

**Episode 49**  
**Title - To what extent We are ready?**  
**The mitigation Measures**

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**Synopsis :**

We all are very well aware of the crucial situation of our planet earth and its climate. So, the need of the hour is finding mitigation measures which are not only feasible but also applicable to the current scenario and situation. The episode highlights the issues along with the available and planned mitigation measures, policies, plans and actions.

***Cast :***

**Dr. Murty - Professor (Age - 52 years)**

**Mrs. Murty - Housewife (Asthmatic patient) (Age - 46 years)**

**Aaditya - Son (Age - 19 years)**

**Dr. Rawat - Climate scientist (Age - 42 years)**

**Dr. Rati - Science writer (Age 32 years)**

**Narrator** - The earth's climate is a complex system, resulting from an aggregated interaction of many components such as the ocean, the atmosphere, human beings, and living organisms like forests and the biodiversity... The earth's climate has changed over the millennium, but what is causing concern is the projected rapid rate of change in the earth's climate due to increased human activities like energy use, industrial processes, agriculture and land use, land use change and forestry... India's agriculture, water resources, coasts and islands, and population health are vulnerable to climate change...

(Scene 1 - Ambience of a person speaking... followed by clapping and cheering... People start moving out of the conference hall, sounds of people chatting, chairs moving, people walking)

**Dr Rawat** - Hello Dr. Murty, your speech during the Conference on 'Climate change and India' was inspiring.

**Dr. Murty** - Thank you... I would also like to thank you for inviting me to address this illustrious gathering on "Climate Change and India" and also for the warm and generous hospitality extended to me.

**Dr. Rawat** - The pleasure is all ours Sir... Hello Mrs Murty, How are you ? How did you like the conference ?

**Mrs Murty** - It was a great experience. Marrying Dr Murty almost four decades back, and living with him since then, makes me half scientist already, that is Why I insisted him to bring me here for the conference. Meet our son Aaditya, he is a science student and is very much interested in climate studies.

- Dr. Rawat** - Hello Aditya... Nice to see your interest in our subject...
- Aditya** - Hello uncle... By the way climate is not only your subject... It is everyone's subject... We all are responsible for it... so we all need to take its responsibility.
- Dr. Rawat** - Well said young boy... I feel proud to know that our young generation are so much concerned about the subject...
- Aditya** - Why not uncle. Climate change can have a dramatic impact on our natural resources, economic activities, food security, health and physical infrastructure... I very well understand that India is among the most vulnerable countries in the world to the impacts of climate change.
- Dr Murty** - Developing countries like India are facing dual burden of climate change and global warming. Climate change is one of the most compelling global challenges. According to a report by the National Aeronautics and Space Administration (NASA), the planet's average surface temperature has risen a little more than one degree Celsius during the last century...
- Aditya** - Yes dad, even I have read recently that 2017 was the third consecutive year in which global temperatures rose by a degree above levels recorded in the late 19th century.
- Mrs Murty** - 2017 is past son, 2018 has let even the common man know and keep a track of the Air Quality Index i.e. the AQI. Living in Delhi-NCR makes us so much vulnerable to pollution. Specially asthmatic people like me.
- Dr Rawat** - Sad to hear that Mrs Murty. But matter of pollution is like a drop of water in the sea. Although it affects the most.
- Aditya** - I have seen my mother struggling for breathing.
- (Tea is served to the group with snacks, some noise of cup plates, eating, chewing etc.)
- Dr Murty** - My wife has asthma for last 10 years... And it is aggravating with time... This is no doubt serious for anyone of us, but the major characteristics of climate change include much more than this... like rise in average global temperature, ice cap melting, changes in precipitation, increase in ocean temperature leading to sea level rise, etc.
- Dr Rawat** - The efforts needed to address climate change include mitigating greenhouse gas emissions on one hand, and building adaptive capacities on the other.
- Mrs Murty** - Off course efforts are needed, but...
- Dr Rati (interrupting the conversation) - Hello Dr Murty... Nice to see you...
- Dr Murty** - Hello Dr Rati... How are you ? Meet my wife and my son.

- Dr Rati** - Hello Mrs Murty... glad to see you... Dr Murty...Did you read my latest write up on the mitigation measures for the climate issue...
- Dr Murty** - Not yet Dr Rati... but would love to read it...
- Dr Rati** - I would share the article with you...
- Aditya** - Dr. Rati, can I request you to plz share some valuable inputs with us right now...
- Dr Rati** - Off course, I have tried to list down 10 things one can do about climate change on an individual basis...
- Aditya** - Sounds interesting...
- Dr Rati** - Thanks... Some of them include - reduced methane emissions... It is estimated that this gas alone is responsible for one-quarter of the observed changes in the Earth's climate...
- Aditya** - The energy sector is considered as the biggest greenhouse gas emitter in India...
- Dr Rati** - True... Second major issue is with use of renewable sources of energy... Time has come when we have to recharge our renewable sources... and use them mindfully...
- Dr Rawat** - Both the issues handles are appreciable... With renewable sources, one must also take care of the transportation which adds to the pollution level leading to climatic hazards...
- Mrs. Murty** - And my asthma too... I can't move out on city roads without my mask... And above all this people keep smoking as well...
- Dr. Murty** - Yes... Aditya you did a science write up on the same for school science competition as well... This topic is of interest to all levels...
- Aditya** - Yes Dad... Topic was "The small changes you can make for the sake of survival"... I added some points like –
- Change to energy-efficient light bulbs...
  - Unplug computers, TVs and other electronics when you're not using them...
  - Wash clothes in cold or warm water... not hot water...
  - Dryers are energy hogs, so hang dry when you can and use dryer balls when you can't...
  - Look for the Energy Star label when buying new appliances.
- And there were some more like that only...
- Dr Murty** - Aditya... so much for the urban sector and no mitigation ideas for the rural ones...
- Aditya** - No Dad... Rural communities are highly dependent upon natural resources that are affected by climate change... Due to this they are facing issues of migration, economic instability, livelihood etc...

**Dr Rawat** - Serious concerns Aditya... They suffer crop and livestock loss from severe drought and flooding, shifts in planting and harvesting times, and large-scale losses from weather-related disasters...

**Aditya** - Right now we are not ready to fight the natural calamities... but I have suggested many measures for rural areas as well... like in case of water conservation, I suggested villagers to dig water bodies and make efforts to keep them clean by not bathing and washing clothes in the river or pond nearby... Also in agriculture sector - I have suggested to grow crops that need less water and to change the pattern of crops every year or two...

**Mrs Murty** - He won first prize for suggesting these energy saving ways...

(Everyone laughs, All of them have finished their tea)

(Scene change - They move on to the garden, chirping of birds, sound of watering of plants, cool breeze flowing)

**Dr Rawat** - Come Sir, Mam... I would show you our campus here...

**Mrs Murty** - Very beautiful place Dr Rawat... I must say - very well maintained and designed...

**Dr Rawat** - Thank you Mam... This place is designed and planned with a futuristic approach...

**Aditya** - Yes, I have already taken a round in the morning... I could see some solar panels in the backside of the building...

**Dr Rawat** - Yes, we have added this some 5 years back and I can proudly say we have saved and managed a lot of heat and light energy...

**Dr Murty** - Brilliant work... Solar panels are common these days... people are using them and they can be considered as a small but efficient step in the direction ahead...

**Dr Rawat** - As we already discussed renewable energy's importance in climate change scenario... I want to point out here that India has already implemented two major renewable energy-related policies... First, the Strategic Plan for New and Renewable Energy, which provides a broad framework... Second, the National Solar Mission, which sets capacity targets for renewables...

**Dr Rati** - Another landmark in climate mitigation can be achieved by increasing the capacity of carbon sinks, through reforestation...

**Dr Rawat** - This is a rule in our campus that whenever a new student joins we rope a plant in his/her name... We make sure that these plants are nurtured...

**Dr Murty** - Very impressive Dr Rawat... Where are you lost dear wife...

**Mrs Murty** - I am just looking at these posters... They are creating an alarm in my mind...  
The first one reads - The world has seen maximum rise of CO<sub>2</sub> in 800,000 years...

**Second one goes like** - Natural Disasters have caused 600,000 Deaths Over the last 20 Years...

- Third one says -** The Arctic would be ice-free by 2040...
- Dr Murty -** Deadly facts with great art work... But there are much more than this... See how they have presented the recent reports...  
Number 1 here is Intergovernmental Panel on Climate Change i.e. IPCC report - I remember it warned that global warming is occurring faster than anticipated and that it can have devastating impacts if steps are not taken to cut down emissions...
- Dr Rati -** I referred to this report for my article... Also, The National Action Plan on Climate Change i.e. NAPCC which outlined measures on climate change related adaptation and mitigation while simultaneously advancing development...
- Aditya -** This is the most severe one : World bank report warns overall 600 million Indians will be moderately or severely affected by changes in temperature and rainfall...
- Dr Murty -** I went through this report... It highlights serious concerns...
- Dr Rawat -** Concerns are everywhere here Sir... Look at this graph on the World structure, which clearly indicates - Global Carbon Emissions jumped to all-time high in 2018 and almost all countries contributed to the rise, with emissions in China up 4.7 per cent, in the US by 2.5 per cent and in India by 6.3 per cent in 2018.
- Mrs Murty -** These facts are just for show off or they mean something to the students and the faculty here...
- Dr Rawat -** No Mrs Murty... We keep on repeating these facts to our students and visitors... We often pledge for a clean and green city... Most of the existing habitats will become unsuitable as global warming intensifies...
- Aditya -** No doubt... Look at these data... come here... India accounts for about 5% of global emissions.... India's emissions surged 65% between 1990 and 2005 and are projected to increase another 70% by 2020...
- Mrs Murty -** But we are not that bad... This board reads - On a per capita basis, India's emissions are 70% below the world average and 93% below those of the United States...
- Aditya -** Mom, You have this positive attitude to almost everything... Even to the climate change and global warming issues...
- Dr Rati -** Look at this beautiful Yak picture here... Ohhh ! But it reads that Yak is facing the threat of gradually rising temperatures in the Himalayan region...
- Dr Rawat -** There are many such stories here Dr Rati... Like this one - Farming of 30 traditional crops has been abandoned in Pithoragarh district of Uttarakhand in the last one decade due to climate change and migration...
- Dr Murty -** I know this is a study by Wildlife Institute of India, Dehradun... Issues and concerns have been raised all over but where are the solutions... Like Dr Rati and Aditya were discussing some big and small ideas of combating climate change...

- Dr Rawat** - We have dedicated this area near the entrance for the same Dr Murty... Very soon this wall would be flooded with mitigation ideas...
- Aditya** - Sir, do put the ideas that I have highlighted in my paper - like use renewable sources of energy like sun, wind and water wisely... Use less, waste less...
- Dr Rawat** - Sure Aditya... We would certainly look forward to that... Also Dr Rati, do send me your article and research... I would ask my team to do the needful...
- Dr Rati** - Off course Dr Rawat... India has a number of policies that, are contained in the Five Year Plans developed by the Niti Ayog... I have read them and would like you to highlight the same...
- Dr Murty** - India is one of the countries most affected by climate change... The threat is especially severe in places where people's livelihoods depend on natural resources...
- Dr Rawat** - That is why, the NAPCC had highlighted 8 missions, as a result of which India is now better prepared to deal with the multi-faceted nature of climate change...
- Dr Murty** - I am not very sure about the last line that you said Dr Rawat... The current challenge is to develop a cross-sectoral, integrated Approach...
- Aditya** - Anyways Dad, why don't you suggest some case studies here...
- Dr Murty** - These initiatives have been operated at the national, state and local levels... A couple of them I remember by heart... like the change in rainfall pattern in the Himalayan region of Uttarakhand...
- Dr Rati** - I was telling you about my article... where I have mentioned some mitigation measures... One major among them is Sustainable livelihoods need to be created in millions...
- Dr Rawat** - Even I have listed my concerns and its impact... although it is not published anywhere but I have kept it ready for people like you who can use it as per their convenience...
- Dr Rati** - What's so special in that Dr Rawat ?
- Dr Rawat** - First and foremost, I have highlighted the adverse impacts of Climate change on food production...
- Dr Murty** - When we look towards rural india, the situation is even more critical... Agricultural production is vulnerable to climate risks... it is considered as the worst affected...
- Dr Rati** - I have addressed this concern in my article saying - Agricultural research in India must lead to the discovery of varieties that can withstand adverse climatic conditions and thus meet the demand for food grains in the country...
- Dr Rawat** - It seems some telepathic connection between both of us... What say Dr Rati ?

**(Dr Rati and everyone laughs)**

- Dr Rati -** Agricultural production is extremely vulnerable to underlying climate risks such as drought, intense and erratic rainfall, and temperature shifts... Adaptation to climate change I agriculture can help reduce farmer's vulnerability...
- Mrs Murty -** I had a word with my in-laws who live in villages before coming here... The concerns there are a bit different...
- Mr Murty -** Yes, Adaptive capacity in poor rural areas is are often limited... Here people live on subsistence agriculture and generally have little formal education...
- Dr Rawat -** Yes Sir, that's why we send our students and colleagues to rural areas with strict instructions to not only give climate change-related information but also give access to social, economic, institutional, and technical resources...
- Dr Rati -** During my research I came to know about this village called Sahel... where small-scale farmers in drought-prone areas have always autonomously adapted to changes in climate... They have used drought-adapted crops such as sorghum and adjusted their production practices... Also they are using hand-dug wells to irrigate their fields when there is low rainfall...
- Dr Murty -** India's National Action Plan on Climate Change focuses on four areas that are relevant for the endeavours of India's agricultural sector to adapt to climate change - dryland agriculture, risk management, access to information, use of biotechnology...
- Dr Rawat -** What you have to say about our water resources?
- Dr Murty -** We are wasting the water resource... We have exploited our Underground water reserves... And utilise water from rain and the melting of Himalayan glaciers... rest drains down to the sea... No concern on saving water...
- Dr Rati -** Exactly Sir, So I propose - India needs to construct many thousands of check dams with the participatory efforts of the local community to store water during the rainy season for drinking, agriculture and other industrial requirements...
- Dr Rawat -** Great idea Dr Rati... Although villages have this tradition of saving water either from rain or by digging water bodies on their own...
- Dr Murty -** Even National Action Plan on Climate Change (NAPCC) is committed to promote civic and state action for water conservation... It has also brought attention to areas where water is over-used... and comes up with plans to increase water use efficiency by 20 %...
- Dr Murty -** Next major concern for we Indians is Human health... Global warming exacerbate incidences of malaria, dengue fever, measles etc., and also deaths from heat stroke and scarcity of drinking water...
- Dr Rawat -** We have mentioned here in one of our posters about this concern... plz see...

- Dr Rati** - We need to address this by investing a substantial amount in the health sector to provide primary health facilities, particularly in rural India where about 75% of the population lives...
- Dr Murty** - Brilliant Dr Rati... although developing countries like India do not have any binding commitments to reduce greenhouse gas emissions...
- Dr Rawat** - But, India has initiated several co-ordinated climate research programmes to assess and understand the implications of climate change, and to enable the country to frame regulatory measures and policies...
- Dr Murty** - I completely agree with you and I appreciate this as well, but even if we start these efforts today, it will take a few decades to come to the original...
- Mrs Murty** - I am not living so long to see the results...
- Aditya** - Mom please stop it...
- Mrs Murty** - I am kidding son... I am sure our new generation like you and Dr Rati, would surely don't let our earth suffer anymore... I am proud of you...
- Dr Murty** - Okay Dr Rawat... I would take your leave now... Would like to reach the guest house and relax for some time before we board our flight at 11.30 in the night...
- Dr Rawat** - Thank you so much Sir... It was really and honour to have you with us today...
- Dr Rati** - Good bye Sir, It was really nice meeting you Mam... Would definitely come to see you in Delhi soon...
- Mrs Murty** - Most welcome...

**(Everyone bid bye)**

**THE END**