

# Beyond the UNFCCC: Rethinking the Global Politics of Climate Change

C Douglas Dillon Lecture 2015

Robert O. Keohane

Professor of International Affairs, Woodrow Wilson School, Princeton University

Chair: Dr Robin Niblett CMG

Director, Chatham House

11 May 2015

The views expressed in this document are the sole responsibility of the speaker(s) and participants do not necessarily reflect the view of Chatham House, its staff, associates or Council. Chatham House is independent and owes no allegiance to any government or to any political body. It does not take institutional positions on policy issues. This document is issued on the understanding that if any extract is used, the author(s)/ speaker(s) and Chatham House should be credited, preferably with the date of the publication or details of the event. Where this document refers to or reports statements made by speakers at an event every effort has been made to provide a fair representation of their views and opinions. The published text of speeches and presentations may differ from delivery.

### Robin Niblett

Ladies and gentlemen, welcome to Chatham House. I'm delighted you would step away from that gorgeous evening outside and come join us down here for the Dillon Lecture, which is one of the lectures that we hold in honour of distinguished individuals who were affiliated or engaged at some point with the Institute. In this case, as many people will know, Secretary Dillon, as he was at the time – C Douglas Dillon was the Treasury secretary from 1961 to 1965, an example of one of those individuals who in those days could live a truly bipartisan life, having served both President Eisenhower and then later also Presidents Kennedy and Johnson. The idea was that we would have a lecture in his honour that would really capture a space where we could talk about the value of transatlantic cooperation – international cooperation in general, but if possible the dynamic of US-European collaboration on issues of international importance.

One of the probably most important topics of this year, that is going to be hugely dependent on levels of international cooperation at a highly complex level, is the question of the Paris negotiations on climate change which will take place in December, later on this year. I'm absolutely delighted that we would have Professor Bob Keohane with us here today to give a talk on 'Beyond the UNFCCC: Rethinking the Global Politics of Climate Change'.

Professor Keohane is known to many of you here – certainly known to me, having studied some of his writings. He is really one of the leading proponents, analysts, explainers of both the possibilities and limits of international cooperation. He was the author of *After Hegemony: Cooperation and Discord in the World Political Economy*, which is a seminal book – and I don't use that adjective too often, but certainly seminal in explaining dynamics of international cooperation. Having written numerous books individually, he was also known for his partnership with Joe Nye (somebody else who we've had the pleasure of hosting here from time to time at Chatham House), in their series of several editions of *Power and Interdependence*, another stock and staple.

So I'm delighted that Bob has turned his thinking and his experience to the issue of the global politics of climate change. If we can think of generally one of those topics that almost seems impossible to overcome the prisoner's dilemma and all sorts of other dynamics of international affairs theory, this is certainly one of them. Bob is professor of international relations at Princeton University – or international affairs, which is a much nicer way of putting it. He has served as president of the International Studies Association, as editor of *International Organization*. He has won numerous awards. Bob, we're delighted that you would make Chatham House part of your visit while you're here in London. I look forward to your remarks and we'll have time for discussion after your opening remarks, and time for drinks afterwards. So welcome to Chatham House – welcome back to Chatham House, I should say.

### Robert Keohane

Thank you. It's a great pleasure to be back here in the United Kingdom – I can still say that. I've been here since Wednesday night, and since I'm an election junkie, you provided me with another election to look at closely. Waking up Friday morning to find that the polls were totally wrong was, to me, more amusing than it probably was to some of you who were probably unhappy at the result, depending on your affiliation.

It is also lovely to be in a city with such lovely weather. We've had bad weather in Princeton. I realize London always has wonderful weather so I didn't take an umbrella, and look, it paid off. I've been here for a week and I haven't needed it.

My colleague, John Ikenberry, sends his regards. I just saw him in Oxford three days ago. I think he was the Douglas Dillon lecturer here last year.

#### Robin Niblett

Yes.

#### Robert Keohane

I'm honoured to have been chosen as the Douglas Dillon lecturer at Chatham House. Douglas Dillon, as my host said, was a prominent policy-maker in the Eisenhower, Kennedy and Johnson administrations. Exemplary of a bipartisan orientation that has virtually disappeared in American politics. He was also, as you may recall, a key figure in the Cuban missile crisis – I looked this up. According to Graham Allison, he was the first person to suggest linking a blockade with an ultimatum to Khrushchev to remove the missiles, which was the measure actually taken that led to a resolution to the crisis. So he wasn't just a figure who floats through the air, he was a great statesman who had a brilliant idea at a crucial time.

It's become increasingly clear that climate change is one of the major political and institutional, as well as ecological, challenges of our time. The ice sheets covering Greenland and Antarctica are melting and will do so more rapidly over the next few decades. The warming oceans will expand, as they are, and sea levels will rise. Climate warming will almost certainly cause more extreme heat and probably will also cause stronger storms and other forms of extreme weather. Crop yields will suffer and at extreme levels of climate change, food security for billions may be undermined. At the higher end of projected sea level rise, severe episodic flooding and permanent inundation would occur in areas in which more than a billion people live, mostly in Asia. The implications of climate change are not simply minor adjustments in lifestyle, increased seasonal discomfort and shifts of flora and fauna toward the poles, but major disruptions in natural ecology and quite possibly also in human life.

But I'm going to talk about the politics, which are more problematic than the science, which is becoming increasingly clear and precise. The politics are difficult for two reasons. First, efforts to reduce the emissions of greenhouse gases represent a costly attempt to reduce a public good – that is, the benefits accrue to everybody regardless of who pays, so the incentive to pay is dramatically reduced. Secondly and equally important, the benefits will accrue to people in future generations. Everyone who will be alive in 2050 or 2100, people of whom we know nothing, whether they or their ancestors have contributed or not. As a result, everyone has a very strong self-interest in not to pay for climate change.

What could be called 'climate altruism' is not a powerful force, since most people are not particularly altruistic. Climate change is hard because those who decide, through our normal political processes, to take costly action – the voters, for example, in democracies – will receive only a small share of the benefits, which will also accrue to people now who do not contribute and especially to future generations.

So it's a very difficult problem. I'm going to focus on it and my lecture will be in four parts. First, I will discuss the failure – and I use that word advisedly – of the Kyoto top-down approach to responding to climate change and the proposals for pledge and review that are still being pursued, intended to culminate in an agreement in Paris in December 2015. My estimate of the prospects that this approach will provide a viable pathway to solve the problem is very pessimistic. So in part two, I'm going to go back to some academic work to ask, what do we know about what promotes international cooperation in general, in situations like climate change? And what does this knowledge imply about viable or non-viable approaches going forward?

Thirdly, this analysis of international bargaining and cooperation will take us back to domestic politics. I will argue that no solution to climate change will emerge without a major change in the domestic politics of the issue, shifting from the inertia we now see in the United States and much of the world to active mobilization of demands for action. Such a shift will require a reframing of the issue.

Finally, I'm going to broaden our attention frame. Emissions limitation, other possible responses to climate change. Adaptation and solar radiation management. Some measures referred to as geo-engineering. What do the politics of climate change look like, viewed through these lenses?

The key argument of this lecture is that the world has been on the wrong path in dealing with climate change. Over the last 20 years on this issue, the bargains sought have been elusive because the incentives to be laggards are too great. So there's not been effective policy coordination. The emphasis on paying now to help future generations has been wrong. The architecture of timetables and targets committing states in advance to legally binding agreements under conditions of uncertainty – that's the Kyoto plan – has been wrong. The exclusive focus on emissions rather than considering adaptation and the opportunities and perils of geo-engineering, while not wrong in itself, has led us to miss some institutional opportunities. We need to change path and to experiment.

It's in that spirit of experimentation – we don't know the answers, except we know that we've been on the wrong path and need to try several different pathways – that I'm giving this lecture. So let me talk about the failure of the top-down approach.

It's not widely recognized that the Kyoto approach was a failure. The Framework Agreement on Climate Change (the UNFCCC agreement) made in 1992 contained few specifics and no meaningful commitments beyond the obligation to report. In the Berlin mandate agreed in 1995, rich countries agreed to exempt developing countries from obligations without a clearly specified phase-out period. It was a disastrous decision. The developing countries grew rapidly. China is by far the largest emitter today and emissions from other developing countries are growing fast. The developing countries have a strong and legitimate interest in ensuring that action on climate change will not condemn them to poverty perpetually by slowing rates of growth.

But once given an entitlement to emit, countries classified as developing were reluctant, quite naturally, to give it up, even as their growth and their emissions rose. Rich countries, not just the US but Australia, Canada and eventually Japan, were unwilling to accept costly limits on their own emissions that would not solve the problem as long as developing countries' emissions were rising so fast.

Deadlock resulted. The European Union was the one notable exception, and it went ahead with costly controls, largely driven by its own internal political needs. With all these diverging preferences, diplomatic deadlock resulted. You know the Kyoto agreement fell apart and countries such as Canada, Australia and Japan, which were once involved in it, defected.

In this context, it is easy to see why Kyoto was more a façade than a real scheme for policy coordination. It largely ratified what governments would have [indiscernible] anyway, except perhaps in the United States, which never joined. It was steep with accounting tricks which were abused as well. Especially striking was the clean development mechanism, through which host governments sought certification of proposed credits for projects in developing countries and dealt with verifiers who were dependent on the host governments for future business. This was a substitute for having constraints on developing countries. The purchase of the credit did not [indiscernible] mistake of ensuring that they were genuine, as long as they were certified. Not surprisingly, estimates indicate that many of the permits represented

phony emissions reductions. Indeed, the CDM, as it was called, even generated perverse incentives, reducing incentives for developing country governments to enact policies permanently reducing their emissions in favour of continuing overall high emissions policies and earning credits from projects that had inflated the emissions baselines.

So Kyoto got it wrong in two ways. At the core of the regime, states did not have incentives to commit to firm targets, much less legally binding ones. At the periphery, many of the characteristic dysfunctions of international organizations manifested themselves.

The current round of talks, to culminate in Paris, is premised on an arrangement called pledge and review – what the climate world called intended nationally-determined contributions. In this pledge and review scheme, targets are not legally binding but once the pledges are made, states are expected to have incentives to fulfil them for reputational reasons. The United States had an incentive to generate serious targets last fall in order to induce China to do so as well. Reciprocity is often important in world politics. But most other countries don't seem to have strong incentives either promptly to specify clear and demanding targets, or to put into effect monitoring and review arrangements that hold them accountable for keeping their commitments. Think about it: if you were running a government, you'd have an incentive to set targets that you were quite sure you could meet without too much effort, and certainly without too much political cost. As an indication, although the Lima declaration of December 2014 encouraged countries to submit targets by March 31st, as of that date only the United States, the European Union and a few other states had done so. The new planning goal for these pledges is early October, leaving the climate change secretary just a month to figure out what the totality of all the pledges implies for the overall health of the planet. The news is unlikely to be good.

Pledge and review can be seen in two ways. It can be seen cynically, merely as a euphemism for not changing policy in any substantial way. In this view, pledge and review constitutes essentially what Stephen D Krasner calls 'organized hypocrisy': pretending to take serious steps while actually proceeding with business as usual. On the ground in Asia, for example, trends are strongly toward more emissions. In India and Vietnam, there are scores of coal-fired power plants either under construction or in the serious planning stages. In India, for example, there are 177 gigawatts of coal-fired plants under construction or planned, which would more than triple capacity of 82 gigawatts. In Vietnam, the capacity of plants under construction or planned is over 34 gigawatts, a tenfold increase over current capacity. Over three-quarters of the new power plants under construction or planned in these countries will be coal-fired.

The talk is all of limitations on emissions, but the reality is more emissions. If you noticed last year, the last recorded year was a sharp upturn in emissions, not the flattening that we need. Of course, the full story is a complex one. More economic growth means higher demand for power. But some countries are diversifying their power industries in ways that are slowing, if not stopping, the growth in emissions. In China, for example, the slower economy, aggressive energy efficiency and support for new power sources, including nuclear and renewables, is leading to peak coal in the next few years, and most likely to peak in emissions over the next decade. That's better news than unfettered growth. It's not as bad news as India and Vietnam. But halting growth is still a far cry from the 50 per cent or greater cuts that would be needed globally to stop warming.

But public cynicism may be counterproductive. Sometimes surprises occur. In any case, hypocrisy is what [indiscernible] Clark called 'an ordinary vice'. It is not as bad as some other vices because at least it recognizes virtue, even if it does not observe it.

The positive spin on pledge and review was that it could start a process of commitments, monitoring, persuasion and imitation that could eventually generate some meaningful action on climate change. Paragraph 19 of the Lima declaration provides for the engagement of experts from civil society and the private sector, which some commentators think could be used to facilitate bottom-up arrangements to promote emissions reduction measures. In any case, for the negotiators now, there is little alternative to trying to make pledge and review work, since the mandatory targets and timetables approach is dead in the water.

One way to strengthen pledge and review would be to focus less on emissions targets as such and more on specific policy pathways. Governments would pledge to implement certain policies that under standard conditions would lead to – most likely conditions would lead to particular emissions outcomes. They would be evaluated on the basis of whether they had implemented these policies as promised. In this way, at least debates about extraneous factors that may have affected environmental outcomes (such as fluctuations in economic growth or fortuitous discoveries of natural gas) would be avoided. Pledges could be made conditional and experimental, so they would signal to other countries what nations will try, not just what they will do. That could lead to more constructive bargaining around joint gains as well as more robust learning about what really works.

But whether the emphasis is on pathways or targets, it will be important to emphasize the institutionalized arrangement, to establish the institutionalized arrangement, to ensure the reviews are serious, so that there is genuine monitoring of pledges and pressure to actually meet them. It's an open question how the UN system would perform these monitoring and review functions. In the past, the climate secretariat has been assigned similar tasks but it hasn't been given the authority needed for serious monitoring and review. The Intergovernmental Panel on Climate Change (IPCC) can't take on this role because it's not designed to make political judgments. All of the official UN institutions face the problem that their authority depends on consensus and the very act of performing serious monitoring and review almost guarantees that some states will object, the ones that are engaging in organized hypocrisy.

The best options probably lie outside the UN system. We may need a new NGO with expert knowledge, perhaps initiated by some countries volunteering to have their own national pledges scrutinized closely, because they want to demonstrate how effective reviews actually work. But basically, if you're looking at Paris, keep your eye on monitoring. If there's no serious monitoring arrangement, it doesn't mean anything. It's not going to mean very much anyway, but if these are self-pledges, not monitored, they don't mean anything at all.

If approached without illusions about likely breakthroughs, the Paris meeting can at least avoid a demoralizing setback like Copenhagen. But there's little reason to be optimistic. It seems likely that pledge and review will have insufficient effect on this massive problem. So we need to think, as the title of my lecture indicates, more about these issues outside of the UNFCCC box.

I'm going to back up there and say, what promotes international cooperation on public goods issues? On these kinds of issues, what promotes cooperation? Everyone is reluctant, as I mentioned, to provide the public good. So the first thing we need is assurance that others will provide it as well. If others don't provide it, we're going to defect and drop off, as Japan, Australia and Canada did. So self-interest is crucial. Institutional arrangements have to somehow induce the states to do the right thing for what, to an altruist, would be the wrong reasons. As Adam Smith famously argued, the markets achieve this result. The butcher and the baker, he said, do not provide us with meat and bread due to their benevolence. It would be desirable to use market mechanisms at the global level (for example, the cap and trade regime).

But since the immediate prospects of that kind of comprehensive global solution are poor, incentives need to be provided in other ways.

So I'm going to list three conditions that could, in principle, be conducive to agreement on issues involving climate change, even though none of them offers a clear path or solution toward effective policy coordination.

The first condition – this is a happy condition – is to be so close to the precipice that catastrophe will occur with virtual certainty unless everyone contributes to the production of the public good. Scott [indiscernible] in Denver have run experiments with university students in Germany, in which participants have options: they can contribute to the production of a public good by paying some of the money they're given by the experimenters, or they can under-contribute. In usual situations what happens is that many participants free-ride – that is, they maximize their own profits by holding back some of their money, because they're getting the benefits anyway. It's a public good. As people observe others doing that, they contribute less and less over time, so the contribution curves go down. These are nice German university students. The only exception is when catastrophe will necessarily result unless everybody contributes almost all their resources. If you can see that your non-contribution will destroy the whole system and therefore you'll lose, because you won't get the benefit – what you hope for is getting the benefit from the collective good and not paying yourself. When that becomes impossible, payments go up, because in these situations self-interest counsels contributing rather than freeriding. People aren't becoming altruistic, they just see their own self-interest is in contributing.

However, in the climate casino, as William Nordhaus calls it, there is inherently a lot of uncertainty. Time lags are great. So if one waits for certain catastrophe, it will already be too late. By the time one sees the precipice is imminent, one is almost certainly about to go over it.

The second condition is to have one dominant or hegemonic power that perceives itself to have an overwhelming stake in causing action on the issue, or else to have two or three powers that form an oligopoly. In the hegemonic case, the hegemon itself benefits so much from the public good that it's worthwhile for it to pay it for everybody else. Think of the Cold War in Europe in the late 1940s or early 1950s, and the Marshall Plan. The US essentially paid European states generously to align with the United States. The United States now only represents about 17 per cent of global emissions, roughly comparable to its share of world GDP. China's emissions are about 50 per cent higher than those of the United States but if you adjusted the accounting system to reflect Chinese exports to the United States and Europe, the imbalance would be reduced.

So between them, call it 20 per cent each of global emissions, 40 per cent between them. But they aren't working together to finance everybody else's efforts to reduce climate change. If they were, that would be a hegemonic solution. They did make a move in November to make a joint pledge of reductions, a major step forward, I think – the most important step forward, much more important than all the UNFCCC negotiations, in the last several years. But they have quite a ways to go before they act as a benign duopoly that pays the bill.

The third and last condition that can promote cooperation – a little bit vaguer – is momentum. It's possible that successive small steps would build confidence in one's partners. Leaders of organizations and states may get to know each other. Industries may learn to work with civil society actors and governments. Regional partnerships may emerge that have benefits for participants outside of the climate change area. If small steps build momentum, the issue could become more salient, attracting support. Confidence could grow. This is probably the most positive spin I could put on the situation. Enhancing the

appeal of devoting resources to the issue. Insofar as support built for the issue, the cost of staying out and being a free-rider, as an [indiscernible] regime, may grow. States that stay out could develop reputations for intransigence, which could inhibit their pursuit of other goals.

But the success of a momentum-building strategy will depend on domestic politics, since domestic support will be essential for success. I'm going to turn now to domestic politics.

For climate change to work on the international level, there will have to be more mobilization on the issue in democracies, especially in the United States. Now there seems to be as much resistance as mobilization. So in my view, to generate mobilization and diminish resistance, we're going to have to reframe the problem of emissions mitigation. As I said before, now it's framed as: we pay; those of us who decide to pay now pay for benefits accruing to future generations, 50 to 100 years from now, everywhere in the world, people whom we don't know and have no connection with.

In 2008, British Columbia took a meaningful step in this direction by enacting a revenue-neutral carbon tax. The carbon tax began at only \$10 a tonne and has been increased since then to about \$30 a tonne, about 7 cents per gallon of gasoline. By law, all receipts must be refunded to the public – this is the key thing – through a low-income tax credit and declines in personal and corporate income taxes. British Columbia emissions have declined compared to those in the rest of Canada. Economic growth has continued at a rate somewhat higher than the rest of the country.

There was a proposal in the US Congress last year that would have reframed the problem similarly, although with a somewhat more egalitarian distribution of the benefits. Labelled the Healthy Climate and Family Security Act of 2014, introduced by Senator Chris Van Hollen, a Democrat from Maryland, this act would have imposed a tax on carbon-emitting industries, with a direct electronic rebate of the full amount of the tax on a per capita basis to individuals. Households would pay more for energy than they do now, exerting downward pressure on demand – that's what a tax would do. But they'd be compensated by a cheque from the federal government with equal amounts per capita – not compensated for their energy payments, but compensated equal amounts per capita. Large energy users would be net payers; moderate users and low users, net gainers. Because energy use, like income, in the United States is highly skewed, a large majority of people would be net beneficiaries. The median voter would be a net beneficiary.

In other words, the framing could have the potential of flipping the median voter – who doesn't care about the future, who doesn't want to pay – flipping the median voter from a net payer to a net beneficiary, and I would hope from an opponent of climate change (or at least a lukewarm, abstract supporter but not really a supporter when a tax is mentioned) to a supporter of increasing the price of energy.

Some new research from last year by Stephen Ansolabehere and David Konisky provides some support for this hope. One of their experimental polls indicates that while the American public overwhelmingly rejects the carbon tax when proposed on its own, support rises dramatically when it is coupled with income tax reductions. I suggest that the greater tangible benefit of a cheque to every household could provide an even larger incentive for support.

In addition to its equity advantages, this proposal has the appeal that once implemented, it would be hard to reverse. A similar arrangement with individuals receiving cheques based on energy royalties has become locked into the politics of Alaska. Every Alaska family receives a cheque every year for their share of the energy proceeds from Alaska. You wouldn't want to be an Alaska politician of whatever ideology, from Sarah Palin to the left, who would challenge that.



Even while cautioning against a naïve faith in the appeal of rebate cheques and the pivotal role of the median voter, we should consider and keep researching such innovative proposals. I'm not arguing that in every country, remitting revenue from carbon taxes or cap and trade would be the best strategy. Even in the United States, I hate to say this, it might be more effective from an environmental standpoint (although distasteful) to divide the opposition by paying off energy companies willing to make investments in a low-carbon future. In countries where respect for government and social solidarity are high, such as Sweden, it might be more appealing to invest the funds in infrastructure or education. Not in the US, it wouldn't be believed. In China, linking measures to reduce the emissions with measures to reduce air pollution might generate maximum political support.

The general point, however, is that it is not sufficient to think of the economically optimal policy. The major barriers to action are political, so a coherent political strategy adapted to each country's situation is needed.

There may be other possible framings for mitigation that also don't rely on altruistic concerns for future generations. For example, we could focus on building a new large-scale, low-carbon infrastructure. Solar power and wind power are the cleanest feasible alternatives. Prices have been falling dramatically. One possible approach, therefore, is to subsidize these technologies, driving costs down even faster. If technological progress made solar power and wind power competitive with fossil fuels, the public goods problem would disappear, because firms would have self-interest incentives to generate power in this manner. But even if costs did not fall so sharply, plausible political efforts to finance large infrastructure investments would generate self-interested incentives by the relevant construction industries to support vigorous action. After all, one person's pork barrel project is another person's effective action against climate change. One country's pork barrel project can be a source of demand for other countries' products.

When a large climate-industrial complex had been created – I'm adapting Eisenhower's phrase – nationally or multinationally, either for production of clean energy or removal of carbon dioxide, momentum for large expenditures would continue, because it would be in the interest of the relevant industries. Perhaps the best analogy is the politics of defence in the United States between 1950 and the end of the Cold War, and also after the terror attacks of September 11.

So the politics of infrastructure and building a lot of stuff could be a lot more benign than the politics of mitigation as in Kyoto. It might be less economically efficient but it would be politically more benign. A nascent clean energy-industrial complex exists, centred on solar and wind power, but it's politically weak. It could be bolder. Especially in a low-interest environment like the current one, we should consider using long-term debt to impose the cost of emissions mitigation on future generations. I use the word 'impose' advisedly. These generations, who would be the beneficiaries of mitigation, will, in the absence of devastating climate change, natural catastrophe or war, be much richer than we are. We only have one advantage over these future generations who are going to benefit from our climate policy: we have the power to impose costs on them. They don't have power to impose costs on us. So why impose costs on ourselves, which we're not going to do, for their benefit? The carbon that we emit will stay in the atmosphere for many generations.

One approach would be immediately to provide cash benefits to households on an equal basis, as in the Van Hollen plan, to support large-scale research and development for a low-carbon infrastructure, and financing both of these measures through long-term debt guaranteed by the revenues from a gradually increasing carbon tax or cap and trade scheme. So you'd pay people first and then they would gradually have to start paying for it. But a lot of the payments would be put into the future. Over the long term, both

the cash payments and the R&D measures would be paid for fully by the carbon tax, so it's revenue neutral, but the excess costs for the first decade or two would be financed by long-term or even perpetual bonds – like British consols, first issued in 1751, some of which are still outstanding. In this way, the costs of climate change would be credibly shifted to the beneficiaries, to those people in future generations who are the beneficiaries but who happily don't have any say in what we do.

Climate change action needs to be taken soon. In view of the prevalence of self-interest as a motivation and the short-term orientation of our society, we need to stop hitting our heads against the wall. Identify incentives that reframe the issue in productive ways, bringing some benefits forward and pushing some costs onto the future.

My last section is on the politics of adaptation and geo-engineering. Most discussions on climate change are focused on mitigation, reduction of greenhouse gas emissions. Effective mitigation will be the best response because it could actually solve the problem. However, as we've seen, it runs directly into the free-rider problem. People are unwilling to take costly measures to produce a global public good, of which they will receive only a small portion of the benefits. So unfortunately, we should expect states to engage in other measures, even if less effective, that they will see as helping themselves. I therefore turn to adaptation and geo-engineering – more specifically, what is called solar radiation management.

First, a word about adaptation. Adaptation means taking measures to reduce vulnerability to climate change without altering climate change. Such measures could include barriers to storm surges, to protect coastal cities such as London and New York. There is the Thames Barrier already, as you know. Shifts in agricultural cropping to adapt to a warmer climate and massive projects to bring water to highly populated but arid regions such as California.

The free-rider problem is much attenuated with adaptation. Communities have incentives to act because their own actions will help themselves. When you build the Thames Barrier or California figures out some way to use seawater for agriculture, they're not helping somebody else, they're helping themselves. So the free-rider problem basically disappears, or becomes much less serious.

From a political standpoint, expenditures on adaptation therefore are entirely different from emissions taxes or higher energy prices. They're similar to building infrastructure for alternative energy production. Adaptation requires new infrastructure, and building infrastructure creates jobs and profits. Like building infrastructure for low-carbon energy production, adaptation perfectly fits what pluralist democracies do best. What the US does really well politically is to respond to directly affected, concentrated and organized interests with targeted benefits that they understand. It does very well at paying off other organized groups with benefits of their own. It doesn't do a lot for many idealistic things about democracy but it does those things really well.

So we frame the issue as one of adaptation within a national or sub-national context, and this generates a more productive politics than framing it as one of mitigation. More productive politics, not necessarily solving the problem. However, the picture at a global level is not so benign, because insofar as the focus shifts to adaptation, issues of distributional inequity rather than public goods will come to the fore. Many of the most serious issues will arise in poor countries: small island states and low-lying countries, such as Bangladesh, that have weak capacities to adapt. As a general rule, poor economies are also more dependent on outdoor activities such as agriculture, fishing and timbering that are especially vulnerable to a changing climate. Rich countries need to think, therefore, in an adaptation context, about building international institutions that will facilitate large-scale channelling of resources to the poor, to enable them to adapt to climate change as well. This, of course, can't be altruistic so they have to have long-term

self-interested incentives to act in a non-myopic fashion, because the consequences are very bad for international relations if they don't. If rich countries fail to act on these long-term incentives – an emphasis on adaptation, helping ourselves with sea barriers and so on – will have disturbing implications as it implies highly unequal global effects and a politics of deep resentment in poor countries and in large middle-income countries that are important sources of emissions.

I'm going to turn finally to solar radiation management. When faced with the free-rider problem associated with mitigation, the injustice of unequal adaptation, and the current infeasibility of economically competitive low-emissions technologies, it's tempting to try to solve the problem of global warming by reducing the amount of solar radiation that enters the lower atmosphere. Temperatures on earth could be markedly lowered as a result, as occurs naturally when enormous volcanic explosions emit huge quantities of ash in the atmosphere. We know what happens then: the world cools off. When Krakatoa exploded in the late 19th century, I think 1877, there was a summer of winter in the United States. Crops failed because it was so cold, because of this stuff in the atmosphere from the volcano that was blocking sunlight.

So one way of cooling the planet therefore would be to send the particles into the upper atmosphere that would reflect sunlight away from the earth. There are many uncertainties associated with such a strategy. Of course, it would not affect the buildup of carbon in the atmosphere. It only affects the impact of the carbon on temperature. As a result, certain processes associated with climate change, such as ocean acidification involving the destruction of coral reefs, would continue even if ambient air temperatures and ocean temperatures were kept down. From an ecological standpoint, solar radiation management is a last resort and is viewed with horror by many, probably most scientists.

I don't want to engage this debate about the consequences of SRM but I raise a different, more political set of questions. What would the politics of solar radiation management (SRM) look like? For some democratic politicians and for authoritarian leaders bent on obtaining maximum economic growth, SRM may appear attractive because it could suppress the temperature effects of increasing levels of greenhouse gases. People wouldn't observe the effects of carbon. SRM could therefore appear to solve problems of global warming in the short term. As you know, the short term is the relevant timespan for democratic politicians. And it could do so cheaply, it's not expensive, which could be crucial for leaders of rapidly growing but still relatively poor countries, the Bangladeshes of this world. In democracies, politicians campaigning for a cheap solution to global warming could out-compete those demanding an expensive solution that would be more sustainable in the long term. Despite the scientific uncertainties, the use of SRM could be rationalized as buying time for more effective long-term action, hypocritically or not.

The likelihood that solar radiation management will be used by some powerful states or a set of such states during the 21st century should not be discounted. Building massive infrastructure is very expensive and adaptation is unlikely to be sufficient when sea level rise threatens to wipe out island countries and threatens major cities, many of which are on coasts. Governments will be tempted to turn to SRM as a magic bullet and to rationalize it as a strategy for buying time.

One possible response which we might take now to this – my last suggestion in this talk – is to begin to design an international regime to control uses of solar radiation management. That is, to have some rules for it. Under what conditions it would be deployed, who would have to agree. One objection to doing so would be that thinking publicly about an international regime for SRM would make SRM more likely. It seems to me, however, that SRM is going to be so attractive to many politicians that this effect would be minor. If politicians are going to think about SRM anyway, we should be planning to regulate it through an international regime. So I'm in favour of some active efforts to design an SRM regime.

Because SRM would affect the whole planet, any attempts to engage in it should be authorized by a collective global body with legitimate authority to make decisions, rather than by one or a few powerful states. The Security Council is probably not the best such body because its archaic structure underrepresents countries that could engage in unilateral SRM, such as India and Brazil, who therefore need to be included in some body to make decisions. Any such regime should include an advisory council from civil society groups, chosen by other civil society groups through some sort of institutionalized process that would ensure wide geographical representation. Ideally, such a regime would be negotiated among countries with the capacity to actually do SRM, which probably 15 countries have. It's not that hard. You're just taking rockets and shooting dirt or some sort of reflecting particles into the upper atmosphere. But it might well be possible to engage in a more informal way than a formal legalized agreement.

Whatever the details, the general point parallels my argument about adaptation. We need to think institutionally about international regimes that could respond to the dangers inherent in both of these politically attractive approaches. You'll notice that Paris is not talking about SRM at all.

Let me conclude. Pessimism is a natural response to the politics of global climate change – you've heard a lot of it from me tonight – since global altruism is weak and self-interested incentives to act now are lacking. Working within the UNFCCC process is unlikely to yield results that are commensurate with the magnitude of the climate challenge. We need therefore, as in my title, to think out of the UNFCCC box. Some of this rethinking involves institutional measures to facilitate cooperation on adaptation and geo-engineering, approaches that are likely to be politically attractive but have problematic results.

But the most fundamental issues involve emissions mitigation. Top-down measures such as Kyoto won't work as long as they rely on climate altruism. Bottom-up measures such as climate clubs among actors such as cities are unlikely to add up. Bottom-up stuff is unlikely to add up. We need institutional designs that generate self-interested incentives for politicians to press for effective action on climate change. We need somehow to align institutional arrangements, self-interest and effective climate change policy, which are manifestly not aligned now. Such incentives won't exist as long as the costs of action on climate change are borne by the constituents and benefits are gained by others – to quote your prime minister of some decades ago, faraway countries of which we know nothing – or in distant future generations. We need to think of ways to make effective action on climate change pay off for the people who are expected to pay for it. My proposal for issuing long-term bonds to be paid off by future generations is an attempt to think out of the box in this way.

My approach in this talk basically is cynical, because it discounts human altruism so severely. But it's not cynical because it's not cynical about climate change, or what those of us who are concerned about it should do. Ironically, those of us who are concerned about climate change constitute exceptions to the 'no climate altruism' rule. My point is that however paradoxical this may seem, we shouldn't fool ourselves. Too much talk about climate change has been preaching to the choir with few people listening. We need to act, and to act we need to devise policies that get the self-interested incentives right.

In the old movie – maybe a few of you have seen it, but it's a favourite of mine – *The Maltese Falcon*, with Humphrey Bogart, the gang leader, played by Sidney Greenstreet marvellously, offers Bogart much less than previously promised for the Maltese falcon. When Bogart protests, Greenstreet says: 'This is real money, that was just talk – \$10,000 in real money is worth \$25,000 in talk'. Bogart acquiesces, although he discovers that Greenstreet was palming \$1,000 and only offered him \$9,000.

We have to stop talking, just talking, about how important reducing climate emissions is for the world and start thinking about creating policies that get the incentives right. Thank you for listening.

## Robin Niblett

Bob, thank you so much. That was a truly comprehensive take, bringing to bear a lot of your accumulated experience of the dynamics of international cooperation from all sorts of other parts of international affairs. Appealing rationally to self-interest, to making sure that those of these generation that has to pay for things can find ways to justify itself as to why it's paying that money. As you said in your comments about making major new large-scale investments in future infrastructure, why not take advantage of that low investment environment we're in today and get the future generations to pay. This was at the heart of your realist – or realistic? – approach to international solutions to climate change. I thought your comments about adaptation were particularly interesting. The idea that, in a way, this will be an unjust and unequal approach inevitably, given that those with the resources, who in many ways created the climate change, will be able to protect themselves the most. Your comment about how solar radiation may have its own dynamics I thought were very interesting as well.

We've got a bit of time for Q&A.