential rains hit India's western coast in the July triggered landslides and a deluge of sludge, left more than 75 dead

Earlier July, 76 people perished including a dozen watching storm and taking selfies at a history fort in Rajasthan. A recent study said strikes rose 34% in the past.

WORLD'S EXTREME CRAZY WEATHER EVENTS, 2021

RECORD-BREAKING SNOWFALL, MADRID

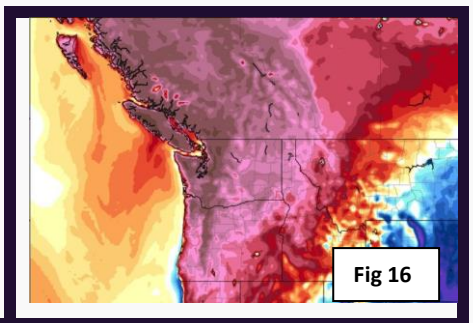
WORST SANDSTORM, CHINA

NEW NEWS

Russian militants discover a new island emerging in Arctic Ocean

Recently algae has been found in Antarctica due to global warming

DEVASTATING FLOODS, CHINA



HEAT DOME, PACIFIC NORTHWEST

HUGE WILDFIRES, GREECE

Solutions to solve the Climate Change

Humans have caused major climate changes to happen already and we have set in motion more changes still.[8] In this tough situation a question arises. Is it too late to prevent climate changes?

It may not be too late to limit some of the worst effects of climate change. Responding to climate change will involve a two-timer approach:

1) "Mitigation"-- reducing the flow of greenhouse gases into the atmosphere.

2) "Adaptation"--learning to live with and adapt to the climate change that has already been set in motion.

The key question is what will our emissions of carbon dioxide and other pollutants be in the years to come? Recycling and driving more fuel-efficient cars are examples of important behavioral change that will help but they will not be enough. Because climate change is a truly global, complex problem with economic, social, political and moral ramifications, the solution will require both a globally-coordinated response and local efforts on the city- and regional-level.[9]

Now it's all up to us what happens next.

"We are the first generation to fully understand climate change and the last generation to be able to do something about it.
---United Nations World Meteorological Organisation.[5]

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