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Market-based solutions to climate change have failed to deliver
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DOLLAR: Hi, I'm David Dollar, the host of the Brookings trade podcast, "Dollar and Sense." Today, our topic is carbon reduction and climate change. My guest is David Victor, professor of International Relations at UC-San Diego and co-chair of the Cross-Brookings Initiative on Energy and Climate. He's just coauthored a new book called "Making Climate Policy Work." Welcome to the show, David.

Let's start with the big picture. How is the world doing in terms of carbon reduction with the aim of limiting the rise in average temperature 1.5 degrees centigrade?

VICTOR: Well, it's a mixed story. So, compared to even five years ago, the world is doing a lot more. When the Biden administration comes in and sets the goal for the U.S. of net zero emissions by 2050, something like two-thirds of the world's emissions will be coming from countries that have those kinds of ambitious goals and pledges. And there is a lot of real work going on now to figure out how to meet them. So, that's the good news. The bad news is that there is a huge amount of inertia in the industrial system and in the climate system. That inertia explains why, under any realistic scenario, we are going to blow through 1.5 degrees. Right now, we are about 1.1, 1.2 degrees above pre-industrial levels. 1.5 we might hit as early as 2025. My guess is that even with a crash program, a politically realistic program, we are going to probably blow through two degrees as well. But that's a whole lot better than letting the planet warm to four, five, six, or even greater levels by the end of the century, which would be the projection absent any serious program.

DOLLAR: Now, we economists like market-based solutions to problems in general, and potentially this issue through cap-and-trade or carbon taxes. What's been the role of market-based approaches in generating what progress there is—or the lack of progress?

VICTOR: Yeah. And I also like market-based solutions when we can design them and make them work and the flexibility of markets. The essence of this new book that we have coming out is to take a look at what's actually happened. And the set piece is exactly your question.

When we look around the world, we see a lot of markets being designed to reduce pollution from carbon dioxide and other greenhouse gases—mainly carbon dioxide. Today, according to World Bank data, something like a quarter of world emissions are from places that have either a cap-and-trade system or a carbon tax system. The problem is the prices are really, really low. Something like 80, 85 percent of world emissions right now still have effectively zero price on them. And the argument we are making in the book, which I'm sure we will get into, is that that's not an accident. That's actually by design. These market-based systems have been designed to look like they are doing a lot of work with very low prices, but when you look behind the curtain, what we find is that almost all the real work for reducing emissions has been done with regulatory instruments, with industrial policy. In effect, they are doing the work, and then cap-and-trade systems that are put on top of it trade the residual that's left over.

We call them in the book Potemkin markets, because they look like those fabled tsarist villages where you take the tsar out and you say, “look at how great this looks.” But if you look behind the facade, there's nothing there. That is the kind of sad reality of the market instruments almost everywhere in the world. There are a few countries, especially the Scandinavian countries, that have high carbon prices—Switzerland has a high carbon price as well. They all use taxes instead of

cap-and-trade systems. But those are rare exceptions and they account for much less than one percent of global emissions.

DOLLAR: We will come back to Europe a little bit later, but first let's break down some particular sectors since most of the carbon emissions come from a relatively small number of sectors. So let's apply your argument, your findings from the book, to some particular issues. Let's start with the power sector, which I think must be one of the most important in terms of the emissions.

VICTOR: Yeah. So the power sector is extremely important. In fact, there is a really robust result coming out of energy models that an economy that decarbonize, an economy that reduces its emissions profoundly, is an economy that electrifies, because it's easier to control emissions from a handful of more or less centralized sources and then move the energy by wire and use it that way rather than a whole bunch of decentralized sources. So, the power sector is extremely important.

To us, what's been really striking in writing this book is to look closely at the politics in each of these different sectors. The politics are different in each sector in part because consumers, voters, are sensitive to different degrees to visible changes in cost, and in part because the government varies in its capacity to manage those political sensitivities.

The power sector is a really interesting example because the power sector is the one sector where almost all market-based systems have actually had their biggest impact. That's because governments typically have mechanisms for adjusting the adverse political consequences of policies that raise costs. For example, they regulate tariffs typically. So you can adjust, you can counterbalance some of those political effects that hold the politics together around the cap-and-trade system or the carbon tax system.

One other thing I would say about the power sector that's really important to keep in mind: When it comes to having electric companies choose amongst known technologies—so in the United States, for example, we have had a big shift from coal to natural gas—when you are choosing amongst known technologies, then market instruments work extremely well. They help with static optimization because they can tell, almost on a minute by minute basis, what's the best power plan to dispatch. It's when you are really looking for profound technological change that the market instrument by itself can't really do the job. I think for reasons that we understand from basic economics that, in effect, the public good of creating profoundly new technologies is something that requires a different kind of policy instrument.

DOLLAR: So, I think this idea that the politics of each sector are quite different is very interesting. Let's take road transport as another important example.

VICTOR: Yes. So, road transport is the exact opposite of the power sector. People are extremely sensitive to the visible changes in the price of transportation fuels. I mean, to the point where people will drive extra distances to find gasoline that's a penny cheaper. And that sensitivity translates into acute political sensitivity around any policy that either would raise those visible costs or could be branded as raising those visible costs.

We in California just went through this experience when we designed our cap-and-trade system where we followed the advice of well-meaning designers of cap-and-trade systems who said, “let's link all the different sectors together into a common system.” So, we included the transportation

sector in our cap-and-trade system. One of the things we learned along the way is that, because of that extreme sensitivity, the entire cap-and-trade system in effect is attached to this sea anchor, this political sea anchor of the transportation sector where you can't do much that visibly raises costs. And so the whole economy-wide effort in California using market instruments is frankly stuck. That's forced even more regulatory and industrial policy efforts inside California to compensate.

DOLLAR: What about aviation? Would aviation be a sector where we are going to need really revolutionary change? What kind of instruments can bring that about?

VICTOR: Aviation is one of the most interesting ones today. First of all, the industry is extremely sensitive to anything that affects cost. The cost of jet fuel down to the cent has an impact on the competitiveness, especially of international airlines. The Europeans have really done the most work here by telling airlines credibly, you are going to have to reduce emissions, and telling all the foreign airlines that we are potentially going to put sanctions on you if you don't do this. So, the whole global airline industry now knows they got to do something about it, but they don't really know what to do. So what we are seeing is a whole lot of experimentation underway. Most of the effort right now is focused on what's called sustainable aviation fuel—so, bio jet, synthetic jet fuel—that could have lower carbon dioxide emissions but still let you use the same liquid fuels that you use in a modern commercial jet aircraft.

One of the things, inconvenient things, that science is showing us is that most of the warming effect from aviation is not just from the CO2 that comes out when you burn the fuel, but most of it is actually from the contrails created by aircraft. So, if the contrails problem does indeed become the big problem for aircraft, we are going to need to pay more attention to completely radical aircraft designs or rerouting aircraft, flying them at different altitudes, to try and reduce the contrail effects. That is an area where the science and the industrial technology are now progressing together. All that is happening not because people are looking at a carbon tax at the margin, but because they know that it is existential for the industry to do something and nobody really knows what the right strategy is.

DOLLAR: Have you got a mix of public and private financing for this kind of research in aviation?

VICTOR: That, I think, is the lesson that's emerged now. The firms that do the most are the ones that stare ceasing to exist in the face and they realize they got to search for solutions. They can't find all the solutions themselves—partly because they don't have the scope, the technological scope, and partly because the solutions are all expensive—and so they find ways to partner, in effect, with government.

So, you have all these partnerships that are happening—in aviation, the steel industry is doing something similar, cement is doing something similar as well, plastics, and on and on and on. The characteristics of all these partnerships are indeed partnerships where they are forced to collaborate because that is the only way to find viable solutions.

DOLLAR: A main point of your book is that market-based solutions have often disappointed in this realm of carbon reduction, but Europe seems to be something of an exception. So, can you say a little bit more about the European system? And can we speculate on why Europe has made this work better?

VICTOR: Yeah, I think that's one of the key insights is the European emissions trading scheme, the ETS, it's the big exception. And it's a particularly interesting exception because it involves lots of different countries. So, in effect, creating a cap-and-trade system is like creating a new form of money, and the quality of the money is as good as the quality of the institutions. Otherwise, you end up with Gresham's law. The Europeans have to some degree overcome that. What we argue in the book is that they have overcome that because they built their system on top of existing strong institutions, including institutions that increasingly function the way central banks function. So, they have a common European market, they have common rules, they have credible rules. When the prices aren't high enough, they can establish reforms that everyone believes are going to hold, and then firm behavior adjusts.

The other thing I think has been very interesting about the European system is that, for reasons in European law, their carbon policy is adopted as an environmental policy. It is easier to pass environmental policies in Europe than it is to pass fiscal measures. The standards for getting them passed are different. So, this cap-and-trade system is an environmental measure. What they have done over time—for a decade or so the cap-and-trade system actually didn't perform very well. To fix it, what they are doing, in effect, is creating central banker functions where they are withdrawing and injecting credits, money, if you like, into the cap-and-trade system. So, they have moved it from a pure cap-and-trade system to something that behaves more like a currency or a carbon price with a snake around it.

One of things we argue in the book is that if you are going to use market-based instruments, it's really important to make them much more like taxes than cap-and-trade systems, in part because the carbon price in a tax always interacts with existing regulations and creates the same marginal incentive to alter behavior. Whereas a cap-and-trade system is trading this residual—this Potemkin market is trading this residual that's left over—so the prices have no relationship to any reality or real effort.

DOLLAR: Do they still have carbon offsets as part of that European system, and do you have a view of the value? Maybe explain a little bit quickly about what a carbon offset is and what's your view on that.

VICTOR: Yeah, so they still have carbon offsets, and they have been trying to reduce the role of offsets and improve the quality, which has been very, very hard. So, what an offset is, is if you have a cap-and-trade system—or it applies also to a tax system, but the experience is almost entirely with cap-and-trade systems—you have a boundary around the cap-and-trade system that covers a geographical territory and then typically a few sectors inside that territory. And, as we show in the book, the more sectors you add actually the harder the politics get, and so the politicians who instinctively know that have been trying to keep these things smaller.

In the ideal world, you would like to create an incentive for firms not just to control their emissions inside the boundary of the cap-and-trade system, but also look around the world, the whole planet. Basically, shop the planet and find the lowest cost way to reduce emissions. And when you go outside the jurisdiction and you get a credit for doing that—for example, you plant trees in a place that otherwise would not have trees—then that is called an offset.

So, in principle, it's a great idea. In practice, what has happened is the entire offsets business hinges on a calculation that's almost impossible to do in the real world. And it is a counterfactual calculation because you have to know "well, if I'm planting trees in some place that didn't have

trees right now, what would have happened if I hadn't planted my trees?" Or, most of the offsets actually by volume are being earned by saying you are not going to cut down a forest that if you didn't have your offsets the forest would have been cut down. Well, we don't know the answer to that question. And so it creates these perverse incentives to identify the projects where you can manipulate the baseline as much as possible, and then you can create this flood of offsets. And done poorly, as is the case for most of the offsets markets today, in effect it is Gresham's Law all over again. You have volumes of credits that flood into this cap-and-trade system, prices go down, and that undermines the overall effort to do something about the climate problem.

DOLLAR: Yeah. When I first moved to China as World Bank country director in 2004, one of the first things I signed was a big 900-million-euro. The World Bank's role was kind of the policemen of that carbon market, and it was the kind of situation you are describing where we were certifying that without this particular technology there was going to be—it wasn't CO2 or was some other greenhouse gas.

VICTOR: Yeah. It was an industrial gas that was a byproduct of technologies that China and lots of other places were using to actually help save the ozone layer. There was a byproduct that was a very strong greenhouse gas.

That experience is actually where I first started looking empirically at offsets. It's what convinced me that this was almost impossible to make work, because even when you had one of the world's economic policemen, the World Bank, all of these firms found ways to basically cook the books. And in some cases, to avoid regulation—in this case of the byproduct—because the moment there was a regulation that didn't allow the byproduct, then you couldn't say, well, absent my offset, the byproduct would be emitted into the atmosphere. So that whole experience that you observed up close, I observed up close from the market perspective, and it made me horrified by the whole enterprise.

DOLLAR: It struck me that there was a serious moral hazard problem there. That China should be regulating the elimination of these gases, but instead we created this market where they were being paid a large amount of money project-by-project.

Let's switch and talk a little bit about President-elect Biden and the United States. He's got some very specific proposals concerning carbon reduction. How do they fit into your framework? What do you think about the proposals in theory and then do we actually think they are going to get implemented?

VICTOR: Never have we had a government come in the U.S. with a deeper team with greater expertise around climate. And never have we had an election, a general election, where there has been so much attention to climate—not only during the primary, but also during the general. So, all of that, I think, is encouraging.

The Biden plan is well-calibrated politically. It's probably still more of a reach than is feasible politically, but that's politics. To me, what's encouraging is they know that in the real world you have to do this through let's call it industrial policy or regulatory policy. They don't have the political forces together to be able to pass new legislation that would create a nationwide carbon tax or a nationwide cap-and-trade program. So, I think that political realism is encouraging. That's consistent with our book.

Our book is making the case that even if you did create a nationwide cap-and-trade system, that the prices would be kind of fake prices and the real work would be done with industrial policy.

There are two things politically that have me concerned about this. One is that the politics of the last electoral cycle point to the fact that climate is obviously not the only concern that people have. And so it is going to be very careful political engineering process to link climate to other things that people care about— income inequality, racial injustice, environmental injustice. The environmental justice movement, so-called EJ groups, are extremely powerful politically, much more powerful than even a few years ago. So that politics is going to be very hard, and a lot of it is going to turn on holding the Democratic Party together and then enough of the Republican Party that you can put the whole deal together.

The other thing that has me concerned politically is that it matters who wins in Georgia, because that affects who controls the agenda in the Senate, but to some degree in terms of what passes through the Senate does not matter as much as the reality that the median senator is going to be Joe Manchin from West Virginia, a Democrat barely reelected. Angus King from Maine, independent caucuses with the Democrat. Mark Kelly from Arizona, a Democrat but elected in a state that's not super green. So that's going to create a conservatism about what's possible on the legislative front and therefore a lot of attention to regulation.

We have to look closely at the regulations that are going to stick or these instruments that are going to stick, because otherwise you are going to have four years or more of the Democratic Party and then the next person comes in and reverses a whole lot. I see a lot of promise in particular in financial market regulation, because if you can alter the incentives in the financial markets, then capital is going to start flowing. That's a process that is hard to reverse later on.

DOLLAR: It also seems like state level action is mostly good news in the United States. Is that right?

VICTOR: I think so. A lot of people have been concerned, rightly, about economic efficiency get worried when you have got a nationwide problem—frankly, a global problem—being addressed through policy instruments that are more fragmented. Whether it's nation-by-nation, which is kind of life, or at state-by-state in the United States, which is also kind of life. I think the state actions are going to accelerate, partly because the polity is more worried—especially in the democratic states—is more worried about climate change. And I think that's probably pretty good news overall for the U.S. policy strategy, not because that's the cheapest way to get it done, but because the more state action we have the harder that is going to be to reverse.

What I'm hearing as I talk to a lot of people around the world is they are looking at the United States, excited that the U.S. is coming back into the Paris agreement, excited that we are reengaging around climate change, but frankly, skeptical about what we do that's credible. A way to boost our credibility and therefore our power in foreign policy, our ability to get stronger action globally, is to bake more of this into the American heartland—John Allen's phrase American leadership—rather than just relying on the federal government.

DOLLAR: The last topic I want to take up, David, is international trade. It kind of follows naturally from some of the things you were just saying, because if different regions of the world, different countries, are really performing very differently, than it's going to be real reasonable for the ones that are making progress with carbon reduction to have some kind of border adjustment, but

that's going to be controversial. So, can you talk a little bit about what is needed in terms of border adjustment? How that's likely to affect trade and what the politics of that are?

VICTOR: Yes. I think this is a really important question. The place where we are seeing this the most right now is in Europe, because the European countries have been reliably pushing much further on climate than any other place in the world. So you can only go so far until industry wants some help, some protection. I totally get that. You see that in the new Canadian proposal around climate where, if they are going to go and make big reductions in emissions, they also want production protection. You see that in the Biden plan. You saw that in Waxman-Markey legislation that went through the House in 2009—emission reductions in the United States and then border adjustments. Bill Nordhaus has a big proposal, the economist from Yale, to look at clubs of countries that can make big reductions—also border measures there.

So, I think the logic of it is impeccable. The politics are going to be a nightmare. I'm really worried that the politics will be hard to keep under control, because what I hear when I talk to people in the countries that are doing the most about climate change is growing enthusiasm about border measures. Then what I hear when I talk with the Chinese government, or the Indian government, or other places that are worried about having those border measures applied to them is concern that we have an already fragile trading system that is still delivering significant benefits to the global economy and you take the fragile system and you put this catalyzing debate into it then that's going to be very hard. I think this is going to be one of the central questions in the U.S.-Chinese bilateral relationship under the Biden administration. A lot of interest in climate change as part of that bilateral relationship, and the Chinese are very focused on making sure that doesn't also result in border measures.

DOLLAR: Overall, are you optimistic about U.S.-China cooperation on climate change, or are we in such a negative environment that it will be impossibly difficult?

VICTOR: Well, the baseline is so low right now that I'm optimistic in the sense that we are going to do things, I think, in the Biden administration that will tamp down a little bit of the toxicity in the relationship. The relationship is in bad shape though—no question about that. And frankly, the domestic politics in the United States have shifted a whole lot. So, it is much harder to be patient and tolerant about allowing a bilateral relationship to flourish today than it was even six years ago in the run up to the Paris Agreement, where, frankly, the U.S.-China bilateral relationship was instrumental in framing what was possible in Paris. We are not in that world anymore.

DOLLAR: Yeah, I mean, it seemed that this is an area where you could have technology cooperation. Not necessarily government to government—most of the R&D is done by the private sector. But you already have interesting partnerships between American or European firms with different Chinese partners, and all of that's being undermined in the last couple of years. So, I worry that we may lose that win-win potential.

DOLLAR: I'm David Dollar and I've been talking to David Victor. He's the author of a new book, "Making Climate Policy Work." We are making some progress on carbon reduction, but not nearly enough. In the end, I think we are going to need probably a mix of both regulatory measures and market-based measures, but his book will help you understand why often the market-based measures simply do not work out. So, thank you very much, David.

VICTOR: Well, thank you. What a great pleasure to spend some time with you.

DOLLAR: Thank you all for listening. We'll be releasing new episodes of Dollar & Sense every other week, so if you haven't already, please subscribe wherever you get your podcasts and stay tuned.

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Until next time, I'm David Dollar, and this has been Dollar & Sense.