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Managing Climate Change – A Strategy for India

Centre for Social and Economic Progress (CSEP)
CSEP Research Foundation

6, Dr Jose P Rizal Marg, Chanakyapuri, New Delhi 110021, India

Ph: 011 2415 7600

CSEP Research Foundation

Regd. Off: Second floor, 6, Dr Jose P Rizal Marg
Chanakyapuri, New Delhi 110 021 India
T: +91 11 2415 7600 E: info@csep.org W: www.csep.org

Speaker(s)

Ram Madhav

Author and Founding Member, Governing Council, India Foundation

Montek Singh Ahluwalia

Distinguished Fellow, CSEP

Know More Details: <https://csep.org/WKqnDYO>

Watch the full event video here: https://youtu.be/UIt_CnoYTkK

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Rakesh Mohan:

Thank you Lavish. Let me welcome you all to this special session on 'managing climate change - strategy for India. While I welcome you let me just remind you all to put your cell phones on mute. Or put them off even better. My job is to just introduce speakers. And of course, to welcome you all. Whereas, my colleague, senior fellow Lavish will be moderating the discussion. I will just say a few words. We are of course aware of the huge importance of the climate change problem at all levels. That is community levels, city levels, state level, national level, global level and it is totally inter related in the sense this is one thing in which it cannot be separated. In the sense that there is not much that one particular place can do that will have a huge impact. Therefore, it is very important for everyone to be involved in it. There are huge climate change related challenges ahead. It is of utmost importance in some sense of future generations and also not just future generations but given the age group I see here for the current generation also. Whereas India has been quite proactive on this issue, the task ahead is not going to be easy. We have more difficult problem than developed countries because not only do we have to manage the climate change, manage the energy transition with appropriate investments but also, we have to do that in such a way that we continue growing. Because our key objective obviously has to be growth. Inclusive growth, greater equality and so on. So, we cannot be doing things for climate change at the expense of our growth and at the same time in some sense we have to find ways of matching the two so that they are consistent. Moreover, with the Indian leadership at the G20 this year is both a challenge for us as well as an opportunity to both give our views, but I would also say to listen to everyone else. As much as giving our views to the rest of the world, but also to listen to the others and what we can do on our behalf. The problem has become worse over the last one year because so many of the larger economies are grappling with the economic uncertainty that has risen because of Ukraine war that has brought new challenges. And given all the energy consequences of the Ukraine war that the developed countries have become much more distracted by what they have to do for immediate problems and in some sense a distracted from looking at the longer-term problems. We are now becoming aware as individuals, as people that the extreme weather events are just increasing. Whether it is far away California, huge flood, whether it is Pakistan a huge flood, whether it is issues arising in Joshimath and so on. It is just everywhere. In my memory I can't recall this frequency of natural disasters. What I think is we should also take on board as we discuss in G20 that whereas it is clear that India and other developing countries may not have been responsible for a lot of climate change issues that are taking place, but there is no question that all of us are part of the solutions. We can't keep saying that we didn't do it, so you do it. We have got to do as much as possible as we can while realizing that it is they who did the damage. Going on from that we need to really combine economic and political concerns, social concerns facing these challenges. So given the importance of this issue for us and the world at large and the many difficult actions to be taken it will be essential to achieve a political consensus on the way forward in both the short and long terms, which why we requested Ram Madhavji to be with us this afternoon. So that this discussion can continue to be extended from just expert forums to the larger society that we have. Let me just say a few words about Ram Madhavji. Apart from being a leading politician, he is a social leader, author and thinker. He is the founding member of the governing council of India foundation where he has been the curator of major annual global and national multilateral initiatives. Like the Indian ocean conference, the Dharma- dhamma conference, ASEAN India Youth summit which has involved heads of nations and leaders of governments besides academics and public-spirited

individuals. This sort of context I was saying that we have to engage in much more with the rest of the world. Most recently of course he has been instrumental in ideating the Religion 20 forum as part of India's presidency of the G20. He has of course served as the national general secretary of the Bharatiya Janta Party during 2014-20 responsible for handling the political affairs of Jammu and Kashmir, Assam and North Eastern states of India. He is of course a very active contributor to platforms like Indian express, Hindustan Times and others. He has of course been widely regarded for his contributions in the field of strategic thinking political philosophy and India's foreign policy. Our colleague Mr. Ahluwalia, Montek Singh Ahluwalia is distinguished fellow at CSEP which is probably the most important post he has ever held in his life. He came back to India from the World Bank in 1979 as economic advisor in Ministry of finance. I followed him in 1980. So, we have known each other for a very, very long time. Starting from economic advisory in finance he has been a constant figure as a leading policy practitioner in all governments until 2014. Of course, his last position was the deputy chairman of the planning commission which he held for 2004 to 14. He coauthored the redistribution... I must mention that the first book that he did was when he was at the World Bank. He was I think the youngest division chief of the World Bank ever. I don't think I am wrong on that. Before income distribution etc. became important and people had been concerned about it, he was a coauthor of the book on 'redistribution with growth'. So equitable growth has been his concern right from beginning of his professional life. More recently of course, in February 2020 he published his book 'Backstage – the story behind India's growth years' which of course is his insider's account from 1985 to 2014. At CSEP he has been engaging almost full time to the issue of climate change. So, thank you very much both of you for taking the time to be with us. And Lavish can I hand over to you?

Lavish Bhandari:

Thank you, Dr Mohan. Can I request Mr. Ahluwalia to make his presentation?

Dr Montek Singh Ahluwalia:

Thank you, Rakesh and thank you Lavish for inviting me to introduce the subject. This is a conversation and it is not a long lecture. But I think maybe I will speak for 10 or 12 minutes that will set out the stage. Now Rakesh has already put the broad picture out that climate change cannot be solved by India. Actually, before that let me say, it is going to affect India. Let us have no doubt about it because the way things are going, we can expect to rise in temperature, fall in agriculture productivity, flooding of low-lying areas, definitely a change in the monsoon pattern, change in the distribution of rainfall which could actually mean long periods of drought and long periods of excessively heavy rains, all of which will impose a lot of difficulty. And the sad thing is there is nothing we can do by ourselves that will change this. This will only change if there is a global response to tackle climate change. That is happening in some kind of global format where we are also involved. Now for a long time the debate in India was it is their fault and they should do it, why should we do it, etc. That train has left the station because now the Prime Minister has committed that we will get to net zero by 2070. Many people may think will we be able to do that? But that is a commitment and in fact what they were saying is that we should commit 2050 and quite rightly we have said look you guys should get there by 2040, we will get there little later. Indonesia has said 2060, we have said 2070. So, I am going to take that as fixed. It should be the national objective now how do we get there by 2070. Now those who feel that this is the wrong objective we should have a separate seminar on that. I am

not going to address that issue at all. So, what does it actually mean? I think the first thing we have to realize is the world is not in good shape to achieve the targets that is claimed it will achieve. So let me just go through these slides a little bit. This is a new website on the global state of climate action which is done by the Bezos fund and a couple of others. What they do is they track what is happening. So, they are actually tracking something like 14 areas and within them they have about 31 indicators. So, they are going to track each of these for each major country and based on that tracking they will get a sense of how is the world doing. I just want to summarize what the most recent presentation on this website is. That first, there is only one indicator on which the world is on track. That indicator is private sector companies being transparent in how much CO₂ they are going to be generating. That is the only one where the international judgement is that people are on track. Actually, that is also true for us. I mean they are of course looking at the whole world. But I think our bigger private sector companies are very conscious of this. After all, when they go to Davos and all this, people ask them what are you going to do about your CO₂, when are you going to be net neutral and many of our major companies have set company-wise targets to get to net neutral well before 2070. Nine of these items which include financial assistance to developing countries, removal of fossil fuel subsidies, changing new building regulations, share of electric vehicles, nine of these are off track but not too badly. 21 of them are well off track. In other words, they are pointing in the same direction but the rate at which progress is taking place is so low that you know you are not going to reach your target. And 6 are actually moving in the wrong direction. So, for the world as a whole let us be clear, we are in bad shape. I think between now and maybe the next couple of years in international fora a lot of pressure will develop that what is the world going to do. This will also be pressure on us. We have to look at how do we perform in this kind of sectorally differentiated picture. I have looked at the same thing from an India point of view. Actually, if you wanted to tell the story what is India doing the thing to do would be to ask what are you doing in the power sector. Because, power is 50% of the CO₂ emissions in the country. It is very clear what you have to do. You have to shift from coal and gas-based generation to renewable energy. Now fortunately the technology exists to do that. There are problems we will come to that later. But one is power. Second is transport where instead of using fossil fuels directly to give energy to the vehicle you switch to electric vehicles. Of course, this has to be combined with the electricity becoming renewable. As there is no use having electric vehicles if the electricity generated to charge the batteries is all generated from coal. But I am assuming these two things will go together. The third is industry where you have a lot of hard to abate areas. It is not very easy what to do. But things like cement, things like steel, things like petroleum refining basically instead of using fossil fuels, they can in fact use hydrogen and the idea should be to use green hydrogen. Now green hydrogen raises another issue. You have to have renewable energy to operate the electrolyzer which will produce the green hydrogen. So that if fed back into what you have to do in the renewable energy space. Buildings promote the use of energy efficient design and equipment. This is especially important for us. Because, we are going to the stage of becoming hopefully a middle-middle income country from being a low middle-income country. One of the first things that will happen is more demand for cooling. Frankly if climate change is taking place the demand for cooling will be that much greater. Demand for cooling actually means ACs, insulations etc. There is almost zero thought being given in the buildings that are being constructed to make sure they are energy efficient. I think this is important for another reason also. That is that our urban population at the moment is maybe around 450 million or so. Most people think it will

go to about 700 million by the year 2050. So, 450 million many of whom are very poorly housed, maybe a 150 million of them are poorly housed, have to go to 700 million which needs a lot better quality of housing. After all, if the economy is going to get to higher income levels and so on. So, a huge amount of the building capacity that will exist in India by 2050 has yet to be built. So that shows how far back we are. But it also gives you an opportunity because you can leapfrog. That is not the case in the west. In the west all the buildings they need are already there. Their population is actually going to shrink. So, they have to do retro fitting. That is not the case in India. We have to build these things. So, there is a big advantage. If you can build them from scratch in the right direction. Expanding forestry and what you do in agriculture to reduce methane. That is the range of things and this illustrates the fact that in each of these sectors and you will see when we discuss power it is not a single silver bullet. In each sector there are multiple actions that are needed. So let us look at what we have to do. This is just to give you a sense of how much is needed. This chart is taken from a paper produced in IRADe. Jyothi Parekh and others they are all there at the bottom. This optimizes a way of reducing emissions to get to net zero either by 2050 or by 2060 or what is going to happen on a business-as-usual basis. So, the purpose of this chart is to show you how much we have to go. The brown line on top is business as usual. Whatever progress there is it will keep on happening, slowly renewable energy capacity will also increase and the carbon will shoot up and then come down but not get to zero. The blue is what you need, the model is telling you how to get there. So technically what the model is saying is that technology exists to do it. But we have to see how difficult that is. Even that will require carbon di oxide to increase a fair bit and then come down. Then you have if you want to get to net zero by 2050. Even then there will be some increase but very quickly coming down. The reason I am mentioning this is that too much of when we discuss is everything happening, people say oh, we are building renewable energy capacity. You are going to build renewable energy even in the business-as-usual. The real question is are we even remotely building it up at the scale and pace needed to achieve the end result. The difference between the brown line and let us say the green line because we are not aiming at zero by 2050. Remember the goal of net zero for power by 2060 is consistent with getting to net zero by 2070 for the economy as a whole. Because, power is in many ways the easiest thing to decarbonize because the technology already exists. So that is a huge change that has to be brought about. Now let us see what we need to... I will just speak on this slide and then ask Ram Madhavji to pitch in because this is a conversation. I think this just to tell you what are the areas which we have to pick up. Every one of these areas can become a source of intense controversy. Number one, if you are going to do that much increase in renewable energy the system must be able to finance the creation of renewable energy capacity. Renewable energy by the way is more upfront capital intensive than simply coal. So, the upfront need for investments will be much greater. Later on, we will have benefits, but in the short run you have a bigger burden. Second, if you go to renewable energy then the power is not a steady stream and frankly if you are running a distribution system you want power when people want power. Having a sequence which says in the middle of the day for eight hours we can have a lot of power most of which will be surplus doesn't help. Therefore, you need to combine this with some method of storing the extra power. That brings you into batteries. Now the technology exists at the moment it is expensive. Hopefully it will become cheaper over time. We shouldn't underestimate that because, this is not an Indian problem alone. This is a problem all over the world. Everyone who is interested and capable of technology change will be working on how to handle battery technology. We should be

producing batteries, but also producing ones that are really efficient. The worst thing to do would be to start producing batteries which are a very low efficiency and then get stuck with them for the next 30 years. That is an aspect that you have to think about. When you build in batteries then the power becomes more expensive. Because the cost of storage has to be added. The present position is that if you could use renewable energy when it is produced it is actually cheaper than coal. The problem is if you have to produce it when the sun is shining and then store it when the sun is not shining, it becomes more expensive. So going down this route means either living with more expensive power which also means in turn transmitting that to the users or you have a real problem. How we handle that is an issue. Linked to that is really that if you are going to have intermittency you need to have much greater use of markets. Where there is surplus, they can trade it with others and it is not clear that our electricity markets are flexible enough to do that. We need investments to build transmission capacity. Unlike coal where very often we take the coal from somewhere, put the plant where the electricity is needed, here the electricity can only be generated in certain areas. And it will have to be taken to the rest of the country by setting up a transmission capacity. That will involve both physical planning and financial planning. Our distribution companies are the ones that actually end up paying the producers for power. And their financial position is terrible. Lots of good work being done in CSEP and others on what to do, but frankly our record in being able to persuade people that you have got to get the distribution companies to a financially viable position is terrible. That is a huge political problem. You can't continue a system in which certain favored consumers get electricity free. Both farmers and low-income consumers. The burden of that is shifted on to industry. Then industry says they have become uncompetitive. So, then they start demanding PLI support. It is a very interesting thing. Instead of directly subsidizing the electricity we are cross subsidizing by charging too much for industry and those fellows are rushing to the government saying give us PLI support. It is a contradiction in terms. I have mentioned reforming electricity markets. Rationalizing energy prices. If energy is more plentifully available at one part of the day and becomes scarce in another, then the logical thing is the price of electricity should vary. It should be high when electricity is scarce, low when it is in surplus. I don't think we have the systems that yet can do that. A lot of development of thinking on the part of our electricity regulators will be needed. But most importantly the state governments have to resist the temptation to intervene. This has to be de-politicized if that is at all possible. We will then sooner or later have to recognize and this is again politically sensitive that net zero by 2070 means that we will phase out from power. The debate has always been when do we phase out. As that graph I showed suggests how much and how quickly you phase out is an open question. But without doubt if you look at the possibilities, we ought to be planning on a phasing out phasing down of coal for power sometime towards the middle or later part of the next decade. This also means that coal production targets have to be adjusted downwards. Here whoever is in the coal ministry unless you make them also responsible for producing solar power it is very difficult for a ministry to say my target is to reduce production by so many million tons over the next 5 years. But frankly if you want to get to net zero that is what it means. I won't go on into this. I will just put this multiple sector screen where we have similar problems elsewhere. At this point let us convert it into a conversation. Ram you can pitch in.

Dr Ram Madhav:

Thank you, Mr. Bhandari. Friends, namaskar to everybody. I used to consider people like Dr Ahluwalia and Dr Mohan as great experts, legendary figures in this development economics area. So, when I was invited to share the dais with them, I was a little taken aback and surprised. I thought what could be the reason for inviting somebody like me who is not even a student of economics nor environmental sciences or anything. I was a student of political science. I had my masters in political science. My doctorate is in philosophy. So why I was called? So, I thought from the organizer's point of view. There are two people in the country who do not require any qualification. One is politicians as you all know. But the other is bureaucrats. My apologies to any bureaucrats sitting here. Both of us can be heading ministries, globalization today and gober gas tomorrow. All that is required is one transfer and we are considered experts in both areas. So probably they thought that as a politician he can talk about everything and anything whether he knows or doesn't know. But let us see what the political or social people have to say on this. When the next question is why I decided to come, that is more important for me. I decided to come for one important reason that I am as much committed to this climate agenda as probably Dr Mohan or Dr Ahluwalia or all of you are. I consider it as a very, very important agenda for the country, for the people and for the whole world as it is rightly pointed out. It cannot be the agenda for any one nation or one community or one region. It has to be a global agenda. Now that has prompted me to come and share a few ideas with you but more in discussion. I will just place a few ideas from the political point of view about this most important issue. Firstly, I mentioned it in an informal conversation earlier also. This whole climate discourse is stuck between two poles. One is a very highly technical side which the economists, environmental experts espouse from time to time. Try to alert us. But the vocabulary is so difficult that for common man it is a subject which he cannot relate with. The other side is very romantic in the sense that if I plant a few trees the challenge is addressed. Or if I say 'Mata Pruthvi Puthron Pradhibya' is our ancient wisdom, the problem is addressed. Both are important, the ancient wisdom of this country with respect to world's climate, this whole creation of this earth and all that is an important guide and important pointer to us as to how we should handle it. I remember at the Rio De Janeiro, first earth summit in 1980, when Madam Indira Gandhi as Prime Minister went to speak, I think she was the only Prime Minister there. Other countries did not send Prime ministers. But from India she went. And she spoke about 'Pruthvi suktam' from our great Rigveda, which starts with that famous shloka 'Mata Pruthvi Puthron Prathibya'. This is how we look at the whole question of climate. We revere climate. We revere nature. We revere all the aspects of nature. First and most important challenge is to bridge this. Technological side and romantic side, how to come together and now we start talking about practical side. To start the debate, I just place two three points before you. Firstly, as far as India is concerned on this climate question India should give up the third world mentality. With third world mentality comes third world discourse. Why I am saying this is, I watched Al Gore's that famous documentary which he produced some five, six years ago. The Indian representatives who spoke with him, tell him very derisively when he suggests that when are you going to start taking important measures to address this challenge. Indian representatives derisively say we will do it after 150 years. Why? The logic given was 'because, you did so much damage to all of us for 150 years'. Both Dr Mohan and Dr Ahluwalia said that train had left the station. That historic grievance who polluted the environment. Yes, we did not do that. Today also at the international climate forum we take this plea that we were not the polluters. It is a fact. But the reason for that fact is we were underdeveloped. On that question of underdevelopment we won elections. Having won elections on this question we go

to global forum and say you know you can't blame us because we were underdeveloped. We did not pollute. That is the old mindset. India needs to give it up. The second problem with governments, when I say governments, I am not talking about the government of India or government of any state. Generally I am talking about the political discourse. In political discourse it is easy to always say – now people should come forward. Now for everything people are the solution. I beg to differ. In this particular case governments are the problem. Or rather governments are the answer to present climate challenges. Why? Just now I was watching Dr Ahluwalia's presentation. 50% of the carbon emissions happen because of energy production. I think that is the figure you gave. People are not doing it. You talked about phasing out coal fired energy generation. We are adding. While we are committing to so many climate targets also, we are forced to add to additional coal fired power generation in our country. So, question is about policies. But what happens sometimes is when policy is because of certain targets. Like, today we have ambitious targets. We have to become a ten trillion dollar economy by 2030. In fact, government gave that reason also in the COP summits repeatedly that we have our own developmental needs. We have our own targets to achieve. While in our eagerness or in our commitment are sincere to achieve those targets. We sometimes do things that actually go against the other commitments like climate. So, there I think the governments have to realize number one give up that third world discourse, number two understand that governments have to take the initiative. Then people follow. I was going through that presentation. The appliances part of it is hardly 5 to 7% or maximum 13%. That means people's contribution is hardly 13%. Okay. Now we gave a call sustainable consumption. That is for people. Sustainable consumption as a goal if people take up very sincerely also you are only addressing 13% part of it. 30% is industry where again it is the government which has to take tough decisions. Transport sector a major pollutant. In that public transport, trains, how we still have not achieved 100% electrification. We still use diesel engines in large parts of our railways. So sectorally government needs to realize that government is the challenge. Governance is the challenge. Certain tough decisions have to be taken. Finally, I would like to also say that in this at least for India it is not just India which should be the playground. Entire south Asia. Because we are so very intrinsically connected when it comes to development. Energy we draw from our neighbors. Water, without neighbors neither Ganga reaches us nor Brahmaputra reaches us. South Asia is its playground if India looks at it, in fact, many problems can become so very easy to resolve. I will give you only one example and close. Take the case of energy. Now it is a huge challenge to transition from today's majorly coal fired energy generation to environmentally friendly energy generation. Whether it is hydel or nuclear or biogas or I would say hybrid... in India today there are companies which are capable of generating hybrid power. Solar is not available round the clock 24/7. But there are companies which can produce hybrid power. When solar is available they will pump up water to a higher place like a hillock or anything. Store it there. When there is no power, they release that water and turbines run. This is called hybrid model. Now we need to transition to that from coal fire. For doing that, excellent opportunities await us in Nepal. In Bhutan. Between Nepal and Bhutan together they have a capacity to generate close to 100 thousand megawatts of green power. That is how much? A thousand giga watts. This is the capability available. We don't even finish our projects which are 128 in Bhutan. Tatas have started a 128 megawatts hydel power project, could not complete. Because we do not see this as an opportunity. Left to India we have certain limitations. Within those limitations you turn to nuclear. I mean, there are countries which have 80% of their energy needs met by nuclear power. We need to go for those measures with determination.

This can be done only by the governments. Government again is doing so much. Like the Ethanol thing. The target was 20% and we have already reached 10% of ethanol mix in our fuels. Fossil fuels. Which is a definitely a good progress. Similarly, we are today generating close to 150 giga watts of renewable power. Solar power. It is also an achievement. So, in that direction government is doing so many things. But I thought that these two three important factors if the government and policy makers also keep in mind moving forward in this direction becomes easier. On people question maybe during the course of this discussion I have a few ideas which I would like to share. Again, thank you the organizers for inviting me.

Lavish Bhandari:

Thank you. Mr. Ahluwalia there is this problem which we are all aware of is that all of these amazing investment needs which have been estimated by many different authorities, it will draw away from the growth process. How would a government try to get around this or circumvent this challenge?

Dr Montek Singh Ahluwalia:

I don't think I would view it that way because what we are talking about for example if you are going to have an expansion in electricity anyway and you do need a huge expansion in electric capacity. Then you are putting in renewable capacity. Instead of using conventional capacity you are putting in renewable capacity. So, the entire cost of the renewable capacity is not additional. Yes, there is an additional cost and this has been calculated. Roughly it comes to almost 3% of GDP. What this really means is that the domestic resource mobilization combined with some foreign resources should add another 3% of GDP if you want to achieve in a sustainable manner. Something of the order of 6 ½ or 7% growth while at the same time keeping the emissions low. So, it does involve more investment than we have at the moment. But I don't think it is a level of investment that will make someone say as a result you can't achieve your growth objectives. The problem is you do have to do a lot of things which are politically difficult. For example, this is not going to be investment done by the government. It has to be by the private sector. You will not be able to get the private sector to invest in energy whether conventional or renewable if the distribution companies remain broke. So, the question is do we have in mind a reform program that will prevent or enable our distribution companies to pay for the increased electricity we want, whether it is from conventional or renewable power. It is little more costly if it is renewable. One of the other difficult choices really should we have a carbon tax? Now the present position is that renewable power if you don't bother about the balancing has become cheaper than coal-based power. But if you introduce the cost of balancing it becomes more expensive. So why would anyone take it? You could force people to take it but then you would have to pass on the cost in terms of higher energy costs through the electricity system. Alternatively, you could introduce a tax on carbon. That would actually make renewable energy preferred. I don't want to go into the details on this. But if you were to put what is currently called a reasonable social cost of using coal, in other words cost that it imposes on society in the form of a tax. People will switch to renewable electricity even if it is more expensive and in addition to that during the period that coal is still being used you would get a lot of resources and those resources can be used to compensate people who are otherwise being hurt by the change. But, is someone willing to impose a carbon tax? That is not easy to do. You can list in that list of sectors that I showed you will find that there is a large number of actions that have to be taken in each sector. Some have to be taken by the central government.

Some have to be taken by the state government. Some have to be taken by city governments. For example, you want to get away from using too much fossil fuel for transportation. Now the solution is you have to have a much more public transport than private transport. Whatever private transport there is should be EV, electric vehicles. To get the public transport going, some municipality has to put in place decent buses. Now the present position is virtually everybody, every state is ordering a few thousand buses. But that is kind of a ‘Naam ke vaste’ response which is good. Makes people aware. But there is no program that would actually phase in all electric vehicles by some date. Because, the municipalities don’t have the resources. How to mobilize the resources to finance the transition is very crucial. Of course, in the debate there is a lot of talk about international support. The way you can get climate justice is not by saying we don’t want to do anything because you caused the problem, but you can say – well look, it will cost a lot of money and you did all this stuff, so you better pay. At the moment by the way, there is no willingness to do that. But I don’t know whether as development as discussions proceed, whether the international community will be more willing to come forward. I am sure this is one of the things that will come up in the G20. If India can within the G20 show some progress where the global community signals to the existing multilateral development financing institutions that they have to greatly expand their supply of concessional capital, that would help.

Lavish Bhandari:

Thank you. I will take up on that one issue of global interaction. A lot of the challenges that have just been outlined by Mr. Ahluwalia are actually... India is not the only country facing them. Just about the whole developing world is suffering from the same sets of challenges. In your interactions in the various global forum, you would also have come across the same level of concerns. How do you think India can bring about some sort of a global cooperative alliance on this?

Dr Ram Madhav:

Thank you. India at the COP summits... successive COP summits has been talking about climate justice, equity, questions of climate finance, technologies that help this transfer from fossil fuels to renewables. On these issues India is very proactively talking to the world powers especially the developed countries. On that very little is being done by the developed countries. So, here I can definitely use that ‘historical grievances’ argument that -you have done all the damage. Now when we are ready to help mitigate it you are not ready coming forward enough to financially support it. I can tell you something very interesting. We host a conference called the Indian ocean conference annually. Last year at the conference in Abu Dhabi in front of the American and other officials the Prime Minister of Fiji raised this issue. He said that – I was told that I should do so many things for my country, a tiny country of Fiji to address this climate challenge. I am ready to do it. But when I asked what will be the support, I was told one million dollars. He said – how can I do this if you don’t support me for at least the cost that I incur as a tiny country which is willing to now join this effort. But the developed world which has benefitted from all this what has happened, today is not ready to shell or spare money. It is willing to give billions of dollars to Ukraine war. Again 40 billion dollars was offered. I am not getting into the politics of it. But, why such kind of money is not available for these things... for these transitions. India is championing it. If you see the latest Egypt round of talks also our environment minister emphasized on these issues once again. He said that we champion these

causes. Because it is not just about us. Of course, India today wants to lead the global south in these efforts. Here these countries have to come forward. If that doesn't happen what will happen, I will tell you. The pessimism I talked about earlier. I happened to meet with one official from an African country. This was before our government came in 2014. It was in 2012. We had an interaction. Those days we used to aggressively push for the solar alliance, international solar alliance. Luckily, you were also there in the government, Dr Manmohan Singh, they took it up subsequently. So, we used to talk with anybody and everybody from African or Latin American countries whomever we meet we used to tell them why not we form this solar alliance. When we mentioned it to him, he said – sir, if you are interested you do that. But please don't drag us into it. This is a conspiracy to keep us backward. These developed western powers have achieved everything by exploiting all our resources. Now when we come forward to do certain things to develop our countries they tell us, no, no, no, don't use this power. Don't do this. Don't do this. Please go back to renewables and all that. The whole agenda is to keep us backward for another 50-100 years. No, this may not be true. But this is the mindset. So, the west or the developed world must realize that although they may not like us talking about these things of historical responsibilities etc., they have a contemporary responsibility of opening their purses, spending more money on helping the developing world which is more than willing to do it. Because, at the end of the day if it continues the bigger victims will be the developing world. We, India, Bangladesh, Indonesia. Indonesia is today forced to build a new capital and I am told billions they have to spend over the next 50 years to build that new capital. So, we are the victims of it. In fact, I was coming back from East Godavari district in Andhra Pradesh. There yesterday some very important industrialist and all came and told me that the government has now sanctioned a coastal road project and by the projections of the environmentalists, by the time it is completed it will be submerged. Because the levels are rising. They have been telling the government don't build. But government says no, this plan was sanctioned three years ago, now we can't change. That is why I said, we sit in the government and we just don't bother. For us it is pushing off a file. So, this is the consequence of all this. So, I think in the larger interest the west has to now come forward more liberally in these aspects of climate financing. Not only financing, the technology aspect of it. We don't have the technology. Forget about countries like India. We can still develop our own technology. Many countries in the world, smaller countries, they cannot afford to have their own technologies. West has to now release them from their financial controls and all.

Lavish Bhandari:

Thank you. Mr. Ahluwalia this point that you had talked about was on the costs part of it. I am going to just blow that point up a bit. Almost all of these transitions will create probably a much higher cost production processes across the board whether it is in the transportation sector or in industry or otherwise. How would we deal with that?

Dr Montek Singh Ahluwalia:

The only way you will deal with that is you have to finance the additional costs. I mean, there is no question that... let me step back... number one I don't think the solution is don't make the transition. Let's face it. For the next 50 years there will be no technological progress in coal-based power. Nobody is investing in it. Whatever technological progress is it is going to be in the others. If you say – no, no, I want to use coal-based. You just have the equivalent of the ambassador and the fiat in your energy sector for the next 20 years. I think when the world

makes a technological leap you pretty much have to go with the world. That is one thing. We don't have the option unless you want to relegate yourselves to an industrial museum or something. Now is it going to cost money? Of course, it is going to cost money. But moving from 5% growth to 7 ½ % growth is also going to cost money. Right now, the average growth rate is much below what we are targeting. If you want to achieve that it is going to take more money. The real question is can we mobilize that money. The short answer will be we will have too many useless subsidies in the system that are absorbing the resources. It is very easy for an economist to say that. But for a politician to persuade people – here is the poetry of a beautiful transition and a nicer life. But I am afraid in order to do that I have to either impose some tax or withdraw some subsidy or adjust the price. That becomes difficult. That is why politics is so important. I don't think we should say it can't be done. It can be done and the question is how do you make it politically possible to do it. That is tough. But more than that right now I don't even think there is a public appreciation that it needs to be done. There are many people as Mr., Ram Madhav was saying, many people say – no, no. why shouldn't we carry on with coal. It is well established. I personally think by the way the concern about technology is a little overdone by us in our international negotiation. There is no evidence that there is a restriction on the flow of these technologies. It was very different in the case of nuclear technology in the old days. They had the technology and they were not willing to share it. Any of this technology is commercially available. If tomorrow somebody comes up with a better solar cell battery or a solar cell that can be used to capture solar energy, it will be commercially available. It boils down to what is the cost. And should the cost be subsidized. That is a fair point. Most probably they will be willing to do some subsidy by concessional resource provision to the very low-income small countries. You know this whole push for aid is only going to benefit the very small countries. But the idea that India, soon to be the third largest economy, is going to be the recipient of aid is not I think credible. But there is no reason why multilateral development banks can't provide long term capital on reasonable interest rates. I think that must be what our government is now pushing them in the G20 and so on. Other governments are also doing the same thing. Even the US treasury secretary said that we need trillions and we are talking about billions. That means that there is a recognition that that is what we need. The World Bank people have been asked to come back to the finance ministers in April or something with a solution. How do they expect the bank to respond? Maybe what they will suggest is not enough. Maybe we should push for more. But there is a good chance for movement in that area. But yes, there will be more costs. But the solution really will be you have to get rid of dysfunctional subsidy-ism. One of the biggest problems that all these countries have is that they included still a lot of subsidies on fossil fuel. So, they would say that – look if the idea is to get away from fossil fuel why on earth are you subsidizing it and we could ask them the same question.

Lavish Bhandari:

Dr Madhav, would you like to respond to some of those points.

Dr Ram Madhav:

Technologies to be made available to countries that cannot afford should be on the agenda. I agree that it is a free flow but free flow where you can afford it. As you also pointed out. But suppose a country cannot afford it what should it do? Today we are going in for newer technologies like hydrogen-based fuels. Those technologies maybe India with its technological

manpower be able to achieve it. But what about other countries. Yeah, either they subsidize it, they decide that these technologies which are required for countries to complete this transition in time. Otherwise, what happens is, we had CDGs. When CDGs were first announced you were all in the government. How many times we had postponed them? Today now it is 2030 so similarly, today's targets of environmental climate change targets can again be extended. In 2030 you will say – not 2050, we will commit by 2070. 2070 one will go to 2090. If that should not happen this transition should be global responsibility. Especially responsibility of the global north which has both financial and technological resources. They have to come forward. That is all that I am saying. Yes, those who can afford can still access those technologies. But the question is those who cannot afford, what will they do? Will they be at the mercy of the companies, the corporations, the power sector giants? Or no, there will be a responsible way of dealing with all the countries in the world. I think that is an important question to ponder.

Lavish Bhandari:

Mr. Ahluwalia, as someone who spent so long in the government, there has always been a problem associated with interaction between different arms of the government or different ministries or even vertically between the center and the state and the state and the local. You have just outlined an agenda which clearly requires coordination.

Dr Montek Singh Ahluwalia:

Yeah, absolutely. That is one of the things that comes out very clearly that if you set yourself the target that this is where we want to get and as Ram Madhavji said some of these targets may slip, as they often do. But nevertheless, it is good to have a target. You will find that that target is converted into a series of targets for power, buildings, transport, electrification, industry, etc. I have been arguing that it is not all that useful to focus on 2070. Because that is so far away. Let us have what I call a granular detailed plan for the next ten years. Something like NITI Aayog could work on that in consultation with the states. What do we expect the center to do for the next ten years? What do we expect the states to do? For example, if we are going to have this much more renewable capacity, how to get that is a big problem of financing and etc., but if you are going to have that then what is the structure of the electricity market going to be? How much variation in time-of-day metering are you going to allow? This should all be sort of worked out by let us say 2035, these things should have happened in the power sector including reductions, systemic changes in distribution companies which will lead to better efficiency. If states that don't achieve it will end up not doing well. They will not be giving good quality power to industry, they will not be able to attract industrialists. Today every state, in fact the first two pages of every newspaper is now an advertisement for the investment schemes of different states all over the country. The one most important thing I would have thought is reliable power at an appropriate price. People will soon work this out. Industrialists will tell the state government that look, you want industry, what is the position regarding power? So, slowly this has to seep down but we need to set targets for the next ten years. For example, how many electric vehicles two wheelers will be sold in the total? How many three wheelers? How many four wheelers? How many light transports? Obviously some are much more difficult. Whatever you achieve in steel, cement? Cement for example, one of the industrial chaps was telling us that they going to go net zero by 2040. Dalmia cement I think it was saying that. Other people in industry etc they are saying that. The big corporates are very aware that if you want to raise money abroad, if you want to go to Davos and look good first

thing somebody asks you is when are you going to be net zero? Those chaps are not saying what the governments are saying. No, no, you caused the problem, you do it. They are saying we are going to be net zero by X or Y or Z. So, we need a little bit of that to be fed into the system. Ram mentioned the railways issue. We are in a very good position there in this sense that within a couple of years the entire railway track will be electrified. This is a program that was begun 20 years ago. It should have been finished 10 years ago. But we are there now. In two years India's electric network will be electrified. But as he pointed out we still have a huge number of diesel engines. What is more? We have just opened a factory which is going to produce new diesel engines and the government has committed to buying 1000 of them every year. Can we renegotiate with these fellows and say – look, we don't want diesel engines now. Please make electric engines. This raises a lot of problems because it cannot be on a competitive bid basis. Because you already got a factory. So, you sit down with them and negotiate. I mean, no civil servant is going to be able to do that. On the other hand, if he doesn't do that, we are committed to buy God knows how many diesel engines even when the railway track is fully electrified. So, this is just giving one nitty-gritty type example. I think we can sort of... if we were to tell people what is a credible target in each sector that you can achieve, they will throw out some numbers. If you have a team questioning those numbers, they will throw out some questions and that way you will get a granular detail that by 2035 this is what we are going to achieve. Now, my guess is that if you do that you will also be able to say that look, we are going to phase out, we are going to start peaking coal by 2035 or 2037 or something like that. But whoever is running the coal ministry it should be clear in their mind that the total requirement of coal will start going down. In which case it doesn't make sense to start a coal mine today. Because these things have a life of 30 years. So, it has some major implications which need to be faced. So, a ten year target, granular detailed, sector by sector, in the things that I listed should be outlined. Frankly the world will respect us if we have such a target. Because people will say look, these guys are really serious. Then we can go and tell them listen, this is what we want to do. Are you willing to pay? For example, if it is going to cost 200 million dollars to convert our diesel engines into electric engines it is very fair for us to ask the western countries how about funding that? Because they are now going around saying we will not fund any coal power plant. That is okay. But how about funding this which is actually helping in the transition. But for that nothing can happen unless we go down to granular targets. Otherwise, we are just talking in the air.

Dr Ram Madhav:

Certain good practices, because you talked about inter-ministerial coordination and all, certain good practices have started. Credit should go to the previous government. The concept of GOMs, the group of ministers. I know that in the present government for this climate related issues also there is a GOM working. So, ministries, related ministries they come together and the Prime Minister's office regularly monitors it. So, with a very targeted approach the GOM works here. Those issues like better coordination among the ministries are largely being taken care of. But the real challenge lies in what Dr Ahluwalia pointed out. These targets of course granular, but also should be sectoral. You need to put targets to different sectors. On a lighter note, that is why I emphasized on that South Asia issue. We can phase out coal-based power utilisation in India maybe if we put targets for next 20 years or 30 years. It is possible. But then Bangladesh needs it. Needs power. Not needs it, it needs power. So, we are today supplying coal-based power to Bangladesh. So, it won't come into our account. Technically speaking we

are not using coal-based power but we are generating. The user is another South Asian country. It may be a business model I am not against that. Until we do the transition everybody has the right to benefit from the business models. But I can tell you, just above up in the Himalayan ranges Bhutan is ready with a 2000 megawatt hydel power project ready. No takers. No takers because it can only be taken by India. That is the kind of relationship we have. You have a possibility of an alternative. We are not going for it because it doesn't concern India. It concerns another country. I think we need to think in the larger regional context. Of course, local context, then the next should be regional and then of course global. So, this sectoral approach also, sectoral targets also are very important. I also feel and appreciate the point that Dr Ahluwalia made. Greater decentralisation in climate change targets is going to be very beneficial. Give certain powers to states, local bodies, even village panchayats. Give it to them. I know, when we were handling in our governments in the North East, we got at least three state governments to declare that they will distribute some 10000 or 5000 or 2000 free e-bikes to all girl students who come in first degree in grade 10th. An incentive to use e-bikes. Now look at India's case. We are not major pollutants in automobile sector because our density of cars is very low. For one thousand people we have 32 cars. In Europe for every one thousand people there are 800 cars. US there are 900 cars. We only have 32. But with that low level also EVs penetration in India is even to this day only 2%. Why is it only 2%? The actual level is also... so this should increase. Do we have in any Indian city separate tracks for bikes? You see the plight of bikers in Delhi. Majority of accident victims are bikers. We don't have tracks. Once we have tracks there can be e-bikes. There can be bicycles. Smaller cities can encourage bicycles. Of course, public transport has already been mentioned. This is where decentralisation helps. If we allow states and others to have their own targets, their own ways of handling it, I think some of these challenges can be definitely addressed.

Dr Montek Singh Ahluwalia:

It is a very interesting point that Ram Madhav made. I completely agree with him. The fullest utilisation of the hydro power in Bhutan assuming that they are willing because they can only sell it to us, we really need to explore that. The simplest way in my view, as you said, it is viewed as Bhutan's problem. But actually, it is a solution to India's problem in terms of peak solar power. I don't see why the solar electricity corporation of India which is currently it enters into PPAs with solar power producers and then hope to sell this power to distribution companies. They could offer to make a purchase which effectively be a central government guarantee of hydro power from Bhutan. Which they would then use to balance off the intermittent power that is generated by different people. You have got an organisation there which is doing it for solar power, there is no reason why they can't do it with Bhutan. There will be other problems, Bhutan has its own NGOs to deal with. But I think we need to explore some of these things. Some of them may work, some of them may not work. But this whole issue of getting away from the assumption that the demand supply of electricity is going to be solved simply by each state, this is an example, after all in the solar electric corporation of India they are stepping in to do what otherwise could be done by the solar producers directly entering PPAs with distribution companies. Because the distribution companies don't have credibility the SECI has come in. For every whatever thousand gigawatts of solar power that the SECI contracts it could contract with Bhutan hydropower. It would be a wonderful balancing in the system. That is just one example.

Dr Ram Madhav:

In fact, just a couple of days ago our external affairs minister was in Sri Lanka. One of the MOU was signed for evacuation of these solar and wind power that is going to be generated the Northern Sri Lanka into South India. Across the Park straight. This MOU has been signed. It can be a trendsetter. We can do similar things. We have similar arrangement with Nepal. We evacuate Nepalese power into India and of course from India it sometimes goes mainly into Bangladesh. Similar thing is possible with Bhutan. That is why I said, left alone Bhutan can generate 50000. It has the capacity to generate a 50000 megawatts of green power. Green energy. Nepal has 30000 megawatt capacity for green energy. This is the kind of capacity available in our neighbourhood. Countries like Bhutan actually not very expensive also for transition. For generation of hydel is not very expensive. If I tell you the rate at which Bhutan supplies power you will be surprised. 3 rupees.

Lavish Bhandari:

I would like to just know... one of the really difficult problems in many of the electricity related things is the ability to get on for instance improve the operations of some of the institutions. DISCOMS for instance. It seems that it is very, very difficult to be able to address the subsidy issues for instance. Now in the political realm how do you think, where are the major problems coming from? How do you think you can address these?

Dr Ram Madhav:

DISCOMS are again state controlled. It is a state subject. But as far as one major step that government of India has taken. A very important step I believe. It was in the case of Adani power, they are generating power in Jharkhand, they have their own transmission line to supply and linkage to the grid in Bangladesh. I think it is the only private operator who has availed that new scheme of the government. Now that opens up one opportunity for more private companies to... first of all get into transmission aspect. Like I told you, now there is a MOU between Sri Lanka and India for evacuating power from there to India. Now Sri Lanka will allow most probably private operators to come and exploit the capacity for wind power and solar power. These two power generation can happen in Sri Lanka big time. In fact, I know, I have read in papers that Adani have plans for 12000 megawatt power generation in Sri Lanka. That means so much capacity is available there. The only challenge earlier was how to bring it to India. because that country the whole requirement is 200 megawatts. The whole model.

Lavish Bhandari:

I was talking about a far more specific question related to the role of the DISCOMS. And how does one reform in that space?

Dr Ram Madhav:

In DISCOM area private operators came. In Bombay, in Delhi, they are also facing problems. Once private operators come, they should be able to handle it. It is expected that they handle it better. But they are also facing problems. They are also going bankrupt.

Lavish Bhandari:

Mr Ahluwalia would you have anything?

Dr Montek Singh Ahluwalia:

I completely agree and I have said on many occasions that state governments should aggressively privatize distribution. I was recently in Ahmedabad. I think Ahmedabad distribution has been taken over by Torrent. They are running it quite well. There is no problem. Bombay exactly the same. Delhi also the two companies that are running it they have seen a huge decline in the commercial loss, transmission and commercial loss that used to be incurred. I think it went down from 45% to 7% or so. So, absolutely clear, it should be privatised. I am not saying necessarily that they should privatise the whole thing. But frankly in my view each state should have some private sector distribution so that they can compare what is happening in the private sector to what is happening in the public sector within the same state and the same overall governance situation. We need something like that. I think if you do this, two things will happen. Number one, the private sector will push the government very hard to allow an increase in tariffs when it is justified. Whereas at present politically state governments more or less tell the distributors etc not to ask for higher tariffs because it is easier to keep the tariff low and incur a loss and then keep electricity charges low. If you want to inject a little more commercialisation put in the private sector. That is my view.

Lavish Bhandari:

Mr Madhav any comment that you would like to make and then I will throw the floor open for q & a. So, I would like to request questions from the audience. There is just one rule please. Only environmental and climate change related questions. Nothing on the budget. Nothing on overwrap. Thanks. The lady at the back. Can you introduce yourself first?

Riddi Gupta (Audience):

Good afternoon everyone. I am Riddi Gupta. I am a legislative assistant to a member of parliament. I have two questions for the esteemed panel. The first one being that do you see climate change becoming an electoral issue any time soon. My second question is that there seems to be a mismatch between the intention and implications of certain environmental interventions that the government takes. For instance, eco-tourism being promoted say in the Aaravalis and the Andaman. There is reported ecological loss because of that. So, what is the reason for this mismatch and how can we prevent it? Thank you.

Lavish Bhandari:

I think we will go around for three questions and then we will answer.

Audience:

I am __. I am studying international relations. My question is, since the very inception when all this climate change compliance started, why we were not able to amalgamate the mitigation and adaptation both. Why there was a different or a parallel track going between mitigation and adaptation. Because mitigation was much focused upon but adaptation was not. Why did this thing happen? Because now we can see irreversible IPCC report saying that irreversible damage, we have reached to that stage where climate change itself perpetuated.

Lavish Bhandari:

Point well taken. Yes please.

Nivedita Mukherjee (audience):

This is Nivedita Mukherjee from the Sunday Garden. My question is that we know that the west does not meet up to its commitments. They don't walk the talk when it comes to financial commitments and India has huge needs in this regard in terms of climate financing. So, what is the way forward? Do we have a plan to attract the big pension funds and other such resources and what about our own internal, do we see a plan of action for some kind of a green financing over here? Bonds and other things?

Dr Ram Madhav:

Ok. Will it ever become an electoral issue? It is a very good question. So far no. you know what are the electoral issues nowadays. But it is definitely an important governance issue. To that extent at least I know that the party to which I belong we always made it an important part of our manifesto. We always had a section for climate change and we made certain promises, commitments which have also been tried to be fulfilled in the last eight years of this government. So, parties at least have to be sensitive to this challenge and party should continue to sensitise the people. So maybe at some point it also will become an important electoral issue. Eco-tourism is actually a two-way thing. One is yes, there are certain challenges, there are certain strong objections from groups whether it is the locals like in the case of tribals. Sometimes tribal groups, sometimes local villagers, sometimes even we have seen in the recent protests by the Jain community, the religious groups. People have different kind of responses to some of these initiatives taken. So, they are both ways. In some cases where there is scope for greater tourism exploitation potential, there courts come into the picture. Courts don't allow things to happen. They will come up with some kind of an environmental question. Some NGO will go to court and that project for tourism is stalled. But this is an ongoing process. I see it as a good thing because, in this process it is creating greater awareness in the people about the need for preserving of our ecology while pursuing our targets for development whether it is tourism development or any other development. It is an ongoing process and we will definitely find a solution to it. Mitigation versus adaptation is an important question from the futuristic point of view. On this question of climate as it is rightly said, the damage that was to be done has been done. Now there is only mitigation remaining. You have to do whatever you can do now at least to retrieve the situation. But what about the newer things that are coming in? newer technologies. Today artificial intelligence is coming. Or other technologies are coming. There, can we now start thinking about both adaptation and mitigation together. Do we also understand that what will be the implications 20 years, 30 years, 50 years end down the line? There the tragedy of today is we don't have philosophers in the world today. We only have experts, field experts, our governments, our multinational corporations who decide what they want to do, but there are no philosophers who will say – ok, this is not good after 50 years. That is where philosopher's role comes in. We don't have philosophers today. The result is all decisions that have far-reaching consequences today, genome or genetic manipulation activity that is happening today is what was happening to internet 20 years ago. We did not try to control it then. We didn't try to go deep into it and regulate it then. Today it has become a major challenge now, after 20 years we coming up with IT rules. But again, that is another problem. You can't mitigate it. The damage that was to happen has been done. So genetic technologies are going to create similar kind of situations for us 20 to 30 years from now. But nobody is there to talk about those things. So, today adaptation, mitigation about the present challenges is very important. Then those at least will not become demons after 30 or 50 years. Lastly this question of how if the west or the developed world doesn't come forward, what do we do? That is what

a lot of discussions happened within the government. I know about it. About what should be our target before the COP. Whether it is 25 or 27, what should be our target for zero emissions? So, there was this discussion that when we become 100 years 2047 we should be able to become zero emission. But then there was also a realisation that no, you can't do that. Because with the limited resources available for this transition can we achieve it. So that is the reason why we are much... our target is 2070. We are even behind countries like Indonesia. Countries like China. Or some of our neighbours. The reason is the same. We don't have enough resources for this transition. We have all the intent to do that. The government I mean the Prime Minister is personally committed to it. But you need that support. That is why we have set a slightly distant target.

Lavish Bhandari:

Mr Ahluwalia, would you like to respond to any of these three questions?

Dr Montek Singh Ahluwalia:

It is just a tough world and I don't think we have seen the end of these issues. What we need to do is to keep an open mind and accept the fact. Let us accept some things are done, we must have a trajectory that gets us net zero by 2070. Let's us work out what that is, but let us work it out in a way in which in the next ten years people understand what the specific requirement is during that period. I think the more this is debated and discussed there will be any number of problems with each one of these things. But it is only if they are surfaced and discussed both ways that we will come to a solution. The only point I want to make or maybe just draw attention to what I said right at the beginning. I think the argument of transfer of technology is a bit of a red herring. Let us look at this. When we say technology, what does it mean? Suppose tomorrow in the west they discover an electric vehicle with a battery which actually is twice as efficient, what is it that we are asking them to do? Give us a blue print so that we will produce the electric vehicle and the battery? Are we asking them to suspend IPR rights on that? What are we asking? For the smaller countries they are not in a position to produce these things. So, what does the demand turn out to be? Are we saying you should subsidise these things? Because, one of the problems about giving the technology is that many countries, many people will argue that we have developed the technology, we give the technology free, some other country then uses which is much more developed, it may not be that country itself, uses the technology to sell the stuff to this country at a cheaper price, is that the idea? So, we need to... we have used this formula you must transfer technology, it would be very... I would like to see from people what exactly do we have in mind. I remember in UPA time used to make the same argument. Ministry of environment and forest used to make the same argument. I recall saying that – look, please try to understand. We are using the airbus 320. There is a huge technological advancement which allows it to reduce the fuel use in the airbus 320 by a certain amount. What are we asking them to do? Are we asking them to buy our old airbus 320s and give us the new ones free? Are we asking for the patent details of the new technology to produce the airbus ourselves? It is not very clear to me what we are asking? That is the important question.

Dr Ram Madhav:

I fully appreciate that nobody can ask for technologies to be freely handed over to countries, handed down to any other company and all that. I totally take that. There was a time not very long history, in 50s and 60s the story of Japan – US relationship where in fact Japan used to be

called as a copy country. Where technologies used to be freely exchanged. That was the time when this patent regime was so not very strict. In fact, in 1962 or 63, I don't remember exactly, when the prime minister of Japan went to France... who was the president of France at that time, Charles De Gaulle... Prime Minister of Japan presents a small box which contains a transistor and De Gaulle dismisses it. In fact, very derisively tells his colleagues you see this salesman of a transistor came. 10 years down the line Japan became the major transistor supplier for the US. And that transistor technology was given to Japan by Texas Instruments, TI. Those days it was thought that let Japan develop it, produce it and let me use it. And between Japan and America that arrangement worked. So, some kind of an arrangement where technologies are available to you that you can produce... ok, there has to be an economic model, I totally agree with you. It cannot be just that you develop technology and give it to somebody on charity. Nobody will do that. But there should be a model where countries can benefit from it. Some such thing at least on for example, solar panels. How to maximise the output of solar panel. On that so much new research is happening. I don't see any reason why it cannot be more liberally shared with countries that has solar power. That is global south. It cannot afford. A south Africa, a Mexico, an Indonesia, India maybe different, but other countries cannot afford to do all that research and do that huge cost. There I thought there is some possibility. But otherwise yes, we can't simply expect everybody to give their new technologies freely.

Lavish Bhandari:

Yeah. Dr Mohan.

Dr Rakesh Mohan:

Mr Madhav, I want to ask a much broader question. Montek gave or I would characterise which is the kind of technocratic solutions that we all people like us are very good at giving. Now each of the areas that he mentioned involves a lot of difficulties. That is raising of electricity prices for example. You talked about cycle tracks and so on. You might remember my brother Dr Dinesh Mohan was a major promoter, but he lost. There was just one BRT set up and there was cycle track there. It has actually been destroyed actually deliberately. Somehow there isn't a popular or political support for many of these measures. Otherwise, these solutions are known. Also talking about phasing out coal whenever it happens. On the human side in a place like Jharkhand there is just so many people employed in coal. How will we deal with all these things socially, politically etc. I think we know the technocratic solutions, how do people like us help in communicating, talking and learning also from politicians etc to take this forward so that there is much greater understanding. Among the people these things have to be done. Otherwise, we all had it.

Dr Ram Madhav:

I have some experience with the present government. Based on my experience I can tell you that there is lot of receptivity to these ideas. What can be done to further mitigate the challenge of climate change and all that. But I also sometimes felt that certain very simple things, when it comes to sustainable consumption aspect... we generally talked about a couple of things. I made a very strong pitch for two things. First was can we have different time zones in India so that we can at least save the energy that is spent by government offices, public institutions. You operate when there is full sunlight. I suggested that let us have a separate time zone for north

east for example. Because both Bangladesh and Bhutan abetting north east are half hour ahead of us. Their time zones are half hour ahead. But when you cross those two when you go to Guwahati you again go back to your time zone. If you do that maybe evening 4 O'clock normally government officers function up to five. But by 4 or 4:30 it starts getting dark in half the year in north east. So, you can save that much energy. There was some discussion. It was felt that it might become a big political issue. Then Mamta Banerjee may say discrimination against Calcutta, Bengal. So, how do we decide where to draw that line? If you decide that ok, Bengal onwards we will do that, Nitish Kumar will say there is lot of ___in Bihar. So, certain political challenges are there. Then we suggested the other alternative. Ok, you can't do that. Why not have office timings advanced. In Assam offices can start at 8 O'clock. Why at 9:30? These are some of the things, easier things that can be done. They also will have some big impact on this energy consumption challenges and all. But having said that, there is definitely a lot of commitment, intent and responsiveness in this government to many new ideas.

Audience:

Good evening. I am **Digamshi**. I am a legislative assistant to a member of parliament. During my final semester of economic honours, I remember coming across a concept of the Copenhagen consensus where in the original one 2004 decisions. Out of the ten major world challenges that were given to eight economists selected global warming and climate changes as issues were on the bottom part of the priority list. Stating the reason that the costs outweighed the benefits. So, my question here is it is lot of also circle back to what Ram sir said initially. There used to be this sort of parity in terms of the terminologies and the approach which environmentalists and economists and the idea of romanticism that is given to it. The question is how feasible is it to study the entire idea of managing climate change with the cost benefit analysis? And how far have we come along in that system so far from 2004 to now?

Audience:

Mr Madhav, you people are trying to establish that India's contribution is very low in carbon emission in comparison to west. Don't you think it is a conspiracy from the west to disrupt our Indian growth?

Alok Bhansal (audience):

I am Alok Bhansal. Director India foundation. First point to Dr Ahluwalia who talked about this diesel locomotive factories which have been established at a time when we should be graduating to electric. Now these locomotives are to the best of my knowledge are diesel electric locomotives where actually transformation from diesel to electricity is not very difficult. It doesn't really require too much modification because basically the diesel engine generates electricity to move the motors. But a question that I have is that one of the major pollutants is congestion and traffic. That is because of our cities, our urban conglomerates getting choked. Nobody is talking for new urban centres actually. A few decades back we used to talk about decongesting cities. Today there is a political competition as far as legalising the illegal colonies is concerned. There is actually a competition. Each political party actually takes pride in how many illegal constructions or colonies have been legalised within NCR itself. Now with that sort of a thing are we doing something about urban planning as far as decongestion is concerned? Because that would reduce pollution at least the vehicular transmission and pollution to a very great extent.

K K Raj (audience):

K K Raj. My question is what is going to be India's strategy in case of Europe's EU carbon border adjustment mechanism acts against our trade?

Dr Ram Madhav:

I think the first question Dr Ahluwalia can answer. The cost benefit analysis of it. You see India has in the successive COP summits, not just right now, even in the past also in different fora, has always clearly stated that while we have our development and growth agendas in place and which we will want to achieve, we are at the same time very committed to this much more significant global humanistic agenda of climate control or climate mitigation. So, there is no need to think that either India will succumb to this climate agenda and sacrifice its growth objectives. Or it will go pursuing its growth objectives and sacrifice environment agenda. It knows how to balance out both these things. That is why I said we took our time even to announce our targets. There was lot of pressure on India to not go that far until 2070. At least commit to 2050 there was lot of pressure. Yet India decided that we will take our time. But we will still commit to both the agendas. Yes, urban management is an important subject no doubt. What was pointed out is also true. The clogging of the cities. I remember when in Hyderabad Chandra Babu Naidu was the chief minister. There was a decision to build 26 flyovers in the city to ease out the traffic. So, a professor, IIT director was there. A very renowned intellectual in early 2000. I am forgetting his name. Ranganathan or something. He came to Delhi. We had a meeting with the Chief minister and the Chief minister very proudly made a power point presentation about how he is trying to ease out the traffic in the Hyderabad city by building these 26 flyovers. The director asked a simple question. Mr Naidu, after 10 years you will have traffic congestions on the flyovers. What will you do? So, we have to look at these challenges from that perspective. We are having a kind of an ad hoc or a piecemeal approach to it. Today I have congestion, I will have to ease it out. Having said it, government especially this government has put lot of emphasis on public transport. Today almost twelve cities in the country or even more cities in the country have metro rail systems that are reducing pressure on the urban road transport system. People also have to cooperate. EV is another solution. But more importantly what Mr Bhansal is pointing out is also important that a shift from this concept of city influx to going out of the city... in fact my brother is an architect in US. He tells me that new architectural concept is not to create downtowns in big cities. The downtown concept which started in 1960s. It is now no longer the in thing in architecture. It is going out. People should be going out for jobs, for works. So, create hubs outside in different directions so that people go out. Don't come into and cram up the city. So, we need to also think about such solutions where certain particular group of activities can go in some direction. Most of the developed world, capitals are not in big cities. Capital governments functions from some remote places. If we take out governments from cities it is a solution. So, such solutions have to be thought of. Especially at a time when India is fast organising. And the urban development minister the other day in the press conference said by 2025 40% of India will be living in urban centres which is huge. 40% means close to 600 to 700 million people living in urban centres. Can our urban centres cope? I would like to make a last point about this population.

Dr Montek Singh Ahluwalia:

On the city's issue I quite agree with what was said, it is tough but we need to somehow make the maximum effort possible. A huge upgradation in the state governments of the whole

mechanism for planning for cities is needed. Because this is being vastly neglected. And I think the figures I mentioned in the expansion in the urban population which you are going to see in India over the next 20 years you will be putting as many people in cities as in the whole of Europe over the last 200 years. It is a transformation that is enormous. I am not sure that we have the mechanisms in the state to do the planning for it. I was delivering the convocation address yesterday or day before yesterday at CEPT in Ahmedabad. And I made a casual remark that the only way we are going to get... we need to have more cities because we cannot have the existing metropolitan cities expand. They are already far too dense. But the only way you can get the kind of will and public support for the new cities if you create a new state. So, I said in my view many of our states are too big. And it is not a bad idea to split them up and create new states because then when you create a new state capital for which the central government should provide assistance many people will get together and say ok, let us do what is necessary. Otherwise, it is going to be an horrendous problem. Frankly six to seven cities of medium size created in a world class manner with truly modern would be a terrific contribution. But I fear that unless you... maybe it is something that you can put into the political frame... some of our biggest states are just too big. They would be as large as the top four or five countries in the world. Frankly I think we need to do that. That is point number one. I agree on the diesel electric. But that only creates an overwhelming compulsion to do it right now. It is the simplest thing in the world. I think there is too much focus on working on the existing... I think there is some work going on in one of the railway kinds of establishment how to convert the existing diesel engines to electric locos. But since we have this very modern factory, let us get them to produce them right away. In which case, that will be a real transfer of technology because whatever technology they use we can fit into the existing diesels. So that would be a very, very good, granular target within the next ten year period. The last point was on the cost benefit analysis. I think there has been a lot of work done. It is overwhelming that the cost benefit is in favour of preventing the kind of pollution that we are seeing. Usually, the argument was that we should not get rid of CO2 generating coal stations because the benefits in terms of CO2 are to the world as a whole. Not to us internally. But the pollution benefit is to us internally and that benefit is huge. According to some studies we are shortening lives by about six to seven years per person. The average life per person because of the pollution. I think there is cost benefit. The real problem with cost benefit is a lot of the benefits is external to the individuals who decide these things. They are internal to the country. Our record in other cases of dealing with these things is very poor. Take for example excess use of ground water. The cost benefit on that is very well known. First, we allow and give free power to the farmers. We don't charge them for using water. Water is a natural resource. There is no royalty on it, nothing. And the system is one that forces them, encourages them to extract as much water as possible. As a result, the water level in Punjab is falling by so many centimetres a year and threatens converting the place into a desert. This has been known and documented for the last 25 years. But somehow, we don't seem to be... I mean, logically you would think that the biggest movement to change this would be from the population of Punjab. But this is not. So, there is a lack of some of the public being made aware of the fact that it is not just some vague thing, some poetic thing called environment that is being destroyed. It is actually going to be your livelihood. The only trouble is the cost is borne maybe come ten years down the road and nobody cares about costs ten years down the road. That is the biggest problem with climate change also.

Lavish Bhandari:

Mr Ahluwalia there was one more question on how does India deal with the C ban from the EU.

Dr Montek Singh Ahluwalia:

C Ban is coming. That is a very good point. My own view as an economist and this is connected with the cost issue. There should be a carbon tax. Very clear. It is very difficult to do and even countries that have much better public understanding are failing to do it. Most obviously the United States. The logic of a carbon tax is as relevant there as it is here. If we introduced a carbon tax a lot of the problems of switching to the new technology would become virtually automatic. And as long as fossil fuels existed we will get a lot of revenue which we would use to solve the kind of things that Rakesh was talking about. How do we help people in areas which are phasing out of coal? Now the absence of a carbon tax what is being talked about which I think we have passed the law, which will make it possible to implement is some kind of a 'cap and trade' system. I personally do not think that the 'cap and trade' system is the best. But that is what other countries are also doing. Europe doesn't have a carbon tax but have a 'cap and trade' system. It is much more difficult to run, it is very non transparent. But if we introduce a 'cap and trade' system which the Europeans feel is calibrated around the right numbers we will avoid the dangers of the C ban. But if we don't have a carbon tax and we don't have a 'cap and trade' system, yes, there will be duties on our exports and we will have to suffer.

Lavish Bhandari:

Mr Madhav, any closing remarks?

Dr Ram Madhav:

I just wanted to add only one thing that is missing in all this discourse on climate change that is population. Both the humans and animals. We need to also think seriously about it. India has this honour of becoming the largest country in terms of population in the world. It has already become or very soon going to become. Population growth rates have come down. TFR in India has now come down to two. But with two TFR also we will be reaching 170 crores, 1.7 billion by 2060 or 2065 when we start actually registering a negative growth. So, with that in mind you have to talk about climate challenges. I mean growing climate challenges with 1.4 billion we have this problem. With 1.7 billion what will be the future. Same applies to the animal population and domestic animals are 60-70% in India. So, we need to think about these things because they are also a major reason for carbon emissions, pollution and all that. So, while we revere in India, I always say that let us revere our animals but also rear them properly. We have to think seriously about these issues also.

Lavish Bhandari:

Mr Ahluwalia any closing remarks? Dr Mohan may I request you to pose a vote of thanks.

Dr Rakesh Mohan

Dr Madhav it was extremely kind of you to have taken the time, two hours to be with us in this discussion. I hope that we can continue these kinds of discussions not just in this subject but other subjects. Because as I said our organisations are basically technocratic. What we try and do is do the best research that we can on different issues. So, at CSEP we are also doing a lot

of work on human development, health policy, minerals mining policies which almost no one else is doing, but is connected to the discussions that we are having, many other areas. The issue is always how to communicate what we find in ways that... that is we are not just talking to our friends so to speak. Not that you are not our friend. So, thank you very much for taking the time. And hope we can continue and we can take your help in such activities. Montek as always thank you so much for taking the time, for doing all the work you are doing. Your sort of passion for climate change I hope that if there is even 1% result of your passion, the world will be a different place. Lavish thank you very much for organising this and for moderating this.