

**TRANSCRIPT OF MINISTER MENTOR LEE KUAN YEW'S  
DIALOGUE WITH SINGAPORE ENERGY CONFERENCE  
ON 4 NOVEMBER 2008 AT RAFFLES CITY CONVENTION CENTRE**

Moderator: "...Well, thank you. Ladies and gentlemen, Excellencies, welcome to the inaugural Singapore Energy Lecture. We're most honoured and privileged to have Minister Mentor Lee Kuan Yew to address us this afternoon. The Minister Mentor is well-known to everyone of you and so it is very difficult for me to add to your knowledge of Mr Lee Kuan Yew, but I cannot resist this opportunity to share a few moments with you on a particularly remarkable introduction of Mr Lee which I personally observed.

"In 1995, when Mr Lee was visiting Israel, he was introduced by the then Foreign Minister, Shimon Peres, at a keynote event. All of us in the audience wondered how Mr Shimon Peres, who is a well-known orator and statesman, would introduce Mr Lee. I recall that there was a provision of several minutes for Mr Shimon Peres to give his introductory remarks, but in his usual brilliant way, he said and I quote, looking at Mr Lee, Mr Shimon Peres said, "You have all come to listen to a legend and I now present to you the legend in person". After that, Mr Shimon Peres gestured Mr Lee to the rostrum and that was all. And now, may I invite Minister Mentor to give us some opening remarks before we commence the dialogue session. MM, please."

Mr Lee: "Thank you for gathering today to discuss the question of energy in Singapore. We are a small island, densely populated. So, when I faced the prospect of becoming an independent nation in 1965, making a viable economy and a society out of this little piece of land with then two million people, I had to envision the kind of ways we could move forward. And, of course, the immediate example was Hong Kong - densely-populated, buildings close to each other. It was just tarmac, concrete, tall buildings and choke full of people. Not the kind of city that I think I would want to live in and not the kind of city which Singapore could become and survive because in Hong Kong, you just have to do business there because it is a gateway to China, and, like it or not, pollution or otherwise, you're there. But in Singapore, there's no reason for you to be here.

"So, to distinguish ourselves from other cities in the neighbourhood, my intention was to create a First World oasis in a Third World region and I coined the slogan 'Clean and Green Singapore'. This was way back in 1965 before the energy crisis in 1973. In this little island, we've got to keep pollution down because there's no way to say these are high-quality areas, that's low-quality areas. If you pollute one part of Singapore, you've polluted the whole of it and we had enormous troubles when they put up a petrochemical plant in Jurong with Sumitomo. Sumitomo wanted Japanese standards. They wanted benchmark against the world's best because, otherwise, yes, we have got a petrochemical

industry, I remember Kaoshiung in Taipei and it was smelling sulphur dioxide and all of the other fumes. So, we set out to be clean and green.

“In 1973, with the oil crisis when oil quadrupled from US\$2 to US\$8 and then again and again, we watched the Japanese, how they control the air-conditioners, not below 25 degrees Celsius in summer and they learnt to cut per unit cost, per unit production of electricity per product. Unfortunately, we are not as well-trained and disciplined as the Japanese and we never achieved their standards. But we watched them, their buildings, the way they tried to cut off thermal heat from warming up the buildings and so on. We tried to emulate them and, in fact, I got the Chairman of the Productivity Centre, a man called Mr Goshi, to come here and explain to us how he does it. But we never reached their standards.

“Today, we are confronted with something much more serious. Then, we are only worried about costs. Now, we are concerned about the consequences of CO2 emissions and climate change. We can try and be the greenest city in the world and not going to make any difference in the outcome. So, what’s the point of it? Well, the point is if we don’t do this, we’ll lose our status as a clean, green city and we’ll lose our business and we’ll lose our extra premium for being an unusual city.

“What’s the future? Well, we use about 100,000 barrels of oil a day. We’re refining 1.3 billion, 1.4 billion barrels everyday, but that’s for export. We’re a refuelling centre for tankers and container ships and so on. So, our carbon footprint is very high per capita, but if you take just what we consume in Singapore, it’s very low. The problem that the world faces is that China and India want to achieve what they think they’ve missed in life - the quality and standards of living which Japan, Europe and especially the Americans have reached. Now, if they hit the per capita consumption of carbon-based energy that the United States is using, the ice caps will melt and we are into very serious trouble.

“So, we must hope that long before it becomes completely irretrievable, the Chinese and the Indians will recognize that this is one world and that if they just spoil the landscape, it’s not just the gases will be blown eastwards into Japan and California, but water levels will rise, Shanghai will be at risk, the Tibetan Plateau, glaciers will melt away and so, enormous consequences when the glaciers in the Himalayas and the Plateau disappears and the rivers become seasonal. Similarly with India because that plateau supplies all the big rivers to China and India.

“What are the chances of their getting the message? I’m not sure, but I think a green movement is slowly growing in China, not yet in India. So, the Chinese are feeling they’re being done in by this growth. So, the Olympics, they had to put up a big show so that the walkathon, I mean, the marathon could go on and they shut off all the factories in the surrounding and I don’t know how many kilometres radius of Beijing for two, three weeks beforehand and, lo and behold, in spite of

the being in a valley and still air in August, they had blue skies for the marathon and now the Paraplegic Olympics are also over. So, it's gone back to the old situation. But the people have already tasted a better Beijing. One of the things they did was to stop all cars, or half the cars using the roads, by odd and even numbers. So, now, they've worked out a scheme where they say 1, 2, 3, 4, the end number is 1, 2, 3, 4, 5, 6, 7. 8, 9, 10 is 1, 2, 3. So, on each day of the week, that car with that number will have to stay off the road. But that doesn't prevent somebody from buying a second car with a different number and there are enough yuppies in Beijing to defeat the purpose. So, they can build any number of flyovers, roads, ring roads, et cetera. They're not going to solve this problem until they hoist in the reality that you need mass rapid transit and that the majority in the city must use public transport.

"But this message is also slowly reaching out to the other cities in the country. So, they have decided as an experiment because they've been watching us and we proposed to them, we'll go to Tianjin and show you how we have a greener city, not a green city like Singapore, but a greener one, which means lower energy consumption, sustainable growth, clean and green environment. So, 30 square kilometres have been set aside. It's something that's going to take ten, 15 years before it begins to take shape. Now, if they get that message within ten, 15 years as this thing progresses, then I think there's hope that all is not lost and there will be a worldwide agreement between all the major consumers of energy to some limits, above which they should not go. If it comes too late, if it comes 30, 40 years in time, then I think we're all in trouble and Singapore can do all its utmost, but there'll be ice caps melt in the Arctic and the Antarctic, we are in deep trouble.

"And so, we must hope for the best, but prepare for something less than the best because I do not believe that they will be able to reach European levels of sensitivities any time within one or two decades. It would take longer. I think the most eco-sensitive of all the societies in the world are the Europeans because they've had a pleasant, very moderate climate, from Mediterranean to Scandinavia and they're seeing floods, strong winds knocking down trees, buildings, heat wave in France, killing off old people. So, there's a sense of urgency which unfortunately has not been shown by the Americans. But slowly, they're coming around, California is coming around. President Bush has moved his position, but it will take some time before the Americans get serious and the Americans are the biggest consumers of energy and they have to show the way.

"Let's all be on us, but I have these unhappy thoughts at the back of my mind, but we have got to proceed with what we can with Singapore and keep it going. So, for us, what are the alternatives? Wind? We've got no wind. I've been to Papua New Guinea and the winds blew all the time in Port Moresby and on the mountains, it was tremendous. Well, if we had that kind of mountain around, then maybe ten, 20 per cent of our energy could come from this aeroplane-like place. Tide? Our tides are not that spectacular, we have no big rivers, no big

estuaries. So, that's off. Solar? Yes and as you know, the Norwegian companies are sinking S\$2 billion worth of investments to do a solar cell plant here and R&D. But how much can it supply? Whatever it is, we've got to try every little way to minimize the use of carbon fuels.

"The real alternative that can produce the electricity generation to match oil and gas is nuclear. As you know, the rule is you must have the power station at least 30 kilometres away. Then you can put one end of the island and what happens at the other end? So, we've been thinking these things through and I said, okay, there's Horsburgh Lighthouse, it's more than 30 kilometres away. We reclaim land there and plonk it there. But then it's less than 30 kilometres away from the Malaysian coast and they'll be worried. So, really, we are forced - eventually, I hope our neighbours also come to the conclusion - that we are forced to cooperate.

"If we understand the complexity and the immensity of the problems the world faces and we will face in Southeast Asia, then we should have a common grid and a common pipeline so that it's transferable and the prices of oil and gas and the electricity between Malaysia, Indonesia and Singapore are so different because they're subsidizing it. We are not. We are using the market to control the consumption of energy. So, prices of oil go up, you drive less or you change into a smaller car. But in Malaysia, you know they put the price up, they removed the subsidy and there was a howl of rage and they restored part of the subsidy. And in Indonesia, every time they remove the subsidy, there are riots. So, these are problems which will take some time to resolve and somehow we must find some way. Sooner or later, they'll come to the conclusion that we have already come to, that this problem can be better resolved if we have a common grid and common pipelines.

"Now, I pose you this final problem on alternatives. I've been through this for many years because I was on the board, I'm on the board of Total International Advisory Board since 1992 and we've gone through all the renewables. The fact is that all energy comes from the Sun. So, primitive man cut wood, burnt the wood to generate heat and production of food was dependent on the Sun and population was then controlled because that was the maximum you could produce. But then came the Industrial Revolution. They went into coals, steam, machine age and you broke through. Then the population rose and people travelled the world. Then they found oil and so, that's more powerful. So, they built battleships with oil. You can read all these progressive improvements in Daniel Yergin's book about energy and oil. But we are, I believe reaching the limits of what this planet can hold. We have to accept that we are all passengers on this one planet and if we don't reduce this consumption of carbon energy, we are in serious trouble.

"The only alternative that frees us from this, coal means retained solar energy, oil is also retained solar energy. Nuclear is not, nuclear is in, what causes the Sun

to go around like that. So I was hoping this collider in Switzerland will produce some results and we say, ah, we can now have technology that will free us from this need to depend on the Sun for energy, but you know what happened after four days, they shut him down and got overheated. So, I think there's a limit to what man's ingenuity can do. So, let's just control our consumption, keep it down, try and keep population down. There are limits to growth. Let's live comfortably within the limits that this world can sustain. Now, over to you."

Moderator: "Thank you, Minister Mentor. Now, we open the floor to your comments and questions. Anybody would like to take the first shot? Yes, sir. The microphone will come to you."

Q: "Thank you, Minister Mentor, for joining us this afternoon. I'm Robert Dixon from the World Bank Group. Question for you, maybe some advice. China, the United States, India are responsible for about half the world's greenhouse gas emissions. We've been negotiating climate change agreements for almost 20 years. As we look forward to the negotiations, what advice would you have, based on your experiences, for the negotiators from these large greenhouse gas producers. Singapore has been a bridge between these cultures for many, many decades and what advice would you have for us, those of us negotiating? Thank you."

Mr Lee: "I do not believe there will be, you know, seeing the light on the road to Damascus. The last international meeting was in Bali and the Indians and the Chinese reserved their positions, as they must do, even as a bargaining tactic. But the Chinese want to experiment with the Eco-City in Tianjin shows that they realize that this is something in the middle term they have to seriously consider and after these Beijing Olympics, it may be nearer than the middle term. I do not sense that urgency in India yet because their consumption is even lower because 75, 80 per cent of the people are farmers in the countryside and they're not into the oil and gas stage and their industrialization is also very low. Their growth has been on the high-tech industries, IT, outsourcing and so on because their infrastructure has not been built up. But they're going to build up their infrastructure over the next ten, 20 years. They will build up their industries and they'll do exactly what China is doing.

"I think there will have to be a series of meetings. Each time, reluctantly, they'll be dragged into committing themselves to targets which they hope will not be too high for them and maybe they will exceed and then they'll be rebuked or fined or whatever it is and they'll go on. The penny will drop only when they see the consequences for them, as Europe has seen. I mean, the Europeans have not become that sensitive just because the world was going to change. They were changing in a way that scared them. I had lived in Britain for four years immediately after the War and it was an equable climate. You can predict, Mediterranean, you get this climate. You go to the north of France, you get that

climate. You go further north, it's cooler. But now, it's so different and it scares the Germans when you have floods.

"Americans are less panicked because they have always had tornadoes, hurricanes. So, what? And they declare a disaster area and enormous resources, the insurance companies pay up and you buy a new home, but now the insurance premiums are going up. In some parts of the country, I think the insurance will not be available. Then slowly, gradually they will also feel the spurs to do something about it, I hope. It's a slow process. If it can happen within 20 years, we will be lucky."

Moderator: "Today in the afternoon, Minister Mentor, many of the participants lamented the lack of political will among the leadership in many countries to deal with this problem. So, this is something that we have to really work on. Any other question? Yes, sir. Microphone, please."

Q: "I am Michael Clarke, a Visiting Fellow at the Energy Studies Institute. I think if you look at..."

Mr Lee: "What energy institute?"

Q: "The Energy Studies Institute that was just formed a year ago. I am a Visiting Fellow here from the US. I think you have very eloquently shown that Singapore could be a beacon to the world, given the sustained policy that you had, beginning with your anti-pollution stance when this nation was first founded. The whole issue with the US is the fact that consistency in energy policy somewhat varies from administration to administration. So, as a word of advice to the whoever is the incoming President, how would you advise them on getting a consistent longer-term policy because in the whole area of energy and environmental sustainability, I think your example of long-term sustained persistence is what has made the difference. Thank you."

Mr Lee: "I think the next President has got a plate full of very urgent problems and climate change is something way beyond the horizon for him. So, I do not believe he'll be very excited if you tell him that this could be at the top of his agenda. He's got his own domestic problem. If Mr Obama wins, as polls show he will, then his first thought must be how do I not lose the mid-term elections and how do I get re-elected at the end of four years, which every President does. So, if you do unpopular things, you won't be elected."

"It will be tough. As I have said, the lesson will have to hit them hard when the insurance companies say, this area is not insurable, or you can pay this enormous premium because I don't want to ensure your house or your caravan or your yacht or whatever and that's when that part of the country will get serious. But it's such a huge country. You can move to a safer part and just say, all right, abandon it, because when Katrina happened in New Orleans, that was some talk,

say, why not abandon it, it is such a hopeless situation, the levees will go again. And so, you move on. I mean, this is a vast open country. If you compare to India and China, it is under-populated. They can take twice, three times the population they have. So, you just move on to another city or another part of the country. And with global warming, you'll never know. Canada may become wary land where they now have thermo-frost and you just move north.

“This kind of prospect makes a society less urgent in solving it. We've got just these 700 square kilometres and we've got to preserve it all cost. So, there is an urgency, there is an imperative need to do everything possible. If you have the size of America, the United States and the population is just 300 million, well, you need more people, that is all, and they are getting many people year by year. So, I don't really know how to do it.”

Moderator: “I saw a hand this side, somebody here? Anybody else? Yes, sir. Microphone, please.”

Q: “I am Charles Zukoski. I am the Chairman of the Science and Engineering Research Council under A\*Star here in Singapore and there has been a lot of discussion today about Singapore as a test bed for new technology, sort of acting to demonstrate new technology such as electric cars and this can attract both industry to Singapore and act as an inspiration and perhaps attract talent to Singapore. And I am curious about your thoughts on having the whole of government sort of approach of Singapore being turned over to working on different sorts or test beds, such as being the global leader and test bedding electric cars? Thank you?”

Mr Lee: “Well, we are a small city and we have a small part of the population with Porches and Ferarri and every weekend, they go up to Malaysia and press the accelerator, but the majority just move around the city limits which is about 70, 80 kilometres at the highest. So, there is no reason. I have driven a GE electric car in Stanford several times. George Shultz is a friend of mine. He is on the Board of GM and so, he was given these cars to try. So, I drove it around Stanford. I don't know how frequently it needs to be recharged. This was about two, three years ago, but it could accelerate like a normal car and there is no reason and it makes less noise, no pollution. But we have got to find the electricity or use carbon to charge it. So, then you go back to nuclear, but where do we site this nuclear station? I was thinking at one time about a floating platform put a nuclear station there and if it blows, then we move it a few kilometres away from us.”

Moderator: “Next? Comments? Yes, sir.”

Q: “My name is Deepak Waikar from Singapore Polytechnic. I just wish to know what are the barriers Singapore is facing to become an Annex One country under the Kyoto Protocol?”

Mr Lee: "I can't hear you?"

Moderator: "What are the barriers Singapore would face to go to Annex One country under the Kyoto Protocol. Climate change. Maybe you want to just elaborate a little bit about your query, Professor?"

Q: "Okay. Annex One countries are those which have decided to have mandatory cuts in emissions and Singapore, being world class in many respects, showing global leadership in water and energy technologies, so, what are the other barriers Singapore is facing to become Annex One country under Kyoto Protocol?"

Mr Lee: "If you exclude what we export, the energy that we have to use for shipping, for petrochemicals which we do not use, but it's really just for export, then, we have already complied with Annex One of the Kyoto Protocol. The problem is, as a small economy, we've got to do these things because it's economic for us to take these high carbon footprints industries which the more developed countries do not want and then we export the products. So, we have no choice. If you want us to comply with Annex One and we've got to close down the petrochemicals, close down our tanker refuelling and close down many other things, then how do we make a living? So, you've got... There was a report from some UN agency that gave us a very high carbon footprint. So, we pointed out to them that this is really our domestic carbon footprint, that this was for export.

"We hope one day that, you know, all these high-energy products need not be in Singapore, we move on to high-tech, then we are not polluting the world, but that will take some time. That is why we are heading for more R&D, not only in the products which we can use but in products which we can help others use. We are moving as fast as we can into a more knowledge-intensive economy, but, you know, if you move too fast, you create unemployment to the people that work in the factories, then you get voted out. "

Moderator: "Yes, sir."

Q: "Thank you, Your Excellency. My name is ...(indistinct)... with the National Centre for Manufacturing Sciences, Ann Arbor, USA and my question is -- a famous saying says, "Some people change when they see the light, others when they feel the heat, feel the heat of things". What is your take on faith-based initiatives as a basis for creating change among individual communities and, you know, eventually, nations?"

Mr Lee: "What do you mean by faith-based initiatives?"

Q: "I mean, essentially, you know, looking at faith and religion and essentially using that as a driver for creating change and, you know, propagating change amongst mass communities?"

Mr Lee: "But I thought the people who are very concentrated on faith deny Darwinism. So, indeed, climate change has got to do with Darwinism and if you believe that Darwinism should not be thought in the schools, how are you going to...? At least half the population or more than half the population of the United States won't be convinced with that. Let's leave faith out of this. It doesn't matter what your religion is, it doesn't matter whether you're Hindu, Buddhist, Taoist, Zoroastrian or Muslim or Christian or Catholic or Jew, this is the planet and if we change the climate, we are all going to be unhappy. "

Moderator: "Thank you. Sir, the Honorable Minister from India, Kapil Sibal."

Q: "Minister Mentor, it's a privilege to listen to you today. I am the Minister for Science and Technology from India. I would have hesitated to ask the question. Since you suggested some scepticism about India's commitment, I thought I should clear the air. We are deeply committed to climate change and I must say I happened to be at Bali and I was the chief negotiator from India and I don't know how you got the impression that we were not committed. So, there is perhaps a lack of communication at some level.

"But coming to the question, I do believe and I think I agree with you that to think that we're going to have a global solution at the political level in Copenhagen is a far cry. I think if you are going to really do something about climate change and make sure that our future generations don't suffer from the impending disaster, we need technology. What we need is a technological solution, not a political solution. We need political commitment for a technological solution and I am afraid that the world is not moving in that direction. What we need, and remember this, each country in the world is differently circumstanced and they need different technologies at different prices which are accessible and affordable at different levels and I don't think that the global community has gotten together to think of those technology solutions. For some, solar energy will be a solution; for some, wind energy is a solution; for some, some others, coal, for example. People are pushing for coal because most countries have huge reserves of coal. We are talking about carbon sequence stations and capturing it because they know that there is no other form of energy and they have a resource if they which to use. But some countries do believe that coal is not a solution. So, I think there needs to be a global mechanism, there needs to be a global commitment and we must move away from the patent regime when you are talking about sustaining our planet. What are your comments?"

Mr Lee: "The Chinese also believe that patents should not buy. If you want them to go green and what you have discovered, you pass on to us and we will be able to help you. I said this of India in Bali because both India and China took the

same positions. They did not commit themselves, you did not commit yourselves in Bali to the resolutions that were put up. And I don't blame you because your per capita consumption is that low. Eighty per cent of your population is in the countryside and even in the towns, you are not industrialized, as they Chinese have, because you have gone IT first. So, your contribution to global warming is insignificant. But in 20 years, I think once you've got your infrastructure in place - roads, highways, railways, container ports, fast communications - you're going to get enormous investments in manufacturing, as the Chinese have, become a great importer and exporter, importer of raw materials and exporter of finished products and then your consumption will go up.

"I do not believe any country can depend on renewables to meet its energy needs unless... There are certain things, there are certain areas where petroleum is necessary and will be necessary for a long time. Transportation, especially by air. Transportation by car, you can switch it to hybrids, switch it to electric, but can you get trucks to go electric? And China and India will have huge distances to carry their goods. So, finally, you go back to oil and the world estimate, the IAEA estimate is that by 2040, the demand for oil and carbon-based energy will be 58 per cent higher with China and India and the output will not match, the output from the oil-producing countries will not match that increase. In other words, the price will go up.

"So, if you allow the price to filter through to the people, then there is a chance that the people will learn to adjust, but as you know, India also subsidises energy, as the Chinese do, and so, you are not curbing consumption. I mean, we do not subsidise energy. We subsidise nothing which we have to import. So, the population learns to live within its means. But big countries like China and India feel that this is one way of equalizing the people who are in the lower socioeconomic classes, but that means you distort the consumption of energy and that prolongs the agony. I mean, it's not your jurisdiction, it's the Minister for Finance and he's got to consider the impact on the votes in the next election. Your job is to find the technology, but I do not believe that you're going to find any technology to solve this problem because all the technologies go back to Sun-based energy, except nuclear, either fission or fusion. I mean, you think about it. When we burn coal, when we burn oil, it's stored energy from the Sun, when you burn wood. Wind is also stored energy from the Sun and it causes all these movements on Earth.

"If we can find the secret to the atom without causing disastrous consequences, then we have limitless supplies and then whoever discovers it will want to gather the cost of the research, R&D, that he's put in for many, many years over many billions of dollars and he's not going to give that technology away free to India or China. And it may come. I have met friends, Americans who are very excited the way able minds, creative minds working on this in Stanford, Boston. I am sceptical because I think you've got to break the secret of non-Sun-based energy, what makes the Sun burn, I mean, that's a very deep secret. If you can unravel

that, then you have really unravelled the beginning of life. And as Minister for Science and Technology, maybe you might put a portion of your R&D funds to work with the Americans and Europeans and the Japanese who are very hard at work on it. I mean, this Cern project has not come yet. Umpteen years have gone into this collider and after four days, they shut it down and some of the best brains in the world are there. “

Moderator: “Next. Yes. Microphone, please.”

Q: “Thank you. Excellency, my name is Didik Hajar Gunadi from Indonesian Investment Board. As you may have noticed that your two neighbouring countries, Indonesia and Malaysia, are the biggest palm-oil producers in the world and we are trying to get a better economy from this business. But then, the developed countries, mostly from the European Community, put a non-tariff barrier with putting any involvement or issues that is actually no longer in the place. Would you have any thoughts, what you suggest for both parties that the bio-fuel is exactly one of the options for the future in having the shortage of the energy? Thank you?”

Mr Lee: “Your interest is in clearing your forests and growing palm oil because you get higher returns from palm oil than having the forests, right? The Europeans are worried that if you will knock down, you keep on burning your forests, the carbon bank there will disappear into the atmosphere and palm oil does not really solve the problem. I mean, just like I do not believe making corn into bio-fuel solves the problem, or even if you have Brazil making sugar cane into fuel corn. The day you can use just simple grass and turn it into bio-fuels, that’s different, but turning food into bio-fuels makes more sense to me. You are going to cause enormous hardships to the world.

“I mean, I spoke to the CEO of one of the big American oil companies and he explained to me the absurdity of it. They collect all this corn and so on from so many places in huge trucks. They bring it to a refinery, then on with this massive amount, you produce this little fuel and you’ve mandated it, you must have this percentage used in the cars. So, he told me, he said he rung up the White House and he said, this is not in my report. But the White House told him not to worry. They know all about it. But that corn turned to bio-fuels makes the farmers in Iowa very happy and they will vote for the right party. So, well, how we start? But that’s America.

“The Europeans take a different view of the world. They have seen their temperate climate world upset and they are quite nervous about what the end result will be and so am I. I mean, the first phase now, we are getting more rain, right? I mean, I am not sure about Indonesia, but we are getting more rain. That is the first phase of climate change. If the end result is less rain, then we are in deep trouble with our... We thought we’ve solved our water problem by recycling and all the clever things of preventing leakage and metering, et cetera, et cetera,

but if our 90 inches of rainfall becomes 40 inches, then we have to do another rethink. So, it's a moving situation and I do not believe palm oil or sugar-cane or corn is the answer to the fuel shortage.

"Palm oil for food, yes, but, you know, you should do it in a way where you don't burn up valuable timber. You fly in Jambi to egg the farmers to do it in a way where they can... It's slower, takes more effort. You salvage your timber, then you replant in a way which makes the loss of the trees less damaging and then slowly grow the palm oil, which takes six, seven years before it yields any results before it fruits. But, you know, it's all in the rage and the Malaysians have gone in a big way to buy up your companies, your palm oil companies because their palm oil has got to be plucked by high-cost labour. They are going to Indonesia where it's plucked by low-cost labour. So, they are transferring their production to a lower base. So, it goes on. That is the way economics works, but looking at it globally, I think it does not make sense to turn food into bio-fuels."

Moderator: "Thank you. Yes, please. Microphone, please."

Q: "Good afternoon, Minister Mentor Lee. My name is Yujun and I think I am one of the few people in this room who are still studying. I am from NUS. The reason why I am standing up is that the odds are if I am lucky or unlucky, when climate change finally takes its toll on Singapore, I will probably still be around. What actually just now at the end of your lecture, you actually mentioned something which I feel is very important, reducing consumption, because so far, the questions here have always revolved around how do we meet the increased demand, how do we find renewable sources, how do we make them? But very little emphasis is placed on how do we reduce the consumption? Take this conference, for example. The local delegates probably drove, the foreign delegates probably flew and, for example, earlier on during lunch, two-thirds of the buffet was still left there at the end of the session. So, what I want to ask is that how can we as a community perhaps place a little more emphasis reducing our consumption and changing our lifestyle, as opposed to looking for solutions that don't seem to be appearing? Thank you."

Mr Lee: "I think we should study the Japanese carefully. They have spent a lot of time minimizing the amount of energy they take to produce a unit of product. That's where most of it comes from, I mean, producing products, manufacturing. You've got to become more efficient in the use of energy and it can be done. Then in the case of Singapore, because of the air-conditioning, you've got to have more green-type architecture where the heat flow is prevented from increasing the need for air-conditioning and it does make a difference. At the Istana, which is an old building, you find there was a corridor around every room because they built it in the 1860s when there was no air-conditioning and you had this pankawalla from India with a string tied to his toe and he moves his toe about in a cross at the top, hips going in, you know, moves around and gives you some ventilation. Now, we are building glass windows banged up against the

sky, the law requires. So, we legislated a certain ratio, heat flow, et cetera and so, what they did was they tinted the glass. What they should do is also not only tinting the glass, it does not cut off, as double glazing. But double glazing costs more money, but that technology could evolve, but these are big consumers of electricity.

“But what the individual can do is to make sure that you don’t waste it. I mean, as our standard of living has gone up, you will see that all the heartlanders, even the three-roomers, have air-conditioners, window air-conditioners sticking out. But when the price of electricity goes up, they switch it off at night. They have it on in the first half of the night. Then it cools down, then they switch it off, which is a sensible thing to do. And you’ve got to change you’re your bulbs to low consumption. I’ve bulbs which, I don’t know what they call them, lithium or and I’ve got several at home and as our old bulbs blow, they put in these new ones which costs more but lasts longer and consumes less electricity. But in the home, the biggest consumer of electricity is the air-conditioner. So, don’t over-cool the place and do not unnecessarily switch it on. Switch it off when it’s not in use. I mean, if you go to most of our hotels, I find them colder than any European or American because they just leave it on and... You take this room. It’s designed to carry the body heat of 500 to 700 people? We leave, the room is empty. The air-con is still going on to carry the heat load of 700 people when none are there. So, the temperature goes down and the thermostat doesn’t quite work. It doesn’t switch off. So, I think...

“I once went to a, I think it was in Turkey, Istanbul and it felt spooky because when I sat still, the lights went off. When I moved, the lights came on. So, I called the manager up, I said, what is happening? He says, no, no, these are sensors. So, when there is nobody in the room, everything is switched off. Well, that’s a clever gadget and I think we should find the equivalent of that for the air-conditioner. When you leave the room, when the body heat is not there, it switches off. All these little things help to keep your utility bills down. When I leave my office, I switch my lights off and I said, switch off the air-conditioner, but unfortunately, some of them are connected to a whole grid. So, the whole floor is activated. So, I switch it off, those who are using their rooms also lose the cooling. So, there you are. So, we’ve got to find ways and means to individualise the needs and save every bit that we can. That’s how we’ve made it so far and that’s how we can continue to make it against more adverse circumstances.”

Moderator: “MM, it’s time for you to conclude the dialogue. You want to pick one more last question? There is a lady there who has been putting up her hand.”

Mr Lee: “All right.”

Moderator: “This lady, please. No, no, the one behind. Now, there are two ladies.”

Q: "Thank you. Mr Lee, one way to..."

Moderator: "Introduce yourself, please."

Q: "Oh, sorry, Evelyn How from Senoko Power Limited. One way to control consumption is, as you have mentioned, through prices. Now, polls taken in the UK and some states in the US suggest that consumers are ready to pay higher prices for renewable energy. Do you think Singapore is prepared to go that way or should we even go there at all?"

Mr Lee: "I think Singaporeans are cost-conscious. They don't care where their energy comes from. Which is the cheaper one? I mean, we have tried to get them to go hybrid in cars, but the cars cost more. We have reduced the taxes. They have decided, no, they will take the non-hybrids. But one day, there will be either an efficient hybrid car and we will legislate that everybody has got to go hybrid or everybody goes electric and if we can have a nuclear power station 30 kilometres away from us, then we'll have more energy than we need. We can charge up buses, lorries, whatever it is, provided you don't have to travel long distances because once you cross the Causeway to deliver your goods, half-way through, they may not have the plug-ins for you. You've got to be practical. Singaporeans have learnt to live with the pricing mechanism and they are not interested where the product comes from. How good is it? What is the quality? What is the price?"

Moderator: "Okay. Thank you, sir. I think that will bring us nicely to the end of this dialogue session. I want to thank you for your interest in this subject. I am sure this conference will continue to attract your attention later this evening or tomorrow. On behalf of everyone, thank you, Minister Mentor."

Mr Lee: "Thank you."

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