

Resolving Climate Change Issues through ICT

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Abstract : Information Communication Technology(ICT) is a part of our day to day life from home to industry. ICT is making our life easier and comfortable with the help of automation. ICT can also help us in fighting with global warming. ICT has an ability to analyze the environment from the depth of the ocean to the upper layer of the atmosphere. It can also help us in reducing greenhouse gases. We can also manage our energy needs in the home as well as in industries. In this paper, we will discuss various issues and solutions related to climate change with the help of ICT.

Index Terms – ICT,IOT, Environment ,Climate Change.

I. INTRODUCTION

The world is facing a great problem of global warming due to increasing pollution from increasing population and industrialization. This is increasing carbon footprint across the globe especially in developed and developing countries. In order to fight against it, we need a preventive measure which will help us in reducing the carbon footprint and making people aware of the adversities of climate change. ICT is very crucial in spreading awareness about climate change and making people overcome it. ICT tools like radio, TV, mobiles, computers, satellites can be used to spread the awareness and disseminate the information related to climate change, depletion of the environment, training people to fight the adversities of the environment, make people aware to put right efforts to overcome the environmental issues. Countries across the globe have set up virtual University consortium to run online education programs for sustainable development in association with United Nations University. The consortium focuses on accessing the online programs and scientific resources available across the globe with the help if the united nation. The objective of this program is to create the mass of people who is trained and aware of the ill effects of climate change and how to overcome it. Various companies have developed ICT based tools to study the environment and the impact of global warming on to it. These tools can warn us in prior to take preventive measures to overcome the impact of natural disaster, reasons for such disasters, project the impact of a disaster so that we can analyze what we are doing and what we must do.

II. REDUCTION OF GREENHOUSE GASSES THROUGH ICT

ICT can help us in reducing greenhouse gasses which is the leading cause of global warming. To achieve this computer-controlled machines will be used in industries which will improve the performance of machines and engines this will reduce the consumption of fuel and raw material. Distribution of raw materials and goods can be managed through ICT for better management, to cut short the fuel cost. ICT controlled cold storages and warehouses must be established for better storage of food and avoid wastage[1]. People can use media like phone, video conferencing to manage the meetings in place of going and attending meeting face to face. Sensors can be deployed in buildings for measuring heating and cooling of building for avoiding energy loss. According to Global e-sustainability initiative (GeSI) use of smart buildings will reduce 20% emission of greenhouse gases by 2030 this will lead to saving of \$ 2.9 trillion in gross energy and fuel[2]. Advance technology equipment's like LED, LCD, sensors-based devices can be used to reduce carbon footprint. Fiber optic networks can be used to transport data from one place to other this will also reduce energy waste and make the network faster and efficient. Major companies in the ICT sector have taken initiatives to fight against climate change[3]. Google has invested a huge amount in the Swedish wind farm and solar plants in Chile. Facebook is drawing 50% of needed energy from renewal sources and moving towards 100%. Adobe has taken steps to power all his resources through renewal resources by 2035.

III. STUDY AND ANALYSIS OF ENVIRONMENT THROUGH ICT

ICT has application in almost all fields like science, economics, business, politics, similarly it can be used for environmental management. ICT can be used to collect, process and disseminate the information regarding carbon footprint, environmental education, and health. The growth of the internet and the satellite network has made us unable to gather more accurate Geographic Information System (GIS) data. This data can be used for a variety of application in the field of environmental and health studies. Now a day's variety of software's are available to study various aspects of the environment and health care. These software's made us unable to learn and predict many of the things in advance so that preventive measures can be taken to tackle those problems. Nowadays we are able to monitor our planet with the help of sensors and remote satellites. We can easily predict and check the amount of greenhouse gases available in the environment, the upcoming hurricanes, floods, and other natural disasters. The meteorological satellites were in use from 1960 by the World Meteorological Organization (WMO) for weather forecast across the globe. Figure 1 shows WMO observing system.

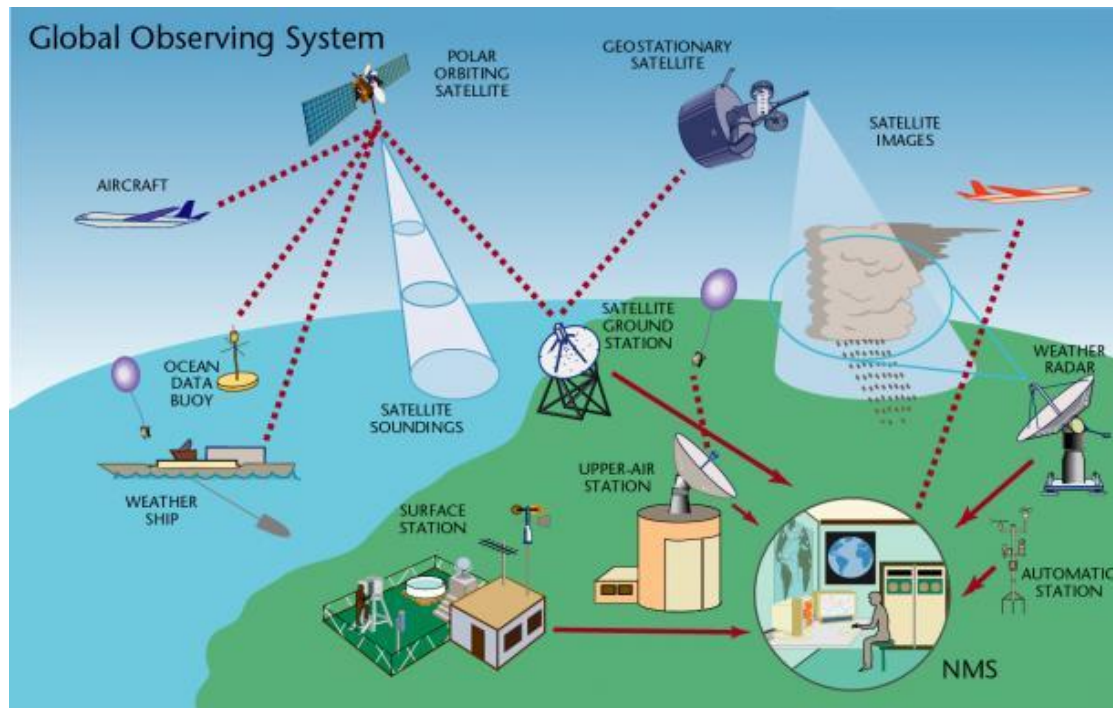


Figure 1: WMO Global observing system

Once the data is collected, that data is processed with the help of various softwares on fast computers. With the availability of supercomputers and other computing techniques like grid computing, it is easy to process the data and to predict the results of that data. One such experiment is conducted by Climateprediction.net and British Broadcasting Corporation (BBC) in 2006 under the umbrella of Oxford University. The grid computing was involved in the experiment in which the ordinary computers which are thousands of kilometers away from each other were used to process the data about 250000 people were participated in the experiment to predict the future global climate by 2080. The data created out of these experiments can be easily shared through internet across the globe. Many free applications like google earth and Microsoft visual earth are available to show the detailed satellite images. GIS is the most efficient way to represent the environmental data. The GIS can help you to visualize the data graphically on the environmental condition, population, agricultural conditions, natural disasters and many more.

IV. ALLEVIATE NATURAL DISASTERS

According to the report of Centre for research on the epidemiology of disasters published in September 2018, the total 95.6 million people were affected from disasters with the killing of about 9697 people in 2017 which is less than the decade(2007-2016) average of 210 million affected with killing of 68273 people[5]. There is a huge decline in the losses of life and property in current years due to early warning systems. Early warning systems are now part of national development planning, sensors can be placed to monitor the eruption of volcanos, movement of tectonic plates landslides, etc. Nowadays with the availability of sensors and satellites we can easily measure the changes in the environment, satellites, can provide data on weather and vegetation patterns. Ocean buoys can send data on any activity in the sea through satellite. Increasing computation power with advanced algorithms helping us in analyzing data more efficiently and accurately. The availability of fast internet access can help us to share a large amount of data across the globe.

V. CONCLUSION

ICT is playing a key role in spreading awareness about climate change, it is also helping in mitigating the effects of climate change and in building a human resource to adapt to its effects. ICT is also helping us in identifying new areas in the field of biometric, gene engineering, online medical transcription, genome sequencing, human health, etc. ICT is booming everywhere but there are many countries which are still not able to take the complete advantage of ICT and its tools to fight against climate change. There is a need for a more comprehensive and integrated approach to take ICT forward to developing and underdeveloped countries. ICT is not merely a tool for online education, but it is a tool to make people aware of the limited resources available in the world and how to use them efficiently.

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