

## 18<sup>th</sup> LOVRAJ KUMAR MEMORIAL LECTURE

October,12<sup>th</sup>, 2011

### **Prof K.Vasudeva's welcome address:**

We begin the evening and say it with flowers'. I would request Geeta Sheshadari to present a bouquet to the Chief Guest, Dr.Ahluwalia.

I now request Pooja Dalmiya to present a bouquet to our esteemed Chairman Dr. Abid Hussain.

Tradition demands that we light the lamp as a welcome to begin the evening so I would request our chief guest to kindly light the traditional lamp and also garland the photo of Shri Lovraj Kumar.

Madame Sushila Sahaya, Chief Guest Dr. Montek Singh Ahluwalia, our distinguished Chairman Dr. Abid Hussain, Dr.Anand Mukherjee, very distinguished audience, ladies and gentlemen.

We have gathered today for the 18<sup>th</sup> LOVERAJ KUMAR MEMORIAL LECTURE.

The figure of eighteen, reminds one of adulthood, perhaps the trust has reached the level of adulthood and it will carry on its activities with increased vigor, enthusiasm and wisdom. We have just passed through our delicate adolescent years with that logic, but we never felt that because of the very able guidance that we received from Dr Abid Hussain, whose been steering us through this period with his wisdom, wit and commitment.

We very fortunate. We also have very strong support and a good team in the trust and I would take this occasion in particular to mention two names. One Dr. T. K Roy whose with us, one of our founder trustees, a distinguished professional in his own right, who has a great commitment to the trust all these years and for last 2 – 3 years despite some physical handicap, has always been attending the meetings of the trust and the annual lecture even though he has to be brought in a wheelchair. May I request you to join me in our appreciation of his contribution.

The other senior life trustee I'd like to mention today is Mr. Jyoti Kapur, who has done the same, but today he is not in a position to move out of his house and therefore for the first time he will be missing the lecture. But apart from the trustees there is a very large

number of people many of them in the audience who have had a long association with the trust. I would mention Mr. P. K. Rudra and I recall the first meeting of Lovraj Kumar Memorial Committee, which Mr. Dharmvira attended and chaired, was held in his office in EIL, 18 year ago, 18 plus years ago, he is also with us. Dr. Vardhraj has been present at all our activities and so are many other people here, the list is long and I would not repeat it.

From people who were young in those days to people who have now even retired have been with us for all these years and on behalf of all of us I would like to show our appreciation and thanks to all of you. I hope you will forgive me for not naming the long list, I see Lalita Singh here. I could say the same for her, Inderjeet Singh, many others.

In the 60's we had the license Raj at its peak and four licenses were issued for starting polyester plants in India and Lovraj Kumar was in the seat at Shastri Bhawan that time, when the decision were taken and many years later, perhaps 25 years later in a casual conversation I asked him that you've issued licenses for four plants with a capacity of 6,250 tones each, that number looks very odd, why was it done, 6250 tones. And he remembered 30 years later and he said we had decided to give licenses to four people and planning commission had worked out the demand at 25,000, so instead of tampering with the figure we divided 25,000 by four, we put up the plants for 6,250 tons each.

But he told me something interesting as a sort of a follow up. He said when the file came to me I found that one of the applicants was Indian Organic Chemicals and we had a few shares of Indian Organic Chemicals. So he asked some senior colleague what should I do, the file has come to me and I am a shareholder.

So he said how many shares you have, he said 100, he said oh that's trivial, how does it mater, don't worry about it, you go ahead, file has come to you, you have to do it.

See, he was still very uncomfortable, he asked somebody else, he said, look if you are losing your sleep, you inform the department, that you are a shareholder. So he did precisely that. He informed the department that he has 100 shares of Indian Organic Chemicals and went.

Such was the approach of Lovraj Kumar. His integrity, his honesty, his commitment, his vision, his deep involvement in whatever he did, even to remember 30 years ago earlier action taken in capacity itself shows you know. Therefore it is no wonder that people like you still remember him, not only fondly but also with great respect.

Is for that reason people like Dr. Abid Hussain agreed to become chairman of the trust. It is for that reason that Dr. Montek Singh Ahluwalia and Vijay Kelkar are veterans of the trust. It's for that reason that we are consistently getting better and better speakers, I shouldn't say better and better, very outstanding speakers and our lectures are highly appreciated. I am sure there are some people here who may not have received the cards and are yet here, because people follow what is going on and I think we are grateful to all of you. I don't want to take anymore of your time, except to show our great appreciation of all of you to be with us on this issue.

I see Dr. Ashok Parathasarathi here, many other people, Dr. Varadarajan who knew Lovraj Kumar, Mr. Pratap Narian, so many very personally interacted with him. Dr. Varadarajan had one of the stronger interactions because he was building the IPCL plant, he was CMD of IPCL and Lovraj Kumar was in Shastri Bhawan planning and doing this. He did great job. With these few words I would get out of your way and let you have the pleasure.

I missed an item and that is Saraswati Vandana and since these young girls have come all the way to do that, with your permission I'll request them to present the Vandana.

- **Saraswati Vandana**

May I now request our chairman for his opening remarks and then invite the speaker to deliver the lecture.

**Dr. Abid Hussain's Opening Remarks:**

Respected Mrs. Sahay, how do I describe Montek, one of our finest persons and a very dear friend of ours. First of all on behalf of the Trust I join Vasu in welcoming you to this 18<sup>th</sup> Anniversary meeting. I am happy that you've all find the time to be with us today. We like to organize these functions, specially every year we are having it, so as to invite ourselves to the memory of a man who has paid an extremely important role in building up, what you call the petrochemical industry & culture in this particular country. Lovraj was a man not from the civil service, but he was a professional, he was working in a private sector in the Burmah-Shell and then he migrated to the public sector and to the government. And I must say one cannot forget the contribution which he made and created a feeling amongst us that people coming from the private sector could be as good, as committed, as nationalistic and patriotic as anybody else in the

government. He proved it to the hilt, that this country needed the support of the private and public sector to join together to achieve the common goals. And I must say that he did succeed to a great extent. He brought the idea of technological change to be brought into the working of his ministry, which he did. He also took up certain areas of petrochemical industry, which were not being attended to. I need not go into his performance and what he did in that particular area, but I must say that apart from being a professional, apart from being a good administrator, apart from being a good technocrat, he was a good human being and that was a quality for which he is remembered to this day. For people who worked with him, under him, or came in his contact, they were all charmed by his personality, because he was so lovable. He was a man who never really carried a chip on his shoulder, he never really showed that he is a very important member of the government. And I must say that the legacy he has left behind and the admirers he has left behind is marvelous. There are many amongst us who have also done very good work, but when we retire and when we leave the service, we vanish and nobody remembers us. But in the case of Loveraj, it is the people who worked with him and under him who still remember and his memory has been kept fresh in our mind. So I am so happy that when we are organizing this particular annual meet, we have all come here to pay tribute to his memory.

Friends I must also confess that I am extremely grateful to my very very dear friend Montek for having accepted our invitation to be here. You know Montek is extremely busy and he is having not an easy but a tough time, but that is not new for him. He has always been facing tough time, and when the times are tough, he has shown that he can also become tough. The recent controversy which is going on shows the intolerance of his critics and yet at the same time his conviction that what is being done is for the good of the country. Montek is a man of conviction and he has a strong conviction in the sense that growth is essential, vital, most important for doing justice to the people below the poverty line. When he takes up the cause of growth, it is not the growth only of a few, what you call industrialists and others but it percolates down to that particular area where it makes a sense for the poor. Montek is full of energy, the physical and intellectual or mental you might call it and that is why when he is out of job or he is not doing the job, he explodes and bursts, because to control that particular energy is not easy. And I must say that he would have remained incomplete without Isher. She has been a greater strength to him and has provided him the support which he badly needed all the time.

I must also say that today when he is going to speak on the question of energy, I am sure he is going to take up certain very critical aspects of energy. Energy is the most vital factor of our economy today. It is dangerous that we are neglecting that particular area and not catching up as the needs of this growth demands. It is absolutely necessary that the management of energy has got to be tackled with the clarity of mind and a sense of vision. And I must say that he has that vision.

There are two or three friends of mine who are here, who'll bear with me, that when he stepped into the world of Rajiv Gandhi, he brought into focus a sense of growth as the most vital factor for the development of the country. And I must say that Rajiv Gandhi also responded beautifully to that particular idea. He was new to the government. He was new to economy, he was new to many things, but then he had the sense and instinct to get hold of the right type of people and the right type of things. And it was at that time, I would say that he sowed the seeds of reforms, which in 1991 bloomed into and flowered. Very few people know as to how closely he was associated with Mr. Rajiv Gandhi and enabled him to take up what you call the cause of liberalization, which was a word at that time not very much liked at all and yet at the same time, he took it up and carried the cross with great success.

I do not wish to take much of your time, but I would only say that we are all eagerly waiting to listen to him to see as to how the whole scene of energy is to be unwrapped so that you see that we may be able to see as to how the different elements of energy which are disbursed today could be brought into focus and we'll be able to have a consistent, constant energy programme. I would not like to speak more because I promised my wife this afternoon that I will try to be on my best behavior and speak as less as possible. And as you know I don't wish to disturb the domestic life of mine by exceeding to speak more. Ladies and gentlemen you are all waiting to listen to my friend Montek and I am sure we will be rewarded and there will be more lights after his speech.

Here I might tell you one thing that the power cuts have been something which has been most annoying to most people, and especially in our area where we are living. And I still remember that when I was in America and when we hired a particular hall for a lecture the manager said Sir, you will have to finish it by 6.30 because that is the time you have to end. I said supposing if we don't close at 6.30 what will you do. He said we'll switch off the lights. I said you do not know we have come from India, half the

time we were in blackouts. So but I am very sure that that part is over and we are going to have enlightened period ahead of us. May I Sir now request you to kindly address us. Thank You.....

### **DR. MONTEK SINGH AHLUWALIA'S Speech:**

Abid Sahib, Mrs. Kumar, Ms. Kumar, friends let me say that you know when Abid Sahib asked me to give this lecture, I readily agreed, Now many of you may think that it is very difficult to resist Abid, that's generally true, but I have to tell you that in the case of Lovraj Kumar lecture whoever had asked me I would have agreed. I have a very special, I mean many people here have worked with Lovi as we all called him, but you know I am probably one of the few who actually met him when I was a student. So I wasn't just young, I was a kid. I was a student in St. Stephen's College and I applied for the Rhodes scholarship & Lovi was chairing the interview committee. Which as it happens, I was one of the 2 people who actually did get the Rhodes scholarship and it therefore will not surprise you that I have the highest opinion of his judgement on all matters. But ,but this this opinion which was entirely personal and in that sense biased was subsequently reinforced on many many occasions on much more professional grounds.

I owe a lot to Lovi for that initial break, but actually I owe even more for the many occasions when I interacted with him in Delhi. For a long time, when I was abroad for ten years actually, and both Isher and I would visit Delhi we were greatly welcomed in Lovi and Dharma's home. Which was the two of them together were, we didn't mention this, but they were great hosts. So he was all these other things that Abid Sahib has mentioned, but you know if you were actually working in India, it was terrific to go there home, be entertained with whatever tea, coffee whatever and it was truly an extraordinary, extraordinary opportunity when you met such a wide variety of people and it reflected the diversity of their interests.

He was also of course as Abid Sahib has said he came from the private sector, which I mean one or two people at that time did the same thing. But you know whereas others came from the private sector to actually one Public sector enterprises, he actually came

from the private sector to the planning commission. So I have a special affection for that also. Because you know it is very unusual to have a manager coming in from the private sector into what is after all a sort of a think tank part of the government. And interestingly again for a private sector manager he had a surprisingly high opinion of economists and also economics as a profession. Because he set up the project appraisal division of the planning commission and you know its interesting that I would say at that time the planning commission in technical terms was absolutely on par with what was cutting edge work in economics at the time. Of course cutting edge works with economics has continued but most of it not connected with planning any more. So even if we were as imaginative as Lovi it would be very difficult for us to have people doing cutting edge work in the planning commission, but it is worth thinking. But I had come in from, recently from a university and all the thinking that was done being on project evaluation, what have you was pretty much frontline. Nobody else was doing better work in project evaluation. Of course as they always say our problems were not in the lack of project evaluation it was in all the other things that are called implementation these days.

Two other points that I want to mention and you know one is that he had a tremendous interest in younger people and you know it is having worked with the government system for a long time and I say this because I think Abid Sahib exemplifies exactly the same characteristic. It's hugely valuable when you have senior people who actually encourage younger people. And I don't mean just encourage them in the sense of do your work and I'll promote you etc, but actually look at them as people and look at their views and find their views stimulating. That is truly a unique unique thing, because there are many many people who have done wonderful work, but not that many of whom this particular thing can be said.

And finally I mean for a person who had all these characteristics he was actually quite a fun loving guy. I had the privilege of being on a committee which he had set up, which he chaired actually on where we were going to locate all these fertilizer plants. So on the one hand we had somebody doing linear programming and it later became the Integer programming analysis and if the HBJ pipeline was going to come from here and the fertilizer had to go all over the place, where should these fertilizer plants be located.

Of course politics also came in because you couldn't locate them all in an economically rational way, because then you have to locate the right number in different states. So a number of constraints were imposed on the linear, on the Integer programming model to get a reasonably sensible result. Now you would think that this requires a lot of what you say quite a boring kind of work. But Lovi said you know I think you should drive from wherever the pipeline is going to land and go up a little bit and see what the place is like and in that connection we all landed up in Surat.

And then one evening he said listen there is a lot of nice antique shops in Surat, which is not one of these very highly expensive ones, but sort of places where you can find interesting things, so let's go and spend an hour or two there. And I went with him and I am very pleased to say that I discovered an old Gujrati wooden bracket which still occupies a pride of place in our living room today. So it is very difficult to summarize all the many things that I can think of, when I think of Lovraj. I am just pleased, delighted that I have an opportunity to give this lecture in his honour and in his memory.

Now when I choose energy I mean an obvious reason for choosing energy was that's were the sector that he had worked in quite a bit. It is also very relevant because it just happens in my view to be one of the critical constraints that we will face in the years ahead. Now you know virtually everything, I mean this is being said in plan after plan after plan, but I think there are reasons why the energy constraint for us is going to be very crucial as we move into the twelfth plan. Most of what I am going to say is actually taken from the approach paper which is on our website, but you know when it is presented in these approach papers, I think the key messages don't get across. And my feeling is that the ordinary person, you are not ordinary people, but I am using the term ordinary person to mean non-specialist kind of person, doesn't actually appreciate what the gaps are between what we need to do and where we are at. So I want to spend half an hour spelling out what I think are the critical areas in energy.

I think one of the most important things to realize about energy is that from the point of view of the economist, I mean energy is just the vital input into production and also consumption. I mean consumption in the sense when you put out all these lights and as you said Abid Sahib your consumption is being seriously interrupted these days, hopefully it won't be in future. So there is the input of energy into production, there is

the input of energy into ordinary direct consumption, electricity is clearly one & petrol if you are driving cars or scooters, maybe diesel if you are driving diesel vehicles is enough. Now you know one of our problems is that we don't have an energy ministry. Now we have a ministry for coal, we have a ministry of power, we have a ministry for well gas and petroleum go together so we have a ministry for oil & natural gas, we have a ministry for renewable energy. So all these things are spread out into different ministries, whereas actually what you need to have is an energy policy.

Now some years ago in the planning commission we produced something called the Integrated energy policy report and I think that the central point that the report made was that if certain principles are valid for energy A, they must also probably be valid for energy B, and energy C and energy D. But this is not actually the way energy policy is worked out in our country, as a matter of fact each ministry has a legacy of policies & it tries to improve that legacy in whatever way it's possible.

We've done some calculations on what the likely growth of the economy is going to be, the target that we have set for the twelfth plan is a 9 percent growth. Lot of people think, particularly if you look at the global situation today that may look a bit over ambitious, but remember we are talking about a five year period. So I am hoping that the short term problems and the Global economy will calm down and therefore 9 percent is a good, ambitious target. Let's say we fall short of it a little bit, but whatever it is, somewhere between 8-9 percent is really where the Indian economy is bound to end up.

Now in order to grow at 8 or 9 percent there is a lot of work done on how much energy we need, looking at energy in terms of total oil equivalent. So whether it is coal or petroleum or others they are substitutable to some extent. Essentially the elasticity of energy demand with respect to GDP growth is known, it was, most recently it was 8. It's been slowly coming down. We think that we can actually bring it down to even further. So if you pitch it at say 7, which is actually a very ambitious reduction. Energy elasticity is not been coming down that fast. But I'll tell you why we are being a little more ambitious, if you pitch it at 7, then the total energy requirement has to increase by about 6 ½ percent per year in order to generate growth of somewhere around 9 percent. Now then we break this down into different energy types etc, and you know if it were possible to produce all this energy pretty much at existing prices, there would be no problem. I mean then it would just be a classic input, output type of calculation. Want

so much growth you got to grow this much, and if you have the investment you can produce the energy.

But energy is not like that, I mean it is not like any other item. The natural availability of energy resources in the country is limited and therefore one has to consider what are the prospects of us increasing the domestic production capacity of energy. And a short answer that we come to is that while there is a capacity by any stretch of imagination, the goals of domestic capacity of energy will not be at the same rate as 6 ½ percent.

So I mean looking at oil, looking at coal, in every one of these areas there are very serious supply constraints. In the case of coal, not only is there a limited amount of coal, but I think mining coal requires, essentially being able to access tribal areas and also being able to deal with the problems of forestation.

It happens for us that a very large part of our coal reserves happen to be under forest and even if you could take care of the problem of forestation, you have serious questions of land acquisition. Because these are areas where adivasi's live and we have never quite managed to work out a seamless way of being able to provide a sensible compensation package. Now we are working on at that separately, but this is one constraint at least as far as coal is concerned.

In the case of petroleum, well there are, we are not the world's most well endowed area for petroleum resources. We are better endowed than used to be thought and certainly some of the findings in the K.G. basin on gas have been very encouraging, but on the whole nobody thinks that we are going to have a huge increase in domestic production in oil and natural gas.

And when you think of these other things like Hydro, there is tremendous potential for Hydro, but it is very directly connected with the ability to build dams and submerge forests and the resistances to doing that cannot be regarded as simply superficial. So you have on the supply side some real constraints. Now you know if you have some domestic supply side constraints but if energy was freely importable at more or less at the existing price level this would not be a problem. You just can't produce it yourself, import it.

I mean this is where we need to recognize that there are two issues here. One is even if energy were freely importable at more or less present prices a continuing increase in imports raises the issue of energy security. And in the case of petroleum, it is already 80

percent import dependent. The interesting thing is that in coal we are going to be more and more import dependent. I mean if I were to, I don't want to bore you with numbers, but what has happened is that the percentage of our coal requirement over the last ten years that is being imported has increased very steadily. We will be importing towards the end of the twelfth plan, which is another five years from now, we will be importing something more than 200 million tonnes of coal, whereas a year ago we imported maybe 47 million tones of coal. And by 2031, given if we grow at whatever  $8\frac{1}{2}$  percent and we produce all the equipment, I mean the electricity generation capacity that we need, the requirement of imported coal on fairly reasonable assumptions about the growth of domestic supply will be as much as 600-700 million tonnes. Now remember the present total trade in coal world trade is only one billion tones.

So we are you know however you project India's energy requirements, its much more disturbing situation than if you were to project any other requirements. Domestic supply constraints are there and internationally, its not just an issue of energy security, internationally the energy environment is now one where the assumption is that fossil fuel energy will become more expensive. So it is not as if you can import what you want at present prices, you would always hopefully be able to import at world prices, but world prices are going to rise and one of the key assumptions we have to make is that coal prices are linked to oil prices and if oil is going to become more and more scarce. And remember this will happen even if the industrialized world slows down, which is almost certainly will, because you've got the growth of China and you've got the growth of India and you've got the growth of all the other emerging market countries. So basically there will be a tremendous demand for fossil fuel energy and the pressure on import prices will only be upward. So when faced with that situation what do u do? Clearly one thing you do which is very important is that you try to minimize, maximize the efficiency of energy use, which essentially means that you manage to produce as much GDP as you want but with lower and lower energy input and thats the what I would call demand management side of energy.

The second thing you do obviously is that you do whatever you can to overcome the domestic constraints on energy production.

The third thing you do is you better plan for imports. And in planning for imports is not just a question of conceptually agreeing that yes we will be import dependent and conceptually sort of taking care of foreign exchange. I mean if we are going to be importing 200 million tonnes of coal by the end of the 12<sup>th</sup> plan and 600 million tonnes of coal by 2031 then we have to plan for both capacity that will make it possible and another capacity that would make it possible to move so much coal from where it is imported.

This is a classic planning problem where one can see that you know these are issues that need to be addressed and they are issues that the government in some manner or the other has to take a far sighted view and come up with some solution. How do you do all this? What does it require?

Now this brings me to the third aspect that I want to look at and that is the issue of prices. Now if you want to increase production and you want to contain demand it's a sort of no brainer that the way you do that, the way most economists will do that is you increase price. I mean if you increase price there will be tendency to reduce demand. Demand responds to price and on the other hand if you also increase price you will generate the resources needed to invest in energy because the marginal expansions in energy that will be required are going to be that much more expensive. And when I say that much more expensive, if you are going deeper into coal scenes or you are having to relocate people or you are having to do a lot more forestation, add it all up basically you need a lot of cost and if you need a lot of cost, then energy prices have to cover those costs.

As far as demand management is concerned, you don't have to rely only on prices. I don't think that prices are the only things that will achieve demand management. There is a lot of role for regulatory enforcement of greater energy efficiency standards. So that's another area where you can act in a non price manner. But you know prices basically support those signals and if you don't have, if you don't have energy prices set at an appropriate level, the chances are that people will resist any effort to economize on energy.

And finally one point I want to make and that is you know when you hear about this you hear a lot of talk about obviously renewables. Now renewables are important for

two reasons, I mean they are important simply because if you say fossil fuel energy is limited, then everybody says solar energy is limitless, and wind energy is not limitless but is there, so we should certainly exploit all available energy resources, we should exploit those.

Nuclear energy is another option, which we are exploiting, and of course in our thinking on longer term energy self sufficiency a major expansion in nuclear energy capacity is vital. That is why the government entered into the agreement with the NSG that essentially enables us to import uranium. I mean for an informed audience the only thing that one has to know is that if we limit, if we are limited to the domestic availability of Uranium then the total generation capacity, nuclear generation capacity cannot exceed 10,000 mega watts. If you want to go beyond 10,000 mega watts, well in long run Thorium based generators, give you the potential, we have a huge amount of Thorium, give you the potential to actually, I've heard huge numbers around 500 thousand mega watts, 600 thousand mega watts. Now that is what is constrained by first of all the technology. We don't have yet the technology that will ensure that a commercially viable Thorium generating strategy is known, experimenting, we are doing it. There is no reason to believe it can't happen, the physics and science of it is known. But one big problem is that in order to do that you need to have a lot of Plutonium. And if you will have a lot of Plutonium, then you have to do a lot of reprocessing of Uranium and go through the second stage of our nuclear fuel cycle. And if you want to build up an adequate Plutonium stock, to be able to switch to Thorium, you can't rely only on the 10,000 mega watts of reactors based on domestic Uranium, you need to be able to import Uranium. So that you build up these first generation reactors, with the more and more spent fuel that comes out of it you go to the second generation reactors, that will build up enough Plutonium and then we go into Thorium.

So it's a nicely interrelated balance structure, which could end up somewhere around 2040, enabling us to sustain very high amount of energy requirement from the nuclear side. But at the moment and all you have got functioning is about 4,000 mega watts and we are trying to build it up now. And you see that there is a huge amount of outcry, issues raised are not unfair, but they do not seem to me to be based on to me on any kind of reasonable assumption. But how will we manage our energy situation if we are going to put a stop to nuclear generation.

So this is some of the, and when it comes to other areas of renewable energy like solar and wind, we have to remember that costs are very high. I mean against cost of electricity from a conventional plant of somewhere around maybe two Rupees or so per unit the cost of electricity from solar generation is currently about twelve Rupees. It has come down from fifteen, but it's at twelve. And many researchers tell us that by 2019 costs of solar generation will keep declining. That's absolutely true and will equate to the cost of conventional energy. But that equation is based on the assumption that the cost of conventional energy is going to rise. So basically what people are saying is that the cost of generating electricity conventionally is going to go up because coal prices are going to go up, and oil prices are going to go up, solar price are going to come down and the two will equate somewhere around 2019. So all of this means is that we are going to face a world in which energy prices are actually going to be high.

Now I come back to the planning commissions formula, that there is the general principle which the Integrated Energy Policy, first planning document and then a Cabinet note which was approved. So we actually somewhere around 2009 in Dec the Cabinet approved the Integrated Energy Policy as a government policy. Not just a planning commission report, it became a Government policy. And that policy says that when you are talking about tradable energy, if you are going to be importing something, then the energy, domestic energy should be priced pretty much at the price comparable to what the world price is. Now exactly how you achieve that comparability there is a lot of, we can have lots of discussions, and hire a few economists and they'll give you different answers. But both principles are really very clear.

So the first thing that I want to point out is that we are not there, and I think this is not realized. Let me now, I mean so far I have been talking about things which may have looked a little to sort of detailed. So I want you attention. See question can be asked you say that energy, domestic energy prices must be aligned with world prices. This is a contestable proposition and I am quite prepared to have someone say that is not necessary. And I mean if you believe it's not necessary, we should certainly debate it. My view is there is absolutely no way, no way at all that India can achieve 9 percent or even 8 ½ percent growth, if we don't accept and implement the proposition that energy prices have to be aligned with world prices. That is principally because we are not a

massive surplus energy producer. I mean Saudi Arabia can price energy at whatever it wants, India cannot. This is the proposition. Now if we accept that proposition, just for purposes of argument, let us see what the challenge is.

First Coal. Coal prices are actually massively underpriced, we have two kinds of coal prices in the country. We have the price, which is the price charged by Coal India from various domestically produced coal mines. And that price technically, coal prices are deregulated, so there is no legal impediment to Coal India saying right we are now going to follow the Integrated Energy Policy and jack up our prices, but of course you know it is a public sector enterprise and has many many constraints on it. So if you take as a benchmark the price of coal at one that is the price, the pit head price of coal is one, about ten percent of Coal India's coal is actually sold by e-auction. That is domestic market price. So people are paying a higher price, but this is not the price which the power sector is paying and so on. The e-auction price is two. So this is all taking into account calorific equivalence.

The e-auction price or the market price of coal in India is twice what Coal India normally charges for all the coal that it sells to various people.

Now if you ask yourself the same question, what is the price of imported coal, again making adjustments for calorific equivalence that number is four. So actually the domestic price of coal charged by Coal India for 90 percent of the coal that it provides for our industry is actually 1/4<sup>th</sup> of the coal equivalent for imported coal. These numbers are much worse than they were 3-4 years ago. So many people in the audience I find are sort of screwing up their eyes because they will remember these numbers. But the point is when oil went to a 100 plus, coal followed suit. It is only here that we think that oil prices have gone up but there is no reason why coal prices should go up. And indeed by the way if we could meet all our demand for coal domestically, then maybe we don't have to worry. But we can't meet all our demand for coal domestically, we are going to become more and more dependent on imported coal. So that is as far as coal is concerned.

Petroleum, well I mean that petrol is obviously priced higher than international price because it has the heavy tax burden, but diesel is priced 20 percent less than what would be a kind of equivalent landed cost, kerosene is priced 75 percent lower than

what would be an equivalent landed cost and I mean LPG is priced 50 percent lower than what would be an equivalent landed cost.

And if you come to electricity, now this is interesting, that all of you are paying electricity bills even for electricity that you sometimes don't get when you should. If you look at the average cost of electricity compared to the average cost of generation, building in the inefficiency in terms of losses, which are actually, somebody must pay for losses, if you don't have the courage to get rid of losses, then the electricity is under priced by 20 percent. However that is only because coal is massively underpriced. If the coal price got adjusted then the electricity price would have to go up that much more.

So I mean when you look at all that, you know even I find it a little hard to say that we must adjust prices with international prices. But the answer is obviously we don't do this adjustment instantly. But you know we must first accept the proposition, and incidentally these are done in different ministries. I mean the Cabinet does not sit down together and say let us under price kerosene by 75 percent, let us under price diesel by 20 percent, let us under price coal with respect to imported coal by whatever 70-60-80 percent.

These are things that are done individually by individual ministries and basically they are not actually decisions, that are simply a continuation of a legacy and this is the end result. So if you are in the planning commission and you are planning for the energy economy of the country, I think your first dharma is to let the country know, that if you believe that energy prices should be broadly aligned, there are not aligned.

Instantly I didn't mention gas, but gas is another wonderful example, where the domestic gas because of controlled pricing, is being priced at somewhere between I don't know between 3 Dollars to 4 Dollars, I never know those numbers millions, btu's, bcus and so on and the traded prices is something like 14, between 12-14.

So quite frankly energy prices, we are in our own world. So that's just a fact that I want to leave with you and it is clear that the we cannot do an adjustment instantly, could we agree on how long its going to take, 2 years , 3 years , 4 years .I will be willing to settle for any number that is reasonable, but I think it is logical, the logical way of approaching pricing is to say, look we must allow it, number two, we can't do it

immediately, therefore let's determine a time phrase and let's do it over that time phrase.

The next issue that comes up is you know how can, will this hurt the poor, of course this is a genuine problem, and I am quite prepared to say that we should have a targeted subsidy. Whatever definition you want to have for the poor and that as Abid Sahib pointed out is a dangerous area to get into right now, but I think most people would say, the official poverty line will say one thing, we have in any case gone beyond it in many of our schemes. But very few people would say that the energy, the group who has to be protected would be more than say 40 percent of the population. The actual energy consumption directly by then, even if you decide to subsidize and I think there is an issue here whether the subsidy should be by cheap provision of energy or giving them some electronic transfer and keeping energy prices at market level, and I would certainly prefer the later.

That is not the big problem, the big subsidies are not going to the poor. Diesel subsidies are dominantly going to, they are maddening if you like, because I mean all transport etc uses Diesel and of course all the fellows with Mercedes and BMW's, and what have you, I mean only expensive cars can use diesel. We haven't got a Mauti 800 diesel yet. So it's a highly, it's a non targeted subsidy, part of it is general, and part of it is going to the very rich. That's clearly not a sustainable thing.

Now question is why are we saying that you need to raise these prices. I think there are two reasons for this.

I mean one is on the demand side, I think we underestimate the extent to which consumption demand will respond, if prices are high and it will not respond if prices are not high. I am not saying that it will automatically achieve all kinds of things and you do need to take some regulatory steps. And I will talk a little bit about the regulatory steps that we need to take in order to have sensible energy consumption. But you know all these regulatory steps are actually supported, if the price system makes it a little more logical. I mean for example you can have a regularity step which says that you know, in all commercial buildings, in all government buildings, whatever you are going to use not these incandescent bulbs but the new higher efficiency lamps.

But if the energy price has been made rational, you will also tell people that you know you will make up all the money within one year. But if the energy price is not being rationalized, I mean they are going to resent it no end, and these examples can actually be multiplied.

I think we underestimate the extent to which the willingness, the willingness to economize, because economizing costs money. I mean you are going to bring in energy efficient technology, you are going to put in all the capital equipment and all the rest of it, that becomes much more cost effective, if the energy price is right, So that is one point.

The second point is that you know I don't see how we are going to get the production of these things, if the prices of these things are massively underpriced. And right now if you are going to explore for oil, you are going to have to explore in more difficult areas, you are going to have to do things that are much more costly. If you are going to increase domestic production of coal, you are going to have to undertake far more compensatory steps, for rehabilitation, forestation. All of that is going to add to cost. But I think if the costs are not being covered by the price that the person is getting for that product, you can assume that you won't have a price response.

And I think for therefore, both for getting efficient use of demand and also for getting the appropriate generation of the supply response we have to do something on this price rise. This is really the key to the whole energy, not the whole, but a large part of taking care of the energy deficit issue.

I think in addition to that we do need to take a number of steps which are not necessarily related to prices, but they have an impact on cost. I mean for example, already the state electricity regulators are prescribing that maybe 5 percent of the total energy that is purchased by the distribution companies should be purchased from renewable sources. What that really means that these renewable sources are going to cost that much more, the additional cost is going to be loaded on, and it should be passed on, so electricity would become that much more expensive.

So here's a case where through regulatory means you are actually growing beyond fossil fuels, bringing in non-fossil fuel energy and I mean creating an environment in which it is attractive for people to start an industry which actually produces non-fossil fuels. It's a very very small thing. I think the total renewable energy contribution to our

energy is about 3 percent. So let's be clear, all the people who say oh I've seen a wonderful Solar plant somewhere, and a wind plant somewhere, I mean that's 3 percent of India's total energy requirement. So it's not going to solve the problem and whatever it does it's actually going to involve some additional cost, that cost is being pooled and it's actually being spread out for all consumers.

You know one of the, I am not going to go on about this, because in the end what I am saying is that if we make these changes and if we make them over a period of 2-3 years, let's say 3 years, 2 years may be really pretty tough, then I think we will have put in place a framework in which we can actually get on with trying to address the energy challenge. If we don't do it, basically every part of the energy system will go financially broke.

Now I want to just highlight for you what the situation is in the electricity sector.

Former Secretary Power here, so he can ask questions or point out where I am wrong. I think we at one stage we had an energy sector which was dominated by the public sector. The generation was dominated by the public sector, transmission was dominated by public sector, distribution was also dominated by the public sector.

I mean one of the consequences of the economic reforms is and many of the people had a big role in, is that lots and lots of private investment has come in, interesting it is all come in into generation, transmission.

It's been allowed to come in into distribution in very few cases, generally state governments have not allowed it to come into distribution. Now the point is that we can take a lot of pride in the fact that there is a lot of investment in generation, a lot of fellows setting up generation stations, but you know the viability of this system actually depends on how much money is pooled in on the distribution side, because ultimately they are depending on the distribution companies paying the transmission company, paying the generation company.

And what is happening is that losses on the distribution side are really mounting. I mean these numbers are very uncertain, because the methods of accounting of most of our distribution companies are pretty dubious. And we've had a group under Mr. V.K.Shunglu, former CAG doing an actually detailed assessment of whether the losses that are shown on the books of the distribution companies actually reflect true losses. And not surprisingly their conclusion is that actually they understate them massively.

So one reasonable assumption is that we are losing 70,000 crores a year. Point is that you might ask, how is that all this loss is going on? Because quite frankly public is quite happy if generation is taking place, fellows are getting some electricity, losses are being made, why bother.

The reason why this is happened, the reason why it's possible is that the banking system is funding these losses. They are ever greening them, they are keeping them on their books, they are pretending that these are sovereign assets, but they are funding these losses. Now anyway what's happened around the world is that the state of the banking system has increasingly come in under a lot of scrutiny. And we have found that several state governments have come to the planning commission and said you've got to do something, because the public sector banks are not giving more credit to state electricity boards, or are now Discoms, because for one reason or the other they think that they are not servicing their debt, they are asking for ever greening. RBI says if you do that then it has to become a non- performing asset, you have to to start making provisional against it etc, etc .And the growth of global focus on the banking systems balance sheet will only strengthen this concern.

The other side is that the RBI treats exposure to the power sector as including exposure to the banking system. So every time the banking system covers 70,000 crores of losses, it's actually prevented from providing 70,000 crores of financing of new investment. Well you heard two weeks ago that SBI was downgraded. That's I think just a warning signal. You can't run a system in which such a large part of the economy is going to be constantly making losses and somehow assume that it is going to continue.

So it's a huge problem and in the case of the power sector, there are problems on you know not being able to reduce transmission and distribution losses, that's true. I mean the good news is that by the way they are reducing them, too slowly, but they are coming down.

We had set a target for 15 percent for T & D losses, but the problem is that even if they were to achieve 15 percent they'd still be making losses, simply because the political system is not allowing the state electricity regulators to increase tariffs. And you know when I say all this, many people will feel that what is this fellow doing. He is asking them to raise tariffs for us, that's going to be tough. I regret to say that that is true.

But actually what is happening is we are subsidizing energy, and that subsidy is obviously in our pockets or in the pockets of whoever is being subsidized and they are actually using that subsidy to fund other things. But I don't think that if we want to give subsidies then we should do them directly through the tax system, we should not do them by burdening the energy sector. Because of all the sectors it's the one that has the maximum multiplier effect, and I think this is a very big mistake.

Now whether we can do anything about this I don't know. We have brought this out in the approach to the twelfth plan we are going to have an NDC meeting on the 22<sup>nd</sup>. Somehow this message has to get across to the thinking population. I don't find by the way that this message has got across to the thinking population. I mean if I am right all those who have a stake in 9 percent growth should be strongly arguing for rationalization of energy prices. The usual image is that the fellows who have that stake are your industry groups etc, after all not the ordinary person. But I don't think they argue for this at all. So really in the areas where these issues are debated, I do not think that the urgent need to do something on the energy sector is sufficiently well understood.

This is by the way a problem in many countries and we are not the only country that has these problems. The problem is that once we get into the rapid growth phase, we get into an area where we better sort this out sooner rather than later.

So with those words, thank you very much for inviting me. I am sure that Lovraj would have told, up there in heaven, I sure he is applauding and saying right on, that's the right thing to do. And I just hope that one of these days we will be able to carry some conviction on this very important issue.

**Thank You.**