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### **“The Imperative of Change: Environmentalism in the 21st Century”**

**Speech by Achim Steiner, UN Under-Secretary General and Executive Director UN Environment Programme (UNEP)**

#### **12th Annual Wege Lecture at the University of Michigan**

**Ann Arbor, 11 March 2013**--To you president Mary Sue Coleman, thank you very much for not only this kind introduction but also for this invitation to be here at the University of Michigan.

Thanks too to the staff of the Wege foundation and to the family of Peter Wege for having established and supported this lecture which recognizes Peter's contribution to the University, his work and his leadership.

Sue you mentioned leadership a few times, in a sense underlining that it begins with the vision of a person—and having read up on Peter Wege's life and his work on economicology, I think in many ways I can say we are soul mates.

Tonight I would like to use this lecture to reflect a little bit away from the daily ups and downs of what it is to head the environmental authority of the United Nations—the role that UNEP has played since being established in 1972.

But before I proceed, let me also thank the Dean of the School of Natural Resources and the Environment, her staff and all the other Faculty members and students who have made my day here at your university here today very special.

I always seek out these opportunities because I still feel—even after six and a half years of being what the media and observers like to call us—a United Nations bureaucrat, to go back to where I think my own journey began in understanding

Environment, Economics and the future of our planet: and that was really my time at university.

And then use these fields—Environment, Economics and the future of the planet—as a way of reflecting both on my own work but also on the larger lessons that we are learning as a community.

Ladies and gentlemen,

The fact of the matter is that in talking about an imperative of change I wanted to allude to some –to me at least- clear phenomena.

One is the imperative of change and of transformational change in terms of where we are on this planet today with 7 billion people and where the notion of planetary boundaries being hit is one that has never been as dramatic as it is today.

That imperative of change is also an inflexion on an environmental community—maybe one says an environmental movement—but nevertheless a very broad community that has for the last fifty or sixty years challenged, changed but also defined the discourse around development, sustainable development and what environmentalism can mean.

To some environmentalism can be a single issue cause that has its origins in a very local issue—it might be centered around resistance to environmental degradation in a community or focused around the preservation of nature for either its intrinsic value or for its neighborhood value.

It is important to recognize that this strand of environmentalism is no less important today in the lives of real people, living in real places, facing real challenges, but it is no longer and can no longer be the only horizon of environmentalism in the 21<sup>st</sup> century.

Indeed much of what drove us in the last 50 years to evolve environmentalism is also a journey of recognizing that while environment is local, environmental change is increasing global and it is planetary.

Moreover the solution to a problem in one place may be found in a completely different part of the world. These are realities which we only began to appreciate into the sixties and seventies.

### **From Local to Global**

Rachael Carson's famous book—*Silent Spring*—in a sense articulated this evolving direction. It offered reflection on the fact that environmental issues were no longer about just dealing with a forest, a wetland, a local beauty spot.

It was the beginning of appreciating that environmental change—in this case relating to pollution-- was something that could happen all around us and that only through the lens of science would we even be able to recognize it as a phenomenon.

Pollution in terms of smog and what drove for example the reforms in the United Kingdom in respect to phasing-out of coal-fired heating and power stations in London two centuries ago or a century and a half ago were things you could still smell and taste.

But ozone-depleting substances, carbon-dioxide and the pesticides that Carson described are not things that you can see. You don't taste them, you don't smell them.

Only through science and empirical research can society begin to realize the implications of these by-products of development and industrialization.

So here we are as citizens in the 21<sup>st</sup> century with more knowledge, more wealth than ever before on this planet and also more capable of, - if you want- transforming the environment around us.

Yet we are also citizens at a time where we are more capable of responding to the possibility of knowledge and technology in addressing some of these phenomena.

## Living in the Anthropocene

Ladies and gentlemen, another departure point for today's lecture is also this notion of living in the anthropocene.

The Nobel Prize-winning atmospheric chemist Paul Crutzen began to draw our attention to this changing geological epoch that we today are living through simply by recognizing that the Holocene of the last twelve thousand years has really come to an end.

Why? because from being just one species dependent on nature, often living at risk of simply trying to survive droughts or floods—being at the mercy if you like of nature--we have evolved into a species that today is a dominant, influencing factor on this planet.

We have managed to grow from a billion people in the last two hundred years to seven billion people in less than two hundred years.

We have proven capable of changing the atmosphere, of fundamentally altering the biosphere, of being able to deploy such industrial harvesting capacity in the worlds' oceans that anywhere between sixty to seventy percent of our fish stocks today are at maxim offtake or are declining and collapsing.

If you had a world map behind me here and you would look at that and say that all this in terms of the worlds' fisheries has happened somewhere in the last fifty to seventy years, then you begin to get a sense of why this notion of living in an age of the anthropocene is not an abstract or an academic notion.

We are actually in the midst of having to recognize that we are not just one amongst many species any more on this planet.

But that we are in a sense a determinant species of what happens to the future of our planet and the ability of future generations to live and to thrive—posterity, a notion alluded to by President Obama in his recent State of the Union address.

Ladies and gentlemen,

The age of the anthropocene is also a way of reminding ourselves of the fact that the things that we do today will determine life on this planet perhaps three or four centuries down the line.

Decisions that we take in the next ten, twenty and thirty years be it related to climate change, be it related to the loss of biodiversity and ecosystems or be it related to our marine resources will have consequences whether you describe them in terms of tipping points or in terms of thresholds of global warming that have a potentially unstoppable track into the future that could well be two, three hundred years down the line.

The responsibility of our current generation is thus to judge its own action with a horizon that is now inter-generational; not just one or two but maybe five or ten generations away: it is an extraordinary responsibility.

And herein lays one reason why I personally find this notion of living in the anthropocene so critical. It must be at the heart of changing human consciousness about the times we live in today.

Our ability to begin to fathom how decisions in just a very short period of the next few decades are consequential in terms of centuries is something we have never had to confront.

Even with the collapse of civilizations in history the effects, the impacts were territorial: They were local or regional.

They were not atmospheric, they were not biospheric and they were not about eliminating entire species and destroying entire ecosystems.

Yet this is the trajectory on which we are today making choices about the future of our nations, our economies, about how our cities are run, how our agriculture will evolve and how we answer the question of mobility in the twenty-first century.

Ladies and gentlemen,

## **From Critique to Solutions**

It is this realization that I believe also creates an imperative for change in the way that environmentalism itself is evolving.

Born out of a tradition of critique if you want--of addressing legacy issues--modern environmentalism needs to be on the one about addressing the ignorance of society and about the impact of its actions.

And on the other it has to also respond to the emergence of knowledge and the cumulative impact of human actions, be it in pollution terms or be it in terms of how we use natural resources such as land and water.

Evolving out of very much a local reality and increasingly into a national agenda, the challenge is to become a global movement- a global movement that try to open the eyes of society to the cost of what one might term ignorant development choices.

It is a movement that has grown from being a phenomenon of rich nations and the urban middle class-at least that's how many characterize it-into today a global movement that is sometimes about the most fundamental of human rights.

Riparian communities that are living downstream of a dam whose rights were never factored into the decision to redistribute the ecological functions of a living river in the name of development—in other words a redistribution of those ecosystem services from a riparian community of farmers and fishermen and fisherwomen into for example producing electricity for an urban centre in a completely different part of the country.

These are choices and development decisions that we have taken which have produced very often an environmental movement that has its origins in trying to undo what many either felt unjust or to be unsustainable.

From that movement of critique and often opposition to development, the environmental narrative has moved very quickly in recent years.

I think environmentalists in the broader sense of a community of professional scientists, social leaders, community leaders, decision makers, corporate, public, local government, that community has evolved an environmental agenda that is moving beyond the critique...beyond opposing development-- to increasingly being a driver of rethinking development.

I'm firmly convinced that at the beginning of the 21st century the power of science has given the environmental community an enormous opportunity and responsibility to redefine the negotiation of development choices in our communities, in our nations and on a planetary scale.

Ladies and gentlemen,

1972--the first meeting of the UN conference on the human environment in Stockholm, Sweden--was a conference in which environmentalism emerged as a tolerated factor in the global design of international cooperation and politics.

It was the outsider knocking on the door of those who essentially had the power to shape future decisions about our planet.

We moved on from that through 1992 when the Rio earth summit brought to the global stage the notion of sustainable development with its three pillars or three dimensions as we would call it today.

It was, in respect to accepting the environmental dimension of development, a breakthrough--from then on environmental science but also environmental community actions, agendas and movements were increasingly part of those sitting at the table pursuing the public discourse on major development decisions.

But it has remained a struggle because the science—whether it be the ecological science or atmospheric sciences—have provided imperfect knowledge which some have sought to use to negate environmentalism in the first place.

Ladies and gentlemen,

## **The Role of Science and Risk Assessment**

This planet is such a complex totality of processes and dynamics that we will never- at least in the horizon of human knowledge that I can foresee today- have perfect knowledge about what will happen.

And yet when we look at for example the discourse around global warming and climate change, there is this strange expectation that it is only when perfect knowledge has been achieved will decisive action follow.

Environmentalism at the beginning of the 21<sup>st</sup> century is about managing the imperfection of knowledge: this is not a new situation; humanity has since the dawn of time made decisions under imperfect conditions including that of imperfect knowledge.

But you can reduce those risks and you can reduce the level of ignorance by looking at what science is telling us today.

Science today, generated by our great universities like yours and our research institutions, can allow societies to make those risk assessments with increasing precision.

We can better understand what it is likely to mean if global warming is not addressed or the implications of losing individual species to the functionality of an ecosystem—and it can now also better link this to what all this is likely to mean to human beings, not as users of nature but as beneficiaries of the services these natural systems provide.

Thus the power of science—the ability to make rigorous, science-based risk assessments--has become a major asset to society.

Perhaps the best way to view this is through the lens of the insurance and re-insurance companies who were amongst the first to take global warming seriously.

Why? because they noticed the increase and the exposure in terms of risks and costs of their business of insuring society and the increase in natural disasters and extreme weather events on the planet.



In mentioning the private sector, let me note that here we see the foundations of another very important development of recent years—our ability to bring not only the scientific but the economic dimensions of how our current decisions are affecting the environment and nature in terms of how this is also impacting our economies.

We live in very financial times as all of you know very well—indeed the paradigm of the economy has been almost the exclusive transactional vehicle through which decisions are taken, be it about energy systems or be it about how much debt we will accumulate to rescue banks too big to fail.

The trillions of dollars that we mobilize as societies in order to absorb a shock of a system that through many of its own faulty decisions has exposed us to this crisis is staggering--especially when you juxtapose it with our reluctance, inability or incapacity to mobilize the \$100 billion nations agreed to address something like an emerging phenomena such as global warming.

Trillions in just two years to stabilize a financially flawed global economy set side by side with our inability to mobilize significant amounts of capital for investment in natural assets or in an international context for addressing inequity on our planet.

In mentioning economics and the value of nature let me also clear up any misunderstanding here.

Bringing the economics of forests or freshwaters to the fore is not about reducing nature, biodiversity or wildlife to merely a matter of cost and benefit.

The economic dimension is not an alternative to anyone's personal or other preferential ways of valuing nature, be it aesthetic, be it in terms of creation, be it in terms of purely a personal value attached to preserving the beauty of landscapes or the diversity of wildlife.

But what we do have to face is that environmentalism in the 21<sup>st</sup> century no longer has the luxury of simply declaring new protected areas and taking stretches of land out of

the productive economy. We are running out of land including arable land, we are running out of water, we are running out of many of the natural resources that we actually need in order to sustain our economy.

The notion of protected areas for example remains an extremely important and valid one but for anyone to believe that ensuring species diversity or functioning ecosystems is simply a matter of declaring more protected areas-- more zones in which we try to exclude human activity—well I think that standpoint is flawed.

Flawed because I think we will very quickly hit the limits of that simplistic policy- whether it is in Africa or in the United States, whether it's in Europe or in Asia.

Indeed in a world of 7 billion people climbing to over nine billion by 2050, the idea that landscapes can be isolated from human use and activity is increasingly going to be a challenging one.

But the economic discourse in relation to environment has also moved from, if you want, documenting the cost of change.

You know, for many years, and even decades we've debated that we cannot afford to make a transition towards a cleaner economy, we cannot afford to remove pollution from our industries, we cannot afford to make ecosystem services something that is part of not just an externality in the economy but part of the way that we charge people for using the environment.

From there however we are now evolving as a society a discourse that is looking at not only the costs of inaction, but also at the costs of reducing risks.

In other words trying to translate an economic analysis into something that ultimately I think will lead us more towards the opportunity of the future and the benefits of an environmentally sustainable paradigm of development that is also economically rational.

## **A Transition to a Green Economy—Bringing the Invisible into the Visible Spectrum**

In the lead up to the Rio+20 Summit last year—two decades after the Rio Earth Summit of 1992--UNEP produced an assessment called the Green Economy report.

It was an attempt to try and gather from across the world and across ten sectors including tourism, agriculture, fisheries, energy, transport, examples of where had countries, societies, communities and big cities have moved beyond piloting for example roof-top solar power, to something that is scalable.

In other words can we not only talk about greening our economies, but actually do it—can we go from the theoretical to the actual.

Can we demonstrate that people would actually have jobs, that people and their economies would not suffer if they made this transition towards a green economy part of their reality?

Ladies and gentlemen, the research unearthed thousands of examples of where that transition is underway, real examples not laboratory ones.

We found examples of phasing out fossil fuel subsidies because as is known to many, as you sit here today we still subsidize a tonne of carbon dioxide at 8 to 9 times the level at which we subsidize the removal or the avoidance of 1 tonne of carbon dioxide.

That is the subsidy regime of our economy in the year 2013 in which we are supposed to be achieving a transition towards a low-carbon economy; Eight to nine times more every day, every year, in every economy across the globe.

We also found- and this was extremely interesting – that this notion of a transition towards a green economy is not the preserve of rich societies, of developed or industrialized countries but an extraordinary opportunity for developing ones.

Industrialized countries have what one might call a legacy economy--you have a whole transport infrastructure, a whole energy infrastructure developed.

If you want to make the transition, you have the problem of stranded assets. You have to make significant changes.

You have electricity structures based on the idea that the more you consume, the cheaper the electricity gets—energy companies in developed countries developed and invested in energy systems to do that.

Now take a continent like Africa--a continent that will soon have a billion people on it, if there are not a billion people already, where close to 8 percent of the population still do not have access to electricity.

Over the next 20 to 30 years, Africa will jump into the 21<sup>st</sup> century with its energy infrastructure and its transport infrastructure.

If we can look at a continent like Africa it can develop with a 20<sup>th</sup> century model of energy and add to the level of greenhouse gas emissions and demand for fossil fuels equivalent to the Chinese economy of today.

But transition to a Green Economy, the availability of clean technologies today and finance, means Africa can have a very different development path—one that can benefit every African but also every American citizen, every European citizen, or every Chinese citizen given the cleaner and greener footprint that would deliver.

Ladies and gentlemen,

### **Green Economy—As Much a Developing as a Developed Economy Agenda**

The notion that environmental technologies and pathways in development are today as important on a continent like Africa to the future of an energy economy in the United States or China is something we have never quite had to confront to this magnitude before.

And it is for that reason that UNEP—in compiling the Green Economy report--went to many developing countries and what we found there was quite astonishing.

In the last 5 to 10 years there has been a sea change in terms of how leaders both at the national level, at the local level have begun to look at this notion of the Green Economy—even if it was at the time not given this term.

What these leaders have been doing--under words and phrases like sustainability, green growth or ecological civilization—is essentially try to invent a 21<sup>st</sup> century economy that departs from the 20<sup>th</sup> century logic of treating the planet essentially as a mining operation.

An operation that mines the resource base, that leads to development and where you clean-up later when you may be rich enough to manage the impacts and costs of this development path.

Many of these progressive economies are also trying to capture not only the up-front costs of pollution and environmental damage, but also the economic value of nature and ecosystem services to us as human beings.

It is a phenomenon of economics and of the study of ecology and nature in an economic context and for a long time, the entire environmental dimension was relegated to the notion of externality.

Now a good classical economist would argue that it is a perfectly valid tool with which to deal with these issues. But the fact of the matter is that there is a fundamental flaw in the way that economics as an instrument of society in driving and determining development choices in respect to nature.

The fact is that under current economic logic a species or a forest is given a zero economic value in terms of the services and functions it provides.

And as you also know in our modern economic world, something that has a zero value is valueless and therefore it is open to exploitation without opportunity costs.

Pavan Sukdhev a former head of global markets with Deutsche Bank who has led The Economics of Ecosystems and Biodiversity (TEEB) hosted by UNEP, describes this as “an extraordinary and gross misallocation of capital.”

What this work is essentially trying to bring home to governments, cities and companies is that indeed capital can be and is also ecological.

### **Natural Infrastructure—Crucial to Economies, Crucial to the Poor**

We think of roads, bridges and power lines as infrastructure—but there is ecological infrastructure too ranging from wetlands, a functioning watershed and a forest to coral reefs and soils which also underpin our economies on a huge and previously economically-invisible scale.

This work is also driving home the extraordinary value of the services we derive from this ecological infrastructure while also pointing out that even if it could be replaced by machines, the costs would be huge.

Bees provide pollination services, they also do not send invoices—so the value of these services is often invisible in national economic and development policies.

But if you, for example have watched perhaps some of the National Geographic documentaries, you may have seen how some Chinese farmers literally carry pollen in plastic bags and then brush it on with little paint brushes in their fruit farming operations because of a shortage of pollinators.

If you look at some of the costs that farmers are now willing to pay to bring the services of bees by truck here in the United States or in Australia then you certainly begin to realize that there is a tremendous economic value attached to pollination services by bees—and also by inference the whole range of biodiversity and ecosystem services running into annually trillions of dollars.

Another interesting fact is that there still remains a view that it is OK to over exploit nature in order to meet development goals and eradicate poverty.

But we also found remarkable evidence that nature is often the most fundamental capital of the poor and indeed the social welfare and security system upon which they draw.

In a country such as India TEEB found that millions of people and their communities depend in a very direct sense on natural systems and functioning ecosystem services amounting to anywhere between 50 to 60 percent of the GDP of the poor.

So to argue that you have to destroy nature in order to eradicate poverty is perhaps one of the biggest misunderstandings of how development and how the poor are actually able to build their own base from which to develop and how it is often destroyed in the name of hard infrastructure, in the name of development.

The Green Economy report also put forward a model that argued that with just 2 percent of global GDP re-invested and re-directed every year, we could begin to trigger a transition towards a green economy.

And remarkably enough, this model has never been challenged by anyone during the last eighteen months of this report having being published.

Isn't it extra-ordinary that we are at the point in time where on the one hand we do know that we are in deep trouble on virtually every count of sustainability and yet we know inspiring and rationale pathways out of this but do not comprehensively act?

I have to be very frank with you. Even though I am by nature an optimist and a believer in the human capacity to re-invent iteself, the balance sheet of twenty years after the Rio Earth Summit in virtually every domain of sustainable development and particularly of sustainability in respect to global environmental goals that have been negotiated and ratified through conventions, progress remains virtually non-existent.

The score card is not all doom and gloom—excellent progress has been made many different areas-- cleaning up rivers, cleaning up the air in developed countries, environmental health, rising investment in cleaner energy.

But if you look at our planetary reality, the fact of the matter is that in the year 2013 on virtually none of the fundamental counts that Rio 1992 and the Brundtland commission defined, have we actually turned the ship around.

In the Global Environment Outlook 5 report of UNEP, which was launched on the eve of Rio+20, we looked at 90 goals that the international community has agreed over the last two to two and a half decades linked to conventions, multilateral agreements and protocols.

In only four of these 90 goals have we actually made significant progress. Among those has been the phasing out and phasing down of ozone-depleting substances under the Montreal Protocol—a treaty that shows it can be done.

And this brings me back to where environmentalism of the 21<sup>st</sup> century must locate itself today.

Ladies and Gentlemen,

Environmentalism in the 21<sup>st</sup> century has to be about providing solutions and answers. It is about trying to answer the question of ‘how on earth will we live together on a planet with 9 billion people by 2050?’ ‘

How will we feed ourselves in a world in which already by the year 2020 one third of the world’s population will be living in water stressed countries?’

It is about answering the question “where will the jobs come from for 9 billion people when even in the industrialized world, in Europe at the moment youth unemployment in some countries has reached 50 percent?”

We have to become economically more literate and we have to be able to frame the responses to environmental change in terms and in domains that speak to where people have to make their living.

Where their livelihoods are determined, where their employment reality is defined, where their ability to educate and finance education of their children is assured and



where we also can, in a more complex reality of a global economy be able to prove that the economy of our countries-- wherever you may live- is not going to suffer as a result of making the transition towards a Green Economy.

And we have to demonstrate to citizens and the global community at large that the alternative is far more risky—that a world continuing to move towards a reality of global warming above 2 degrees, or a world in which the worlds' oceans will essentially be devoid of fish stocks because we have simply not managed them sustainably is not going to work.

If we continue along those tracks and if we are not able to put in place the instruments, the policies and the transition strategies that can speak not only to the environmental and scientific reality of environmental change, but to the opportunities and the consequences in terms of economic policy, then I think environmentalism in the 21<sup>st</sup> century is a doomed movement.

But let me end my lecture on the many reasons why you here and people everywhere should be far more optimistic--the transitions that I have alluded to in various sectors and domains today are in fact beginning to happen.

The environmental community is becoming far more economical literate as the economists are becoming far more environmentally savvy.

For example in Kenya, where UNEP is headquartered, the total installed electricity generating capacity for 40 million people is just around 1200 megawatts—the equivalent of just one or two of the power stations you have here in the United States.

Thus 80 to 85 percent of Kenyans have no access to electricity and yet this country put in place 3 years ago a green energy policy. It is betting on the transition towards a green economy.

It is betting on a future in which its ability to generate electricity in the future will not be subject to the vagaries of the price of oil on the worlds' market. Kenya is instead focusing on energy resources that are within its territorial domain.

Take geothermal power for example. In Kenya today, there is the fastest growing geothermal economy on the African continent and interestingly enough China will soon be investing almost a million dollars in geothermal infrastructure development in Kenya.

There is likely to be the tripling of the generating capacity of that country over the next 8 to10 years, virtually, exclusively relying on renewable energy from geothermal and wind power- indeed the largest wind farm on the African continent is currently being planned and will soon be underway in Kenya.

It is an example of how governments can put in place the regulatory frameworks that allows different choices in infrastructure and in an energy policy to happen.

It is also a fact that in countries in Europe today, the renewable energy feed-in tariff policy has had a tremendous impact and has also proven those wrong who would argue that un-competitiveness and unemployment would follow a transition towards renewable energy.

Denmark is a small country so some people are arguing that its pathway towards renewable energy over the last twenty five years- -where GDP has grown by well over 70 percent and yet electricity consumption in the country has been decoupled from that growth- may not be an example that other countries can replicate.

But take an economy such as Germany, one of the largest economies in the world and sensitive to competition.

It has made decisions about its energy future that allowed Germany last year to produce one-fifth of its entire electricity consumption with renewables, and this year it will be 25 percent and probably by the year 2030 close to 40 or more percent.

At the same time that economy has the lowest unemployment rate for twenty years, low inflation, economic competitiveness and an economy that has been strong enough to overcome the current financial crisis.

So the hypothesis that if you go for renewables you will have problems in your economy does not hold as a simple logic. And we see many other developments like this. Brazil, as is known to many probably has made the single largest contribution to avoid its CO2 emissions of any country in the planet in the last few years by reducing deforestation of the Amazon significantly.

There are countries in the developing world that are taking far more painful and far-reaching decisions in addressing global warming and climate change than many rich countries are willing to do. Therein lies a degree of hope that we will one day reach the point where the environmental sustainability that I mentioned is not any more an issue between north and south, rich and poor.

Look at China today—it is far beyond rhetoric when its leaders talk of an ecological civilization and its green plans for its latest five year plan.

In China you have a nation, a country, a society that is fundamentally threatened in terms of its progress by the terrible price it has paid over time in terms of environmental pollution and loss of natural assets.

China is one of the most dramatic countries in terms of making a transition from a 20<sup>th</sup> or 19<sup>th</sup> century into a 21<sup>st</sup> century economy that I have ever seen documented in the history of how nations change their development paths.

Counterintuitive when you look at the pictures of Beijing in January. But let me assure you there are developments underway that will have magnitudes and scales of change in half or a quarter of the time it has perhaps taken any industrialized country.

And I could cite many other examples, from Ghana phasing out fossil fuel subsidies to the new climate-change law in Mexico and the investment of India in ecological infrastructure through its Rural Employment Guarantee Act.

We are seeing the logic of environmental change beginning to re-define the outlook on the future of sustainable development and our economic future, shifting decision making in industry, in the financial markets and in government.

But as with all things that depend on public confidence, we still are struggling with those who believe that these transitions will be too disruptive; that want to go slower even though environmental change is accelerating. Our greatest challenge today is to develop the confidence amongst our fellow citizens that the cost of their inaction is in fact so much higher than the cost of acting now.

And here I end by simply reminding you that living in the age of the Anthropocene imposes on the current generation a far greater moral, ethical-- whichever way you want to describe it-- responsibility to act, given everything we know today, given everything that is at our disposal in terms of technology and finance and human ingenuity.

There simply will not be an excuse a hundred years down the line when the historian looks at decisions that were not taken today- to rationalize them in the way that we have done in the last hundred to hundred and fifty years.

In that sense I want to pay tribute to people like Peter Wege who have shown wisdom, that vision and that leadership.

We may not always be people in the position of Peter Wege but, you know, leadership is something that everyone can show.

Leadership starts simply with one person. It starts in the family, it starts in the university, it starts in the supermarket, it starts on your farm, in your business, wherever you are: I think leadership is not something that is God-given.

It's the confidence that we can actually make a difference and our role as environmentalists living in the 21<sup>st</sup> century is to give people confidence that the future is not only a derivative of the past.

Thank you very much.