

## **Episode 26** **Social, Economic and Environmental Impact**

Script: Shri S. P. Dharne

**Mukta :** School student

**Vishwas:** College Student

**Manohar :** Agriculturist, Father of Mukta and Vishwas

**Manasi :** Mother of Mukta and Vishwas and a social worker

**Vikrant :** Climatologist from Ministry of Renewable Resources

**Ashfaq-** Ul-Haq : Environmentalist from Canada

**Pramodini :** Scientist at Indian Meteorological Department, Sister of Manohar

**Place :** House of Manohar

**Time :** Evening

Vishwas is studying. Mukta is playing nearby making lot of noise. Manasi is in kitchen cooking something

**Vishwas:** Carbon dioxide, Methane, Chlorofluorocarbons, hydro fluorocarbons, nitrous oxide, water vapour are greenhouse gases.

(Repeats)

Carbon dioxide, Methane, Chlorofluorocarbons, hydro fluorocarbons, nitrous oxide, water vapour are greenhouse gases. ....

Oh No !, how many times I have read it but can't remember it again.

(He is irritated) (Looks for a vent for his irritation)

**Vishwas:** Mukta !, Stop making stupid noises. I am studying. My exam is very near. Stop all noises.

(Mukta ignores) (Gap of few seconds with background noise)

**Vishwas:** (Shouts again) STOP Noise.

**Manasi:** Vishwas, What happened? Why are you shouting?

**Vishwas:** Mummy !, Mukta is not letting me study peacefully

**Mukta:** . No Mummy, I am doing nothing. I am playing all by myself. He is shouting as usual.

**Vishwas:** You liar ! Hold on, I will see how you make noises  
(runs after her. Lot of noises)

**Manasi:** Mukta, come into kitchen and help me. I am making gulab jamuns for you .

**Mukta:** Wow ! Gulab Jam. Mummy, I am coming  
(runs to kitchen)

**Vishwas:** Carbon dioxide, Methane, Chlorofluorocarbons, hydrofluorocarbons, nitrous oxide, ...

(suddenly the doorbell rings)

**Vishwas:** Oh no ! nobody is allowing me to study!

(Opens the door. Sounds of door opening and closing) Manohar comes in

**Vishwas:** Hello, Dad. Where were you whole day?

**Manohar:** My son, I was on our farm at Gurgaon. But what are you doing?

**Vishwas:** Studying, Dad, I have Environmental science exam next week.

**Manohar:** Good ! good ! keep on studying. Manasi, I am back.

**Manasi:** OK. Dinner will be ready in about ten minutes.

Telephone rings. (Sound of telephone ring)

**Manohar:** Mukta, see who is on the line. Please.  
(Mukta picks up the telephone and speaks into it)

**Mukta:** Hello,

**Pramodini:** Hi Mukta, this is Pramodini. How are you?  
(on telephone)

**Mukta:** (very happy) Hello auntie. How are you? Long time no see.

**Pramodini:** You are right. Long time no see. Hence I will come and see you right now. You are all home, isn't it? I will be reaching in another ten minutes. OK? Tell mom and dad.

**Mukta:** (on telephone) OK auntie. Waiting for you for dinner. Come soon.  
(hangs off the telephone).  
Mummy, Daddy, Pramodini auntie is coming right now.

**Manohar,** What? Pramodini? Suddenly? Oh!, what a pleasure.  
**Manasi**  
**(together):**

**Manasi:** Thank God! I have made Gulab jamuns today. She will be very Happy.

**Vishwas:** Very Good! Pramodini auntie is a Meteorologist. Her knowledge about environment is fantastic. I can ask her all my doubts before exams. Great.

**Manasi:** OK! So we will have dinner together as soon as she comes.

Doorbell rings. Mukta runs and opens the door. Shouts "auntie, auntie" . Pramodini enters home.

- Pramodini:** Hello Manohar bhaiyya, Manasi, Vishwas, Mukta? How are you all?
- Manohar:** We are all fine. But this was a big surprise. How come you are suddenly in Delhi. No intimation.
- Pramodini:** I wanted to give a surprise to you. I am here to attend a conference and deliver an invited lecture.
- Manasi:** Which conference?
- Pramodini:** There is an “United Nations International Climate Change Conference” from tomorrow for three days in Vigyan Bhavan.
- Vishwas:** What are they going to discuss in this conference?
- Pramodini:** Climate change, global warming; short and long term effects of that on earth and on all of us
- Vishwas:** Can I come?
- Mukta:** Ha! Ha!, there will be all great scientists and what are you going to do there?
- Pramodini:** Mukta! It is not like that. In fact all of you should attend. It will help Manohar Bhaiyya as he is an innovative farmer. Vishwas and you are studying environmental science so it will give you lot of information and knowledge.
- Manasi:** Yes all of you should go as auntie is telling. It will help you.
- Pramodini:** Manasi, you should also join. You are connected with many NGOs working in this field. You can spread awareness in public about harmful effects of global warming. You must attend.
- Manohar:** I agree fully. Manasi, you must join. All of us will go.
- Manasi:** Ok! OK! Now let us have dinner. Pramodini, Gulabjamun are waiting for you.
- Pramodini:** Great, Manasi, nobody makes delicious gulabjamun like you. Let us start eating.
- Sounds of plates. Glasses and general talk.  
Interlude Music  
Pramodini Mukta and Vishwas are chatting post dinner
- Vishwas:** Auntie, I hope you are not sleepy. I have some doubts. Can I ask you?
- Mukta:** No, No auntie is going to play with me.
- Pramodini:** Of course, we will play, but let me clear doubts of Vishwas first. In fact I would be happy to clear them. Vishwas, ask me.
- Vishwas:** Auntie, in my book they have said that many gases like Carbon dioxide, Methane, Chlorofluorocarbons, hydrofluorocarbons, nitrous oxide, water

vapour which are called greenhouse gases, are they bad for environment.

**Pramodini:** Yes. That's right. Greenhouse gases is one of the major factors in global warming.

**Vishwas:** But I am confused because when they teach us botany, they tell us that plants produce food from carbon dioxide during sunlight and that is the food all of us human beings eat. Then how that gas is bad? In fact it is a very useful gas, Otherwise all of us will get starved, both vegetarians and non-vegetarians.

**Pramodini:** Good boy. Very sharp. Your point is correct. But there has to be a balance. The carbon dioxide production and its utilization in nature have to balance out. In a balanced mode it will provide us with enough warmth and the necessary food and the cycle would sustain.

**Vishwas:** So where is the imbalance then?

**Pramodini:** All our current activities, especially industrial, power production and vehicular activities have brought in this imbalance. We are producing excessive amounts of the greenhouse gases which trap the heat and bring about the global warming.

**Vishwas:** But the atmosphere, the earth is such a huge thing, how much temperature rise this is going to cause?

**Pramodini:** Substantial. I will give you the figures. As per the Intergovernmental Panel for Climate Change the rise in the mean global surface temperature at the end of this century is likely to be of the order of 1.5 degrees Celsius. And mind you, this is very high with substantial harmful effects.

**Mukta:** Auntie, let us play please. I am waiting for long time.

**Pramodini:** OK. OK. Vishwas we will talk further tomorrow morning on this. OK?

**Vishwas:** OK auntie, Good Night. I will go and sleep.

Mukta and Pramodini go for playing.

Interlude Music

Next day morning.

**Manohar:** Hurry up. Hurry up we have to reach Vigyan Bhavan by 10:30. Morning traffic will take about one hour. Hurry up. Fast. I will go and take the car out. All of you come quickly.

Sounds of car starting, moving, doors closing and road traffic.

**Pramodini:** Well, thanks Manohar bhaiyya. We are well in time at Vigyan bhavan. We have still some time. Let us go around the venue.

They move around. Some background music  
Somebody calls - “Mr. Manohar”,.sssss.. “Mr. Manohar”

**Manasi:** Manohar, somebody is calling you. Pl see.

**Manohar:** Oh My God, I can't believe my eyes. Professor Ashfaq-Ul-haq? So glad to meet you Sir.

**Ashfaq:** Mr. Manohar, my pleasure. How are you?

**Manohar:** Very fine Sir, Thanks a lot. I introduce my wife Manasi, An excellent partner and a dedicated social worker.

**Ashfaq:** Namaste madam.

**Manasi:** Namaste. You seem to know Hindi very well.

**Ashfaq:** I love India and keep coming here very often

**Manohar:** She is my Sister Pramodini, a meteorologist and deputy director of India Meteorology department.

**Ashfaq:** Namaste. I am eagerly waiting for your Invited Lecture.

**Pramodini:** Namaste and thanks a lot.

**Manohar:** He is Vishwas, my son, undergraduate student of Environmental sciences and she is Mukta, my daughter studying in 10th standard.

**Ashfaq:** Hi Kids, good to see you here

**Vishwas** & **Mukta** Namaste uncle.

**Manohar:** Folks, Now I will Introduce Prof. Ashfaq to you. He is professor Emeritus at Toronto university, Canada.

**Vishwas:** But dad where did you two meet?

**Ashfaq:** I will tell you. Last year I was in Delhi for a conference on “Innovations in Agriculture for a Sustainable Future”. Your dad was in the conference and we had a lot of discussions. He is such a innovative and progressive farmer.

**Pramodini:** We still have some time. What about a coffee professor Ashfaq?

**Ashfaq:** Suits me very fine. Let us go.

All go to the cafeteria. Appropriate sound effects.

**Vishwas:** Pramodini auntie. You were going to tell me more on global warming.

**Ashfaq:** Global warming? What are you doing with that?

- Pramodini:** I was explaining him yesterday about greenhouse gases and global warming. Vishwas, professor Ashfaq is a renowned international expert on effects of Global Warming.
- Vishwas:** Uncle, Auntie was telling me that the mean global surface temperature of earth will increase by 1.5 degrees Celsius by end of this century.
- Ashfaq:** She is absolutely right about it. And it is so frightening.
- Manohar:** Frightening? Professor, can you please elaborate.
- Ashfaq:** Yes. Certainly. Let us first take your area. Agriculture. OK?
- Manohar:** Yes Sir, tell me.
- Ashfaq:** India is a country whose economy is largely dependent on agriculture. As the global warming rises, agriculture will be badly hit in more than one way. First, the crop yield drops as temperature rises. This will reduce the production per acre..
- Manohar:** Oh, that will make life further difficult for the farmers.
- Ashfaq:** It does not stop here. It will change drastically the monsoon patterns. This will create severe drought like situations or flood like situations resulting in heavy losses to farmers and the national economy. Severe drought conditions will not only affect the crops but also human life and livestock. A monsoon dependent country like India will be worst affected,
- Manasi:** The recent Kerala flood has created losses of lakhs of crores of rupees due to loss of lives, damage to the property, damage to crops, loss of production, loss of wages and so many other things. It will take very long time to normalize. Apart from the loss of lives and damage to property, the relocation and rehabilitation of affected populations poses a major challenge.
- Pramodini:** You are very right. Such situations will keep on increasing.
- Ashfaq:** There is one more danger. The latest research from Colorado State University suggests that as the temperature rises, the hunger of pests increase and they consume more grains resulting in the corresponding losses to farmers. Of course this more applicable to cooler countries than India.
- Pramodini:** Sir, your mention of pests reminds me of one more menace due to global warming
- Manasi:** What is that now?
- Pramodini:** Diseases ! There are two major reasons for spread of disease. First is floods and submergence. As floods recede, a conducive environment is created for rats, mosquitoes and ticks to thrive. This brings on the outbreaks of deceases like leptospirosis, malaria and others carried by these carriers.

- Mukta:** Oh! that is why there was a big threat of leptospirosis after recent floods in Kerala.
- Ashfaq:** You are absolutely right my dear Mukta.
- Manasi:** This was one way. What is the other way of spreading deceases?
- Ashfaq:** The carriers like mosquitoes, which earlier could not survive in cold climate, start thriving in these countries as the climate warms up. So now a new population faces the outbreaks of diseases like malaria, dengue, yellow fever and west nile. Already there have been reports of mosquitoes infecting Canadians with West Nile Virus.
- Vishwas:** Oh my, there are so many angles to global warming?
- Ashfaq:** My dear this is just beginning. There are many more things. I will tell you mainly those which have huge impact on India.
- Mukta:** Yes uncle. Please tell.
- Ashfaq:** Next one is related to Heat Wave. The temperatures are rising and the countries like India in tropical zone will be worst affected due to frequent heat waves.
- Pramodini:** Yes Sir, Last three consecutive years have made a sort of record in high temperatures. The highest temperature of 51 degrees Celsius was recorded in a place called Phalodi in Rajasthan.
- Ashfaq:** Yes. In fact, one of the simulation studies at MIT predicts that by the year 2100, India, Pakistan and Banglaadesh will be too hot for human habitation.
- Vishwas:** My god, this is really frightening, unless we do something about it.
- Ashfaq:** Absolutely right my dear. Sea level is another danger lurking around. As the climate warms up it melts ice in various forms and places. The ice on mountain tops, ice in glaciers, ice in seas and water bodies, ice in polar sheets. As temperature rises, more and more ice melts and comes to rivers and oceans. This makes rivers overflowing and flooding the areas damaging crops, properties and lives. This also will again focus on the issue of relocation and rehabilitation of affected people.
- Pramodini:** Yes professor, the flow in the Colorado river in America has increased six times due to excessive melting of ice.
- Ashfaq:** Further, the rise in sea level will drown many many islands and they will vanish from the map. Low lying areas in various countries, cities on sea shore may experience sea level rise by about 15 to 20 feet by year 2100, submerging large parts of the cities on shore.

**Pramodini:** On the other hand there is a reverse effect also. Due to temperature rise many glaciers like Gangotri glacier, feeding river Ganga, are shrinking. For some glaciers this receding rate is as high as 120 feet per year. This means less ice to melt and hence less water to the river. This means less water for irrigation, less water for drinking and other uses. So the civilization on the banks of such rivers faces grave danger.

**Ashfaq.** Same effect but two totally different consequences. There are many more harmful effects like loss of biodiversity due to extinction of species unable to tolerate rising temperatures and destruction of ecosystems. The affected regions and countries will have grave consequences on their economy and well being of their population.

**Manasi;** Professor, is the situation out of control? Can we not do something about it?

**Ashfaq:** Of course. We must do something about it. It is our duty towards our future generations. First and foremost thing is educate everybody on this planet and make them aware of the contributions they are making to this dangerous scenario.

**Manasi:** In addition to making them aware we must tell them to act in such a manner that the wrong practices are stopped and right practices are adopted.

**Vishwas:** Mummy, through your network of voluntary social organizations, you reach a large population. Why not start with them?

**Pramodini::** Government has also taken many initiatives in this direction like reduction of use of fossil fuels and increase the use of renewable sources of energy like Solar, Wind etc. They are planning 40 % of electricity generation through renewable sources by 2030.

**Manasi:** Through my network I will formulate a programme to persuade every member of the society to avoid or reduce use of fossil fuel and generation of greenhouse gases.

**Ashfaq:** We all must do that. And do it immediately. Because the inertia of climate change is extremely high. Even if we freeze the generation of greenhouse gases instantaneously today, the positive effects that will be seen only about 100 years later. Hence do everything and do it at the earliest.

**Vishwas:** Wah ! Professor uncle, you made the topic so simple and understandable. Thanks a lot.

**Ashfaq:** Most welcome my boy.

Buzzer rings indicating that conference session is about to start

**Pramodini;** Hi folks, It is time for my lecture. I am going. Bye, Bye, see you in the evening.

**Manohar:** Let us also go inside the auditorium to listen her.

All proceed inside the auditorium to attend conference.

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