

THE BROOKINGS INSTITUTION

Intersections:

Carbon pricing: Harnessing market efficiency in pursuit of clean energy

Wednesday, April 26, 2017

PARTICIPANTS:

Hosts:

ADRIANNA PITA

Contributors:

ADELE MORRIS

Senior Fellow, Economic Studies

Policy Director, Climate and Energy Economics Project

DAVID VICTOR

Co-Chair, Foreign Policy, Energy Security and Climate Initiative

(music)

PITA: Welcome to Intersections, part of the Brookings Podcast Network, where we talk about the angles on the policy issues. I'm your host, Adrianna Pita, and with me

today are David Victor, who is the co-chair of the energy security initiative here Brookings and also director of the laboratory on international law and regulations at UC San Diego. And also Adele Morris is a senior fellow and policy director of our Climate and Energy Economics project. Welcome to you both.

MORRIS: Thank you very much.

VICTOR: Good to be here.

PITA: So when it comes to dealing with climate change in addition to the regulatory model of limiting greenhouse gas emissions there's also this idea of setting a price on carbon emissions thereby providing market incentive for higher pollution industries to reduce their emissions that they're adding into the atmosphere. So this idea of carbon prices whether we're talking about a carbon tax or talking about the cap and trade quota system this has been around for what seems like most of my adult life. The cap and trade really big in the 90s and then carbon tax is now being popular. But while it's gotten a lot of exciting a lot of interest from economists and environmentalists at the political level at the national level anyway in the US, it's never really seemed to go anywhere. So I'm wondering if either or both of you could start us off with a little orientation for our listeners about why this idea has never gained a whole lot of traction What if in some of the roadblocks.

MORRIS: Well first let's just say a few words about what kind of policy we're talking about and why it is that economists and experts of all stripes believe that a price on carbon is an indispensable part of a cost effective approach to reducing the risk of global climatic disruption and ocean acidification. So the idea of a price on carbon is – I'll frame it as a tax, but as you mentioned that you can do a cap and trade program that

has much the same market outcomes. There are a variety of fossil fuels and they have different carbon intensities when that energy is accessed. So for example coal has about twice as much carbon per unit of energy as natural gas. And obviously renewables don't emit carbon. So the idea of putting a tax on the carbon content of different fuels and other greenhouse gas emitting activities changes the relative prices of those different inputs to our economic activity and that instantly incentivizes people to switch fuels to use energy more efficiently and to develop technologies that are lower carbon emitting because now then they have a market advantage over more carbon intensive fuels. So you know if you don't create that huge range of incentives and really harness the profit motive and end market signals, you're not going to have a policy that efficiently reduces emissions. I mean you can have a regulation or a cap or a technology mandate or efficiency standards. But none of those policies work as comprehensively deeply and importantly dynamically over time to reduce emissions across the economy and across all the sources across all the gases. So you ask, well why don't those policy ideas get more traction, and maybe I'll turn to David and give him the first iteration on that.

VICTOR: Well I think one of the reasons people talk a lot about this now and it seems to be getting more real is that companies recognize that they're going have to do something about the emissions. I think for a long time people were talking about global climate change but not really doing very much of modest changes the margins here and there partly because the Paris Agreement partly because the science is stronger partly because the political pressure to do something about this is greater partly because the major emerging economies are now recognizing the need to work on this problem as

well. India China Brazil others that you see a much greater pressure. And so companies are interested in the inside that Adele outlined here which is that if you use a market instrument it's going to be a lot more cost effective. It's going to affect the entire economy as opposed to letting government officials make decisions about exactly which technologies to use which almost certainly are going to be the wrong choices. And so I think that's the reason we're starting to see more attention to using the market as opposed to regulatory Fiat. And I think it's also partly why you see more and more companies talk about using carbon taxes in particular because there's growing evidence that the tax instrument even more than cap and trade the tax instrument is really the most efficient way economically to send the kind of clean reliable signal that you need to change.

PITA: Now there are other countries other than the US who have instituted either carbon taxes or quota systems or combinations thereof. It's been working or it seems to be at least so far in countries like the UK and Canada. However, Australia tried putting on a carbon tax in 2012 but gave it up two years later what was it that didn't work about their program and what's needed for instituting some kind of carbon price to be successful?

MORRIS: So there were several flaws in both the process and the design of the Australian carbon tax. It was a very political process and it was really a policy that was owned by one part of the political spectrum and rejected by another. And when they imposed the tax they did several things I think that are object lessons for us. They started out at a relatively high level especially considering that Australia is an energy intensive trade exposed economy so fossil fuels are a core part of their economy, and

they kind of went out ahead of all of their other major trading partners so there's a lot of concern about the competitiveness effects of that tax. Moreover, they had decided to link that policy and convert from a tax to a linkage with the European emissions trading system down the line. Well they started their tax at \$23 a ton of CO₂ but the trading price by the time it came around that it was going to be linked the trading price in the European Union was less than \$10 a ton. So it was exactly backward from how economists would suggest we design this price where you would start modestly and increase gradually and predictably. So that linkage never made any sense. Plus, they badly designed how they use the revenue and they kind of gave it away, in fact they spent more money than they actually collected on the tax so it ended up being a deficit increaser for the Australian government. So for a whole variety of reasons including the political polarized nature of it and the badly designed policy it just wasn't politically sustainable. So that tells us that when we adopt a price on carbon. Be mindful of the political durability. Be mindful of the quality of the design of the policy itself and recognize that you know we might have to start a little more modestly than we eventually want to get to simply to get the program going and make sure that it's not you know that our consensus isn't killed with ambition before the policy really takes off.

VICTOR: Yeah I mean I think this is the key insight is this is kind of carbon taxes 2.0 carbon taxes 1.0 was we spent a lot of time as analysts was a lot of fun and think about idealized mechanisms and how could they be optimally organized and some governments went out and tried some of these systems but without as much attention to the political economy as would be needed to make a policy really durable what's new today is with carbon taxes 2.0 is you have the political economy and the politicians right

alongside the economists or the other architects of the system, Adele herself is in the middle of this process. It is the combination of the two that's the special sauce is thinking about how you design an instrument that is durable politically so that parties can change power so that the economy can go up it can go down technologies can change and the policy remains credible and durable and I think one of the big insights here is that the more credible the policy the bigger the impact on the larger economy because the activities that really emit most greenhouse gases are long lived activities are the result of investments in the capital stock that have a very long time horizons. The average coal plant in United States right now is about 40 years old. Gas plants maybe a couple of decades old, typical renewable power investments are multi-decade affairs, power lines even longer and so you've got to get firms thinking that the policy is going to be there for a long time to then start reorienting their investments getting consumers to change their behavior. And it's really making the policy credible that's almost more important than the exact details of the policy.

PITA: Adele you had written a nice piece laying out sort of what you called the 11 essential questions that anyone trying to design a policy needs to look at. Can you talk a little bit about some of those important elements?

MORRIS: Sure. Yeah. So that's right. So there's a thing on my Web site talking about the 11 essential questions for designing a price on carbon and it really focuses on a carbon tax although many of the same concepts would apply to a cap and trade program. One of the things you have to decide is what to call it. People email me saying Adele don't call it a tax call it a fee. Call it a pollution charge. Call it anything but a tax. I'm going to leave that to everyone else.

VICTOR: Call it policy magic.

(laughs)

MORRIS: Whatever works I don't care. So let's say you've resolved the nomenclature and now you're on to the design of the price signal. So you have to decide what your price trajectory is going to be you know where do you start it. How do you ramp it up over time. Do you adjust based on the missions or economic performance of the tax or do you just said it and let it go. I think pretty much everybody agrees that it needs to rise over time over inflation so that increases over time. The incentives to abate, you know hopefully as that credible price trajectory evolves then we've got newer technologies than can be deployed. Next thing you have to decide is which sources and gas you're going to cover. So certainly the carbon in fossil fuels other CO₂ emissions for example from landfills and coal beds, those are highly taxable. But there are a number of other sources that it's kind of questionable they'd be fairly hard to measure and it might not be so easy to identify a responsible party. So you know you're going to have to make a judgment call, but the Congressional Research Service reports that we could cover about 85 percent of U.S. greenhouse gas emissions with under-25 hundred taxable entities. That means taxable parties that would actually have to send money to the government. That may have changed since the fracking revolution. But still I think we could do a very administration tax. But then that gets to the second point is, Who is it exactly in the supply chain of fossil energy that's going to be responsible for paying that tax? You could do it anywhere from the coal mine itself to the consumer household that uses the electricity that was produced with that coal. Generally, economists would recommend doing it fairly high in that supply chain. So you

have the fewest number of entities. And then of course the price signal gets passed along and it will still be embedded in your electricity bill. But we wouldn't have to tax every single person who puts gas in our car. A few other things you have to decide. One of the most important is what do you do with the revenue. Right. And that's one of the things that I think relates to David's point is how do you build confidence in the program. It could be important to use that revenue in a way that helps create a political sustainability for the tax and a few ideas that have been floated include giving the money back to households and rebates you could give back money to households via cuts in other taxes. There's a huge variety of ways you could use that revenue that I think will help people accept the idea of a new tax that reduces pollution even while it benefits them in other ways as well.

VICTOR: In my mind as a political scientist the revenue side of this is the most important one because this is where we're likely to see in the real world the biggest gaps between an ideally designed tax instrument and one that's durable politically in an ideal instrument what you want to do is take the revenues and use them to offset the other most extraordinary taxes and the economy taxes on capital and tax on labor and so on. And I could see that happening. Maybe my guess though is the politics are going to require building coalitions of supporting groups who see and this is part of what happened in Australia. I don't see the Australian history with the carbon taxes as a complete failure. I actually learned a lot about how you design these things and also learned a lot from failure of the very important part of innovation and you need to build political groups that see parts of those revenue streams as something they want because then the political group is there fighting for the tax the next time the politics

shift and somebody wants to stop the tax and that's just crucial to making all of this happen in the real world.

PITA: There is some concern that carbon taxes are very regressive because it does get passed down to the consumer.

VICTOR: absolutely and as a fraction of income lower income consumers spend a larger fraction of their income on energy services. Some exceptions here and there. Then do you know higher income users. I mean Gulf Stream 5 uses a lot of jet fuel but still is a fraction of income, a small part.

PITA: Right. Adele I think you had written as well some others had some interesting ideas about being able to credit that back to the ITC programs that people talk about being able to use some of the revenue from the carbon tax to help the coalfield communities encourage economic diversification there and retraining. Can either of you talk a little about that?

MORRIS: Sure. I think one of the most important political components of how the revenue gets used is how you protect those who are disproportionately burdened by the policy. And there are a couple of main categories. One is poor households now poor households who receive benefits that are price indexed are going to be a little bit buffer because their benefits if you're you know food stamp or whatever those things will go up with the higher prices that might result from the carbon tax rate. But aside from that still I think we have to be mindful of the remaining burden on low income households. And the other population are those deeply involved in the fossil fuel industry. And there's no question that's disproportionately folks in the coal fields. So it's coal workers those in coal reliant communities and those folks are already suffering because we've already

seen a big downturn in coal production. So I think that you know because those folks already need help they need a brighter future. Part of the political deal could be to channel some of the resources made available by a carbon tax to those communities to those workers, ensure that retirees benefits are solid in light of the bankruptcies of the various firms make sure those mining lands are reclaimed appropriately and that the folks there have an opportunity for an education and a better future. Some of that might include infrastructure, very locally what the ideal approach is going to be. But certainly a carbon tax even a tiny share of the revenue of a reasonable carbon tax could do a tremendous amount of good in those communities.

VICTOR: I think that's a tremendous moral responsibility here and it's already upon us because much of the American coal industry is already deep in the twilight. There's a core part of the industry that will survive I think for a long time. But a lot of pain already in those communities a tremendous reduction in the workforce already. And there's a lot of precedent for what Adele just said which is for example 1990 Clean Air Act amendments which regulated sulfur pollution among other pollutants. That was also expected to have a big impact on coal. And part of the politics of that made that feasible was direct compensation to the communities that were going to be hard hit and we need to be smart about exactly these kinds of political deals to make a carbon tax happen.

PITA: David you mentioned that one of the reasons why carbon taxes are starting to look a little more viable and more popular is that there has been the change from industry that several leaders of things like ExxonMobil and British Petroleum have come along and say that they're ready for carbon taxes in addition to that. There's also

the fact that China is about to implement their own cap and trade system sometime this year. Obviously your answer is going to depend on how well we see that going but what are some of the repercussions of China now entering into carbon pricing system. And given that some of the resistance here in the U.S. has been based on the fact that oh well if we institute carbon pricing and China doesn't they're going to have this massive advantage. Well now China's going ahead and doing that so what's that going to mean for them.

VICTOR: Yeah know it's crucial to the global politics of this. All the large American firms big emitters are in various ways global firms and so they're attentive to their position globally and their interest is in having the most cost efficient policy here at home. And then the most level playing field around the world possible within reason because there's almost no area where the playing field is perfectly level in other areas of policy so we shouldn't expect that in climate as well. I think the Chinese experiments are very very important. The Chinese have figured out over the last decade or so that they have an interest in controlling the same kinds of activities that cause the pollution that leads to global warming. Not so much because they're worried about global warming although there's growing concern about the impacts in China especially the coastal areas, especially the arid north, Global climate change, but because of the cities where you can see the air because of a tremendous water pollution some of it related to energy. And so there's a lot of reasons a tremendous public pressure to do something about this problem. They've run an experiment in several provinces over the last few years and they're now expanding that experiment to the entire nation with its cap and trade program. My own expectation is that we're going to probably overplay the extent

to which that program itself changes Chinese behavior and the reason is that the Chinese cap and trade program is layered on top of a planning system. And so most of the actual work being done by the policy instruments in China will be done by the planning system by efforts to control air pollution by efforts to deal with the balance between state owned firms and non-state own firms and also the kind of stuff that is a normal part of a vibrant economy that is in the midst of a kind of halted transition from state ownership and state domination to a larger role for what we would call the private sector. All of that happening and then layered on top of that is going to be this cap and trade system that my expectation is the actual effect of the cap and trade system is going to be relatively small compared to these other larger forces. But I think that goes to a kind of key insight about how these market instruments work. I'm from California. We have a cap and trade system in California, but it also has layered on top of existing policies and so most of the work being done in California's policy environment most of the actual effort to reduce emissions comes from these other policies and not from the cap and trade system and yet we're constantly looking at the cap and trade system and saying hey the cap and trade system is doing this and the price is too low and therefore the cost of compliance are low and I think this is where the technical differences between cap and trade and a tax instrument are very important, why taxes are a better policy, because a tax system if you put it on top of existing policies still sends a clean signal to firms as to what you should do what the cost of their effort should be to control emissions whereas a cap and trade system if it interacts with other policies that are actually already making big reductions in emissions than the cap and trade system ends up trading what's called the residual what's leftover So it's almost like a fake system

because it's trading a large supply of leftover permits and creating the impression that the actual cost of the efforts is much lower. Because it's not the capital that's actually doing the work. This is fundamentally why the European system isn't working very well. That's fundamentally why the California system is not frankly working as well as it should be and why these efforts to move more in the direction of using taxes, clean taxes as opposed to cap and trade systems, I think are a good idea.

PITA: OK. I'm actually glad you brought up the state question. I was going to ask about how it's working with the states. Some individual states like California are putting their own system. There are also a few regional alliances like the Regional Greenhouse Gas Initiative that's sort of New-England down to about the mid-Atlantic. How effective are some of these individual state or cross state initiatives? And what's our difficulties might they be imposing could some states well I've got a tax in this state, but not in this state so where a company has to decide where they're going to operate.

VICTOR: Yeah so I'll take up words about this and I'm very interested in Adele's views because she's looked closely at the California system in particular. But we're a federal country. We experiment in the states experimentalism is very very important in an area like this where people agree you need to do something but we don't know what the best thing to do is and so experimentation is actually a vital part of the policy process. And so the founders were right on that. I'd say it's been a mixed bag. I think that cap and trade system of the northeast the prices are so low that they've not been really material to major decisions by firms. The California system performed a bit better. It's starting to create some linkages to other cap and trade systems although the linkages are very hard to organize. What I'd like to see is more experimentation at the

state level using actual tax instruments. And I do think one silver lining from the Trump administration's non-policy strategy on climate change is that the states especially the blue states are really fired up about this and they want to go do stuff. And so I think you're going to see over the next few years a lot more experimentation at the state level and that's probably going to be a good thing.

PITA: OK.

MORRIS: I would say it's a good thing in the sense that you learn from it but it's not a good thing in the sense that it's highly inefficient. I mean every ton of CO₂ that goes up in the atmosphere creates the same damage. So there's no good reason to be reducing emissions at \$50 a ton in California and \$2 a ton in Illinois. It's just not an efficient way to address the problem. And it also you know creates complications for businesses that operate nationally. You've got issues at the grid edges where you have different jurisdictions with different policies. I'd like to see a federal tax for a huge variety of reasons partly because it smooths out all of this. I don't think a future where we have a host of disparate state level actions is really desirable to the Republicans or the Democrats or the climate. And so if you had a federal tax everybody has to act and then businesses can be indifferent about where they locate their economic activity at least as regards to climate policy. But if some states want to be more ambitious they can and that would be their option. But at least you know those states that don't choose to be more ambitious are all kind of equivalently affected by the tax. The other reason to do it federally is as I described if you do your tax upstream it can be far more administrable because you don't have to tax very many firms to impose the price signal throughout the economy. If you're trying to tax at the state level, you don't have any jurisdiction over a

coal mine a thousand miles away. You have to tax the folks within your jurisdiction and that creates a much less well designed policy. And I would also say state level actions really have very little diplomatic power. Ultimately this is a global problem. The U.S. needs a policy it can leverage into action by other countries and to reduce competitiveness concerns between the U.S. economy and other countries that may not have that same level of climate ambition. So as a diplomatic tool the states have no standing. They can't go to the conference of the parties at Paris and make commitments that can only be done by the federal government. So for all these reasons and more I think that while I agree with David completely that this experimentation at the state level is a good thing but it's good in part as a motivator for even better federal level policy.

VICTOR: Yeah, I agree completely with that. I think experimentation is important because practical knowledge is still in short supply. But then you need to have a strategy that moves from experimentation to the benefits of a larger market. And so ultimately some kind of at least federal framework within which there might be variations in the details as they're applied to the state but are done within a federal framework allows states to have one of the Interstate Commerce Clause problems that are going to arise. That's essential. I do think one of the great ironies of this current administrations non strategy on climate is that it's encouraging a level of chaos at the state level that will create a stronger incentive for the federal government to get its act together when that happens remains to be seen.

PITA: On that question of uniformity in approach there's sort of this argument about setting carbon prices internationally about whether it should be uniform because it doesn't matter who or where that ton of carbon is produced it has the same climate

effect and also about not giving businesses an incentive to move more of their production to a different country that has lower prices than another country. But then there's the counter argument that you shouldn't try to link up these prices or link your carbon markets because one country or the U.S. or the EU might say well we can bear a higher burden we can pay a higher carbon tax and we're willing to do it versus another country that's still trying to get their industry up off the ground can't afford to pay that kind of price yet. And so that will give them a disincentive to even get involved in the issue at all. Can both of you weigh in on that debate?

MORRIS: Well I think it is true that for the foreseeable future different countries are going to have quite significantly different policies both in terms of the overall ambition of the policy and the design choices of those policies. Some countries are going to have renewable energy targets others are going to have something that looks more like conventional air pollution regulation and some are going to choose taxes and some really want to do cap and trade. And I think that that process is an inevitable part of actually getting serious about climate change. Up to now frankly it's been a lot of discussions and disputes about who gets what kind of target and when it should take effect and what do poor countries do these are the rich countries and vice versa. None of that frankly has been all that serious about mitigation policy and having very significant reductions on the table. And gradually I think we're getting more serious. I think key innovation of the Paris accord is that all countries put forward promises about what they were going to do. As far as reducing emissions. And like I think when we get to the point of serious climate policy it will be serious economic policy and then a whole different kind of dialogue internationally will have been and will be. The finance

ministers and the trade ministers talking about these things just as they talk about every other international economic matter.

VICTOR: Yeah, I think that's exactly right. There's always going to be variation in preferences of countries and strategies and the genius of the Paris arrangement is that it encourages creates incentives for countries to reveal what they're willing and able to do. And what we've learned so far as that process is unfolded is there's huge variation. So that's not surprising and that's not different from trade and finance and central banker Gordon there's all kinds of other employment policies and so on. I do worry. I've always been very skeptical that there could be an easy global market for cap and trade systems or all these systems are linked together seamlessly or a global carbon tax and so I understand the beauty of it but I see as a political scientists see tremendous amount of difficulty given all this variation in administrative capability and variation of preferences. But I'm a little worried that people are not swung too far in the opposite direction and say, Don't link these trading systems that all have an all national level or some national level activities because that then ignores the key insight that Adele and others have contributed which is that the larger the market and the more fungible the policy instrument across that market the greater the economic efficiency and so I think we're going to see as linkages at the margins you're going to find like systems linking first more than unlike systems and so some of the economic advantage which comes from linking online systems won't be realized but you're going to start to see these systems linked and then emerging out of these cores are going to be larger carbon markets, larger zones within which the same law applies the same way that the European Union I guess until recently expanded around an initial core of common laws

and then countries figured out what you needed to do to sign up and you started to see that grow because there was an incentive to do that.

MORRIS: I think David's right in that the form of those linkages could vary a lot. So for example in a cap and trade system you can imagine explicit trading of emissions allowances across countries. The linkage could take a very different form. It could just be an agreed floor price on carbon or a floor price trajectory over time where countries say OK I'm a little concerned about our competitiveness visa your industry how about we both agree that we're going to have a carbon price of at least you know this level over time. And you know we have lots of tax treaties. There's tons of bilateral and multilateral tax treaties. I can imagine you know the same kind of agreements around carbon pricing both in terms of you know sectors and coverages and price levels in reporting and monitoring making all of us more confident that we're each doing what we're saying we're doing.

PITA: Does that shift that you're talking about from going from sort of the more diplomatic level at which these international discussions have been happening to the more economic level you talked about involving the finance ministers and others are paying more. Right now those diplomatic discussions have been started under the U.N. kind of auspices. Does that mean that it shifts to being something that's more happening at the G-20 meetings or at the WTO or any other bodies?

VICTOR: Yes yes I mean that's one of the great fictions is that this is all been a United Nations operation and so they hold the Annual Meeting and the Paris agreement is under U.N. auspices and all that's great. But that's really an umbrella under which lots of other things happen. And so I'm very enthusiastic about the umbrella. But what really

matters is all the activities that happen under the umbrella are decentralized in some areas of international law. The law itself is highly integrated trade law for example. Until recently has been highly integrated around a core set of legal instruments and hierarchical all the authority comes out of those core instruments climate because it affects so many different activities in the economy. And because we're still in an area of lots of uncertainty about what the best strategies are and instruments and so on is not well-suited to a hierarchical approach. It's much more decentralized or more like a complex of activities as opposed to a kind of single shining star on the horizon. And I think one of the other things that's become very interesting is that the more serious countries diplomats people firms get about the climate change problem the more they start working on it in smaller groups. It's very hard to make progress in a global forum where the decision making rules are consensus and you got 200 countries sitting around the table and they couldn't agree on you know when to have breakfast if they need to let alone how to save the planet. And so working in smaller groups lowers the cost of organization it helps create strong incentives for firms and countries to do things and then join those clubs. To me one of the really interesting areas of academic research now in political application in political science international law right of other fields has been to now try and model and understand in some detail how these smaller kind of bottom up club like organizations how they actually function and how they're going to deal with the climate change problem over time. I think that's a sign of seriousness that new people are involved in the financing investment people involved. All that's a sign of seriousness. It is important that we take a step back from that and then think about the rates of change because those processes these bottom up

processes are intrinsically slow. And yet the climate scientists are writing more and more papers showing that. Meanwhile the emissions continue to accumulate in the atmosphere. My own view is that the goals people have been talking about starting with me are two degrees impossible to meet those goals because when you look realistically at how these processes unfold how the whole capital stock of the energy economy changes it's hard to square that with the steep rate of decline in emissions needed to stop warming at 2 degrees and so that is I think now teeing up the next frontier for climate policy which is what are realistic targets, what do we do about the fact that even if as we get serious about controlling emissions a lot of people call mitigation that the need to deal with the effects of climate change and acidification of the oceans what's sometimes called adaptation which is kind of too friendly a term because adaptation is going to be kind of brutal in places that's now front and center.

PITA: I think I had one last question for you which is we've been talking about carbon pricing mechanisms talking about the markets because the markets are more flexible to economic responses. There was recently a group of Republicans who started advocating for the carbon taxes and the proposal they put forward would roll back a lot of the regulatory model to say let's go with the pricing mechanism rather than the regulatory model. But of course environmental regulations cover a lot more issues than just carbon emissions or methane emissions you know the Clean Air Act and Clean Water Acts cover a whole host of other questions. What is in your mind sort of the ideal balance between the regulatory and the pricing mechanism?

MORRIS: So the proposal that you just described actually carefully circumscribed what it was that they said would be repealed. So specifically within the Clean Air Act it

would suspend or repeal, I can't remember exactly the verb, the authority of EPA to regulate greenhouse gases under the Clean Air Act. It wouldn't do anything to fuel economy standards or energy efficiency standards for appliances or host of things. I think the way I interpret it is that's the key trade and whether you know when the horse trading of the legislative process other authorities are then modified in some way I think will ultimately be a political decision. I haven't heard anybody talk seriously about repealing authority of standard air pollutants as a result of a deal with a carbon tax. And frankly that wouldn't make any environmental sense at all. But I do think that a reasonable price on carbon let's just throw a number out \$25 per ton of CO₂ rising at say four or five percent over inflation would be far more environmentally protective than anything that the Obama administration promulgated under its authority under the Clean Air Act. And that's for several reasons. One is you know they were just never able to get stringent standards put in place and to take effect. And second the price on carbon would apply across the economy. They only regulated the power sector and that was their flagship rule and they had some other rules as well many of which are being repealed by the Trump administration. But a tax on carbon would be in legislation that would apply broadly across the economy. So you would start that emissions and abatement process immediately across the economy which would be far more rapid than a piecemeal state by state sector by sector regulation that you'd have to do under the Clean Air Act.

VICTOR: And this is key to the politics of this problem. The Obama administration really did what it could under existing law and those laws were not designed for this purpose. So not surprisingly they were economically very inefficient. I

think these tax reform proposals are beautiful. They're hard politically because they require a big deal that involves regulatory reform and tax reform that require dealing with something we discussed earlier about the revenues where the revenues go and so on. So you can imagine some scenario by which you put that together in a bipartisan way. This has become less of a bipartisan town. And yet I think it's interesting that essentially all the major kind of watershed statutory reforms on environment actually came from Republican administrations working across the aisle. The 1990 Clean Air Act reforms under George H.W. Bush. A lot of the bedrock of modern environmental law came in during the Nixon administration. I am not persuaded that at least on the environmental front that the Trump administration is another Nixon administration. But you could begin to see the contours of this. If the carbon tax idea becomes embedded in tax it will cut a larger tax reform and that may yet happen although the atmosphere does seem to be quite poisoned right now.

MORRIS: But it is an extraordinary opportunity for the Trump administration to tackle one of the world's most pressing problems and really strike an incredible. I mean this would have catalytic effect internationally in the climate discussions. And actually I think it would have positive repercussions across all our diplomatic and strategic relationships. So I would just commend these ideas to the Trump administration and I believe there is a deal to be made. And so I would just welcome them to keep an open mind about that.

PITA: All right. Any final thoughts from either of you on this subject?

MORRIS: Well thanks very much for bringing it up. It's my favorite topic, carbon pricing, so no accounting for taste. But I'm delighted to be here.

VICTOR: It's a pleasure to be here again and especially to do this session with the Adele.

PITA: Wonderful

MORRIS: Likewise, with David.

PITA: Thank you both. I want to encourage our listeners if they'd like to find out more on the subject. They can go to Brookings.edu both to find some of the writings and reports that were mentioned here but they also find the proceedings of our April 19th event on carbon pricing and was an event that featured Lord Nicholas Stern and Joseph Stiglitz among some others and they can either find the video on Brookings.edu website or if you like listening to it in podcast form you can find the Brookings events podcast on your podcast app. Don't forget to follow @policypodcasts. And thanks for listening.

(music)