

Episode - 28
Title - Don't turn your face away

Writer - Dr. Anurag Sharma
Transcription – Ms. Neha Tripathi

Cast :

Dr Kishan - Litterateur (Age 50 years)
Dr Uma - Senior Wildlife Scientist
Dr Sarika - Uma's associate and senior weather scientist
Dr Sophia - Uma's associate and senior environmental scientist

(Morning scene, sound of cup-plate)

Dr Kishan - Uma, tea is very good... This is the pleasure of beginning of my novel or you are just practicing today as your associate Dr. Sarika and Dr. Sophia are coming...

(Dr Kishan laughs)

Dr Uma - I have not made the tea... Manisha has made it... She has no time from cooking and washing utensils... How would she read or know your novel...

Dr. Kishen - What an irony... I write for you all and you don't show interest in my novels... and critics flaunt in the name of Hindi and society...

Dr. Uma - Then, if you had taken science along with Hindi then everything would have been based on the experiments of logic and science...

Dr. Kishan- Hey, you are a wildlife scientist and have always been associated with science... Science or literature, the people are from the same society... now if the vision of the society will be correct, then every area of research will be in the right direction...

Dr. Uma - You are smart enough to manipulate every achievement of human being as a gift of society or the distortions of the society... but I will have to appreciate your ability to deny all the evidence of the age of science...

Dr. Kishan - Hey, I am appreciating your science knowledge as well... To fulfil our dreams we have exploited our earth... now the earth has become the enemy of human civilisation...

Dr. Uma - Well, I agree with you on this topic... but science is not the only one at fault... main culprit is the greedy nature of humanity... and for this the literary people like you should have worked on...

Dr. Kishan - We had to work ? Uma, we have to show everything the way we see them, and tell the story of human beings and the society... Actually we show mirror to the society...

Dr. Uma - Yes... and leave the responsibility of global warming to science... right ???

Dr. Kishan - Yes, it's like that only... By the way, cold is breaking all records and you are pointing fingers at global warming...

Dr. Uma - So, the famous Hindi scholar is unsure about the evidences of global warming in the world...

Dr. Kishan - The famous wildlife scientist Dr. Uma ji... I see global warming as a game of unanimous evidence gathered by a scientist to prove his theory... I am thinking that I should write an article... Global Warming - a so-called science...

(The bell rings ...)

Dr. Kishan - Looks like your friends Dr Sophia and Dr. Sarika have come... I would open the door for them...

(Sound of door opening...)

Dr. Kishan - Hey Namaskar Sophia hi... Namaskar sarika ji...

Both - Namaskar Dr. Kishan...

Dr. Kishan - We were just waiting for both of you... come in...

(Sound of footsteps)

Dr. Uma - Come on, So, You both are on time today... Last time you were supposed to come in the morning and we met for dinner...

(Sharp laughing ...)

Dr. Sarika - Last time, it was just a casual meeting, this time we have come for a purpose... So we have come on time...

(Laughing ...)

Dr. Kishan - You guys start up your important work... I will get you all some coffee...

All - wow... wow... sure...

Dr. Sophia - Well Uma, last time he even cooked for us... It seems there is not much to do at the university...

(Laughing ...)

Dr. Kishan - Dr. Sofiya... I am just enjoying my work...

(Laughs...)

Dr. Sarika - Dr. Kishan... you enjoy your work... We are happy for you...

(Sharp laughing ...)

Dr. Kisan - I bring coffee for all of us...

Dr. Uma - So what is the important work ?

Dr. Sophia - Dr. Uma, actually one of my student's paper is being published in the International Environment Journal... I just wanted to show you once...

Dr. Uma - Oh wow, congratulations, It's impact factor is 4...

Dr. Sarika - Yes ...

(Voice from inside ...)

Dr. Kishan - Now what is this impact factor?

Dr. Sarika - So you are listening to everything...

Dr. Sophia - Dr. Kishan, You know that the more is the impact factor, the more effective the journal is... and the better your research paper is considered... Your work is acknowledged in the scientific society too...

Dr. Kishan (Coming to the room) - Just had to hear it, Dr Sophia... Now also tell me, what are the chances of the research paper to be genuine and non-manipulative if it is published in a journal of impact factor more than 2... And there would be some possibility of a good research paper will be published in a Journal with a very low impact factor ?

Dr. Sarika - It can be, absolutely ...

Dr. Uma - From this morning, his literature is raising questions on every investigation conducted by the brain science... The quarrel of art and science is old ... By the way, What is the subject of Dr. Sophia's paper?

Dr. Sophia - Evidences of Global Warming...

Dr. Uma - Evidences of Global Warming... Now speak Dr. Kishan...

Dr. Kisan - Here is the coffee and the subject is of my interest... Dr. Sophia, are we getting some real evidence, or we still bring evidence from such places... so that we can justify our concept...

Dr. Uma - See how much bigger accusations have been put on our scientific work ...

Dr. Sarika - Dr. Kishan, Now the evidences are proving the old assessments...

Dr. Kishan - Like ?

Dr. Sophia - Dr. Sahab, now because of global warming, you are aware that the problem of greenhouse gases in the environment is increasing... due to which the temperature of the earth is rising which is resulting in climate change and rise in sea level...

- Dr. Kishan** - Yes I know that... There is a crisis on biodiversity... there must be a change in the crop circle as the cycle of rain is changing... Even then, what is the biggest evidence of crisis in front of us today ?
- Dr. Sarika** - Hey Kishan ji, the humanitarian activities are responsible for global warming... We have lost a mammalian organism Melomis because of this...
- Dr. Kishan** - Melomis ? I have never heard of this and how did it end with our activities ?
- Dr. Uma** - Dr. Saheb, A species of rat that is called Melomis... which were found in a small island breamble in Australia's Great Barrier Reef... and due to human activities, it is now the first mammal to get extinct from the earth...
- Dr. Kishan:** Hey, it must have been hidden in a burrow...
- Dr. Sophia** - That's what happened... Due to rise in sea level, water entered the burrows of melonis... destroying its habitat...
- Dr. Sarika** - You know Dr. Kishan, People used to get idea of the amount of rainfall by the height of the burrows made by these rats... but now its residence and the reproduction area is all over...
- Dr. Kishan:** Ohhhhhh, the threat is really on a high...
- Dr. Uma** - Yes, of course, let's see Dr. Sophia's paper and we can keep our discussion going...
- Dr. Sofia** - Okay, Dr. Uma, first of all, we researched around the coastal areas... Dr. Kishan, do you know that coastal areas are those areas where land and sea meet and are unique because they are also affected by land, ocean and even the atmosphere...
- Dr. Sarika** - Well said Sophia... They provide a wide variety of natural scenes spread over a very large area and with them the large clusters of animals and plants, provide a great variety of natural habitats... These coastal habitats support many species of plants and animals... The interaction of terrestrial, marine and atmospheric factors make these natural habitats an important ecosystem...
- Dr. Uma** - Now look, most coastlines in the world are being affected by human pressure... Many areas are extremely busy ports... As of 2007, sixty percent of the world's 50 million population, 39 Metropolis cities, were located within 100 kilometres of the coast... It includes 12 cities with population of more than one crore people...
- Dr. Kishan** - Why are you trying to explain to me in such detail... I know this much... I will share my knowledge with you... Two centuries ago, the industrial revolution led to burning of fossil fuels and cutting of forests... Suddenly, a trend that has been growing continuously since then... Due to this, greenhouse gases like carbon dioxide and methane have increased alarmingly rapid levels in the atmosphere, which is increasing the temperature of the entire world and is affecting the climate...
- Dr. Sophia** - We are very much certain about your knowledge... but you have to believe and rely on scientific methods too...

- Dr. Kishan** - Thank you, Sophia ji, let me explain a bit more then you can tell us about more evidences... Now, like before industrialisation about 10,000 years ago, the concentration of carbon dioxide in the Earth's atmosphere was around 280 ppm i.e. portion per million... Between 2000 and 2009, there was a sharp increase of 2 ppm per year and currently the concentration of carbon dioxide in the atmosphere is 395 ppm... and in the last century the global average surface temperature has increased by 0.6 to 0.9 degree centigrade...
- Dr. Uma** - You said, the rate of temperature rise in the last 50 years has doubled... It is possible that the increase in temperature may seem very low, but it is important to remember that small variations in temperature can bring large and potentially harmful changes in climate and weather... and it is happening as well...
- Dr. Sophia** - Polar frostbites continue to melt due to global warming... because the temperature of the poles is increasing at a rate higher than the global average... When the amount of snow and frozen ice melting is greater than the snowfall, then ice-shield, ice sheet, glacier and sea ice begin to shrink...
- Dr. Sarika** - Yes, Sophia and other polar frostbites also have high albedo, i.e., extreme whiteness... which means they reflect most of the sun's light on its surface... It plays an important role in maintaining the temperature of the Earth... When more and more ice is melt to water, then there is a decrease in whiteness, and more sun rays are absorbed... This makes the heating process faster...
- Dr. Uma** - Sarika, The study in this paper is also important as the warm temperature is also making huge molins... which leads to the water from the top of glaciers to the bottom...
- Dr. Kishan** - What are these molins?
- Dr. Sofia** - These are small tubes made of surface water over the ice... which let the ice melt while flowing... These structures increase the speed of the glaciers, the snow melts more and the glacier flows further towards the sea...
- Dr. Uma** - And as the big ice piece is broken, it starts floating in the ocean as iceberg...
- Dr. Sofia** - Yes, yes... Uma, shrinking the ice cover of the Arctic has a negative effect on the polar bear... Sea ice serves as a hunt ground for these savvy animals... where they look for seals, which are the main sources of their diet... Sea ice is moving away from the ground and due to this, these birds need to swim for long distance in stormy water and face extremely difficult situations, to reach the ice...
- Dr. Sarika** - Now look, in Canada's Hurrricane Bay, the ice-free period has increased twenty days in the last twenty years... During spring, the snow melts quickly, and due to this the time of special weather of polar bear hunting has come down, especially because seal children are born in this season...
- Dr. Uma** - Sarika, so you read this full inscription... Hey, well you are the co-author... What is it, that in the next few decades due to the rising sea of Sheshmaraf, a small village in Alaska, there is a possibility of it getting completely submerged... Is there some data on this...

- Dr. Sofia** - Yes, Dr. Uma, drinking water in this village has already been contaminated with sea water...
- Dr. Uma** - Oh, the source of sweet water has become corrupted due to sea level rise... Then the possibility of life here seems to be ending...
- Dr. Kishan** - Well, what is the status of Greenland? I read a lot about it...
- Dr. Sarika** - In Greenland the ice is melting rapidly... the annual rate of loss of ice between 1993 and 2003 was 50 to 100 billion tons and now it has increased further...
- Dr. Sophia** - Yes Sarika, Greenland's seasonal melting rate of ice is being observed by satellite from 1979... On September 4, 2012, the scarcity of ice in the Arctic Sea was reduced to 34.1 million square kilometres... which was 50 percent lower than the average of 1979-2000... Experts believe that the rate of decline of sea ice is on the rise and it is beyond the forecast made ten years ago...
- Dr. Uma** - Sophia, Now take this... In 2002, the ice fragments located in the eastern shores of the Antarctic Peninsula was separated from the continent of 500 billion tons of snow from the northern part of Larsen B Ice shelf... which got demolished completely, small icebergs were dispersed and completely disintegrated within a month...
- Dr. Sarika** - Yes Uma ji, Larsen A ice shelf, which was two-thirds of Larsen B, was stacked in 1995... In the last five years, Larsen B Ice Shelf has lost 5700 square kilometres and 40 percent of the minimum stable expansion is now left... In the last 50 years, 80 percent of Antarctic glaciers have shrunk like other glaciers in the world...
- Dr. Sophia** - Now it is not that the figures have been submitted recently, one of our support groups found that in Antarctica, a small fish creep population has fallen almost 80 percent since 1970... Perhaps an increase of 2.5 degree centigrade in temperature from this region in 1950 has been responsible for this decline... The source of food for many organic organisms is crill, many of which are professionally important, and as a result of this, fisheries have been affected because the southern ocean is valuable resource for fisheries...
- Dr. Kishan** - Just tell me whatever is happening is carbon dioxide only responsible for it ?
- Dr. Uma** - Well there are many factors and there are many Green House Gases... but the amount of carbon dioxide is increasing due to the burning of fossil fuels present in the environment... And this carbon dioxide is being absorbed by the sea... Because of which the sea becomes more acidic... The increase in the amount of carbonates in sea life increases the amount of acid in the sea... It also affects the formation of a shell of marine creatures and making skeletons... Increase in acid dissolves the shells and skeletons...
- Dr. Sophia** - Well said Uma, now look, Australia's Great Barrier Reef is the world's largest biological structure... It is a very big ecosystem, in which more than 1500 fishes, more than 400 species of corals are found... In the last 50 years it has decreased by 50 percent... Since 1990, this new area has decreased by 14 per cent... One of the main reasons for this is acidification... During the year 1980 and 1997, 370 incidents of bleaching of the corals have occurred... There have been 3700 such cases from 1998 to 2010...

- Dr. Kishan** - hmmm...
- Dr. Uma** - What hmmm... We are telling you so many facts... So give them some place in your literature...
- Dr. Kishan** - I will write... I will write... but let me collect some more solid facts...
- Dr. Sophia** - Kishan Ji, Now if the carbon dioxide is increasing in the environment... its direct effect is on the nutritional value of plants... If the carbon dioxide is high, then nitrogen is less absorbed in the leaves, due to which, the organisms depending on them like Kula, Panda etc. would not get proper nourishment, and then gradually the species would end...
- Dr. Uma** - Now take the farm... all the crops, trees, fruits, flowers in the whole world flourish according to the conditions of the climate and the land in that area... Therefore, we get different tastes in every season, from different fruits, vegetables, grains etc... If climate change continues, then there is a great fall in crop yields too...
- Dr. Sarika** - Well said Uma ji, if the average temperature continues to increase in India... it will have the worst effect on India's food security and water resources... The rain-cycle is changing due to hot soil... which also affects the crop cycle... Most of the world is based on farming season... About 60 per cent of farming in India is dependent on rainfall...
- Dr. Sofia** - Dr. Sarika, we have assessed that in the year 2009, the lack of monsoon has reduced food production by about 20 percent... In 2009, a widespread drought and fierce flood continued drying up and dropping crops... The demand for crops like pulses, oilseeds, sugar, onion and potato was not being fulfilled, due to which the prices have touched the sky...
- Dr. Kishan** - The farmers also suffer and people who consume expensive pulses, vegetables etc. also suffer...
- Dr. Uma** - Also Kishan, due to lack of farm-centric agricultural marketing, the inflation of food and rural poverty is at high... The present government is changing the system and trying to bring the market directly in the hands of farmers...
- Dr. Sarika** - One more thing, the Food and Agriculture Organisation of the United Nations, FAO, has calculated that at this time the number of poor in the world, who sleep hungry, has reached more than one hundred million, and this is the biggest cause of hunger... Prices of main food like wheat, rice and pulses has increased... Above all this, the threat of climate change is on the rise and the productivity of agriculture is declining... Therefore, ensuring food security has become a big challenge for us now...
- Dr. Kishan** - Sarika ji, I had read that the Indian Council of Agricultural Research has prepared a report based on the study of its network projects... The impact of climate change on global scale in this report will be reviewed on what will happen to the country's agriculture... It was revealed by the collective efforts of around 15 institutions that if new technologies were not utilised, then only one degree centigrade increase in temperature would lead to the possibility of a shortfall of 60 lakh tonnes in wheat production...

Dr. Sophia - You are right Dr. Kishan... and if the estimation of this financial loss at the present value of wheat is done, then the loss of 1.5 billion dollars i.e. approximately 7500 crores rupees will occur each year... This type of loss is estimated in other crops and in this way, the total income of farmers in India can be more than \$ 20 billion in loss, i.e. about 100 trillion rupees i.e. loss of around one lakh crores, which will not be easy to bear...

Dr. Uma - Sophia, ICAR scientist Dr. P.K. Agarwal says that due to climate change, shortage of 39 million tonnes in wheat production can be seen in next ten years... Scientists say that it is necessary to set up early varieties of wheat but after the harvesting of paddy in the Ganges area, the fields are not available immediately for wheat... Agricultural scientists say that unless new technologies are developed and farmers will not adopt them on a large scale, it is difficult to deal with global warming...

Dr. Sarika - Uma ji, Studies conducted by agricultural scientists have revealed that the impact of climate change on paddy which will occur during the kharif season will have a big impact... Paddy production will decline 6.7 percent by 2020 and 15.1 percent by 2050 and by the end of the century, the paddy production will fall nearly by 28 percent...

Dr. Sophia - Sarika, that's not all... if the average temperature is increased by 1 to 4 degree Celsius, then 5 to 40 per cent of potato and 11 to 36 per cent of soybean production will decrease... We can think that global warming can feed the country where lakhs of people are already starving...

Dr. Kishan - That means... no pakodas...

Dr. Uma - Obviously...

Dr. Kishan - Then, I would just make it...

Dr. Uma (laughing) - You sit, I will get it... and now there will be tea in place of coffee...

Dr. Sarika- Yes tea and pakodas is a good idea...

(The sound of footsteps)

Dr. Kishan - Dr. Sophia, there is also some crisis on milk production ?

Dr. Sophia- Yes, Kishan ji, one of the the immediate impact of climate change and the most prominent among them is milk production... Due to climate change, there has been a reduction of about 18 lakh tonnes of milk production in India... The main reason for this is that hybrid breeds have failed to cope with climate change... Scientists claim that by 2050, milk production of 50 million tonnes would be ruined because of global warming and global hybrids and buffaloes will be more affected, not our native cows...

Dr. Sarika - Kishan Ji, Studies have also revealed that the water level of the oceans has been rising almost 10 centimetres... The climatologists had warned that the continuation of the collection of carbon dioxide and other green house gases in the atmosphere would also increase the temperature of the earth and due to the increase in temperature, the speed of ice melting of glaciers and buffers cause the sinking of sea

coastal areas... The danger will increase, the rising levels of the oceans will immerse thousands of islands like the Maldives... In the coastal areas, the salt water of the sea will spoil the underground water, and soil will not be allowed to be cultivated...

Dr. Uma (shouting from the kitchen) - Along with the humid lands near the shores and the natural systems of mangroves i.e. mangroves can be in danger... With increasing temperatures, the speed of melting glaciers has increased and the water levels of the oceans have risen... Climate change is coming from the heat of the earth, which is becoming a dangerous form for all living beings including humans...

Dr. Kishan - Uma, you come here... I would do the rest of the work in kitchen... (laughs) yes, now one thing has become clear that only human can be blamed for this crisis... because of its greed, humans have done the indiscriminate exploitation of natural resources... which has brought the earth to this destruction... Gandhiji had rightly said that there are sufficient resources in nature for human needs, but not for greed... At present, around two percent of the people have 80 percent of the resources in the hands of the people... Then it will be called greed... what else...

Dr. Sarika - Well said Dr. Kishan, we have already started feeling the heat... A glimpse of what is going to happen next, with melting temperatures, the melting of the North Poles gets mixed with ice... Glaciers of the Himalayas are slipping backwards at the speed of 15 meters per year since the early 1970s... It is estimated that in the second half of the twentieth century, not more than 1,700 species of plants, beasts and insects have been affected every year and their migration rate has been measured... The monsoon is changing its way, it is not visible in Maharashtra and Gujarat, but the floods in Barmer in Rajasthan and drought in the North Eastern regions are clearly visible...

Dr. Kishan - I think we are now stuck in a vicious cycle... I was just reading yesterday that even if 30 percent reduction in emissions of carbon dioxide has been cut, then the ratio of poor in the world will increase by 17.5 percent... The truth is that the use of fossil fuels - coal, kerosene, natural gas, gasoline etc., in the homes, offices, cars, planes and industries - continues to exploit, the future of mankind is in crisis...

Dr. Uma - (from the kitchen) That is why scientists and economists will have to find ways to reduce the emissions of gases at an ever increasing rate for many years...

Dr. Sophia - Now look at the rise in temperature in Holland... butterflies caterpillars came a month early... now till the time the eggs of black terns bird were broken and chickens came out of it, there were no caterpillars for them to feed on... they had already become butterflies... This has led to extinction of Black Terns in Holland...

Dr. Uma - Here comes the pakodas...

Dr. Sarika - You sit Dr. Uma... I will get Tea...

Dr. Uma - Thanks Sarika... So, the well-known fellow and Professor Dr. Kishan... What do you think ? Should we go on and discuss the evidence of global warming... 80 percent of the report is yet to be read...

Dr. Kishan - No Uma... I can see the hard work of you people that the responsibility of protecting the earth is not just yours... We are equally responsible... and I would write on the global warming and life at stake in my next novel...

Dr. Sophia - Oh wow, you would mention the hard work of scientists in your novel...

(Laughs)

Dr. Sarika - Take tea, Dr. Kishan, whether you mention us or not, it is ok... but do mention the danger on the earth and the methods of dealing with it...

Dr. Kishan - It seems that you three would make me a science fiction writer...

Dr. Uma- Then, it is better to write now on the scientific facts... at least something relevant will be written...

Dr. Kishan - So I have been writing irrelevant till now...

Dr. Sarika and Dr. Sophia (together) - Hey just relax, don't get hyper... Yes, the pakodas are hot, they need to be consumed immediately...

Closing with laughter