

## **DEFINITION :**

As per the ***Inter-governmental Panel on Climate Change (IPCC)*** 4<sup>th</sup> Assessment Report 2007 – the definition on “Climate change”

“The Warming of the Climate system is unequivocal, as is now evident from increases in Global average AIR, AND OCEAN TEMPERATURE, WIDE SPREAD MELTING OF SNOW AND ICE AND RAISING Global mean SEA LEVEL”.

WHAT IS CLIMATE ? WHAT IS THE DIFFERENCE BETWEEN WEATHER AND CLIMATE ?

Climate is What YOU EXPECT : Weather is What YOU GET.

**WEATHER :** Weather is an assessment of temperature, Humidity, Cloud Cover, Pressure, Wind conditions etc..

It describes what is happening outdoors in a **GIVEN PLACE AT A GIVEN TIME**. The Weather can change a lot within a very short time. **Example :** It may rain for 1 Hour and then become Sunny and Clear.

Climate describes the total of all weather occurring in a place over a long period of time, generally years. (Climatologists generally consider 30 years as the time needed to find out the Climate of a place).

Climate includes Weather conditions, regular weather sequences (like Winter, Spring, Summer and fall) and Special Weather events (Floods).

## **WHAT IS CLIMATE CHANGE ?**

As we discussed earlier the Weather generally changes in a short time, it may rain for an hour... and then the Sun may come out. Climate can change too !!

CLIMATE has always changing and this Change is **NATURAL**. EARTH has witnessed **ice ages** in past which are examples of Change in Climate.

The Natural causes of Climate change include variations in the earth's Orbit around the Sun, around its Polar axis, changes in Solar output (Sun's Heat); Stellar dust in Earth's atmosphere; and the Change is the concentration of gases in the atmosphere.

In the Past Climate changes took a very long time. Today the rate of Climate Change is **faster** and the Change is that **the earth is getting WARMER !!!**

### **WHAT IS GLOBAL WARMING ?**

Earth has a Natural temperature Control System. Certain atmospheric gases are critical to this System and are known as GREEN HOUSE GASES.

Naturally occurring Greenhouse Gases include WATER VAPOUR, CARBON DIOXIDE, OZONE, METHANE, CLOROFLURO CARBON (CFC) and NITROUS OXIDE, AND TOGETHER CREATE A NATURAL GREENHOUSE EFFECT.

An Average 1/3<sup>rd</sup> of the Solar radiation that hits the earth is reflected back to Space. Of the remainder, some is absorbed by the atmosphere but most is absorbed by the Land and Oceans.

The earth's Surface becomes Warm and as a result emits **infrared radiation**.

**What is INFRARED RADIATION :** Solar energy is absorbed by the Earth's Surface and Warms it.. and is converted into Heat causing emissions of Long wave (infrared) radiation back to the atmosphere.

The Greenhouse Gases trap the infrared radiation, thus Warming the atmosphere.

However, Human activities are causing **Greenhouse Gas levels** in the atmosphere **to increase** and thus Causing in **GLOBAL TEMPERATURE**. This increase in mean Global Temperature **is called GLOBAL WARMING**.

**More Heat means MORE ENERGY** in the Atmosphere, which means more frequent or Severe extreme Weather events like Droughts, Storms and Floods. This **increasing temperatures** and extreme **weather events** is what is known as CLIMATE CHANGE...

### **DO YOU KNOW ?**

GLOBAL TEMPERATURE rose by about **0.6 degree C** during the 20<sup>th</sup> century. About 0.4 degree C of this warming occurred in the last 35 years. **This Global Warming is causing the CLIMATE TO CHANGE.**

## **IS GLOBAL WARMING SAME AS OZONE DEPLETION ?**

Global Warming is a Quite different Phenomenon, it is a human made problem, but this time it's due to increase in heat trapping Greenhouse gases in atmosphere from our **Industries, Homes and Vehicles**.

The **Ozone Layer** is a part of the Upper atmosphere that helps **SHIELD THE EARTH** from the Sun's most Harmful infrared rays.

A few decades ago, scientists found that some of the Chemicals used in Industries and Homes, such as CFCs, were finding their way into the Upper Atmosphere, reacting with the OZONE AND DESTROYING IT.

Scientists were concerned that if this continued, it would thin the Vital Protective OZONE LAYER, leading to increased **SKIN CANCERS AND CROP DAMAGE.....**

## **HOW WILL CLIMATE CHANGE AFFECT US ?**

The increase in Global Temperature will result in DIRECT and INDIRECT EFFECT ON ENVIRONMENT AND SOCIO ECONOMIC SECTORS.

The frequency and impact on Extreme weather events like CYCLONE, STORMS, FLOODS, HEAT WAVES AND DROUGHTS WILL INCREASE. MOUNTAIN GLACIERS will sink further and the ARTIC ICE WILL GROW THINNER.

MELTING OF GLACIERS and Polar Icecaps will increase the Water in SEAS. Expansion of SEA Water due to WARMING would rise the SEA LEVEL and this Would **SUBMERGE small islands** and COASTAL areas.

The Agriculture will be adversely affected in Some Regions by increased evaporation, Drier Soils and Prolonged Droughts while in other areas it will Suffer from increased infestation of PESTS, CROP DISEASES AND WEEDS.

The flooding of Coastal areas as a result of **SEA LEVEL RISE** would **LEAD to a LOSS of AGRICULTURAL LAND...**

It would also leads to intrusion of SALT Water into Coastal aquifers which would in turn affect AGRICULTURAL PRODUCTION. THE IMPACT ON AGRICULTURE WILL EVENTUALLY IMPACT THE FLOOD AVAILABILITY.

Change in CLIMATE will impact the BIODIVERSITY AND ECO-SYSTEMS AS PLANTS AND ANIMALS WOULD BE FORCED TO MIGRATE TO KEEP UP WITH CLIMATE SHIFTS.

Shifts in regional Climate would threaten many NATIONALS PARKS, WILD LIFE RESERVES AND CORAL REEFS AND THEREBY AFFECT THE RICH DIVERSITY OF LIFE THAT THEY HAVE.

HUMAN HEALTH will also be affected directly and deaths due to Heat Waves and other extremes of Climatic conditions are some direct consequences.

Tropical diseases i.e. MALARIA, ENCEPHALITIS, YELLOW FEVER AND DENGUE FEVER could spread to the present temperate regions of the World.

A World Health Organization study report estimate 150,000 people in developing countries are now dying each year from the effects of GLOBAL WARMING ranging from MALARIA AND MALNUTRITION to extremes of HEAT AND COLD AND FLOOD.

It is also Clear that the effects of CLIMATE CHANGE CAN NOT BE SIMPLY REVERSED OR SWITCHED OFF.

THE EFFECTS OF GLOBAL WARMING ARE PROJECTED TO CONTINUE FROM THE NEXT HUNDRED OF YEARS..... the already released into the atmosphere will not just DISAPPEAR.

THEY WILL LINGER - SOME LIKE METHANE FOR DECADES, SOME LIKE CARBONDIOXIDE FOR HUNDREDS OF YEARS. AND SOME GASES LIKE PERFLUROCARBONS, EVEN FOR THOUSANDS OF YEARS.

EVEN IF ALL EMISSIONS OF GREENHOUSE GASES CEASED TOMORROW, THE CLIMATE WOULD CONTINUE TO CHANGE, AND WITH IT ALL THE EFFECTS OF LIFE ON OUR PLANET.

POWER	...	24%;		
LAND USE	...	18%;		
INDUSTRY	...	14%;		
AGRICULTURE	...	14%;	TRANSPORT	.. 14%
BUILDINGS	...	8%;	OTHER RELATED ENGERGY	... 5%
WASTE	...	3%;	ENERGY EMISSIONS	58%;
NON ENERGY EISSIONS		42%		

## **WHAT CAN I DO TO MAKE A DIFFERENCE ?**

MORE THAN 40% OF CARBON DIOXIDE EMISSIONS ARE THE DIRECT RESULT OF ACTIONS TAKEN BY INDIVIDUALS.

Every time we use Non-renewable Electricity, drive a Car or take a flight, we are producing CO<sub>2</sub>, as all of these actions largely depend on fossil fuels. And every ton we Emit commits the World to more Warming.

## **SOME OF THE SIMPLE THINGS TO DO & ACTION COMPONENT:**

Use Less energy by Car pooling.  
 Use Public Transport. Bike, Bus and Walk.  
 Turn Off the TV or Computer when they are not use.  
 Take Shorter baths. Heating water uses Energy.  
 Plant a Tree. Use Solar Energy.  
 Buy Organic and locally Grown vegetables and fruits.  
 Reduce, Reuse, Recycle, Refuse and "R" Rupees also....  
 Use nature Light. Respect other living beings.  
 Turn to Vegetarianism.  
 Promote wind and Solar Energy devices can be use. Segregate  
 Garbage. Encourage Bio-Fertilizers in Agriculture.  
 Restore & Main Water Bodies.  
 use Compact Fluorescent Bulbs.  
 Avoid Plastics Bags usage.  
 Consume Less Waste-Less.  
 Recycle. Develop Parks, Community Forests & Plantation  
 Programmes. .... and many more at local level.....

THINK .....MORE..... THINK GLOBALLY.... ACT LOCALLY....  
 THANK YOU.....

## **SAVE ENERGY – 2009**

### **Energy Saving Cooking Tips :**

- a. Eating fruits, salads, and sprouted food not only saves fuel, but is also nutritious.
- b. Always use ISI mark and energy efficient auto ignition stoves.
- c. Maintaining, servicing and keeping stove clean is fuel saving.
- d. Cooking at minimum flame not only saves fuel, but also retains nutrition.
- e. Use always copper bottom stainless steel or hard anodized aluminum vessels.
- f. Soak grains and use optimum water quantity.
- g. Always Cook in clean vessels to their full capacity and cover vessels.

### **SOALR COOKERS SAVE ENERGY & MONEY :**

Solar Steam cooking systems are economical, energy saving, pollution free and useful for canteens, and large scale cooking.

### **ENERGY SAVING LIGHTING TIPS :**

- a. Maximize day lighting and Minimize Electric Lighting.
- b. Use CFL'S, and discard incandescent lamps.
- c. Use T5 tube lights or switch over to electronic ballasts.
- d. Use LED task lighting and Solar LED lighting.
- e. Use light colors both inside and outside the house/office building.
- f. Switch off TV, DVD/CD players, Microwaves, Music Systems and other remote operated appliance/equipment from the mains.
- g. Buy energy efficient fans and use electronic regulators.

### **SAVE WATER SAVE MONEY :**

Water is not just a commodity; it is a source of life.

The Per capita water availability of water is expected to fall drastically from the current 1800 cum per person to 1200-1500 cum by 2025. In the last 50 years the water availability has reduced to 33% save water.

- a. Avoid wasteful use of water when brushing, shaving washing vehicles.
- b. Use dual flushing water systems.
- c. Dissolve detergent in water and Soak clothes before washing.
- d. Harvest/Recycle every drop of water.
- e. Use sprinklers or drip (irrigation) systems for watering plants.

### **ENERGY CONSERVATION MISSION :**

ECM a voluntary non-profit organization is a wing of 'The Institution of Engineers' and first of its kind in India working for spreading the message of energy and resources conservation to all sections of the society. It is open to all persons interested in Energy Conservation.

### **ECM activities include :**

- a. Conduct awareness programs, organize lectures, seminars, symposium, exhibitions, and competitions etc.
- b. Conducting Energy Audits through their BEE certified Energy Auditors. Initiate Energy Savers Clubs in Industries Schools and Colleges.
- c. Interacting with Key Nodal Government agencies and Suggesting Possible Policy changes.

**SAVE ENERGY.... SAVE ENVIRONMENT .... SAVE ECONOMY...**

## **SAVE EVERYWHERE :**

1. TODAY'S WASTAGE IS TOMORROW'S SHORTAGE.
  2. STOPPING ENVIRONMENT POLLUTION MEANS STARTING ENVIRONMENT PROTECTION.
  3. NO WATER NO LIFE; ONE PLANT ONE LIFE.
  4. IF U PROTECT NATURE, NATURE PROTECT U.
  5. YOU HAVE THE POWER TO SAVE POWER.
  6. MANAGE ENERGY, IT PAYS.
  7. USE SOLAR - COOKERS, WATER HEATERS AND LED EMERGENCY LAMPS.
  8. MAXIMIZE DAYLIGHT, MINIMIZE ELECTRIC LIGHT.
  9. HARVEST/RECYCLE EVERY DROP OF WATER.
- SWITCH OFF A LITTLE. SAVE A LOT WHEN IT IS BRIGHT. SWITCH OFF THE LIGHT.

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