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Grantham Research Institute on  
Climate Change and  
the Environment

**Environmental justice and climate change: a  
speech at the Istituto Patristico Augustinianum,  
Rome**

**10-11 September 2015**

**Nicholas Stern**

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## **Environmental Justice and Climate Change**

**Nicholas Stern**

**International Meeting on Environmental Justice and Climate Change  
Istituto Patristico Augustinianum, Rome  
10-11 September 2015**

### Abstract

Justice, equity, rights, and values, more generally, are fundamental, broad and deep notions that should guide our behaviour and manner of living. We must take these values, and combine them with what we have learned about the environment and economic development, to the defining challenges of our century: managing climate change and overcoming poverty. If we fail to manage climate change we will create an environment so hostile that lives and livelihoods will be destroyed. If we try to manage climate change by placing obstacles to overcoming poverty we will not have the coalition we need to manage climate change. If we fail on one we fail on the other.

The risks of climate change look ever more severe as the evidence, already strong, gets still stronger. With increasingly severe extreme events, desertification, flooding and submergence, hundreds of millions are likely to have to move with the likelihood of widespread conflict and loss of life; the stakes are immense. Over the last decade our understanding of the opportunities that lie in moving quickly to a low-carbon economy have changed fundamentally. We can now see that: i) the “horse-race”, alleged by some, between growth and climate responsibility is false and artificial; ii) strong decisions must be taken now or that opportunity will be lost and we will “lock-in” long-lasting investments in cities and energy systems which are polluting and wasteful, and land and forests will be pillaged further; and iii) burning hydrocarbons creates colossal damage to health from air pollution which is now killing millions per year.

The political will for strong and timely action is not yet sufficiently strong. It must be founded in evidence, argument and discussion and in values. His Holiness the Pope has shown extraordinary leadership in taking that discussion to the world. The moral arguments for combining growth and climate responsibility are crucial: degrading the environment, via climate change or otherwise, denies too many, particularly poor people, (including those yet to be born) the right to development, the right to work to enhance their living standards. But we now see that we can combine, very effectively, rising living standards and the responsible management of climate change. With this evidence in front of us, most widely accepted value systems surely point to strong action. Such action is entirely feasible, very attractive, and overwhelmingly economically and morally justified. The urgency is however intense. That is why the UN discussions of the Sustainable Development Goals, in September this year, and the UNFCCC discussions in Paris on climate change in December are so important. That is why both clarity of analysis and moral and political leadership are so important.

## Full lecture

Justice, equity, rights, and values more generally are fundamental, broad and deep notions that should guide our behaviour and manner of living both individually and collectively.

But they are applied in a specific context often or usually where choices and decisions have to be made.

The challenge of climate change is the management of potentially great risk to the lives and livelihoods of humankind over the coming century and beyond, whilst at the same time overcoming deep poverty, in all its dimensions, in the next two or three decades.

These are the defining challenges of this century.

If we fail to manage climate change, we will create an environment so hostile that lives and livelihoods will be destroyed.

If we try to manage climate change in ways that create barriers to overcoming poverty, we will not put together the coalition that we need to manage climate change.

If we fail on one, we will fail on the other.

The risks of climate change look ever more severe as the evidence, already strong, gets still stronger.

The damage from climate change is intensifying as the world grows hotter.

Since 1880, the Earth's global average temperature has increased by more than 0.8 centigrade degrees, according to the latest assessment by the Intergovernmental Panel on Climate Change.

That may not sound much, but the Earth's global average temperature has been relatively stable during the Holocene geological epoch, over the past 12,000 years since the end of the last Ice Age, when human civilisation has been established and its agriculture, villages and towns have been created.

We live and work where we do, in large measure, because of where rivers, shores and ports are located, and where the climate is favourable or manageable.

*Climate change can radically alter all of that.*

So today's global average temperature lies at the edge of what human civilisation has experienced.

And we are already starting to see strong effects, with the loss of glaciers, the reduction in polar ice sheets, the rise in sea level and the shifts in the patterns of extreme weather, such as heatwaves and heavy rainfall.

But what we have seen so far is also small relative to the risks we face if global average surface temperature warms by more than 2 centigrade degrees.

These dangers from warming of more than 2 centigrade degrees include substantial increase in the risk of tipping points, such as the irreversible or accelerated melting of the polar ice caps on Greenland and West Antarctica, leading to rapid sea level rise.

The Intergovernmental Panel on Climate Change warns that a ‘business as usual’ pathway for annual emissions of greenhouse gases could mean a rise in global average temperature of 4 centigrade degrees or more by the end of the century, compared with the pre-industrial levels.

This would mean a global average temperature that has not been seen on Earth for tens of millions of years.

That would be not just beyond the experience of human civilisations in the Holocene, but also beyond the experience of *Homo sapiens sapiens*, who appeared on Earth only within the last 250,000 years.

Climate change from ‘business as usual’ emissions would likely be enormously destructive, including much more intense extreme events.

There would be huge changes to deserts, coastlines, rivers and rainfall patterns.

Our world would be redrawn, fundamentally affecting the reasons why we live where we do.

The dislocation and damage to lives and livelihoods of such rapid and large climate change would be immense with hundreds of millions, probably billions, having to migrate, resulting in the likelihood of widespread conflict and loss of life.

So the science indicates that the stakes are immense.

If we want a reasonable, say 50-50, chance of avoiding global warming of more than 2 centigrade degrees, we will need to reduce annual emissions of greenhouse gases from about 50 billion tonnes of carbon-dioxide-equivalent today to less than 35 billion tonnes in 2030, less than 20 billion tonnes by 2050, and about zero by the end of this century.

We can do a little less than required for such a path over the next 15 or 20 years, but this would mean acting more strongly afterwards, and vice versa.

It is the total of emissions over the years that matters and thus, with limited scope for going below net zero, there are limited differences between feasible emissions paths.

Some studies suggest we could emit 40 billion tonnes of carbon-dioxide-equivalent in 2030, but it would require very strong action afterwards, perhaps even ‘net negative emissions’, to have a reasonable chance of avoiding global warming of more than 2 centigrade degrees.

‘Net negative emissions’ means removing more carbon dioxide out of the atmosphere than we add to it.

The paths that we need to follow as a world, to have a reasonable chance of holding to an increase in global average temperature of no more than 2 centigrade degrees, are those that have around zero emissions from electricity generation by the middle of the century, zero total emissions by the end of the century, and possibly net negative emissions for major economic sectors well before the end of the century.

That also means that we can burn and emit the carbon dioxide from less than half of the reserves of hydrocarbon that are already known, if we are to have a reasonable chance of avoiding global warming of more than 2 centigrade degrees.

Meanwhile, over the last decade, and this point is crucial, our understanding of the opportunities that lie in moving quickly to a low-carbon economy have changed fundamentally.

We now have a much greater understanding of how economic growth, development and climate responsibility are mutually supportive and intertwined.

Sustainable growth and development complement and support climate action, as the New Climate Economy Report, ‘Better Growth, Better Climate’, explained last year.

We can now see that there are technologies, city structures, energy systems and management of land and forests that can yield *both* powerful reductions in climate risks, *and* a much better standard of living in general, together with radical reductions in poverty.

There are at least three fundamental differences in our economic and developmental understanding from the Rio Earth Summit in 1992, and even the 15<sup>th</sup> session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Copenhagen in 2009.

First, these used the language of burden sharing and extra cost, and in large measure, embodied the idea that there was a contest or race between growth and climate responsibility.

But to portray them as being in conflict is to misunderstand development and the opportunities from the low-carbon transition.

The “horse-race” between economic growth and climate responsibility is false and artificial.

Second, we have a more intense understanding of the dangers of delay.

The economies of the world are transforming, and the next two decades will be of deep importance in how we manage fundamental structural deep change.

Long-lasting investments are being made in the development of cities and energy systems.

The number of people living in our cities will grow from 3.5 billion at present to around 6.5 billion in 2030.

If in this period we lock in the congested, polluting, high-carbon patterns of the past, we will not be able to stay within the limit for global warming of no more than 2 centigrade degrees, beyond which scientists, rightly, regard the risks as too dangerous.

Continuing structural change in the global economy, and inadequate management of cities and energy systems intensify the dangers of delay.

Third, the immense damage caused by fossil fuels, beyond climate change, is now more apparent.

Many millions of lives and livelihoods are destroyed across the world each year as a result of particulates and other pollution released by the burning of hydrocarbons.

A recent study concluded that breathing the polluted air in China's cities carries a similar risk to smoking 40 cigarettes each day, and kills 4000 people every day.

The air pollution in Indian cities is much worse, while Germany, Korea, and indeed most other countries also have severe problems.

The colossal damage to health from this air pollution is ever more clear and now much better understood.

Whilst it is now obvious that the transition to the low-carbon economy is very attractive, it will require radical change and strong investment.

The private sector will take a lead role in this investment which will drive the transition away from the damaging and dirty high-carbon path towards cleaner and more sustainable economic growth.

Investments in infrastructure will be critically important, much of this will be public and much private.

Clear strategies and sound policy will be crucial.

Some US\$90 trillion will be invested in infrastructure over the next 15 years, or US\$6 trillion each year on average, around the world, and mostly in emerging economy and developing countries.

We will need both better quality and greater scale for our infrastructure.

A lack of infrastructure is one of the most pervasive impediments to growth and sustainable development.

Good infrastructure unshackles and removes constraints to growth and inclusion, and fosters improvements in education and health.

Bad infrastructure kills people and leaves unsustainable economic burdens for the future.

Investing in infrastructure can boost demand, raise productivity, and increase long-term growth.

Unlocking good infrastructure requires action on both policy and finance.

It will require clear, stable and long-lived policy to reduce risk and foster an investment climate that delivers these opportunities.

Good policy must also foster the finance that can support the investment.

We should expand the capacities of the development banks, and attract profitable and long-term capital, including from institutional investors.

And we must also tackle the distortions in the market that prevent people from recognising the immense real cost of the use of hydrocarbons.

Huge implicit subsidies for fossil fuels, including through the lack of strong carbon pricing, are pervasive and result in a distorted price, especially for coal.

A recent analysis published by the International Monetary Fund concluded that the total cost of fossil fuel subsidies this year will be more than US\$5 trillion, of which about three-quarters are due to the failure to price in the damage from air pollution and climate change.

Thus ‘externalities’, in the language of economists, are of great importance.

The real price of coal is not US\$50 per tonne, but well over US\$200 per tonne, when we take into account the externalities of its impact through air pollution and climate change.

These are not “abstract externalities”, but the deaths of people now and in the future from air pollution and climate change.

These are surely real costs by anybody’s standards.

And remember that the costs of air pollution are largely local, so it is in a country’s best interests to avoid them even if it has never heard of climate change.

Thus it is wrong, and perverse, to still view high-carbon as the ‘low-cost option’.

But it is not just the economic arguments that point to urgent action.

All major approaches to moral philosophy seem to point in the same general direction.



Strong action to reduce emissions is morally required.

Recognition that the inherent equality of humans lies, in large part, in their entitlement to a decent chance in life, forms the foundation of most value systems.

The lives of human beings, our children and ourselves, those in different countries, should have equal status in our moral assessments and understanding.

That is what it means to have a common humanity.

Injustice is entitlement denied.

We can examine a number of approaches beyond standard economics: Kantian, virtue ethics, social contracts, rights versus liberty, which embody this understanding of entitlement and justice.

Discounting future welfare or lives means weighting the welfare or lives of future people lower than lives now, *irrespective* of consumption and income levels, purely because their lives lie in the future.

It is profoundly unethical to apply high discount rates, which effectively means that damage and harm caused to lives and livelihoods by climate change decades from now, no matter how large, is largely ignored.

It cannot be right, for instance, to apply, as some would suggest, a 2 per cent pure-time discount rate which means that the life of someone born 35 years from now, with given consumption patterns, is deemed half as valuable as that of someone born now, with the *same* consumption patterns.

That is discrimination by date of birth, and is unacceptable when viewed alongside notions of rights and justice.

That is a very different point from discounting extra consumption in the future because, we might assume, that future generations will be richer.

That assumption, of course, must be examined, particularly if we fail to manage climate change.

A clear and modern understanding of climate change and development means we *can* combine rising living standards now and the responsible management of climate change risks.

A valuable concept for both intra- and intergenerational equity and justice is “equitable access to sustainable development”.

It embodies in a strong way many important moral positions, including notions of rights and justice and conventional consequentialism as used in much of economics.

This was the term that was used in the agreement between countries at the 16<sup>th</sup> session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Cancún, Mexico, in 2010.

It means all are entitled to sustainable development as part of the dynamic and collaborative transformation to a zero-carbon world during this century.

Each nation should choose its own path to sustainable development.

For developing countries, those paths should be supported by the rich countries.

While this is founded on the principle of common actions, the idea embodies the proposition that richer countries should cut their emissions faster and generate strong examples, while also promoting flows of finance and technology.

This is in contrast to the ‘burden-sharing’ approach, where “others should pay the incremental cost”, and zero-sum games, which arise from traditional interpretations of ‘common but differentiated responsibility’.

‘Equitable access to sustainable development’ embodies the core concepts involved in ‘common but differentiated responsibility’, but goes beyond them and is more dynamic and collaborative, while focused on opportunity.

And it is more explicit about equity.

Notwithstanding the clear lessons from economic analysis and these strong moral arguments, the political will for action is not yet sufficiently strong.

This political will should be founded on evidence, argument and discussion, and on values.

The moral arguments for combining growth and climate responsibility are overwhelming.

Degrading the environment, through climate change or other damage, denies many, including those yet to be born, the right to development.

His Holiness the Pope highlighted this in his encyclical letter, *Laudato Si’*, earlier this year.

The Pope has shown extraordinary leadership in taking the discussion of this issue to the world.

We can now see that we can effectively combine rising living standards and the responsible management of climate change.

Only by combining political and moral leadership with social movements will the necessary decisions be taken with the urgency required.

Crucial decisions must be made later this year in Paris at the United Nations climate change summit.

A key action for governments is to recognise and act on the gap between current ambitions and the goal of limiting global warming to no more than 2 centigrade degrees.

The pledges that have been made so far for 2030 indicate that global annual emissions in that year will be about 55 to 60 billion tonnes of carbon-dioxide-equivalent.

This will represent an important improvement against the 'business as usual' path, with emissions of 65 billion tonnes or more.

However, most paths that are consistent with the goal of avoiding global warming of more than 2 centigrade degrees require emissions in 2030 of less than 40 billion tonnes.

The large gap means that strong efforts are required to ramp up ambition both *before* and *after* the summit in Paris.

Thus, the Paris summit must not be regarded as a one-off opportunity to fix targets.

It should be the first step of many. The agreement should embody regular reviews, to assess programs, to share lessons, and to identify and create new opportunities.

We must all understand now that high emissions levels over the next 20 years imply the need for zero carbon emissions by the second half of the century, as recognised in the communiqué from this year's G7 summit in Elmau, Germany.

More broadly, the Paris summit will present a chance to build a better understanding not only of the threats and risks from inaction, but also of the great opportunities that arise from the transition to a low-carbon economy.

To build a better understanding that poverty reduction, sustainable development and climate action support each other, as the report 'Better Growth, Better Climate' showed.

Much, or even most, of the necessary action, country-by-country, is in the vital interest of the country itself.

The urgency is still greater than we previously thought.

There is great danger of lock-in to high-carbon systems as our economies are transformed and rapid urbanisation takes place.

The importance of collaboration to generate the scale and quality of investment necessary is becoming still stronger, with rich countries supporting through finance and technology, and setting strong examples, and politicians around the world providing clarity, soundness and stability of policy, domestically and internationally.

Examples will come from everywhere as we enter a period of extraordinary creativity, innovation, investment and growth.

All this requires moral and political leadership, as his Holiness the Pope has shown in full measure.

We can and must rise to the two great challenges of this century: overcoming poverty and managing climate change.

But if we fail on one, we will fail on the other.

We must not fail.