2nd K B Lall Memorial Lecture on Global Warming and Global Finance

By Prof. Lawrence H. Summers, former US Treasury Secretary - April 17, 2007

Dr Rajiv Kumar, Director, ICRIER:
Good evening, ladies and gentlemen: My great pleasure to welcome you all to our second KB Lall Memorial Lecture. This is one of the high points in ICRIER's calendar and especially so this year because this is our Silver Jubilee and thank you all for being here. A special thanks to Dr Montek Singh Ahluwalia for being here and to Professor Larry Summers of course and with that can I request the Chairperson of ICRIER Dr Isher Ahluwalia to make her opening remarks please. Dr Ahluwalia.

Dr Isher Judge Ahluwalia, Chairperson, ICRIER:
Thank you. Professor Lawrence Summers, our distinguished speaker of the evening, Montek Ahluwalia, Deputy Chairman of the Planning Commission, Dr Rajiv Kumar, Director and Chief Executive of ICRIER and friends, faculty and staff of ICRIER, it is my privilege and pleasure as Board Chair of ICRIER to welcome you to this second KB Lall Memorial Lecture by Professor Larry Summers. I would like to offer a special word of thanks for Professor Summers for accepting our invitation to deliver this lecture. This is one of the highlights of our celebrations of the Silver Jubilee Year at ICRIER.

This lecture is in honour of our founder Chairman Dr KB Lall who had the vision to create a research institute which would focus on policy oriented issues arising from India's interaction with the world economy. The fact that it was created in 1981, long before integration with the world economy came to be taken for granted, testifies to Dr Lall's vision and farsightedness. Our Prime Minister Dr Manmohan Singh was among the founder members of ICRIER and he put it succinctly in his message to ICRIER during our Silver Jubilee Year. Dr Singh said, and I quote, "this was an early recognition of the growing economic inter-dependence of the world economy". Integration with the global economy became increasingly more relevant in the years that followed 1981 as the Indian economy long insulated from international developments began to open up, especially in the 1990s to trade, technology, and capital flows. As is to be expected in a democracy the process of economic reform has not been without controversy but it has been steady and its direction unambiguous.

We at ICRIER strive to live up to our broad mandate for informing the policy debate in the rather controversial area of linking India to the world economy. As a think tank we are aware that we need financial independence. In 2001 when ICRIER turned 20, we raised our corpus fund from Rs.5 crore to Rs.10 crore. For our 25th anniversary we had set a target of Rs.25 crore for our endowment fund. I am very happy to say that we have attained this target. I would like to use this opportunity to thank all those who made this possible. In particular, I would like to thank the State Bank of India, the ICICI Bank, The HDFC, including IDFC, Citibank, Infosys, Reliance, Sterlite Group, ITC and Tata Consultancy Services for their donation of Rs.1 crore each to the endowment fund of ICRIER. Other major contributors to our fund are Ranbaxy, Fortis, Bharat Forge, the Deutsche Bank, Kotak Mahindra Bank, Mahindra and Mahindra and DSP Merrill Lynch.

At ICRIER, we think, we listen, we research, we facilitate dialogue and we strive to influence policy, and then we think some more. Today we are here to listen, to listen to one of the brightest minds in the world. I will now without losing any more time request Montek Ahluwalia to introduce our very special guest and chair the proceedings of the lecture and the Q&A which will follow. Thank you.

Dr Montek Singh Ahluwalia, Deputy Chairman, Planning Commission (Chair):
Isher, Rajiv, Larry, friends, it is a great pleasure and an honour to be asked to chair this lecture. It is quite an awesome responsibility also to introduce someone who is quite rightly been described as one of the best minds around today because I am very conscious that everything I say will only be preventing you from hearing him sooner, so I will be brief. Fortunately, the organizers recognizing Larry's extraordinarily distinguished career have actually circulated a little brochure that tells you all the many many things that he has done. He has been a distinguished academic and the winner of the John Bates Clark Medal which is

widely regarded in the economics profession as the best predictor of whether you will get a Nobel Prize in due course.

He left Harvard in order to get into the world of multilateral development finance when he joined the World Bank as Vice President, in which capacity he actually visited India. Shortly thereafter during the Clinton Administration, he was inducted into the Treasury, first as Under Secretary and very rapidly thereafter made Deputy Secretary and finally made Secretary of the Treasury by President Clinton in 1999. He then, at the end of that particular part of his career went back to Harvard in the position of President and served with distinction bringing to the fore a number of issues of university reform which actually have a lot of relevance to us also. I think it is not unfair for me to say so, he was associated with putting forward some more radical idea that even tenure professors should do some research, an idea which frankly we would find quite useful to apply at home. Thereafter, he has now moved back of course as Professor but also, and this is not mentioned in the brochure, he has actually now got a foot in the private sector as the MD of a new fund the DE Capital Fund which hopefully will do some investment and of course over dinner I will try to persuade him that India would be quite a good place to locate some of the investments he is responsible for. Any way, I wanted to say that I did not have the pleasure of meeting Larry in his very first incarnation as a brilliant professor, I did not have the advantage of going to Harvard to get a degree but since then I have had the pleasure of interacting with Larry in all of his subsequent capacities as Vice President of the Bank he visited India and we had the opportunity, NK and I, to give him his first introduction at least of India at a stage when he was just getting into development economics. I had the pleasure of interacting with him in all his many capacities in the Treasury and it was quite a challenging task explaining to Larry that although we may not appear to be making much progress, we are actually doing a lot of reforms in the guadualist from that we prefer. I recall one occasion when I was making this case to him saying that he was not sufficiently appreciative of the progress being made, Larry was kind enough to say, you know Montek, I think you are right, every time I meet you I am very irritated at something but it is usually something different. So, the earlier irritation must have got sorted out. I also had the pleasure of meeting him when he was President of Harvard and calling on him in the wonderful place that Harvard President stays.

With all of that I am particularly delighted to be able to chair a lecture where Larry is virtually throwing himself to the lions really because the issue of global warming and global finance is a very live issue. It has received a huge amount of attention internationally with the submission of the report of the Inter-Governmental Panel for Climate Change, which is chaired, as you know, by a distinguished Indian Mr Pachauri and that report has brought out a pretty dramatic picture of the inevitability of global warming and has also brought out the fact that it has implications for India which are generally quite negative. This raises the issue of how do we react to this, what do we do in terms of adaptation, what is it that we should do in terms of mitigation, and these are very difficult issues which are currently being negotiated as part of the revision of the Kyoto Protocol.

The whole issue of burden sharing is actually a core issue in the debate as everyone knows. The perception in the developing world is that if there is a problem in global warming, and the International Climate Change Panel clearly asserts it is a problem, it is now scientifically being established by a very large number of people that that is principally due to what is being done in the world in terms of spewing carbon into the atmosphere and probably 90% of that is the responsibility of the developed countries. We are now at a stage where the developing countries are beginning to grow and the whole issue arises that as a planet clearly something must be done. If we simply carry on doing what everybody has been doing we will simply burn up the planet in very short time. But how do we reach a fair burden sharing, I am not aware that we have any good answers to that. In order to do something and we can do something and there is a lot of work done on what we can do, is a huge amount of resources that are going to be needed and I imagine that that is the second part of Larry's lecture, global finance. So, what is the most efficient and what is the fairest way of redirecting global financial flows so that the world as a whole conduct itself in a somewhat more sensible

manner than it has been doing since the industrial revolution. That is really the challenge. I cant think of anyone better than Larry to actually address it. Ladies and gentlemen you are now about to get a real treat and I have great pleasure in calling upon Larry Summers to give us his lecture. Thank you.

Professor Lawrence Summers:
Montek, thank you very much for that generous introduction. You have demonstrated once again that you have that marvelous Indian ability of putting Americans on the spot. First you raise the expectations by exaggerating my accomplishments and then you pose the hard question in the most pointed and difficult way. I would expect no less from you.

It is a great honor to be here at ICRIER, an institution, which has done so much to foster economic reforms in India, to be here with its distinguished Director, Rajiv Kumar, and to be here also with Isher Ahluwalia, who has done so much over the years to promote understanding of international economic relations and with whom I have been honored to serve in recent months as a member of a group advising the Asian Development Bank. I believe that when the history of our period is written 300 or 400 years from now, ICRIER's central concern – the economic relations between developing countries and the broader world and how they played out, how they were managed – will be the central question in that history.

For what we are witnessing today is an unprecedented degree of economic integration between countries where standards of living differ by a larger factor than countries that were integrating ever before and with a more rapid rate of growth, particularly in the poorer countries, than you have ever seen before.

Think about it.

They called it the industrial revolution because for the first time in all of human history to that date growth had started at a rate where living standards might increase by as much as 75% within a single human lifespan. At rates your country has enjoyed in the last several years, and that China has enjoyed for a generation now, living standards do not increase just 75% within a single human lifespan, they can increase by as much as a 100-fold with profound consequences for every aspect of economic activity.

Now as an economist, and as Secretary of the Treasury, my primary concern with that interaction was the establishment of suitable global architectures for managing questions of the flow of capital and in the trade of goods so that this integration would take place harmoniously and successfully. That continues to be a major preoccupation. But I, like many others, have come to see in recent years, in ways that I certainly did not fully appreciate at the time, that I was in office that the challenge of global warming is another important dimension in which the global economic issues we face today are different not just quantitatively but different in kind than the global economic issues that we have traditionally faced.

For it is also true along with those unprecedented rates of growth and that unprecedented integration that for the first time in all human history, mankind's economic activities have the capacity to affect the conditions of life on earth not just locally but globally on a planet-wide basis. So, I have chosen because of its transcendent importance to speak about global warming and global finance today. But there are also other reasons for choosing this topic, two principally.

The first is that I am convinced, as I will explain in the course of these remarks, that if appropriate solutions are to be found it would be essential that thought leadership come from the developing world that in crafting a solution. The solution cannot be an industrial country solution in which developing countries are brought along but must be a truly global solution. Your country has a long tradition of thought leadership on major international questions and, therefore, I believe a major role to play with respect to this issue in the coming decades. The

second reason why I have chosen to address this subject as myself, now a professor and speaking at a distinguished research institute, is that I am convinced that this is at this point a profound intellectual problem.

I like to divide big public policy problems into two categories. The first category is where in some sense we basically know what to do but it is enormously difficult to do it politically. I would submit that much in economic reform in India falls in this category, that the completion of the Doha Round falls in this category, that even the task of crafting an appropriate peace agreement between the Israelis and the Palestinians falls in this category. The broad outlines of a solution are relatively clear; the challenge is one of finding the political will and the political consensus to enact that solution.

There is now a second category of political problems where even if there were not policy problems, or even if there were not political difficulties, it is far from clear what the right way forward is. In that category I would place transcendent issues of international relations across those with very different historical traditions, I would place the policy challenge we all face in dealing with failed states, and I would also place the problem of how we are going to address the twin challenges of development and global climate. So my remarks today will succeed if I am able to provoke thinking, provoke creativity, provoke research here at ICRIER and beyond on a problem where I believe the world has a great deal more understanding that it must seek to gain.

I wanted to do three things in these remarks. First, to seek to dimension and frame the global climate change problem as it appears right now in several of its central elements. Second, to provide a kind of report card on the progress that I believe the world has made and has not made over the past 20 years as this problem has become more focal and third, to make some observations and suggestions about the right way forward.

First, dimensioning and framing the problem. It now, as Montek said, cannot be doubted that mankind through his emission of greenhouse gases has had and will have on an increasing scale an impact on the global climate. To suggest otherwise is to join those who doubt the theory of evolution, or still maintain that tobacco smoking is not hazardous to human health. Nor can there be any substantial doubt at this point that the consequences of global warming were variegated and dispersed around the world; or much more likely to be adverse than they are to be congenial; or likely to bear harder on those who are closer to the equator and those who are poor than on others. And while there is an enormous amount we do not know, the surprises with respect to the impact of global warming are more likely to be adverse than to be congenial. Nor, and this is a point that is always understood but sometimes is not focused on, the question is not a question of whether there will be adjustment but a question of when and how there will be adjustments.

Here is one central fact of atmospheric science, and there are many facts, and I only understand a few of them, but I am only going to highlight one fact of atmospheric science that is central in understanding and reacting to this issue, and that is that the change in temperature, the change in the climate depends on the stock of greenhouse gases, it depends not on what was emitted this year or last year but what has been emitted over the last century. It follows that the problem does not remain constant if the world economy remains constant but continues to increase as global greenhouse emissions grow. Therefore, if there is some limit on how much temperature increase we can accept, at some point the stock will have to stabilize which means the level of the emissions will have to fall very substantially. It is a serious problem, it is an increasing problem, and it will require adjustment at some point.

The second observation, which is less familiar but I would suggest no less important in thinking about this problem, is that the uncertainties we have about the impact of global warming, as great as they are, are dwarfed by our uncertainties in perceiving what the global economy will be like when global warming starts to have major impacts 50 years or a century

from now. Frankly, the record of economists in forecasting and the confidence that should be placed in their forecasts is, shall we say, minimal.

I participated in a very serious exercise of preparing briefings and analyses and thought for President Clinton during his transition in 1993 of how the global economy was changing, how the American economy was changing, what the major economic issues that he would face were. I believe I can report accurately that the word Internet or any synonym for it did not appear in that briefing in 1993. I do not think we were uniquely shortsighted at that time, but the record of century, half century, quarter century, forecasts is simply not one that commands confidence. I highlight this for this reason.

If one seeks, and the estimates are still preliminary and uncertain, to quantify the impact of global warming, the largest estimate that has yet been put forward by anyone and this estimate can be challenged on a number of grounds, is suggested in the Stern report that global warming would reduce global GNP by as much as 20%. This figure is suggested as an impact that could take place two centuries from now. Now it is a vast figure. But what is our uncertainty in looking even one century ahead you will each have your own views but I don't see how any serious person could maintain a confidence interval less wide than 2% in forecasting global growth over a century and my own confidence interval would be far greater than that. But take 2% as a figure, 2% compound over a 100 years is a factor of 7. Our estimates of where the world economy will be global warming entirely apart are an order of magnitude greater than the uncertainties associated with global warming.

This is not to mention other aspects of economic conditions such as crucially the price of energy, or the availability of technologies for using energy in different ways than we can envision today. I am reminded of the great British economist Jevon's study at the very end of the 19th century in which on the basis of a very careful set of calculations he concluded that unless a major adjustment operation was undertaken every street in London would lie under two feet of coarse mineral by 1930s and calling for an appropriate adjustment program to control these coarse minerals. The nature of the solution that played out was not something that was envisioned at that time. So we need crucially to maintain awareness of the profound uncertainties that equal in importance of this problem. I highlight this because of the uniquely long period that we are discussing in the context of global warming.

The third observation I would make in dimensioning of the problem is this, and this is perhaps the most important thing I would say tonight. Industrial countries bear responsibility for global warming but no solution is possible without most of the action taking place in the developing world.

First, industrial countries are responsible for what has happened. They are, as Montek suggested, responsible for 75% of past emissions as we speak here the level of emissions in United States per person is 10 times the average in the developing world and about 20 times the level that is typical in India. And of course in any burden sharing exercise those who are affluent have more capacity to bear burdens of the solution to common problems. So, it is absolutely right to assert industrial countries responsibility.

But it is equally the case that solutions centrally involve the developing world. Of the increasing emissions that will take place over the next 25 years, 75% will take place in the developing world. Various forecasts, which are in my judgment relatively conservative, predict that between 2040 and 2050 about two-thirds of all emissions of greenhouse gases will come from the developing world. Beyond that there is the point of malleability.

Most of the infrastructure for the production of electric power, where the design of cities, where transportation arrangements, or where people live 20 years from now in United States or in Europe is in place today. Most of the infrastructure that will shape the development of the economy of China or India a quarter century from now has yet to be put in place. The

degree of malleability and the consequent cost of adjustment are lower in the developing world than in the industrial world.

There are separately abundant opportunities in the developing world without parallel for action at very low cost to reduce the emission of greenhouse gases. I think, for example, of programs to preserve forests, programs to change irrigation practices so that agriculture emits less methane, opportunities to reduce gases that contribute to global warming at prices of 10 cents a ton by adopting practices in the production of chlorofluorocarbons that have long been standard in the industrial world.

The low hanging fruit is in the developing world, the malleability is greater in the developing world and ultimately most of the emissions will be coming from the developing world. If that was not sufficient to make the case for the centrality of the developing world, there is this. No partial solution can succeed with respect to many of the most important global emissions sources. Think about it. Efforts to control in one place by raising the cost or imposing other regulatory burdens that are not mirrored in other places will produce reductions in emissions from the controlled places and move emissions to the uncontrolled places. The result will be minimal impact on the global environment and so even to control those emissions that are coming from the industrial world in a way that is effective in reducing the global stock of emissions requires the consideration of what is taking place in the developing world.

In finding solutions then, there are three crucial elements. The problem has to be addressed. There are enormous uncertainties in the baseline against which it is going to be addressed, and industrial countries are responsible but developing countries are at the center of the solution. Where is our effort? Where in the broader sense is the global effort today?

First, the good news, the issue is now centrally on the international agenda. It is discussed at every international meeting. Language with respect to it is included in almost every international communiqué, public opinion in the industrial countries regards it as a problem of central concern. It has become a preoccupation of global business, indeed a majority of the executives present in Davos this year regarded global warming as the most important global issue that they were facing. There is a far greater recognition than there was even a few years ago of the fact that the relationship between energy growth and GDP and between global emissions and GDP is not one that is immutable.

One experience and one statistic made this point more powerfully to me but it is documented in any number of studies. I always believed as an economist that firms naturally are efficient and they do things in the least cost way and that is how it works. I discovered as President of Harvard, and I do not believe Harvard is at all unique in this respect, that we as a university engaged extensively in constructing buildings and we held those who were involved in the construction of buildings closely responsible for the cost of the building. We asked how much our laboratory can cost compared to MIT's laboratory or compared to the budget that we set. We made no effort in assessing the cost of the buildings to build in the lifecycle costs of the buildings, whatever it cost to heat them in the winter or whatever it cost to cool them.

So what happened? People built the buildings in ways that invested as little as possible in insulation so that they could succeed and quite consciously chose to forego opportunities to invest in energy saving that would pay itself back in three or four years when we were able to change that focus by providing special loans and such we produced a somewhat better outcome. It is clear from those who know that such opportunities are ubiquitous, that we do not have in most energy users accounting systems that succeed in giving credit for even the highest return investments that promote efficiency.

A different way of making the point on what is dramatically possible is just to say this: In the United States, carbon emissions per person from the State of California are 55% of the national average. Why? A set of local environmental policies, a set of policies directed at electricity, a number of other regulatory measures to be sure the comparison is not entire fair

because California's climate is more mild. But it is increasing clear that energy efficiency at the same level of GDP is possible. So the good news is that there is a broad sense of political commitment and it is clear that there is an enormous amount that is possible.

The less good news, I will suggest to you, is this: it is far from clear that so far Kyoto is delivering in ways other than highlighting and driving this tremendous concern about the problem. First, in the way that Hamlet is not a very good play without the prince, global warming treaties in which the United States does not participate are limited in the efficacy that they can have. I should say, and have to say, that while I have my many differences with the current administration, the decision not to participate in the Kyoto treaty was made by a 97 to 0 vote of the United States Senate, including members of both political parties.

In other industrial countries, and I think here principally of Europe, it is far from clear that Kyoto is as yet driving changes in the environment that other wise would not have taken place. One way to make this point is to observe that on the market where carbon allowances can be traded, they are currently selling for one Euro – a *de minimus* price suggesting that the constraints are not yet heavily binding on business. Another is to look within Europe and to observe that while a number of countries have achieved very substantial reductions – for example the UK, Germany or several countries in central Europe – they are primarily countries that, for other reasons independent of global warming, were moving radically away from coal during the 1990s. If one looks at other countries, Italy and Spain for example, one can observe more than a 20% increase in their emissions since 1990.

Nor, and this is the critical point, has Kyoto meaningfully engaged the developing world. There are no targets that the countries in the developing world have accepted, nor did they appear to be on an imminent path to accepting targets. There was the hope that the so-called clean development mechanism would provide for meaningful interactions and meaningful financing from the industrial world to the developing world. The reality to date has been at best sobering. More than half of clean development projects have involved industrial gases. The industrial gases that have been affected are very difficult to measure relative to any alternative baseline and it has indeed calculated that the emitters of those industrial gases who have converted them as a consequence of clean development projects are now earning more money from the clean development mechanism than they are from selling their underlying project.

This invites the suspicion that there may well be those who are going into business, and who are going into the activity of expanding businesses, not so as to make profits in the market but so as to make profits by them abating their global gas emissions. All of this suggests that the incremental achievement of the Kyoto treaty in reducing developing country emissions separately from any contribution to industrial emissions is at yet quite small.

It also seems to me that we have learned from other international experience in recent years the difficulty of what Bill Nordhaus has called the Westphalian dilemma: under the realities and the principles that have governed international law for three centuries now, nations are not able to coerce other nations, agreements can only be entered into voluntarily, and the difficulties of enforcement are profound. The European experience with the Maastricht Treaty – an agreement entered into universally and with great conviction – is very educational in this regard. It referred to a policy instrument that was within governments' control – budget and deficits – which could be relatively easily adjusted with spending or tax policy changes. There was an explicit agreement on an enforcement mechanism. At the first instance when it appeared that a free country would not meet its goals, the enforcement mechanism was abandoned. A certain amount of experience with international pledging conferences such as the ones that are now in effect with respect to the Millennium Development Goals also makes one aware that it is much easier to enter into collective national commitments than it is to honor those commitments.

What is the way forward? I think this is a fair question, and there are two dominant views in the debate. There is agreement that yes, it needs to be worked on; yes, there should be some pilot projects; yes, there should be some research; yes, it is very valuable to have a dialogue. But we gush we cannot do anything transformative because the current problems we have to face are just too urgent and too important and this will some how take care of itself down the road. That view might be juxtaposed with its polar opposite which I might label the alarmist or immediate action view of the kind that is exemplified in the Stern Report. The Stern Report comes close to suggesting the fate of the planet will be determined in the next 15 years by whether the right steps are or are not taken.

There is a cost for a mechanism in which nations would commit themselves absolutely or subject to large monitoring payments to promise the world that come what may to the price of energy, come what may to their economic growth, they would not emit more than a certain quantity of greenhouse gases a decade hence. And though this approach has eminent appeal, the question is whether it is at all realistic in terms of nations, and to be sure for the reasons raised earlier, and whether developing nations are going to be prepared to take on such commitments. And if they do to take on such commitments, can they live by those commitments. I am not sure that either of these perspectives can fully point us forward, though the second one contains important elements of truth. And so I would suggest three requisite principles and then a number of elements that may be part of an ultimately successful package.

First, thought leadership must come from the developing world. The central actions that need to be taken and the central compensation that needs to be received will take place in the developing world, and the largest player by far will be China. It will be followed by India, and others in the developing world, simply as a matter of scale, will trail far behind. The stakes are very large, the changes very important, and the magnitude of the support that can be expected and should be expected is very large.

How this can best be done? I am going to suggest some answers in a few moments. But fundamentally it is as much or more for the developing world to prescribe as it is for the industrial world and I worry about any approaches in which the effort is to bring along the developing world rather than a strategy in which the developing world is central from the start. Second, any successful strategy must recognize the twin realities that the industrial countries are responsible and the developing countries are at the centre of the solution. That means major actions must be taken in the developing countries but they can reasonably expect, perhaps even demand, that they not bear the burden of taking those actions but be compensated and supported in taking actions that are in the interests of all.

At the same time, and I think this is the third principle, there needs to be a shared recognition that the development of those who are emerging cannot be a recapitulation of the growth experience of the industrial countries. There is no projection on which it is reasonable to believe that the kinds of energy use per person that are common in the United States or Western Europe today can be enjoyed by 9 billion people. Fortunately there is every reason to suppose that economic growth can and will take place at much higher levels of energy efficiency.

After all, if one takes a very different sphere, the levels of life expectancy or literacy that have been achieved in Asia are far, far greater than the levels of life expectancy or literacy that has been achieved in the industrial world at times when they enjoyed comparable levels of income to those that are enjoyed in Asia today. And so this is not in any way to suggest that it would be more feasible or appropriate to suggest that the growth in standards of living of the citizens of developing countries should be held back by this concern with global warming.

I suggested that thought leadership will need to come from the developing world and so I am hesitant to prescribe too much but I can hardly stop without offering some prescriptions that seek to instantiate this principle that of industrial country responsibility and developing country

action. I would suggest four major areas where action is necessary. First, there needs to be an expectation for a set of policy commitments in the industrial world. The United States has no basis for expecting others to act without having taken more actions than it has today. An international mechanism needs to be established for measuring the extent of policy actions that countries have taken that move beyond their base lot. The approach of simply measuring emissions is one that rewards those who have recessions, rewards periods in which the price of energy rises for other reasons, penalizes those who grow their economy and provides no basis for the measurement of national effort. An international mechanism such as takes place in the trade area through the WTO, or in the subsidies area through the OECD, needs to be established for measuring, monitoring, reporting and making transparent the efforts of each country. Inevitably, the calculations will involve subjectivity; inevitably, there would be room for debate, but making policy commitments transparent is a first key and expecting that every major industrial country make significant policy commitments is the first element of any solution.

The second element is a far greater commitment than has been made to date towards the funding of research in every area that can contribute to the reduction of greenhouse gases, a present commitment to avoiding the mistakes with respect to intellectual property that were made in the pharmaceutical sphere, and assuring that technologies that are developed will be made practically and fully available in the developing world. There are to be sure a wide variety of research efforts underway, they are not commensurate to the scale of the problem and in many cases they are not directed at the issues that press most in the developing world.

Third, reconceptualization of the development banks as banks for development and environment. Let it be said clearly the traditional role of the developing banks in major middle income and rapidly growing countries is not there when the net flow of capital is very substantially from developing counties to industrial countries. The traditional function of lending to support development has much less meaning when major countries have 200 billion or a trillion dollars in reserves. So quite apart from the environmental question there are a major set of institutions whose role with respect to middle income countries needs to be reconceptualized.

That is perhaps fortunate because their central purpose, which was to intermediate the flow of resources from the industrial world to the developing world, does need to be resurrected, but not as loans for development. Rather, it should be resurrected as support through grants and through enhanced credits for global environmental objectives. There is very substantial potential economic value that lies in the credit guarantees that the funders of the development banks make to them. How best to harness that value for energy and the environment is an open question but one that I believe of urgent importance if ways are to be found of transferring significant resources as is appropriate to developing world and if these institutions are to fulfill their potential in the next century.

Fourth, a global commitment should be entered into soon to end all energy subsidies by the year 2025. The definition of ending all energy subsidies will prove to be a not totally intellectually interesting but vastly consuming task for economists, the question of whether if you have an energy tax and you have somewhere else an energy subsidy that constitutes zero energy subsidy will have to be debated. But at a time when the world is concerned about the excessive use of energy it is hard to believe that moving to eliminate nearly $250 billion that the Stern report estimates is being spent on energy subsidy should not be other than a first step. This can be done through the standard mechanisms for enforcing unfair trade practices which surely subsidized energy can be.

This has another very important benefit. If, as I suspect will ultimately be necessary, the world will have to not just ban energy subsidies but will have to agree collectively on a common higher price of energy. The effort to eliminate energy subsidies will require doing the necessary intellectual and institutional work. I believe that if in the next several years the principle can come to be clearly established, as I believe it is not today in the industrial and

the developing world, that the large actions will be in the developing world and that large amounts of support will be necessary to reflect the responsibility of the industrial world, if that principle can come to be established, and steps of this kind can be undertaken the world will be in a much better place to address this formidable challenge come what may.

There will be those who regard this program as manifestly insufficient because it does not involve the clear establishment of a binding commitment on a target as to how much gas will be emitted – whether 5 years, 10 years, or 20, or 25 years from now – and to those who are able to establish such mechanisms, I would suggest more power to you. But just in case that does not prove possible, I hope that in these and perhaps other or even better ways your country and others in the developing world will show us the way and make suggestions that will enable us collectively to address what I believe is a central global economic challenge and for those of us in the financial area will be the central challenge of official global finance in the years ahead. Thank you very much. I would be delighted to answer any questions or respond to any comments.

Q&A Session

Speaker: Professor Summers, I thought what you said is very true. Yes, that developing countries is where the action lies, the developed countries are responsible, but I thought the answer to that would be very simple for an economist to give how to do this. Allocate property rights in an equitable manner. Once you give per capita level of emissions whatever level you say is tolerable by the earth to all the people on earth, all the things that you said, the tradeable emission rights would lead you to that most economical solution globally, it will create the right incentives both in developing countries and developed countries to cut down their emissions and it will also price technology endogenously. So, why is not such a simple solution acceptable?

Prof. Summers: You are absolutely right. As you well know in your reading of text book economics, and that is it is exactly what economics suggests, that if you assign property rights it does not matter how you assign property rights, but once property rights are assigned, buying and selling will take place and so you get to an efficient outcome. The question is whether countries will ever be able to agree or ever be able to live with any agreement that they make with respect to the assignment of these property rights. Remember that at some point in the future none of us know what the price will be, and indeed that is part of the issue, but the implicit price could easily be $20 to $100 per ton of carbon. Will countries agree to let an international mechanism in effect distribute a 150 billion worth of property rights? And if they are and then there is a surprise will they be prepared to live with it and make the necessary payments? Perhaps that will take place and perhaps the world will evolve to that. The experience today, I would suggest, is not hugely encouraging. The fact that Europeans have consistently produced more and more tradeable permits to the point where the value of such a permit is nearly zero is indicative of the kind of political pressures that such schemes enter into. So, it may work. In principle, it would be an ideal solution as you suggest but the difficulties of monitoring and compensating seem to me to be profound and I guess I put the question back to an Indian audience. Is it imaginable that India will accept a constraint a level of emissions such that if it grows beyond that level of emissions it will have to make a major payment to the global system? Is that a step that a potential recipient country is going to be able to accept? And if not, then it will not be possible to agree on an initial allocation of property rights.

General Chopra: I am a war veteran who is a common sense economist. I want you take you to your macro level right in the beginning where you said that India needs to have the leadership role and I agree with you because in today's context of India's economy growing and our progress, this leadership role comes to us naturally. I find twin problems in this leadership role. One, although we want progress 75%, 100% or a generation progress within this very lifetime, the problem firstly is the difference in the leadership perception. India would like to be in the doable mode whereas we have the West led by the US who are not prepared

to listen or participate notwithstanding the fact that you have said that the central focus today is on global warming and you want to impose international mechanism. This perception gap is going to be there. No.2, India has the youth. We have the majority of people under 35 who want things done now. They want this generation progress in their lifetime and not wait for the other generations to come. So I would like your expert comments on how do we bridge this gap first in leadership, and secondly, how do we meet the aspirations of the youth notwithstanding all this.

Ms Anjali: I would like to suggest that perhaps one has not really addressed the moral question in discussing the financial implications. I would like to draw a small analogy here between nuclear non-proliferation and… when the industrial countries have huge catches of nuclear arms the developing countries have invariably said why not us. As far as this is concerned the developing countries are going to say why us. How are we going to solve that moral problem in the future when there is no means of enforcement. Thank you.

Speaker: Prof. Lawrence you said a very profound statement that developed countries are responsible and developing countries to take action. And you suggested solutions also. These solutions are you suggesting as an economist or as a policy maker? As an economist if you suggest, we agree but as a policy maker it is not possible why because we have so many evidences where in the international forum, may be WTO, where developed countries failed agreeing on many occasions WTO agreements and all evidences are there that US is producing highest emissions compared to UK and all.

Speaker: Prof. Summers I have a question. In your current role as the head of a private financial institution or your association with financial institution where do you see the role of private capital in mitigating global warming. Recently in US we saw an example of the private equity bid for TXU where NGOs and private capital…where do you see that in India where private capital can make a difference.

Speaker: There are over a Trillion dollars of currency reserves in China, that is causing the global volatility and where are the global economics heading. That is causing a lot of exchange rate problems and such. My second question relates to American companies like Ford, General Motors and multinationals are saying that there is expanding consumerism, on the other hand you are saying that stop consuming so that global warming can be contained.

Professor Summers: Characteristically, in India the questions go to the knob of the issue. I guess I have a reputation for speaking bluntly so maybe I will attempt to do it again. Here, I think, is the challenge if we look at this issue from India's perspective or we look at it from another developing country's perspective. You have a compelling argument that most of the gases have come historically from the industrial countries, the industrial countries produce more per person than your country and they are emitting five or ten times as much. So why should you be restricted and all really until they are restricted down to your level? In this, you have an entirely compelling – at least on a philosophical level – moral argument, and besides that, would not it be spectacularly imprudent to accept some cap on what your emissions would do? It is a telling moral argument. You can make that moral argument and you can continue to produce gases and you can do that. If the industrial world will then be correct in concluding that its activities are relatively marginal compared to the total outcome and that its attempts for restriction will be ineffective in impacting the global stock because the supply of gases, the producers of energy intensive products will relocate in developing countries. So you are entirely justified at one level in taking that position. If you take that position the world will not have an effective strategy with respect to global warming. And so the challenge you have to take – and I thought the nuclear proliferation analogy was apt without at all pretending to understand all the exigencies of that issue. I would suggest to you that the world is almost certainly safer today because there is a non-proliferation treaty, and because India occupies a special role with respect to that treaty, than it would be if every developing country would take the position that they will eliminate nuclear weapons when the industrial countries do. But since we won't accept any kind of restriction, and if we had no nuclear proliferation regime of

any kind in the world, I think that would be a much more dangerous world. So a pragmatic solution was necessary that everyone could live with, that reaped the gains possible from cooperation. I think the challenge on this issue is to find a similar kind of practical solution. And in many ways, the decision as to what constitutes a practical solution has got to be made in a relatively small number of major developing countries, which is why I think this is such a crucial challenge for India. But the challenge – and this is what I would stress, this is why I think this issue in general would benefit from the greater involvement in the years ahead by Finance Ministers who tend to be relatively pragmatic sort – would be describe what solution you are prepared to accept. The property rights argument that you make is compelling, but to date it has been countries like yours that don't want to have a property right established at a level that is imaginably acceptable by the industrial world. So the question is what is the right way forward that everybody can accept? I think we don't have at this juncture a sufficient shared ground in principle everywhere to make a kind of debate about should it be stabilization at 550 dollars a ton, or should it be stabilization at 450 dollars a ton, or should it be 100 dollars a ton. I think we need much broader political acceptance of a set of principles around the way in which action is going to take place before we are likely to generate a large action. But perhaps I am wrong there will be a formula that can be suggested as more ambitious, that both major emerging markets and major industrial countries would be able to accept.

Dr Montek Singh Ahluwalia: Ideally since there are large number of people, we should have distributed entitlements to one tenth of a question and allowed them to trade to whoever got up to one could ask the question, we have not done that. But we do have here Mr Pachauri, if he is left, the lady here can get to ask the last question.

Dr Rajeev Lall: It just occurred to me are there no conceptual similarities between this problem and the intergenerational problem that social security poses let us say in the developed world. If so, what can we learn from the nature of the debate that is moving us perhaps to a solution in those areas.

Mr Rana Kapoor, Yes Bank: We are a young bank which adopted sustainability as responsible banking, we call it responsible banking in our organisation from the point of inception less than three years ago. Sir, I ask you a question related to your statement effective strategies and operational implementation. I think banks as public trust institutions who have a fantastic span of clients across all sectors – medium, large, small, can play a significant role in terms of influencing their customers to truly adopt mechanisms which are linked to conserving energy and it can be done through credit mechanisms, it can be done through credit scoring, it can be done through implementation in terms of giving them better pricing. What is your view in terms of banks and financial institutions playing a role in truly influencing and in this respect I must confess Financial Times is playing a small role in propagating this cause.

Speaker: You gave an example of the kick the can down the road view of the global warming debate. Could you just talk about that example that you gave and also are you suggesting that a CDM and the Kyoto Protocol, a lot needs to be done to strengthen it, do you think a more strict monitoring of the CDM projects is a solution.

Prof. Summers: The question of the financial sector is related to the broader question which was asked earlier and I did not answer about the private sector. I think there is tremendous potential for businesses to economize, as in the little example I gave of building Harvard. I am sure there is room for those who finance business to encourage them to take advantage of those opportunities. Without some framework, I think there is a question as to how much all that will add up to, and there is a very difficult question of how much the price of energy needs to change to incentivise that type of activity, and then an even more difficult question of how you define the objective. I suspect that there will be important competitive issues for financial institutions that are too demanding in their environmental objectives because others who provide credit with less demand may succeed in getting business. So I am very

supportive of all of those initiatives. I think they should be encouraged and championed but there does remain a question of what type of global framework at a broader political level in which efforts of that kind should operate.

On the question of kicking the can, I think the kick the can attitude is that we can't be expected to bear the burden because the burden is not fairly shared; therefore we are going to worry about what is urgent in the short run and not a lot happens. So I think the challenge really is to find a framework that everybody will live in. I don't think the ideas I suggested are as compelling or as forceful or as effective in what they will accomplish as I would like but one does have to define a framework in which everyone is prepared to live and I think it may be too large a leap to very tight constraints and very large transfers either on the part of those who are going to accept the constraints or on the part of those who are going to make the transfers, which is why I made the type of suggestions that I made.

I thought a little bit about your question. It is an enormous honour to be here speaking in memory of your father. I am not sure with respect to social security that the record of the industrial world is such as to give great comfort. I think it is rather more to suggest the very great difficulty of addressing problems that are many years old in the context of a highly uncertain economic forecast. I think if there is one lesson it is the importance of accurate and rigorous accounting. I don't think the US does very well on this score but it does better than many other countries because there is somebody who estimates the 75 year accounting for the system every year and that is made public and we act more responsibly than we would if there was not a 75 year accounting that was made public, which is why I attached importance first of all to finding a mechanism not just for measuring emissions but also for measuring policy effort, because I thought that comparison includes policy effort.

I think the second last thing on social security issue is something that in one way does apply the environmental sphere are reluctant to accept it, in the social security sphere it turns out the countries that grow fast have much smaller problems than the countries that grow slow. In a sense because they are young and better able to pay the promised benefits to their elderly with modest tax rates. At a deeper level, because the society has more resources it is able to achieve more of its objectives and I think that it is a mistake therefore to divorce quite as much the growth imperative from the environmental imperative as the classic Kyoto property rights on emissions approach does, which has the feature that if you grow faster then your economy is growing, more energy is getting produced, people are living better, that means you are in trouble. So I think some approach that is less conflictual between growth and the environmental imperative would draw more from social security.

Dr Montek Singh Ahluwalia: Thank you very much Larry.

Dr Rajiv Kumar: Thank you Chairman. Ladies and gentlemen it is my very pleasant task to propose a formal vote of thanks to all those who have helped to make this major event possible in ICRIER, but before I do that just couple of sentences, when the founding fathers of ICRIER led by Dr KB Lall whom I consider a visionary established ICRIER to push reforms and push international integration for the Indian economy, they gave two tasks and both those tasks were mentioned by Professor Summers, one to actually try and actually break new ground in applied policy research which is suited to the Indian conditions and then also to see that it is actually implemented by creating a consensus by bringing in the major stake holders in a constant dialogue with each other. So we have always had ICRIER doing very rigorous analytical research which is applied and also then to be presenting it to all the principal stakeholders which is the industry, the policy makers and the academia which we bring together all the time. So, Professor Summers, thank you again for reminding us that this remains our principle task, thank you also for telling us what an enormous change we have in our hands and that the developing countries would have to lead the intellectual effort and I assure you and all those present here that ICRIER will not be found wanting in that and we will do our best as we go forward in the next 25 years having completed the first 25 this year. With that as I said it is my very pleasant duty to thank Professor Summers and Prof. Liza New

who made this trip from Boston to Delhi to be with us just for this special occasion and they have done this to come and deliver this lecture which is one of the most principle and sought after events for ICRIER. Thank you Dr Ahluwalia for agreeing to chair the session and sparing the valuable time from the busy schedule that you have, and being with us for dinner, my special thanks to Dr Isher Ahluwalia, chairperson, ICRIER and to all the board members of ICRIER whose constant support and encouragement to me as Director and to the staff has made this possible for ICRIER to break new grounds and move forwards and finally my thanks to all of you who have gathered here in good numbers to grace this occasion for being with us…

End of Seminar