

CLIMATE CHANGE- RESPONSE STRATEGIES

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Anchor: Good Morning Listeners. In the previous episode you all learnt about the causes and impacts of climate change. As you are aware, we are already experiencing the effects of climate change in several ways. Temperatures are rising, snow and rainfall patterns are shifting and more extreme climate events-such as heavy rainstorms and record high temperatures- are already taking place. These changes are linked to the climbing levels of carbon dioxide and other greenhouse gases in our atmosphere, caused by human activities such as burning fossil fuels for energy. By taking action to reduce emissions of greenhouse gases that warm our planet, we can reduce the risks we will face from future climate change. A well-informed public is essential to promote awareness of the issues and provide guidance on positive practices. Every one of us has an important role to play. Climate change is a global issue. Effective responses require a global effort. In fact global warming requires global response. In this episode you will know the efforts in this direction.

CHARACTERS:

Dr Sagarika (35) Professor of Environmental Studies

Dr Teja (45): IITM Scientist

Saketh (42) Senior Scientist, IMD

Dr Akash(44): Environmental Scientistt

Ashrita (21): M.Sc Student

Anish (38) NTPC Scientist

Subbarao(42):TTE

SCENE-1

(Howrah-Chennai Mail on platform 1, mike announcements. Sounds of a passengers getting into train in the background)

Anish: Madam,I am Anish. Please move a bit. I am allotted upper berth. I will put my luggage underneath the lower berth. My friend Mr Saketh is also coming.

Sagarika: Oh, it's alright. I am Sagarika. Glad to meet you. I got the lower berth.

Anish: Thank you madam. Where are you coming from? Are you travelling alone?

Sagarika: I am coming from Cuttak. Going to Chennai. My student Ms Ashrita is also coming with me. The train has stopped .Where are we now sir?

Anish: This is Visakhapatnam station. It's lunch time. Our train will have halt for 15 minutes. Shall I bring any refreshments for you?

Sagarika: Thank you sir. I ordered lunch for both of us from the pantry car.

Anish: ok. The boy is bringing your meals plate. You first finish your lunch.

Sagarika: The train is departing. (Appropriate sounds)

Anish: Madam Sagarika, what are you and why are you going to Chennai?

Sagarika: Anish ji, I am a professor of environmental sciences in Chennai. I am returning after participating in a national seminar on climate change at Cuttack. Where is your friend Saketh?

Anish: He will catch the train at Rajamahendravaram. He went there yesterday to visit his sister. We were both colleagues in the IMD. I shifted to NTPC as a scientist. We are going to Chennai to study the impact of heavy rains and floods as members of a team of experts.

Sagarika: Oh, very interesting.

Anish: By the way, madam, you are carrying a transistor radio in your hands. Anything interesting?

Sagarika: Yes, Anish Ji. Today is Sunday. I was listening to the monthly 'Man Ki Baat' programme of our Prime Minister. I never miss it.

Anish: It's true our PM shares his thoughts with the people on various issues and government policies. Like lakhs of people throughout the country I also listen to the programme. Which topic do you like the most ?

Sagarika: In fact all topics are very important However, as I am a professor of environmental studies I noted several points from his address on the topic 'Climate Change'.

Anish: Yes. It is an important issue concerning the entire world. What did the PM say?

Sagarika: He touched upon many issues. He said it was the responsibility of all to ensure that the Earth's temperature does not rise as global warming was already creating disasters like recent heavy rains in Chennai.

Anish: Yes, Chennai was hard-hit by massive rains that resulted in floods causing loss of life and property. What are the other points mentioned?

Sagarika: PM said that we would keep receiving news about natural disasters from every corner of the world. Such were the tragedies that have never been heard earlier or imagined. He observed that we were now experiencing the impact of fast-changing climate and mentioned the heavy rains that hit Tamil Nadu and other states of our own country which resulted in devastation.

Anish: The whole world is worried about climate change. There are discussions everywhere over it and concerns are being expressed.

Sagarika: Yes. Prime Minister also expressed the same opinion. Observing that there was acceptance for the occurrence of climate change as an index before any work was done; he felt that the global temperature should not rise and it was the responsibility and concern of all.

Anish: Unfortunately, the developed world is placing greater onus on developing countries like India in the fight against climate change.

Sagarika: Yes sir. Dwelling on this the PM maintained that the developed countries had been the major polluters and thereby should assume greater role in fighting global warming by funding and transferring low cost technology to developing nations.

Anish: There are some steps being taken at the global level. However people also have a role to play.

Sagarika: You are right. PM said that it was the responsibility of to ensure that the earth's temperature did not rise as global warming was already creating disasters like the heavy rainfall in Chennai. He asked the people to adopt measures for energy conservation and energy efficiency such as maximum use of solar powered items to avoid global warming.

Anish: It is time we should turn to non-conventional energy sources. Government is also promoting the use of solar energy.

Sagarika: Prime Minister advised the people to adopt measures such as maximum use of solar powered items such as solar lamps. He also reminded the people that the government was running a number of schemes like LED bulbs and asked them to take advantage of the schemes.

Anish: Solar power is an emission-free driver of the economy, generating growth in both direct and indirect employment. A lot of sunlight remains to be tapped. The Union Cabinet has recently approved the doubling of solar park capacity to 40,000 MW. 50 additional solar parks would be set up. The parks will lead to abatement of around 55 mt of carbon dioxide per year.

- Sagarika:** It is a good decision. While grid connected large scale installations have received maximum attention, there is slow progress on roof-top solar.
- Anish:** You are right, madam. The AP government is procuring 1 lakh solar pumpsets to be distributed to farmers free of cost as part of its 'solar farming'. Farmers will be able to produce power in their own fields and sell back the power they produce during nonfarming days.
- Sagarika:** Very innovative idea! The average consumers also should be encouraged to invest in PV modules by offering incentives. You know, recently Naval survey vessel INS Sarvekshak has innovatively deployed zero-maintenance solar power system by installing razor-thin, flexible solar panels on its helicopter deck. It slashes a yearly carbon emission of more than 60 thousand kg .
- Anish:** It's very interesting. Government launched several measures to ensure energy conservation and energy efficiency. The Energy conservation Act and the Bureau of Energy Efficiency have taken some initiatives.
- Sagarika:** The EC Act has some provisions. Energy intensive industries and buildings have to comply with specific energy conservation norms. Energy consuming appliances, gadgets and equipment are assigned standards and labelling. Energy conservation building code is set in place. Institutional set up is created for coordination of energy conservation efforts in the country.
- Anish:** Yes. We have Bureau of Energy efficiency at the Federal level and Designated Agencies at the State level. Some states have introduced energy auditing and replacing old appliances with energy efficient equipment.
- Sagarika:** It's very good. Energy Conservation Fund is created at Centre and States to provide necessary financial support for energy efficiency initiatives in the country.
- Anish:** There is a National Action plan on Climate change. I heard that that the Action Plan includes some Missions.
- Sagarika:** Yes, Anish ji. There are 8 Missions. National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Green India.....
- Anish:** Yes , I remember the other Missions. National Solar Mission, Missions for sustainable Agriculture ,for strategic knowledge for climate change and also Mission for sustaining the Himalayan Ecosystem.
- Sagarika:** All these Missions have tasks assigned.
- Train Ticket Examiner: Ticket please..Show me your ID cards also.

Sagarika, Anish:

OK sir. These are our tickets. See our ID cards.

TTE: Allright. I see, you are both environmental scientists.

Anish: Yes sir. We are discussing environmental issues to make best use of our journey time.

TTE: I did PG course in energy and environmental studies.

Sagarika: Very glad. May I know what the Indian Railways s doing for energy conservation?

TTE: I will tell you. Indian Railways has adopted a range of energy efficient technologies to support the vision of environment-friendly rail network. Energy efficient ceiling fans and LED bulbs are being used at railway stations and coaches A policy to use star rated equipment has been put in place. Solar pumps, occupancy sensors etc. are being installed. These have resulted n a saving of about 3% of electricity.

Anish,Sagarika: Oh! Thank you,sir.

TTE: Ok. I shall move.

Anish: We are reaching Rajamahendravaram station. My friend Saketh will board the train here. He has vast knowledge about Climate change and Green House Gas Emissions.

(Train arrives on the platform. Sounds of vendors and passengers)

SCENE-2

Anish: Hi Saketh. Come here. You have the side-upper berth. Put your luggage there and sit by my side. We can have a chat till we reach Vijayawada or Ongole. By the way, meet Dr sagarika, Professor of environmental studies in Chennai. This is Ms Ashrita, her student.

Sagarika: Good evening sir. Glad to meet you.

Saketh: Good evening Nice to meet you. Anish and I are good friends I'm working in IMD.

Sagarika: Oh! Very good sir. Anish ji told me that you have sound knowledge of climate change and green house gas emissions.

Saketh: Of course, some knowledge on matters concerning energy and climate changes is necessary for all of us working in the NTPC, IMD, IITM etc.

Tea Vendor: Chai...Chai..

Sagarika: Sirs, let us have tea. It's 6 pm now.

Anish: Oh, sure. I have biscuits with me. We can share them.

Sagarka: Ok sir. Oh, chaiwala... come here. Give us 4 cups of tea.

Anish & Saketh:

Thank you madam. Take the biscuits.

Sagarika: Thank you. Shall we continue our discussion?

Saketh: Anish, what is the topic you are discussing?

Anish: Saketh, it's climate change and GHGs.

Saketh: It's an important topic. Everybody should think seriously about it. It is a fact that the Earth is getting warmer. Even small changes in Earth's temperature can have big effects.

News papers are carrying reports on how the climate change is unfolding itself.

Anish: There is a news paper in your hands. Let me see.

Saketh: It is today's news paper, 'The Hans India'. I purchased at a stall on the platform.

Anish: Here is news item.

Sagarika: What is that, Anish ji?

Anish: 'Sea ice in the Antarctic has shrunk to its lower data has shown.st level since records began four decades ago, preliminary US satellite data has shown'.

Saketh: Sea ice at both poles has been expected to decline as the Earth heats up due to man-made global warming. These and several other effects are being felt everywhere.

Sagarika: Yes. I heard that one out of every five living things on our planet is committed to extinction by the levels of green house gases that will accumulate in the next few decades. We have reached a tipping point.

Saketh: Exactly. All nations across the world recognised the problem of environmental degradation and the dangers involved. A serious attempt was made to address the problem at the Earth Summit at Rio de Janeiro on June 3-14, 1992.

Anish: The Heads of 150 nations and 40,000 delegates attended. But I think there was no consensus. Saketh, I remember you also attended.

Saketh: Yes. The developed and developing countries were divided on the issue who should pay for cleaning the ecological mess that the earth finds itself in. The nations realigned themselves into North-South environmental blocks.

Ashrita: Why was there a deadlock at the summit, sir?

Saketh: India, China and third world countries grouped themselves under the group 77 banner while the developed countries grouped under group 7. Developing countries argued that the developed countries were the major polluters and they must accept moral responsibility to pay for it. The other side refused to accept the logic. There was thus no consensus.

Anish: I think a treaty was negotiated.

Sagarika: It is UNFCCC, isn't it Saketh ji?

Saketh: Well said madam.

It is United Nations Framework Convention on Climate Change. Its objective was to stabilise GHG concentrations in the atmosphere at a level to prevent dangerous interference with the climate system. It came into force in March 1994.

Anish: Are there any binding limits on GHG emissions?

saketh: No such limits and no enforcement mechanism either. However it outlined how international treaties could be negotiated to set binding limits on GHGs. There are 197 parties to UNFCCC. The parties meet annually in conference of parties.

Sagarika: Subsequently, there was a deal at Kyoto.

Anish: I remember it was in 1997.

Saketh: Yes. Anish. Kyoto protocol is an international treaty. It is world's first legally binding climate change deal. It came into force in 2005. As per the deal industrialised countries were obliged to cut their GHG emissions 5% on 1990 levels by 2008-12.

Ashrita: What about countries like India?

Saketh: Developing countries-including China, India, Brazil and South Africa-would face no restrictions on their emissions but were encouraged to adopt policies to promote greener growth.

Anish: There is the idea of multinational carbon market in Kyoto Protocol.

Sagarika: It is known as Clean Development Mechanism.

Saketh: Yes, madam. It set new rules for reporting, accounting and verifying emissions. It offered means of support to poorer countries through the establishment of Adaptation Fund and through mechanisms designed to incentive investments in the developing world.

Sagarika: I think the US is not a supporter of Kyoto.

Saketh: You are right. US withdrew support to the treaty in 2002. Russia signed up in 2004 which meant Kyoto had 55 enough for it to come online in early 2005. Despite best efforts, green house gas emissions continue to rise. It threatens sustainable development and puts millions of people at risk over the coming decades.

Saketh: yes. But, one thing is clear. Emissions among those countries under Kyoto Protocol have generally fallen but the rate of carbon pollution has soared. Biggest rises are in US and Canada.

Anish: Kyoto protocol period ended in 2012.

Saketh: Yes. It was the end of first commitment period. But there was an amendment to the protocol at Doha and it was extended to run until 2020.

Sagarika: There is also the Paris Agreement.

Anish: Yes.

Sagarika: Anish ji. We have reached Eluru. It's nearly 7pm now.

Anish: Yes. It takes nearly 90 minutes to reach Vijayawada. We shall eat something. I see fruits at that stall on the platform. I shall get down and bring bananas and apples.

Saketh: Ok Anish. We will wait in our seats.

SCENE-3

Anish: Madam and Saketh take the fruits.

Sagarika: Thank you, sir. Train has started. Look there, sir, two gentlemen are coming this way with their suit cases.

Anish: Oh! They are my friends Dr Teja and Dr Akash. Both are scientists.

Anish: Hi Dr Teja. Hi Dr Akash.

Dr Teja: Hi Anish. We have our berths next to you.

Dr Akash: Anish, we are returning to Chennai after organising a seminar on climate change for farmers and students.

Anish: Dr Teja and Dr Akash, Please keep your luggage there and come here. We can chat for some time

Dr Akash: Thank you Anish. We will join you in two minutes.

Anish: Both of you, sit here. By the way, please meet Dr Sagarika and Dr Saketh.

Sagarika and Saketh:

Good evening sirs.

Anish: We have been discussing climate change and control of green house gas emissions.

Sagarika: We had a discussion on Earth summit, UNFCCC and Kyoto Protocol.

Saketh: Teja sir, we wish to know more from both of you. We just stopped at Paris accord.

Dr Teja: Oh! You have chosen a good topic for your discussion during journey time. Dr Akash also knows many details.

Dr Surya: Ok. Paris accord is the world's first comprehensive climate agreement. It was negotiated by representatives of 195 countries at the Conference of Parties of UNFCCC at Paris in November 2015. The agreement dealing with GHG emissions, adoption and finance starts in 2020.

Ashrita: Sir, how many countries ratified it so far?

Dr Akash: As of December 2016 132 countries ratified the Paris Agreement. It entered into effect on 4 November 2016.

Sagarika: What is the aim of the agreement?

Dr Teja: I will tell you madam. The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise well below 2^oC above pre-industrial level. It would also pursue efforts to limit the temperature rise even further to 1.5^oC.

Dr Akash: The agreement also aims to strengthen the ability of countries to deal with the impact of climate change.

Sagarika: What are the obligations of the parties to the agreement?

- Dr Akash:** The agreement requires all parties to put forward their best efforts through nationally determined contributions.
- Dr Teja:** One more thing. There is a mechanism to contribute to the mitigation of green house gases and to support sustainable development. It is informally called Sustainable Development Mechanism.
- Saketh:** I think Government of India is taking steps to respond to climate change.
- Dr Teja:** Yes. India is committed to UNFCCC and Kyoto Protocol. The Union Environment minister announced in December 2016 that India would start preparing for implementation of Paris Agreement from 2017.
- Dr Akash:** India has a global share of GHG emission at 4.1% and is highly vulnerable to impacts of climate change. So, India has a comprehensive framework of legal and institutional mechanisms to address environmental challenges. It has initiated several environmental-friendly measures particularly in the area of renewable energy.
- Saketh:** Some steps are required under Paris Agreement.
- Dr Akash:** Yes. India announced its new climate plan known as the Intended Nationally Determined Contributions.
- Sagarika:** What are the basic objectives of the climate plan?
- Dr Akash:** Our country is committed to invest in tackling climate change while addressing poverty, food security and access to health and education. The Action plan also prioritises efforts to build resilience to climate change.
- Pantry car boy:** Dinner at Vijayawada....Do you have any order?
- Anish:** Ok. 6 plates of vegetarian meals.
- Sagarika:** No full meal sir. I take light meal, dosa or chapati only. Of course, Ashrita will take meal.
- Anish:** No problem, I will change the order. Boy, take the order for 5 meals and two chapattis.
- Boy:** Ok sir.
- Sagarika:** Let us resume our discussion. What is the role of IPCC ?
- Ashrita:** IPCC is Intergovernmental Panel on Climate Change. Isn't it madam?
- Sagarika:** Yes. You are right Ashrita. Let us listen to Dr Teja.

- Dr Teja:** The IPCC is playing a key role. It has observed that the long-lived gases would require immediate reductions in emissions from human activities of over 60% to stabilise their concentrations at today's levels. The IPCC predicts a rate of increase of global mean temperature of about 0,3⁰C per decade and average rate of global mean sea level rise of about 6cm per decade during the next century.
- Dr Akash:** IPCC has noted that industrialised countries and developing countries have a common responsibility in dealing with the problems arising out of climate change.
- Anish:** What are the measures suggested by the IPCC?
- Dr Teja:** IPCC has identified measures at national, international and regional levels to reduce GHG emissions.
- Ashrita:** What are the measures, Teja Sir?
- Dr Teja:** IPCC has suggested measures such as improved energy efficiency, use of cleaner energy sources and technologies, improved forest management, phasing out chlorofluorocarbons under the Montreal Protocol etc.
- Sagarika:** Agricultural practices are also contributing to GHG emissions.
- Dr Teja:** IPCC has taken note of it. It has suggested improved livestock management, altered use and formulation of fertilisers and other changes to agricultural land use without affecting food security.
- Vikas:** I remember that the IPCC has recognised that human mobility is intrinsically related to climate change.
- Anish:** Recently I read an article in Science Reporter on Climate Refugees. Some countries are largely interested in setting 1.5⁰C as an absolute limit for temperature as the fear that sea level rise could wash off their nations from the world map.
- Dr Teja:** Yes. I also read that article. Extreme weather events due to climate change can lead to human mobility and displacement within a country or cross border. India is vulnerable to land and water related disasters and may experience intrusion of refugees which will create pressure on the available resources.
- Dr Akash:** India has always welcomed and helped refugees. However unwanted intrusion of refugees poses a serious problem. Measures are to be taken to handle the problem of climate refugees.

Ashrita: There was a meeting at Marrakech, Morocco last year.

Dr Akash: Yes. It was held from 15-18 November. It was the 22nd session of conference of parties to UNFCCC. It was also the first meeting of the Governing Body of the Paris Agreement.

Sagarika: What was the outcome of the conference?

Dr Akash: The conference proclaimed, "The extraordinary momentum on climate change worldwide is irreversible. The year 2018 was set as the deadline for completing all details of decisions to fully implement the Paris Agreement.

Akash : oh, it's Vijayawada station.

Pantry car boy: Sir, this is your meal. Madam, tiffin for you. Take water bottles too.

Anish: We all had a very good discussion so far.

Dr Teja: Anish, we have to come back next week to participate in a second conference in continuation of the first. We will discuss with farmers, business people and others on all aspects global response to climate change which we discussed so far.

Anish: I am hungry. Let us start eating.

Sagarika: Ok. You all go ahead with your food. I will take my tiffin later. It's 9 O' clock. I will tune in AIR for news.

Scene Ends.

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