



Conference Transcript

The macroeconomic implications of climate action

Session 7: Panel discussion: Implications for the global economy

Tuesday June 6, 2023, 1:00 PM EDT

And

Concluding remarks

Tuesday June 6, 2023, 2:30 PM EDT

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[Audio gap 0:00:00 - 0:00:14]

Adam Posen: Real world, which is the virtual world. I'm Adam Posen, president of the Peterson Institute for International Economics. And this will be the closing panel of our two-day conference on the Macroeconomic Implications of Climate Action, organized by Jean Pisani-Ferry and myself. As you've already heard today, for those of you who were in the earlier sessions, we changed the focus from some of the more national and technical issues to some still technical important issues on the international side today.

We had a important discussion with Jennifer Harris, Christiane Nicole, and Beatrice di Mauro on where the policy stands, particularly in the US and Europe. But then a session discussing the consequences of policy heterogeneity across countries. Chaired by Cecilia Malmström with presentations by Chad Brown, Kimberly Clausing, Reinhilde Veugelers a rather presentations by Chad and Reinhilde, and discussion by Marie Obstfeld and Jeromin Zettelmeyer.

We would like to now turn even more full square into the international aspects of today's topic. With our discussion today, I'm privileged to have four people who have been policymakers, academics, thinkers, and thought leaders. And we are delighted to have them with us. In alphabetical order of their last names, by which we will speak, we will have them speak.

First up is Suman Bery, who is the Vice Chairperson of Niti Aayog in the rank and status of a cabinet minister in India since May of 2022. As Suman has explained to many of us, Niti Aayog is essentially the planning structural reform economics agency of the Indian government, and he will of course be speaking in his capacity as an Indian minister. Prior to his appointment, he was a senior visiting fellow at the Center for Policy Research in New Delhi, a global fellow of the Asia Program at the

Woodrow Wilson International Center, and a nonresident fellow of our friends at Bruegel.

From 2012 to 2016, he was Royal Dutch Shell's global chief economist, and prior to that, had served as director general of the National Council of Applied Economic Research in New Delhi. He's previously worked at the World Bank. He brings, therefore, a multifaceted perspective, including time as working for one of the major energy companies globally.

To his left is Mauricio Cárdenas. Forgive my pronunciation, Mauricio. I'm sorry. He is professor of professional Practice in Global Leadership at Columbia University, and director of the MBA there in Global Leadership. He's also a senior, global senior research fellow at Columbia Center on Global Energy Policy. During the administration of Juan Manuel Santos, Dr. Cardenas was Colombia's energy minister from 2011 to 2012, and finance minister from 2012 to 2018, serving long time with distinction as Colombia came out of difficulties, and moved into a new era.

He's also served in three other Cabinet positions in previous governments in economic development, transport, and planning, as well as twice being executive director of Desarrollo, Colombia's leading policy research center, and he's previously worked across the street at Brookings as well. He has recently served as a member of the WTO Independent Panel for Pandemic Preparedness and Response, co-chair of the Task Force on Carbon Pricing in net zero, and chair of the Doing Business External Review Panel for the World Bank.

To his left is our colleague here at Peterson, Cecilia Malmström. As many of you know, she is a former member of the European Commission and European Parliament. She is host of the PIAEs Trade Winds Weekly or biweekly event series. Okay. I got the names wrong now. Malmstrom comes before Wolfram, right? Okay. Okay. Sorry. My visual didn't work with my alphabetical. Sorry. Not going to work. She's also a visiting professor at the School of Business, Economics, and Law at the University of Gothenburg.

Cecilia has devoted the better part of her career to global affairs and international relations, and served as European Commissioner for Trade from 2014 to 2019, and European Commissioner for Home Affairs from 2010 to 2014, where of course she was globally involved in migration and other issues. She was first elected as a member of the European Parliament in 1999.

Of course, while she was European Commissioner for Trade, Cecilia represented the European Union at the WTO in international trade bodies, and she was responsible for negotiating bilateral trade agreements with key countries, including with Canada, Japan, Mexico, Singapore, Vietnam, and

the four founding Mercosur countries. I think any USTR would be ashamed to match their record with what Cecilia accomplished, and we're very proud that she's been a fellow here since June of 2021.

Finally, we have Catherine Wolfram, who is a visiting professor at the Kennedy School on leave from UC Berkeley. As mentioned, multiple times, deservedly, she and Kim Clausing have an important new paper out on international aspects of just what we're talking about divergences, and different pacing and methods, particularly on dealing with climate action, particularly the European pricing versus the American subsidization.

But it's more general than that, and that paper is forthcoming in the Journal of Economic Perspectives. I don't mean to focus on one paper. Catherine also served for 18 months as the Deputy Assistant Secretary for Climate and Energy Economics at the US Treasury, ending just last year. She is the Cora Jane Flood Professor of Business Administration at UC Berkeley, and previously served as the Associate Dean for Academic Affairs at the Haas School at Berkeley.

In addition, she was the program director of the NBER Environment and Energy Economics Program, faculty director of the E2E Project, a research organization focused on energy efficiency, and she has been publishing extensively on the economics of energy markets. Previously, before joining Berkeley, she was an assistant professor of economics at Harvard.

So, those bios are compelling. Even more so, the insights we hope to have from our colleagues, some of our colleagues have who are seeking have prepared slides. They can speak from here. Those who have decided not to use slides can stay seated or come here. But first, over to Suman Bery. Thank you.

Suman Bery: Clicker.

Adam Posen: The clicker.

Suman Bery: Thank you. Adam, my thanks to you and Jean for this invitation to speak at a very important and prestigious event. And also, it has the co-benefit, if I can use that language, of reuniting me with many former Bruegel colleagues. Yes, I am here as a minister and vice chairman of Niti Aayog, but this is by no means an official statement. So, there is an implicit disclaimer there, which is that I'm here to basically learn and to make the audience here aware of how India is positioning itself for the great transition, and also the specific topic, the implications for the global economy.

So, my prepared remarks was submitted on Monday morning before we had the benefit of the terrific discussions yesterday and today. So, I will present the essentials of the India story. But then as I turn to the implications for the global economy, I will make use of many of the insights that I've learned that have come across in the last day, and a half. Okay. So, I think the first point is that India is very much a climate believer.

And I would attribute this to my boss, the prime minister. He did a U-turn at Paris, went in the face of, as it were, the prior position of the Indian government, which is that, look, we have to grow, and this is a problem created by the rich countries. So, he committed to the decarbonization agenda, and the main reason for doing so, and I think that's relevant to what I'm going to say, is because he did see that, A, this mattered to India, and B, that it was an opportunity, as many have stressed in previous sessions, to be at the leading edge of new technologies.

So, there is an ambitious climate agenda. We've had discussions on burden sharing, particularly in what Beatrice had to say about the carbon space but here these are the numbers that India has included in its low carbon roadmap to the UN. And in terms of commitments that it's already made, it's amongst the top five best performing countries, and it has the fourth highest renewable capacity in the world after US, China, Geneva, and Germany. So, it can't be accused of being a climate laggard, which was a phrase that was used earlier in the conference. It has to manage an energy trilemma.

And I think that's the important point, which is that when you come to somewhere like India, you are talking about an economy which has strong growth aspirations. Prime Minister Modi has articulated a goal of India being a developed country by 2047, and energy growth is expected to range around four percent per year. And yet India has committed itself to reducing the emissions intensity of that growth. And let me say that at the same time we have a substantial challenge on which progress has been made of moving people from traditional fuels to modern fuels.

Bringing modern energy to Indian households is a very important part of the development agenda. And for that to actually be utilized, obviously the energy has to be available, has to be affordable. Then there is the issue of reflecting the climate constraint essentially by betting on renewables and other technologies as well. But also, very important, and this was a point made in the Spilimbergo paper yesterday, the issue of, as it were, diversifying your energy resources so that you -- your strategic autonomy is not compromised by embargoes of various kinds, has always been an important part of Indian energy policy.

And you can see that import dependency on fossil fuels is high, 89 percent in the case of oil, 50 percent in the case of gas. We heard similar numbers

for Turkey yesterday. And of course, we've had the discussion about how, as it were, moving to renewables creates other kinds of vulnerabilities. Now, Carl Sagan talked of trillions and trillions of stars, and we've been talking about trillions and trillions of dollars. But as was pointed out by Stefan yesterday, there are indeed large the investment requirements in doing -- and I think I should make this point doing something which frankly is unprecedented move, trying to get one fifth of humanity to improve its standard of living on the basis of relatively new and untried technologies.

So, that is really the bet that Prime Minister Modi has taken with the world. And the argument about the cross-border aspect, which was echoed a little bit in the previous session, is really what is the constraint, and what is the support that is available. And India is doing this partly -- well, it's certainly affected by climate change, the adaptation challenge, but also, of course, because it believes that if it is able to pioneer this development trajectory, this will have global implications for other parts of the world, particularly South Africa, sub-Saharan Africa.

Now, this starts to get into the cross-border dimensions. There's work that will be done by the World Bank and has to, some extent, been prefigured by the work of Homi Kharas at Brookings about the public finance or the financing challenge of a big investment push, and the scale of that investment push is I think still to be determined. The figure here is seven percent of GDP. Stefan had made the point yesterday about how much of this is gross and net, but the fact still remains that we don't have the kind of tax base that a rich country does.

And to increase domestic savings is to reduce domestic consumption. And so, there is, in that sense, a welfare trade off if you were to choose to finance this largely domestically. So, let us, as a thought experiment, say that what we're trying to do is to increase the investment rate by about two percentage points of GDP for a couple of decades, because that's the estimate. The question then is what are the sources of financing? There's also an indication here of an issue that came up earlier in the conference, which is the fiscal impact of decarbonization.

And I'm not including in this any reference to a carbon tax, because for now, drawing along the lines of what Stefan had indicated, I think carbon pricing comes relatively late in the sequencing. And so, we are operating on the basis of other policies, largely because of the fears of the distributional consequences of this. Now, there's the question of how much of the investment would be in the public sector, how much in the private sector. And this now brings me to some of the cross-border issues. There was a discussion already in what Mori had to say about, as it were, doing things about the cost of private finance for particularly the private sector, but also the public sector.

And India, as the G20 president is actively engaged in the debate on changing the terms of multilateral development finance, not only direct lending, but also through various credit enhancement kinds of schemes. Now, what are some of the cross-border developments that could have an impact on the Indian economy? These are some of the perceived obstacles that India feels that it faces, even though it is making a full-throated effort.

Let me talk a little bit here about CBAM, because the whole theory of CBAM and its American equivalent seems to be predicated on the concept of carbon leakage. But I was interested in what Jeremy and others had to say in the last session about appealing to a rather different intellectual construct. And Robert Lawrence, who's left us, did say that there was once the belief that really, you should or could aim for a global cap and trade, and that would really be the most efficient way of embarking on the decarbonization sort of journey.

I say this because the -- if it had -- if the theoretical model was basically that there were global allocations of permits, then under those circumstances, I think poorer countries would have been assigned a higher level of permits, which would therefore mean that they had a "right to pollute" and to attract some of the, as it were, carbon intensive industries to them. And so, in that world, you would not have the concern for carbon leakage, which has now figured so prominently in the EU debate and increasingly in the US debate.

So, I just wanted to say that testing the analytic foundations of something like a CBAM is something that a group like this might want to revisit, even though it's probably too far gone in EU legislation et cetera. In the interest of time, because I think I'm almost out of it, let me then go to a final cross-border point, which I don't think has received the kind of attention it might, and with luminaries like Murray and others in the room, if I'm wrong in the analytics, I'd like that to be pointed out to me.

And the point is this, I mean, in development economics, we were taught something called the transfer problem. And the transfer problem is, basically, if you want to absorb real resources from abroad, you have to accommodate those through a larger current account deficit. Otherwise, you are not actually absorbing the real resources from abroad.

Now, India, India's macro construction, put very simply, is a macro construction, I would argue, which has been driven at least since the Asian financial crisis by the belief, and that's been a fairly widespread belief in Asia that you don't want the loss of national sovereignty that is involved in having to go to the fund, and that therefore we've operated the economy on the basis of a speed limit of a current account deficit of no more over the cycle than two percent and some deviations from that.

And so, my question, the cross-border question really is do we have a global financial system or architecture which would give an India comfort that it could actually run current account deficits of twice that without risking a major accident? It's part of the larger issue, which is Europe basically went for full capital account convertibility in the mid-80s. It's my understanding when most European countries were more affluent than even China, let alone India now. But the question really, I think, are two, and then I'll stop here.

One, how does one want to restructure global finance so that India and other countries who want to absorb external financial resources, assuming that they are affordable, can actually run those current account deficits? And I would remind those in the room that at the time that the Knicks had their fast growth, they often had current account deficits of six and seven percent. So, just to end there are, if you like, for political reasons in the major metropolises. There is a formulation that I think Pierre Wunsch pointed out was, in some ways, erroneous in its basis, talking about supply destruction and all of that.

And my point is that that narrative actually, and the consequences of a narrative like CBAM et cetera, make it hard to develop the kind of domestic constituency that a country like India needs to embark on, which is a bold, and I hope not reckless, bet that the world system would support what India wants to do, which is to raise living standards while reducing emissions despite being the least affluent member of the G20. I think I've overrun, but thanks for your indulgence, Adam.

Mauricio Cárdenas: Yeah. But what I'm seeing here is not my presentation. This is Martin Wolf.

Adam Posen: We've seen that one already.

Mauricio Cárdenas: I'm sure it's good. Well, I can start. While it gets ready. Thank you so much, Jean and Adam, for having me here in this group of converted macro economists, and I'm happy to join this club. I have to share with you my moment of revelation. And that happened in 2016 when the Colombian delegation that had been in Paris negotiating the Paris agreement came back, and said that they had agreed to a 31 percent reduction in emissions by 2030 relative to our baseline.

And I asked the question, "Well, how are we going to get there?" And the answer was, "Well, we need a plan." And I said, "Well, yeah, we need a plan, and maybe we need something else. We need a carbon tax." And we introduced the carbon tax, and it was actually passed in the Colombian Congress in November of 2016. Getting a tax, a carbon tax approved in a

country where it's easy to ignite social unrest by raising fuel prices, it's hard, but I have to say also that it's easy to reverse those progresses.

So, first message is, let's not take for granted that the achievements that have been made, including, for example, here in the United States, the IRA are irreversible. Years later because of political pressures, especially in the post pandemic, gasoline prices were frozen. So, I'm going to essentially talk in these next minutes about the rest of the world. And I think it's very good, and in the last two panels, we covered some of that because it's hard to think of any global common or global public good that better describes what a public good is than the atmosphere.

So, if we don't think about the rest of the world, we're not going to solve the problem of mitigating emissions. When I was putting the title to this talk, I thought about the asymmetries that exist between the advanced economies and the rest of the world. I could have said, "Let's highlight the inconsistencies in today's policies towards climate, or we could also think about the tensions that exist.

I think these are the dimensions I'd like to highlight. Let me start by saying that this is putting geography, and I think Beatrice mentioned this this morning, geography is back, and I think it's back with a vengeance because we had underestimated the impact of geography on development and climate certainly, puts it at the center because regardless of the institutions, regardless of trade, geography matters a lot. Wherever you are located in the world has important implications.

And think, for example, the percentage of the population that in emerging and developing countries live in low elevation coastal zones, and this is amazingly high as a percentage of the population for the least developed countries. Although many of the models have underscored the fact, and we've talked about this in the context of Europe, whether Italy is in a better or worse off position, most of the models underscore the fact that there is an optimal temperature.

There is a lot of debate about what that point is, but certainly temperatures are higher in most of the emerging and developing world, and that's where the negative effects of the increase in temperature hit. So, that's purely factual. So, geography has to put us in the frame of mind to think about the differential effects of climate change. Second, there is good evidence showing that the more exposed countries are also less able to adapt. And here, adapt involves not just a state capacity, fiscal capacity, legal capacity. It involves institutional issues.

So, here, the picture is bigger. It's not geography. It's also compounded by the fact that these countries are less able to adapt, and this is particularly the

case of low-income countries. And the really bad news is that for many of these countries, they are highly exposed. It's very hard for them to adapt. There is no fiscal space, and there is no fiscal space because they have exhausted all their borrowing capacities. This is data from the IMF, which essentially shows that many of these developing countries, 44 of them, by the way, have negative borrowing space.

So, you cannot solve these issues by accessing more debt. And to complete the picture about these differential effects, about the asymmetries, about the tensions, we should think in terms of global inequality. I think we are very, I think, optimistic about what happened in the past, say, three decades in terms of the reduction in global inequality with the increases in incomes in the bottom of the distribution.

But what we're seeing now, according to the models, and certainly there is a need to do more research on this dimension, is that climate change can actually revert the progress that has been made in terms of the reduction in global inequality. Clearly, because the countries that are at the bottom of the income distribution are the ones that are going to be hit the most. And this is going to cause also some tensions and challenges with other development goals, not just the reduction of inequality, but many people tend to think that achievement of the reduction in emissions as being completely consistent compatible with achieving the SDGs.

And I think we need to be a lot more clear in that direction because it's not that the SDGs and mitigation efforts reinforce each other. Certainly, there are cases for that. For example, in sectors related to the quality of the air, et cetera, but in others they create tensions because climate action can actually, for example, increase food prices or climate action will require new investments in technology for agricultural production. There is a paper on India, by the way, that basically says that achieving the NDCs, the climate goals can actually -- is going to increase the demand for resources to provide clean water.

So, not all the development goals are going in the same direction. The tradeoffs, the tensions, we need to underscore them. There's a lot of buzz in the literature saying that this is these are two compatible goals and underscore the intentions is good because when there are tradeoffs, you have to prioritize. And I think this is an important element in the conversation. And one aspect, additional aspect I'd like to highlight about these asymmetries is -- and connects a little bit with the point about the current account deficit is the relation between climate change exposure and trade.

A lot of these countries that are highly exposed are not just poor but also have a high dependency on fossil fuels. So, fossil fuels take a large share of

their exports. And this is data from the WTO, which essentially shows that these are countries that are going to lose foreign exchange. They're going to lose revenues. So, in addition to the problems posed by climate directly, this is a consequence.

In a recent paper I wrote that -- at the Center on Global Energy Policy at Columbia University, I tried to do a taxonomy of the risks that these countries have as they move forward in terms of confronting the climate change. Some countries are dependent on fossil fuels. Some other countries are dependent on mechanized and modern agriculture. Others have subsistence agriculture or illegal activities. And in one way or another, they're going to face very high physical and transitional risks.

And these risks essentially will undermine the capacity to adopt the policies that are necessary to reduce emissions. Let me also say that the problem of emerging and developing countries is not the lack of ambition, because many countries in the original nationally determined contributions in the second iteration have been very ambitious. I'm here showing you the data, the level of ambition for some countries, for the countries of Latin America, that's the chart on the left. But at the same time estimating through an integrated assessment model, what will be the global optimum?

The global optimum will be to reduce emissions even more in Latin America. The reason is that Latin America's emissions are essentially agriculture, forestry, land use. These are technologies reducing emissions in, say, deforestation. It's a technology that is easy, and is relatively inexpensive compared to, say, developing green hydrogen or producing green cement. It's relatively low cost. So, if you were a global central planner, you would say Latin America should reduce the emissions associated with deforestation much faster.

And Latin America should be clearly net negative by mid-century. But there is no market signal. There is no transfer. There is no way to incentivize that to happen. The central planner, global optimum is just not going to happen. In fact, if we just stick to the government's own goals, the nationally determined contributions, and you do the numbers and see, well, how many tons of CO₂ or CO₂-equivalent you have to reduce, what's the price tag for each one of the activities and the technologies, let's put it in that term to reduce emissions.

In some cases, it's about preventing deforestation. In other cases, it's about reforestation. In other cases, is electrifying transport. You just put the price tag, the price that applies to, say, in this case, this group of Latin American countries, let's add up, make the numbers, and see what that means in terms of investment per year between now and 2050. And the numbers are just staggering.

I mean, if you compare the cost of emissions reductions, say in a country like Colombia, the range is between 7.7 and 12.7 of GDP, compared that to Europe, the United States is about essentially the double of that number. So, these countries, it's easy to think, "Where are these countries that are facing the physical, the transition risks, where are they going to finance these needs?" And add to this issue an aspect which I think is very important, and we mentioned it in this last two days very tangentially, which is the difference in the cost of capital.

Whereas in the advanced economies, the ones -- this is the G7 on the left, the cost of capital has been falling. Here is essentially the cost of interest rate paid on public debt. It has been increasing for emerging and developing countries, and there are many reasons for that. This is an area that is being explored, has to do with the differential in savings, has to do with differential investment rates, has to do with demographics. I mean, it has a lot of ingredients, but certainly we're facing this situation in the context of an increased cost of the existing debt in emerging and developing countries. And I think this is only getting worse.

So, let me end with some comments on global policy action. Again, highlighting inconsistencies, asymmetries, tension. On global carbon taxes, I think the idea is good. The differential rates is the only way to make it viable. But we have to acknowledge that this will involve gradualism. This will require distributional incentives compensating the ones that will be affected the most. Rules, tax free allowances, sectors that are quite important for certain countries that have to be exempted. And these will be in my way only viable with the financing, with the support, with the flows.

And unless there is clear action, say, at the level of the multilateral development banks or regional development banks or basically donors support, it's going to be very hard to implement this on industrial policies. I think the message I'll -- my takeaway of this conference is the both the IRA and the green industrial plan for the net zero age in Europe, they make a lot of sense from the point of view of industrial policies, jobs generating new technologies, economic growth. They make less sense when you start thinking about other goals.

For example, de-risking, decoupling, adopting domestic content requirements. I think they ultimately will end up undermining the efforts in the direction of the reduction in emissions or progress towards net zero. And these are just efforts that with the fiscal capacity that is available in emerging and developing countries are just not replicable. So, this is not going to be a race as someone as some portray a race to the top in terms of who's going to subsidize the most. The US and Europe can do whatever it takes. Emerging and developing countries can only do whatever they can.

So, this is a big difference. Therefore, thinking about the race with China, and using the IRA to change the dynamics of that race could be a goal for the United States, but it's not something that is going to really help in terms of the global commons problem. CBAM, I was asking Jeremy a while ago about the status of this. I guess it's a done deal in Europe, but it's a deal that poses many questions for emerging and developing countries. Where are you going to draw the line? Scope 1 or scope 2 and 3 emissions only for intra-industry trade or you're going to impact also intra-industry trade. How are you going to adjust for exports? I mean, a lot of questions.

And finally, and I'm going to end up with this, in the development world, it's becoming a fact now that the way to square this circle is by increasing significantly debt for climate swaps. And I really have reservations about that. I think that's, clearly, not the first best solution. I mean, if countries need support, much better to -- in general, I mean, there could be exceptions, but much better to have climate condition grants, and so changing a bit the dynamic of that conversation now that we're just days ahead of the meeting in Paris that President Macron has called, which it's been portrayed as a conference where these issues are going to be addressed in terms of the financing.

So, yes, we need financing. We need fresh money. And hopefully for many countries in the world, and very concessional terms, because otherwise they're going to be able to cope with these challenges. Thank you very much.

Cecilia Malmström: Good afternoon. I don't have a PowerPoint, so I have to confess also that I'm a political scientist, not a macroeconomist. But thank you anyway for inviting me to this illustrious conference. I've learned a lot, and it's been very interesting. I thought I'll give a few comments picking up what has been said, and lots of things have been mentioned, and there's a clear overlap and a clear need to discuss further certain issues.

But one obvious thought is, of course, that lots of papers and discussions referred to WTO compatibility or non-compatibility or the need for WTO rules. The truth is, of course, that WTO is very weak right now, and that's one of the reasons why this is so difficult to get global agreements. And if we have big proposals such as the IRA, and some parts of the EU that could be -- some clearly are non-WTO compatible there, and there is no enforcement to do that.

This is, of course, creating a lot of problems which will have effects for how we fight climate change and about the macroeconomic aspects of this. And if the US clearly says that they don't care about the WTO, this has effects for lots of other parts of the world as well, who recently has at least tried to.

We hear it even in the European Union right now, who has been the last bastion of trying to defend the rule based multilateral system. If nobody else cares, why should we? And this is a very dangerous development that I see.

We saw it also in Indonesia and the nickel export recently. We have seen how difficult it has been to discipline China, even more discipline now when there is no discipline, neither from the US or from some parts of the EU as well. And this is extremely complicated because we would need WTO first to exercise some discipline using the rules that we have, and maybe fine-tune them a little, make them more adaptable to today. And also, whether we create a climate club or whether we create some sort of peace clause related to CBAM, and I'll come back to that. We would need a forum to discuss this.

Now, the WTO has recently taken an initiative together with the with the World Bank and IMF to map subsidies in the world to give them greater transparency. This might be an important first step to use it, and they are committees in the WTO who are working day and night actually very actively, even if it's not very in the spotlight. And that could be something that results in some minor forum where to talk about this. But this is obviously a very important problem because also Schaden and Kim's paper referred to some sort of discussion level to discuss that.

But the truth is that there are very few forums. There's the G7, there's the G20, the Trade and Tech Council could ideally be a place to discuss global or at least transatlantic standards on green technology and on emissions but it's not discussed there either. Another point I wanted to raise, we heard that Europe is more or less, according to the figure, on the right track. And if everything goes to plans, Europe would have done its part of it.

The problem right now is that we are approaching elections in many countries nationally, but also in one year there will be elections to the European Parliament, and the biggest group in the European Union, the EPP Group, have just said that maybe we are going a little bit too far, too fast on some of these proposals. Maybe we should put on the brake a little bit because our citizens are not really coping with the -- it costs too much. We have so much other things to discuss. We have inflation. We have high energy prices. They are going down slightly but there's still a problem in many countries, and this is used also in some of the national elections.

So, if all these plans are being held up by politics, this would, of course, have considerable effect. And the last thing I wanted to bring up, and that is CBAM, also our former co-panelists have talked about this. I mean, the CBAM, we've talked about this a lot. It's part of the fit for 55 the EU strategy, to get fit when you have turned 55. Right? And it includes a lot of

different parts of legislation with the aim to become the world's first climate neutral continent by 2050. And it has a whole range of proposals.

Some of them are already decided, and stamped, and put into motion, others are still being negotiated. And it spans from forestry to agriculture to infrastructure, renewable energy, buildings, social climate fund with distribution of vulnerable households, and micro companies et cetera, et cetera. And the most controversial part of this is, of course, the CBAM, which builds on the ETS system as all of you have talked about. And I agree, and you said it also, both Mauricio and Suman, that taxing carbon is a good thing in theory.

And the CBAM intense from an EU point of view to address the carbon leakage, and to address what is perceived as discriminatory decisions today because the EU producers have to pay a higher price than others with more dirty industries. So, the CBAM would ensure that the price of imports reflects more accurately the carbon content, and that would be in the whole range, and it would be done through certificates corresponding to the carbon price that would have been paid had the goods been equivalent, equivalent to had the goods been produced under the EU carbon pricing rules.

So, this will affect cement, steel, fertilizers, aluminum, and electricity. And the European Parliament has added hydrogen and a few other specific goals, but has also pointed out that this should be revised regularly, and the list should be made longer in the future as well, which adds to the insecurity that a lot of countries around the world are perceiving as well. So, it will mirror WTO rules. It will be nondiscriminatory as the EU free allowances of ETS will be phased out. The jury is still out whether this is fully WTO compatible or not, but this is at least the intention.

So, this will of course have consequences. We have seen that the US is skeptical. We have seen that China will take it to the WTO. We have heard reserves from India and others, and the most affected countries as it looks today would be, in order; Russia, China, UK, Norway, Turkey, Switzerland, Ukraine, India, South Korea, and the US. Norway and Switzerland are excluded from the system because they are part of the internal market, and the US exports are only three percent, actually. Ukraine, while the biggest steel factory in Ukraine doesn't exist anymore. So, we'll see what about them. But it disproportionately affects the global south.

There is a study done by Unctad, and another one by the African Climate Foundation that has shown that Mozambique is actually the country that will be mostly affected in the world for -- and also that Ghana, and Zimbabwe, and a few others in Africa will be very affected because they're part of export is so big. So, it will be affected. And this, according to the same report, could have the effect of reducing Africa's export to the EU by

up to 5.7 percent, which would be the equivalent to 0.9 percent of Africa's GDP, on average.

Which, of course, if you look into individual countries, could be a lot. It will be lots of jobs. It could have a lot of consequences as well. And this is due both because there is no financing to invest in the cleaner technology, of course, and cleaner energy system that would make it possible to reduce the carbon footprint. This is costly and complex, but there is also very tough demands in the CBAM on how to report the whole the whole steps you referred to them as well.

And you need a lot of statistics, you need a lot of information, and you need you need specific qualifications to do that. This is also costly to build up in certain countries. And to this comes the UN security. Maybe in a few years there will be five or six other products being included in the scheme as well. So, this is of course having a macroeconomic consequences, but it's also having geopolitical consequences because some of the countries that I mentioned are neighboring and candidate countries; Turkey, Ukraine, Serbia, Macedonia, Northern Macedonia, Montenegro, Albania, and Moldova.

So, this will create factions, and complicate negotiations when it comes to enlargement. And other countries I mentioned Mozambique, Ghana, Zimbabwe. There are others as well. There is already a geopolitical tension between the EU and the west, if I may say, and the global south when it comes to the view on Russia, and the refusal of having a clearer stand against Russia in the war in Ukraine. So, this risks to reinforce these feelings. So, what can be done? Well, EU is encouraging some countries to develop a carbon pricing on their own. This is happening in Argentina, Mexico, Chile, Colombia, as we heard, South Africa, but is rather modest.

And then there are provisions, the CBAM will enter into force in its first step in October this year, it is decided, and during that first step, there will be a transition where you reach out to partners to see what needs to be done to prepare. So, this is provided for, even if it's rather vague, how it will happen. You could, of course, agree to have special and differential treatment to the poorest one, and you could agree to have the revenues to support the transition in the least developing countries to be used as green finances in this.

So, CBAM estimates to gather between 1.5 and 3 billion euros per year. So, of course, some of this could be used, but it is already credited for in the EU system for a lot of other things as well. So, this is not only a macroeconomic risk globally. If we talk about almost one percent of Africa's GDP, but it also risks to have severe geopolitical consequences. I'll stop there. Thank you.

Catherine Wolfram: All right. I wanted to start with thanks to Adam and Jean for inviting me, but I guess kind of qualified thanks because you've given me a hard job. I am the last speaker on the last panel, and I'm also, in some ways, representing the US. And we've spent the last day and a half beating up on the Inflation Reduction Act and the US. So, I wanted to start with some personal observations on the Inflation Reduction Act.

As Adam mentioned, I served in the Biden administration in the Treasury, and during the summer of '22 I was working hard on sanctions on Russia, specifically on the price cap on Russian oil. And so, we were traveling around to a bunch of international partners and talking to them about sanctions. And we were traveling when the mansion Schumer announcement came out about the Inflation Reduction Act, and the meetings with our foreign counterparts just changed dramatically. There was this kind of visible sigh of relief that the US was back at the table, and that we had done something serious to address climate change.

I think the second question out of people's mouths was -- and this is obvious after the fact, we were the Biden administration, we were there, we care about climate change, but we were interacting with people who had dealt with our predecessors, and they were just saying, "What's going to happen? You guys are only here for so long. The next time a Republican comes into office, is the Inflation Reduction Act going to disappear?"

And so, here, I think, is part of the beauty, really, of the Inflation Reduction Act is I don't think that it will be repealed. I think that a lot of the investment that we're seeing, the administration came out with a map just this morning. A lot of the investment is going to be in red states. That's where a lot of the wind potential is. That's where a lot of the solar potential is. And so, down the road, I suspect even if there is a Republican in the executive office, even if the Republicans control parts of Congress, will Grassley or an Iowa Republican really vote to repeal the Inflation Reduction Act, given that there's so much wind potential in Iowa?

So, I think this is important to keep in mind because as we've been talking about our trade partner's initial enthusiasm for the Inflation Reduction Act waned when they started reading the fine print, and read about the domestic content provisions and the less trade-friendly parts of the Inflation Reduction Act. So, as we've talked about, this became an issue. It took a little while, though.

Just as a side note, Kim and I were pitching our paper, the Journal of Economics perspective Paper to the JEP in October, and saying we think it will be an issue that the US is taking this subsidy-based approach, and the EU and a lot of other countries are taking this cost-based approach but at

that point we hadn't really heard from people. So, it took until December definitely a lot of commentary, and January at the Davos meetings.

So, I think it's important to highlight that there are two things, two fundamentally different things that our trade partners are worried about. And the one that's gained the most attention are the domestic content provisions, the things like the electric vehicle subsidies, which are only available except for the leasing provision that Kim mentioned, if the car is manufactured, if the final assembly of the vehicle takes place in North America. What Kim and I highlight in our Journal of Economics perspective piece, though, is that what's more fundamental is the difference, is the cost-based approach versus the subsidy-based approach.

So, even if all the domestic content provisions were removed, there still is just this this fundamental difference in approach, and I think that they are not rounding error. I think that they are potentially big. And so, I'm taking a little bit of the different side on this than German. But for instance, the Boston Consulting Group, the same presentation that Jen Harris cited this morning, they have a calculation about the cost of making low-carbon steel in Germany compared to the cost of making low-carbon steel in the US, and it's 43 percent cheaper in the US.

And this is quite low-carbon steel, I think that's the good news here, that steel made with dirty technologies, it's like two tons of CO₂ per ton of steel, we can get it down to 0.15, but with the subsidies for carbon capture and sequestration, and the Inflation Reduction Act with the subsidies for hydrogen, it'll just be dramatically cheaper in the US. So, not rounding error. So, we've heard a lot from the Europeans. I guess one thing I'm surprised about is we haven't heard from the Canadians yet.

So, I think that the fact that people are focused on the domestic content provisions, the Canadians are exempt from those because of the free-trade agreements means that it's going to take a little bit more time, and then the Canadians will realize that some similar dynamics will exist in steel production in Canada versus steel production in the US. On the other hand, I think it's important to emphasize, and we've heard all these stories about companies that are deciding not to open up factories in the EU moving to the US, there are other dynamics at play here.

The EU has been experiencing very high natural gas prices. The US has had the benefit of very low natural gas prices that will likely persist. We're building more LNG export capacity, we will be more connected with the rest of the world. For the foreseeable future, we will have lower gas prices. So, what do we do about these tensions and these different approaches? I want to offer three solutions, potential solutions. These have all been discussed, but think have a couple new things to say.

So, the most obvious thing to do is to price carbon and the United States. And here I wanted to emphasize two points. One is the carbon pricing in the United States does not have to be economy wide. We can exclude transportation fuels. We can exclude lots of sectors. If we started with the sectors that Cecilia mentioned that are being covered by the EU, CBAM, if we went with steel, cement, that would be basically completely impervious or imperceptible to consumers. And so, hopefully it would be politically more viable.

And secondly, the carbon pricing in the US doesn't have to be immediate. So, for instance, as Kim mentioned, in 2025, the Trump tax cuts are going to expire. There may be fiscal pressures for things that raise revenue. The other thing that's happening is that the Inflation Reduction Act, if I'm right, it won't be repealed. But it's only around for so long. And specific plants under the Inflation Reduction Act are only able to collect subsidies for time limited period.

So, for instance, one of the things that the Inflation Reduction Act has big subsidies for is carbon capture and sequestration. If you build a carbon capture and sequestration plant, and basically if you have a power plant, you have to build a second power plant next to it to do the carbon capture and sequestration. This is a non-trivial capital investment. It's also not trivial variable cost of operating it. So, the inflation Reduction Act offers 85 dollars a ton subsidy for that CCS. For operating the CCS.

But if you've done this, built the second power plant next to your existing power plant, you can only collect that under the Inflation Reduction Act for 12 years. And so, what happens at the end of the 12 years, maybe we extend the subsidies. And historically, the US has not been very good at getting rid of subsidies. But if we're achieving our goals, and we're building more CCS plants, and we're building more wind and solar, at a certain point we're just subsidizing our whole energy sector. And so, that strikes me as not very fiscally viable or politically viable.

So, imagine, if in 2025 we introduced a carbon price that came into play in 2030 or some point in the future, then the investment calculus for somebody building a CCS plant is I've got the 12 years of the IRA, and then I've got the benefit of avoiding the carbon price. And so, it becomes a even better investment to make. And the carbon price is very complementary with IRA. So, while I was in DC, I learned the phrase hope-casting instead of forecasting. And so, potentially this is me hope-casting that we have the ability to do carbon pricing in the US.

But I think there are a couple reasons. One, as I said, it's complementary to IRA. IRA is already doing the work of shifting the burden of the climate

transition away from the electricity ratepayers, away from energy producers onto the backs of taxpayers. And so, that leaves us some room to impose prices or impose costs. And also, as we've mentioned, the fiscal belt tightening. So, I think there are a couple routes to carbon pricing.

For instance, the senator White House has a bill, the Clean Competition Act, that basically levies a CBAM of the US, a US CBAM, and ties it to basically carbon pricing. He doesn't call it that because of the political sensitivity on US production that's above the means, and then lowers the threshold where the US is priced over time, which is really clever, I think. So, that's the ideal solution is that we see some convergence in approaches that the US takes versus what our trade partners are taking.

The second, and we've discussed this over the course of the day and a half is focus on technology transfer. The Inflation Reduction Act does have great subsidies for some really cutting-edge nascent technologies like direct air capture, like carbon capture and sequestration, like clean hydrogen. If we can succeed in driving those technologies down a learning curve, there will be huge benefits to the rest of the world. And so, we need to think about how those benefits spill over.

The third approach, and Kim also addressed this, we have a forthcoming policy brief where we suggest that the EU, the US, and potentially more energy consumers focus on areas where we are seeing eye to eye. So, the Inflation Reduction Act in fact contains a greenhouse gas price. It's a price on methane, not a price on CO₂. So, we think that there is scope for the EU and the US to build the muscle, develop the relationships of working together on this area where we see common ground.

And hopefully those interactions will spill over and lay the groundwork for more extensive cooperation. So, I think just as a bottom line, I would like to encourage economists to remember Biden's phrase that you don't want to -- he says, "Don't compare me to the Almighty, compare me to the alternative." So, I think we need to remember that. We need to compare IRA to the alternative, and not to the Almighty.

This has also come up. So, I have a paper with Jean Baseline and Neil Mehrotra where we calculate the carbon price equivalent of the IRA, and it is like 10 dollars. It's 1/5, 1/6 the cost of what IRA is. So, that's clearly the Almighty. But we also compare that the cost per ton of reduction in IRA to the social cost of carbon, and the IRA is hugely cost beneficial even at the levels of expenditures that have been projected, the trillion dollars rather than the CBO numbers.

So, IRA is here. We're going to be living with it, but I think we should be pitching, we should be thinking about working with IRA, and layering

carbon pricing on top of IRA. I think, as it's come up, we have the moral imperative to figure out the most efficient way to address climate change, and to work with the rest of the world on that. So, hopefully, hopefully we have scope to do that.

Adam Posen: Thank you, Catherine. And thank you, all our speakers. As we are getting near the end of the actual program. I think Catherine was perfectly interesting and not burdened by being at the end. Thank you for batting clean-up. Let me reward our hearty, or hearty, I guess, audience members by turning to them for questions if anyone would like to be first. Yes, please.

Audience Question: Thank you. Thank you so much. It was really a fascinating panel. Thanks to all of the speakers. First, I want to reassure you on Mozambique. I think a lot of the numbers we see also floating are very uncertain. And these numbers that you quoted on the impact on Mozambique takes the global average carbon intensity of doing aluminum in the world. But Mozambique, of course, does it with hydropower. So, if anything, Mozambique might be benefiting from CBAM and not being hurt. So, I think this is something we see in our simulations of CBAM that you have this relocation of exporters.

And we found the same thing on Turkey where a lot of sectors actually benefiting because carbon intensity is lower in Turkey compared with other countries exporting to Europe. So, how this will happen is really complicated, and we see a lot of assessments that we have to take with a lot of care. My main question was on the investment needs that we have shown for a lot of Latin American countries and India in the first presentations. So, there is this delta because we want to build more resilience, because we want to build low carbon.

One question is countries don't invest enough in their development already. So, we're not starting from a perfect situation, and we just need that delta. The question is how can we imagine climate finance, and a new pact or however you want to call it, as a way to fix not only the climate delta, but more generally the lack of investments. I mean, we're lagging on SDGs because we're not investing enough.

So, beyond this climate needs, can we have a broader perspective and look at how we can help with the development challenge in general? Because I think if we're looking only at 10 percent of what we need in total, even if we close that gap, and provide these 10 percent, we're still left with a 90 percent gap that we need to be close somehow. So, any views on how to make this connection better?

Adam Posen: Please, Mauricio.

Mauricio Cárdenas: Yeah. Well, we can spend hours and hours trying to define the architecture that will allow that to happen, which is essentially achieving all the developmental goals is not just climate but also the SDGs. But I think this that would be too ambitious. I think we should start from something basic, and there is something that is on the table right now, which is the possibility of using the SDRs that were issued to capitalize the development banks. I think that would be a good way to start.

I mean, while we create the plan you're hoping for, maybe it's going to be too late. So, I'll just throw that idea, which is relatively simple, but there's huge obstacle, and then there's a huge obstacle on the part of many of the central banks of the advanced economies.

Adam Posen: Thank you. Suman.

Suman Bery: I just want to make sure that I understood the question. I mean, India's gross fixed capital formation rate is at the moment, in the high 20s, and it has been the thrust of this government to invest a lot in infrastructure. So, when you talk of the development gap, it comes back in some way to my current account deficit point, which is that, yes, you can be doing things on the tax rate if you want to generate more domestic savings. But I think they are efficiency of public spending issues.

So, I'm not sure that I would necessarily focus only on the investment rate. And that's where, as it were, the entire complex of interaction between a sovereign, the fund, the bank, the advice comes about. I mean, there is a dialog that is meant to optimize both the revenue side and the expenditure side. Now it's a different matter that some of this is seen as irksome, and may be ignored. And it's also the case that over time, certainly talking about the World Bank, and more broadly, these have become a relatively insignificant part of the investment financing.

So, there's the usual trade off that the countries are, democracies are responsive to their electorates. And there is a process that leads to the quality of taxation, and the quality of public expenditure. International organizations have a duty to point out where there are departures from optimality. But if you were to ask me, would you rather be a 26 or 30 percent investing country, or would you rather have the problems of a China, and have savings that lead you to invest 50 percent? I think there's more likely to be efficient capital allocation if you are somewhat savings constrained than the other end of the spectrum.

Adam Posen: Thank you. Cecilia or Catherine?

Cecilia Malmström: Now, just I'm happy to compare notes on Mozambique. I have several different sources, but you have a very good point saying that there's a lot of

anecdotal truth circulating in this whole debate. And that's why it's so important that the EU uses this time until it actually enters into force. It has already started, of course, to really enter into dialog with all potential countries who will be affected by to see what to what extent will it be, what could be the other benefits, how can we compensate so that you get the full picture before it actually enters into force? And in that work from World Bank and others will be extremely important as well.

Catherine Wolfram: I guess I would just -- since it hasn't come up yet on the panel, I think I'd just emphasize the role of adaptation. And so, investments that help encourage development are going to help with adaptation. Access to energy use or access to energy is a really important part of adaptation. You can have fans, you can run air conditioners. So, yeah. Reminder that even investments that don't ostensibly have to do with climate change but are climate change mitigation at least but that are encouraging development are going to help with adaptation.

Adam Posen: Thank you. Another question, please. Could you go to the mic right there?

Chad Bown: Chad Bown, Peterson. Catherine, a question for you. So, I think of everybody you've thought hardest about, at least in the US side, the potential complementarities, how we get to carbon pricing eventually. And I appreciate very much you laying out a positive agenda and how we might foresee it, but I imagine you've also probably thought through some of the pitfalls of what might come up along the way that we might need to watch out for.

So, can you tell us a little bit about those? Do we need to worry about new industries, new political economy evolving that's going to create roadblocks, that are going to prevent us 10 years from now to getting to carbon pricing? What should we be worried about? Doesn't seem like it's just going to happen naturally.

Catherine Wolfram: Yeah. Easy question. I mean, yeah, in general, I think we should be worrying -- in this room, should be worrying about the devaluation of economic thought in the whole discourse. Yeah. I mean, culture wars have nothing to do with economics, and that's what the Republicans are waging right now, and to the extent that mitigation or win becomes part of the culture wars, and even if it makes economic sense to them, the Republicans are fighting against investments in climate change. I think that's one big potential drawback.

Adam Posen: Okay. Next, please.

Audience question 2: [Foreign Language 01:19:10]. I have a question for Mauricio. You mentioned at some point the fact that in Latin America there was a lot of

low cost, low-cost abatement opportunities through afforestation and land use. And you later mentioned as well that it would be preferable to have climate conditional grants as opposed to climate debt swap. So, my question is how much scope do you see for the carbon markets to fill some of this gap?

Mauricio Cárdenas: That's a really good question. Carbon markets are relatively small compared to what the needs are in terms of the reduction of emissions. And of course, there is great hope that they can increase to the trillions of dollars to solve that problem. However, when you dig deep into carbon markets, you start seeing a lot of market failures. Beginning with the most basic one, which is property rights of the land but enforced technologies. There is a lot of distrust these days on these agencies that do the auditing on the carbon credits. So, a lot of work needs to be done.

There are two directions in which this can go. One is more market driven. Companies that need offsets. Individuals that prepare projects in the Amazon, but they have to deal with all these all these problems, this complexity. Then there is another approach, which is more the jurisdictional approach, which is you go about regions. Kind of what I was asking yesterday, Andrew Steer about Gabon. So, it's a big national effort, and that is that involves more donor's money, and cooperation, IDA, et cetera.

So, there are these two approaches, but there is a -- I think that's where the greatest opportunities are really -- in terms of not just abating emissions but also avoiding because avoidance can be a huge thing if we just stop deforestation. But we need to start thinking about the market failures that have prevented that from happening.

Adam Posen: Great. Anyone else with a question or a comment? Suman, Mauricio, anything you want to come back to your fellow panelists on?

Mauricio Cárdenas: Yeah, I just want to make two quick points. One on Stefan's good question about Mozambique. Which input-output metrics is going to be used to calculate emissions? Germany's, Italy's, Mozambique, Turkey. That's question number 1. Question number 2 is, this is going to -- it's been portrayed as the -- the rationale is the leakage. So, I think the first best solution would be the carbon pricing in all the jurisdictions. A create incentives for that to happen.

So, this is a little bit about whether it's stick or carrot. I'd rather go with the carrot strategy. Which is like South Africa. I give you this. I give you this support. Say the loss and damage fund or any other any other type of benefit. But you have to do this. You have to implement carbon pricing. So, I think that's one element. And the quick comments I just don't speak anymore is we talk about adaptation and mitigation as two separate subjects for the rest

of the world, the focus of this panel, adaptation is huge in terms of the CapEx.

It's not in the numbers I mentioned. The numbers I mentioned is just about mitigation. So, adaptation is huge. So, we need to start thinking about how to increase investment in adaptation, but especially adaptation that is compatible with mitigation because there is also a tradeoff. There is also tensions between adaptation and mitigation. And we need to start working on analytically, on which are the actions where adaptation and mitigation are complementary, which are the ones where there are tradeoffs, and try to favor those ones where there is complementarity.

Adam Posen: Thank you. Suman.

Suman Bery: Yeah, just two points. One is that, of course, everybody now talks about the Paris Agreement, but all of this and the cops are embedded in the UNFCCC, and that was the recognition that climate change was a global challenge. And that's what led to special but differentiated responsibility. But I think I'm right in saying that the UNFCCC also talked about the transfer of technology. And I think that that will be a very important part of the carrots for the global south to make their contribution.

And I'm not entirely clear either in US legislation, and here I know a bit more about the vaccination story, but a lot of -- certainly US, and I think European, clean research starts off as government funded as was the case with the vaccines. It started in DARPA. Okay. Now, to my knowledge, in Sweden, if there's a government contribution to research, the Swedish state retains some of the IPR, whereas my understanding is that the US attitude is basically that the IPR then vests in whoever commercializes it.

And so, the issue of what is the framework either in Europe or in Japan or in the United States for coaxing, as it were, the commercialization of technology to share that on advantages terms is not something I've heard that much discussed, but it could be quite important part of the carrot. And secondly, just to say that I mean -- and these are the issues that Europe has faced, that the fiscal federalism issues that would arise in a federal society like India are raised by, as it were, the climate transition.

We had a lot of discussion about the spatial dimensions in Europe, but exactly what that means about the architecture of relations in the transition between the Center and the States is something we are going to be wrestling with, and it'd be interesting to see exactly what Europe has, as was discussed yesterday, experience with regional policies. And all I'm saying is that the appropriate tweaking of intergovernmental fiscal relations is another challenge. But it's a domestic challenge. It's not a cross-border challenge.

Adam Posen: Thank you. Catherine. Cecilia.

Catherine Wolfram: Just one final thought on carrots and sticks. I think as any parent knows, that they work very well together. And in some ways, the best stick is one that you never have to actually wield. So, I think in some ways, the best CBAM is one that never actually gets assessed, that it's just there, and it encourages countries to think about carbon pricing themselves. I mean, I think that's part of the reason that the EU has this really long three-year lead in period.

And hopefully, there will be a lot of technical assistance that the World Bank and others are offering to countries to think about carbon pricing. We have looked into this example of Turkey, where Turkey was doing the calculus. A lot of their exports go to the EU, and so their industry was going to be paying the carbon price anyways, 50 percent or something was going to the EU. And so, Turkey figured, "Well, just assess our own carbon price and collect the revenue that rather than having the Europeans collect it, we'll collect it."

So, I think there is this virtuous cycle where CBAMs encourage other CBAMs, and then nobody has to actually see bands encourage carbon pricing, then no one actually has to enact a CBAM or use the CBAM.

Adam Posen: Thank you. So, with that hopeful note, I will just say -- one thing I need to say. Catherine made a great contribution to this panel, but she opened by saying she felt like people have been beating up on the IRA. I think we had Jennifer Harris speaking earlier. We had Andrew Steer last night. We had a lot of actual optimism about the US IRA. It's not uncontroversial, it doesn't deserve to be uncontroversial, but this was hardly a session of repeated beating up on the IRA. And therefore, that leaves our audience here in person, and globally to make up their own minds.

I have a few housekeeping organizational things, but to end most importantly on substance, before I do those and our online viewers can tune out, let me call on Jean Pisani-Ferry, who is the intellectual backbone of everything we did the last couple of days to give a few concluding remarks.

Jean Pisani-Ferry: Fortunately, I wasn't the only intellectual backbone. And success has many, many fathers, and especially you. And thank you, Adam, for making it possible. We thought of this conference as a way to mobilize research, and learn from its insights, and learn from the discussion. And really, huge thanks for all who have been here, who are still here in this last session, because we haven't been disappointed at all. I mean, this has been a great, great conference.

I have a few takeaways. I thought perhaps it would be interested to give you my takeaways, although I did that a bit this morning. I'll be quick. The first is that whatever the divergent views there are on the economic implications of the transition, and we don't yet agree fully on that, we all agree that the alternative of no action would be far worse. And I think that was repeating, certainly. The second point is that in the long run, there is probably no tradeoff between growth and climate action. We can have both. We can have a greener economy and a growing economy.

Third point, the battle for climate. And this was very apparent in the discussion on Reynolds paper, and also on Philip's contribution will be fought, and won or lost on the innovation front. This is what, in the end, will determine whether there will be adoption. There will be generalized adoption. It's when the green goods are getting cheaper, more efficient, more adapted that there will be -- the jury will finally stop being out, and deliver its verdict. We're speaking, in fact, of an industrial revolution. I think this hasn't been mentioned so much, but it's really an industrial revolution. It's an industrial revolution.

The difference with those of the past is that it's taking place or is it bound to take place at warp speed and be driven by policy instead of exclusively technology. So, that's the challenge, is to succeed in this industrial revolution. The global economic implications of climate action are likely first order for a number of variables. Speaking of output, speaking of inflation, speaking of international trade, speaking of balances of payment.

But we're still far from having a full understanding of how those things are going to play out. I mean, definitely in part, because we're not at the frontier. We're not starting from a situation where economists can be regarded as being as efficiency frontier. So, clearly, some work remains to be done on that front. That applies also to the fiscal equation. We had discussions on the fiscal implications of climate action. Some see them as positive, some see them as negative. In part, this is also because we're starting from very different perspectives.

The feasibility space also is variable depends on the judgment, on the political feasibility of some reforms. We spoke extensively about the possibility of removing fossil fuel subsidies, of taxing carbon, et cetera. So, for the fiscal equation, it matters. And the only answer to the question that was the title of the session, I think it depends, and it still depends. And the climate transition, you have one regret is that we haven't addressed sufficiently this dimension, the inequality between nations.

It has been addressed in the last panel. Within nations, it hasn't been addressed so much, but I think it is first order, and it is from a political economy standpoint. It is vital that it is being given sufficient attention

because we all know that this is where the test, the final test of the feasibility of the policy will be delivered. The labor market implications of the green transition, we discussed that in the session with Robert Lawrence. Interestingly, there was no disagreement. We all agreed that there are, in principle, relatively minor, but in fact they can be a stumbling block, a significant stumbling block.

And so, they need to be given sufficient attention and sufficient resources have to be devoted to that. The global south, we just spoke about it with Suman and with Mauricio. The global south is vulnerable to transmission risk. There is no doubt about that. Investment needs are major. I think I was amazed by the numbers you gave. And external financing is scarce. Fiscal space is limited. So, the challenges are high. And this dimension, I think, deserves much more attention.

And hopefully, it will get more attention, and especially the rich country will finally deliver on their pledges. Last dimension, the heterogeneity of climate policies is here to stay. I think we've made progress in understanding how to accommodate this divergence. It's not an easy task because the multilateral system is not in good shape. It's exceptionally fragile. We can't rely much on the WTO.

So, the solution proposed by Chad and Kim was to emulate the WTO by starting with a limited number of countries, and using the principles of the WTO to replicate them. I think that's a very clever solution. So, best hope is that UID get some traction. Thank you.

Adam Posen:

Thank you, Jean, and thank you all for the appropriate applause for Jean and everyone. Our online viewers may want to drop out now. I'm now just going to say for the record how we're going to carry forward some of this work. And obviously all authors and participants will get this in writing. But just so nobody can accuse the institute of not being transparent in our goals, Jean and I will be working on building off of his recent just completed remarks.

A set of quick takeaways, we think, from this conference partly to follow up on the attention that we think it's generated, partly to engage all of you. We hope to circulate that internally next month, and then to all of you as soon as possible after that. We are going to ask all paper writers on the program to give us some version of their paper. We stand by with our full editorial support to help you achieve that, and we'll provide transcripts of the discussions, and the other conversations in your own presentation, if you would like.

We are flexible as to whether these may take the form of [inaudible 01:39:12] policy briefs or working papers, but we will ask you to do those. The goal is to have two bites at the apple, to use the expression of avoiding

food waste that first, each author, contributors or group of contributors' papers will be published separately by PII, and that will allow us to promote in the way that we do with PII charts, with perhaps discussions, and Cecilia or Nicola or Chad's event series with Webb's efforts and so on. And then we will, of course, have a conference volume at the end of the process.

Adam Posen:

It's not because we want everyone to wait around for a conference volume, but we do believe the whole is greater than the sum of the parts, and there should be one reference point for what we all have put together. And the timeline for that is assuming we can get in everybody's paper in some form by end of September, which is the goal, we should be able to turn around with the help of our amazing publications team, conference volume by -- before end of first quarter of 2024, possibly well before.

So, that is the outline. We will process all that and get that to you. All of you who made the effort to be discussants, if you would like assistance, turning your discussion, your deathless pearls of wisdom into a blog or into even a policy brief, again, we're happy to provide transcripts and work with you on that. There was a lot of good thinking in the discussants. We don't want it to go to waste, and other members of the extended PII community who participated in this, if you would like to get involved, I can't guarantee you a slot in the conference volume, but I can't guarantee you a fair hearing and dialog with our work.

So, with that, with thanks to Jessica, Sarah. Michal. Femi, JB, Denise, Patricia, Robert, all of whom work -- Jose. All of whom work somewhat behind the scenes to make this work. Even the clicker. I agree. They do good stuff. Thank you all for joining us. Thanks to Jean. Thanks to everyone. We'll be in touch.