

Transcript of Dr. Mark Carney's lecture on "The Philosophy and Practice of Tackling Climate Change"

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Thank you very much President McEwen, Rhonda, for that kind introduction. Thank you all of you for taking an hour out of your busy schedules to join us this afternoon. I'm going to speak for about 40 minutes or so and, as I'm a central banker, you know I'll go over that agreement! I want to begin by reinforcing where President McEwen ended, which is just to pay tribute to the generosity of Stephen Coxford. His leadership, his dedication to the community, to this university and to university life, the pursuit of knowledge, and thank his family, Kathy and Andrew and Peter, for joining us today.

The purpose of the Coxford Lecture, as I understand it, is that these lectures will form part of a series which will go on for a long time (regardless of the quality of the first one). It is hoped that they will trigger curiosity, spark new perspectives and encourage the amazing student body at Victoria College, and the Vic alumni as well, to go out and use their talents to solve some of the biggest issues of our time.

So, the lecture series has a wide remit. It's to look at issues of public policy. I'm narrowing it somewhat but only somewhat to look at issues around tackling climate change. What's working, what isn't. I want to illustrate the imperative of building consensus. The importance of governance and the power of public policy as well as the power of business and in order to draw out how to address what is an existential problem I'm going to roughly organize my thoughts around three themes: the philosophical and the practical; the global and the local, because it's obviously a global challenge but we have to act locally; and the relationship between public policy and private action. To give a bit of a preview I'm going to try to stress really five points.

And the first is the paramount importance—particularly of this issue and it's point of broader application but particularly for climate change— of purpose and mission. And if you're familiar with the work of Nick Stern and Tim Besley (Tim Besley, a Canadian future Nobel Prize winner, you heard it from me first) the ideal in an issue like this is to define the core purpose very clearly and then determine the most cost-effective way of achieving it. The trick of course is forging that consensus and then the debate should be about the best way of achieving it. And, of course, with climate change, science makes our purpose clear. Net zero isn't a slogan, it's an imperative of climate physics. And further, the Paris Accord objective of less than two degrees isn't an arbitrary figure. Science, and increasingly our lived experience

- you only have to have lived through the summer we had in Canada to know this - demonstrates the catastrophic impacts of further warming.

The second core point is that we can't just achieve this objective even with a strong consensus or through some binding agreement because the net zero transition in it involves a wholesale transformation of our economies with immense consequences for our fellow citizens. We need global agreements, but they are guides. They're not binding, they guide governments. They have a mechanism for accountability as I'll discuss.

But national sovereignty is essential to develop legitimate strategies to mitigate climate change and to manage the transitions that accompany those strategies. And, similarly, climate policies must deliver today for people while creating the conditions for the major structural change in the medium term.

Now all strategies, and I'm going to talk about those at the national level amongst international financial institutions, companies and private entities, should be measured regularly against their objectives in order to ensure public accountability. After all, if we've come to a consensus on the goal, we all should be accountable for what we're doing to help achieve it. That provides accountability but also encourages consistent improvement. And if we get this governance right, and I'm going to draw this out, we can create a virtuous cycle.

I'm enough of a central banker to say one of the lessons of monetary policy is, if you get it right, you don't have to do as much if you don't have credibility. So, the more credible and predictable policies are, the more the economy adjusts in anticipation and the smoother the transition will be.

My final theme, and I'll draw this out a bit but hopefully not too much for those non-economists, is that a net zero financial system is essential but it's not a panacea. With the right incentives, finance does what it does well, which is to look forward to the future, bring the future to the present, smooths adjustment, drives growth. Finance is a catalyst that can speed the transition, but I remember just enough of chemistry to remember the catalysts rely on their underlying components to work. And with respect to climate, the catalysts are those underlying components—the power of people demanding change, the policies of governments to incentivize actions, and the energy and innovation of entrepreneurs, businesses, municipalities and civil society to deliver it.

So, I promised a bit of philosophy at the start, so I will give a bit here and hopefully won't be called out by the philosophers too much for the shortcomings. And as some might anticipate, my core point is that the climate crisis is a crisis of values and the fundamental

challenge is to create an economy in which society's values, that consensus, broaden the market's conception of value. If we can, individual creativity and market dynamism can be channeled to achieve our social goals. But there are paradoxes and there's a difficult relationship between values and value and to draw that out I'll just allude to three famous paradoxes of value.

Great minds from Plato to Adam Smith have wondered why water, which is essential for life, is virtually free and diamonds, which have only a limited utility beyond their beauty, are so expensive? The question I pose is why do the markets rate Amazon, the company, as one of the world's most valuable but the value of the vast region of the Amazon literally appears on no ledger until it's stripped of foliage and converted into farmland? And how do we reconcile during Covid our celebrations and support of the extraordinary public service dedication and heroism of healthcare workers, with their low wages and perilous working conditions.

And these are all questions of what and how we get what we value. Now these concepts of value are rooted originally in theology, in philosophy and more recently and narrowly defined in economic and financial theory and practice. Value isn't necessarily constant, but it's specific to time and situation. So, the professors may well again correct my allusions here but Shakespeare's *Richard III* despairs in battle, "a horse, a horse, my kingdom for a horse." Given the peril he found himself in at that point, we can all relate to the value that we put on daily essentials during the pandemic.

Over the centuries there's been two broad schools of thought around value: the objective and the subjective. And objective theories contend that the underlying value of a product or a service is derived from how it's produced, and they focus importantly on how that affects wages, profits, rents, and so that's similar slightly to different conclusions but similar whether it's Aristotle, Adam Smith, David Ricardo or even Karl Marx. The last three are so-called classical economists and they have this perspective, this focus, on the distribution and the consequences of value because I would suggest they lived during a period of unprecedented urbanization, industrialization, technological change and globalization. And so, they place the growth and distribution of values squarely in the context of those enormous social and technological changes that were then underway and all of them would have found profoundly alien the view that's widespread today in the economic community that economics is a neutral technical discipline that can be pursued in isolation of such dynamics. They would have argued that at a time such as ours when the economy is being reordered through both the net zero revolution or transition in the AI transformation, that value theory which values to pursue and how to distribute the gains are more important than ever.

And especially because Adam Smith taught that values are not fixed. There's a central concept that links all of Smith's work. He's characterized as the invisible hand but his central concept across the theory of moral sentiments and *The Wealth of Nations*, is that continuous exchange forms part of all human interactions. So, it's obviously the exchange of goods and markets, but it's also the exchange of meaning in language, and crucially the exchange of regard in and esteem in the formation of moral and social norms. So in other words, he believed that we form our norms or values by wishing, and I quote, "to love and to be lovely," that is to be well thought of or well regarded.

We receive feedback as we go through our lives from perceiving or imagining how others judge us, and this feedback creates an incentive to achieve a mutual sympathy of sentiments and that leads people to develop habits and then principles of behavior. So, the point is that moral sentiments are not inherent, to use the modern terminology of Richard Dawkins. They are social means that are learned, imitated and then passed on. Usually like genetic means, they can mutate or appear in behavioral cascades and tipping points. So, the conception of the markets of Adam Smith should be seen in this broader social context. Markets are living institutions, they're embedded in the culture, practice and traditions of their day. Those markets determine the distribution of value which he believed, as Ricardo and Marx and Aristotle before him, is derived fundamentally from labour.

Now, in the 19th and early 20th centuries, there were a group of economists known as the neoclassicists who launched an upheaval in the way of thinking about value that was comparable to the Copernican revolution in science. Copernica's science transformed astronomy by moving its axis from the Earth to the sun, and the neoclassicists changed the perception of value from shifting the axis from the objective to the subjective. So according to them, people value goods and services that satisfy specific wants, and it's only because people value these goods that the inputs that go into them have value. Labour does not give goods value; labour is valued because the goods it creates is valuable. Value is in the eye of the beholder, not in the sweat of the labourer. And in the century since neoclassicism, this combination of subjective value theory, it's in the eye of the beholder, a theory in which price equals value and a cursory understanding of the Invisible Hand in which markets yield optimal outcomes supported by unseen and unchanging moral sentiments, promoted a view that all market outcomes equal value creation and through them the growth of wealth and welfare of nations.

And this perspective would eventually lead to an increasing imbalance between states and markets, and between social values and financial values. Now there was much to commend, this will be a controversial statement, but I'm supposed to provoke! There's much to

commend, particularly at the time it happened (the Thatcher-Reagan Revolution). What it did is it fundamentally shifted the dividing line between markets and governments and unleashed a new dynamism but, fed by the fall of communism in the late 80s, the spread of the market grew unchecked. And so, by the time I entered public policy and joined the G-7 in the early 2000s, the conventional wisdom of market efficiency reigned supreme. And policy makers had nothing to tell the market, they only had to listen and learn. To put it another way, the market is always right. But as my central bank colleague and later Italian Minister of Finance, Tommaso Padoa-Schioppa, once observed, and I quote, "When we grant an entity infinite wisdom we enter the realm of faith."

Now faith can guide, but it can blind policy and such cognitive capture led to the self-cancellation of the policy-maker's judgment, as only the market knows. It led directly to the financial crisis, and it has fed the climate crisis. More precisely there are three risks that the combination of subjective value (theory and price equals value) and market fundamentalism encourage. And the first is the familiar tragedy of the commons, which arises when individuals acting in their own interests undermine the common good by depleting a shared resource. So grazing lands in the UK in the 19th century, the cod fishery which ended by the early '90s off the Grand Banks in Newfoundland, and the current destruction of our rainforests and imperiling biodiversity. Now the second is the tragedy of the horizon. The first is a product of the market, the second is a product of human nature. We are irrationally impatient, and the catastrophic impacts of climate change will fall largely, not exclusively, but largely on future generations.

So, beyond the current news, business and political cycles, leaving few direct incentives to solve the issue today even though the sooner we act the less costly it will be. In other words, for an issue that can only really be solved in the present, we have to value the future. And there are many solutions to this, and many have come in the last decade, particularly through the financial sector and stress testing, scenario analysis, but they all require new governance that I'm going to come to. And the last challenge is what I've been speaking about which is a drift from the moral sentiments of Adam Smith, to the market sentiments personified by Milton Friedman, where decisions are made purely in utilitarian calculations.

So, there is an advantage to the subjective view of value in that you can add up prices and compare them in a neutral way. And that's true for most things, but the disadvantage is that summing up prices with no sense of priority or sense of distribution and no weight put on that which isn't priced, such as nature or biodiversity, this encourages trade-offs of growth today and crisis tomorrow, economics and health and planet and profit.

Okay, enough proto-philosophy. What about moving towards some of the practical solutions on climate change. And I'll put my cards on the table: in my judgment, my experience, given the scale of the challenge and the need for rapid massive investment --and we're talking about increased investment globally on the order of \$4 to 5 trillion a year, which is achievable but it's an enormous sum--any solution must include a major role for markets. Because markets are the most powerful instrument we've ever created, and their energy and dynamism can be harnessed and directed to serve great purpose. Directed to serve great purpose being the key words, because the market is also indifferent to human suffering and can be blind to our greatest needs. And that's why those if they're in government who worship the market tend ultimately to deliver policies that hurt people and those who default purely to laissez-faire leave us unprepared for the future.

Put simply, I could sum up the last 10 minutes of my talk by saying markets don't have values, people do. And it's our responsibility to devise a way to close the gap between what we value as a society and what the market price is. The Nobel economist Elinor Ostrom has documented how communities can come together to help manage a scarce resource through cooperation and prudent regulation.

And now I'm shifting; starting at the global level this is what UN climate change summits, or the COPs, seek to accomplish. They bring together countries, communities, and companies, to develop a consensus for sustainability, and then look increasingly to put the dynamism of the market in, so that value is in service of values.

So, I said at the outset that climate change is a global problem that requires many local solutions. And I want to draw that out just for a second because Danny Roderick, who is a professor at Harvard, has drawn out the fundamental tension that exists. In his example he called it the impossible trinity of globalization. Where a deep mistrust of globalization arises from the conflicts between economic integration, democracy and sovereignty. In other words, he's saying you can't have all three because you need common rules and that seeds sovereignty and if you don't have those common rules it's hard to have the integration. So, to maintain legitimacy, the process of agreeing on any common rules in globalization must be rooted in democratic accountability. And this is something I have some experience with.

Following the financial crisis and through something called the Financial Stability Board, if you followed it, coming up with global agreed standards through a consensus process that most countries felt enough ownership in order to go back and implement. We need that combination of a shared objective, a formal authority, informal iterative process, and transparency, to create the virtuous circle of climate action. And this is a dynamic that has to operate at all levels, through the global, the national level of governments, and the

financial. And it didn't start out that way. It started out with binding agreements beginning with the Rio Summit in 1992. And for over two decades, the effort was to pursue binding agreements that would commit countries to act and impose penalties on those who didn't. The Kyoto Protocols, signed in 1997, found 37 industrialized nations to specific emission reduction targets, and failures to meet those targets would bring penalties of further reduction targets and suspension from various provisions. So, it was a textbook solution and it was an utter failure.

It fell apart part because the U.S. failed to ratify the treaty, also because Canada, unable to meet our commitments, dropped out in 2011. Countries proved reluctant to pay large sums of taxpayers' money to pay for more efficient reductions in foreign countries. And attempts to revive it at the COP 15 Summit in Copenhagen failed. So, in effect, global governance needed a new approach and that approach is found with Paris. I must flag here that the first thing Paris does is get a clear consensus on purpose on the mission. Which is less than two degrees with pursuing efforts to quote "pursuing efforts to limit temperature increases to one and a half degrees above pre-industrial..." And the genius of that agreement is how it balances this clear numeric goal, with national sovereignty, over the policies in order to achieve it and includes some mechanisms to, through peer pressure, raise ambition over time.

To simplify, what it asks countries to do is their best efforts, they're so-called nationally contributed determined contributions, and then add those up to see how the world is doing. And through a regular stock take mechanism it encourages them to do more. And of course the role of civil society, fellow governments, is essential to this to raise ambition alongside. Now the transparency over country places and the NDCs is essential to this permit regular assessments. As I said, what Paris also did for the first time is it started to broaden the parties that were involved, for the first time bringing in state and local governments, and critically, some of the private sector, a more limited amount of the private sector. But one of the most significant acts it did was to call to make financing flows consistent with the one-and-a-half-degree pathway and it acknowledged that the need to transform all the finances, so that public and private money is aligned with the Paris goal.

And one initiative that was launched there was the Task Force for Climate-Related Financial Disclosures. I'll speak about that bit in a moment-- and I see my colleague Brian Lawson here in the audience who was instrumental in helping to implement that in other sustainability accounting. From that early stage to bring it into the mainstream to give us a chance, and that is not an overstatement.

So, to simplify, that diagram up there on the screen is at the global level the governance of climate is clear objective (of) limit warming less than two degrees, one-and-a-half. National sovereignty in setting the policies of Canada and other countries. Regular assessment to see how everyone's doing. And then this iterative process to say do better and of course we will need to do better and I'll get to that. What happens in Glasgow is a reinforcement of the core objective: much less talk of less than two degrees, all the talk is one-and-a-half degrees. And part of that is the science and the lived experience which is it turns out that it's parabolic in terms of the climate impacts of each point. So, in other words, we're running out of room, but we've realized that it's more important that we do more. Secondly, what's happened with Glasgow is this, that we get virtually universal coverage of net zero commitments 90 per cent of global emissions agreed over the course of three years in the run up to Glasgow, and then a spread through companies and financial sector. And with respect to the financial sector, something called the Glasgow Financial Alliance for Net Zero, which is 675 major financial institutions, whose total balance sheets are bigger than Global GDP \$150 trillion of balance sheet, commit to begin to manage those in line with one-and-a-half-degrees as well. What happens in Glasgow is a series of side deals on methane, on avoiding deforestation, phasing out coal. So not everybody agrees to that, most of these agreements you're trying to get 192 countries, and these side deals are getting 30 countries or 40 countries, significant and it's something to build on. And what happens in Dubai a few years later just last December is huge take up of some of these side deals on powering past coal so more come in. And on methane which was niche, but through agreements in the oil and gas industry, not everybody, but 40 per cent of global production agrees to Net Zero methane. As well, agreements to triple renewable capacity by 2030.

So, the focus in Dubai, and the key things about Dubai, it's all about the near-term, it's all about measurable things by 2030 as opposed to by 2050. In addition, bringing together the hard to abate sector, so-called sectors, from aluminum to steel and shipping, with specific targets. The punchline, if you add up all of those agreements in Dubai, and people implement what they say they're going to do, it's a third of the emissions gap between now and 2030. And that is a huge jump. And we're going to know very quickly, and that feedback loop of peer pressure is going to be there and the quite legitimate feedback loop. Forty per cent of the oil and gas industry has agreed to do this so what about the other 60 per cent, why haven't you agreed to do it. And that gap could close even greater. The final thing that Dubai does, and I want to touch on is to address a fundamental challenge in addressing climate change which of course is a global issue, and two thirds of emissions now are coming from the emerging and developing world, and they're short of capital.

And these numbers are very large, it's at least a trillion dollars extra of capital that's going to be required. So, we need a new system and we need a better combination of the power of the so-called multilateral development banks like the world banks, and loss bearing capital underneath. And in Dubai, the host put together a facility called Altera, the name is not as important as the price tag, which is \$30 billion, which has the potential to raise \$250 billion in near term to help address this issue so if you think about it it's almost a quarter of that gap that's there in one deal.

Okay, so what about private action and moving from the global down to the local level. So not surprisingly re the shared mission you know Canada has a 1.5 degree in legislation, so does the UK and so do others. And then that's the math on the gap which I forgot about. And I wanted to run through a few principles around how to make this work within countries, talk a bit about the financial sector, and then I'll take questions. And what I put up there on the screen is really five principles, at least from my perspective, of how to think about we how to unlock the market potential in country to make a difference here.

The first thing is recognizing that this is a whole economy transition. So, we need to get capital particularly to those industries that have heavy emissions. We can't just shut them down. Or if we're going to shut them down, we have to shut them down in an orderly way because there are people who work there, there are communities who rely on them, they're part of the economy and the feedback loop comes there. But we need to be transparent about it. Secondly, particularly in the energy sector, you need to ramp up the solution before you shut things down.

We do a lot of work in Southeast Asia where there's a need to shutdown coal. Not one of those coal plants will be shut down unless the wind and solar plant is built first. It's not the toughest thing to figure out but it has to be there and there has to be bridge financing that.

And the third point I thought I'd put up on the screen and bears focusing on, is that we have scarce government resources. We cannot subsidize our way to net zero. And this is an analysis from the IMF which is just looking at the punchline here is 40 to 50 per cent of GDP is the additional cost if all of the weight of the adjustment were on subsidies as opposed to a carbon price or regulation or some combination. So, you can do some but you can't do it all. Because remember, that's happening in a time where there's greater demand on health care, spending, on education, on defense, on policing. So we need to use those precious in my judgment fiscal resources to support households who need it the most during the transition, things like targeted support for energy transition in homes, retraining for jobs, we should match that spending discipline with clear regulation on a forward basis to bring forward adjustment, and we should focus on carbon value for money so if we're

spending it we're subsidizing the industry. Where do we get the biggest bang for the buck in terms of reduction? And my last point is to really underscore the role the financial sector can play in all of this which is because finance looks forward to see if we have credible and predictable climate policies; if the argument is about not the objective but what policies are in place; if the standard is if you're going to take something out, like the carbon tax for example, if you're going to take that out, transparently and clearly put something in place that's better.

That's going to have a better outcome because investment is happening, people are moving forward in a way that's consistent with the objectives of the policies that are there. And work I did with Janet Yellen before she got a better job, was to draw out this point of how credible policy, working with a financial sector that has the information it needs to tell who's doing well, who isn't, who's trying, who's not, pulls forward adjustment and smooths adjustment, and in fact just like in monetary policy if they know you're going to do what you need to do you don't have to do as much. That's a secret. I can say that now that I'm not a central banker. I'm going to say that if you have credibility, same thing with the carbon pricing. If you anticipate if you know where it's going companies reduce their emissions today in order to be out in front tomorrow. And that's in part what we're seeing with the inflation reduction act, we're seeing with things like moratoria you know 2035 on internal combustion engines and others. So, the last words I was just going to say just before I conclude is on the financial sector (and I think I have this on a previous slide) oh there it is. Yes. And you know the punchline here is the Industrial Revolution was accompanied necessarily by a fundamental change to the financial system centered in the UK. It's why the central banks exist. We moved from a bank that just had a dollar here and could lend a dollar out there, to banks that create their own money that's what banks do so-called fractional reserve banking, a new international financial system. We need something of a similar order of magnitude and it's underway. And it's oriented around information tools and markets, so that financial decisions take climate change into account. Now sometimes it's irrelevant and sometimes it's decisive, but they take climate change into account. They take into account the trajectory of carbon.

It's built on that financial disclosure, which was launched in Paris, TCFD, which is the acronym, but is now becoming mandatory. It relies on transition plans and getting capital to where the emissions are not just green but shades of green if you will, in order to get emissions down. It relies on focusing on the emission reduction that comes. So, in other words, on one level it's quite easy from a climate perspective or from an appearance perspective to invest or lend to a software company. (It's got a low carbon footprint).

Therefore, if you look at my portfolio there's not much carbon in the portfolio. The return to grey, there's my soundtrack, is coming down and is relatively modest in comparison to going to the steel company or the chemical company that has a plan and can do something to get those emissions down. And increasingly what we'll see I think is judgments on financial return but also expected emission reduction. Because the left does much more for the planet than the right. The right just looks better if you don't look behind it. I'm not saying there's anything wrong with lending or investing in software companies, to be clear. But from a planetary perspective you need that.

So just a quick stock take of where we stand so I don't want to be too downbeat: in Paris the world was headed to 3.6 degrees on various estimates and what countries said they were going to do was around 2.7 degrees and you see the evolution of that through to Dubai where policies that countries have adopted is at 2.4 degrees. So, there's a huge move in less than a decade, not enough obviously, and there's a gap between commitments and actions still there. And the other glass half-empty element of course is the carbon budget is being rapidly adjusted. I apologize as this slide is a bit busy but the punchline here is about the two-thirds likelihood of breaching the carbon budget for one-and-a-half degrees by the end of this decade and already we have more than three-and-a-half billion people living in areas highly susceptible to climate change. And of course, we know some tipping points in feedback loops. Those include Canadian forest fires in recent years. You can guess the most recent one. So more positively what we are seeing is an investment boom in this dynamic feedback loop of looking forward on how you get emissions down. And that's helping to drive growth. That's the sense. The key thing in this chart is the orange line which is the average investment in I'll call it oil and gas pipeline infrastructure.

Important for obviously our economy but it's averaged just a little less than a trillion dollars a year. If we went back to Paris it was about half as much in clean technologies. Now it's almost twice as much and the momentum is always all there and if you know if you focus on finance and investment, it's where things are going not where things are. So, the scale is starting to get to a level or trajectory that is consistent with getting on top of this. It's responding to these policies, these objectives as to what society wants across various technologies, across manufacturing, and crucially, and I started with value and philosophy of value, what you see is that it's starting to show up in value.

So, companies that are improving their carbon footprint are getting higher valuations, and if you're just absolute relative to your peers so you're a chemical company that has a lower carbon footprint than your peers your value the lines on the far right have become much higher than they were 10 years ago. So, this loop is working, and one would expect it to continue.

And then the last point is the flip side of this which is a little more awkward, depending on where you are, which is we will be using, this isn't awkward this is a point of fact, we will be using oil and gas for a period of time on a one-and-a-half-degree horizon or not even if we're on that absolutely. But the expectations of how much, this is gas, as an example, that the world's going to use have changed quite dramatically. And this is just over the course of the last five years. These are the IEA forecasts. They won't be precisely right, but they're directionally correct. They used to expect that we would hit peak gas globally in terms of demand and consumption in the late 2040s. Now they think by the end of this decade.

That is a huge move. And it's a move that's consistent. It's mirrored in coal; it's mirrored in oil. It is consistent with a big, big shift in the energy sector. And so last words (too late for last words) but I'm going to force them in: So we're in a position where being low carbon is becoming a driver of value, a driver of competitiveness, jobs and growth, and I would even argue, and here I'm going to quote Boris Johnson-- I can't believe I'm quoting Boris Johnson--but he said rightly in a meeting in advance of COP to a group of 10 or so leaders that in the future great powers will be green powers. He's right.

Thinking about Canada, we can be a green power and we should be a great power. You know we can be the lynchpin of these sustainable value chains that are being created in virtually every industry. Because we've got the prospect of a clean grid because we have a great manufacturing base, a great workforce, because we have the best trade deals linking us into Europe, the U.S., Mexico, Asia. We have a great track record of innovation. We've been an energy superpower. We can be a clean energy superpower with solutions from hydrogen to nuclear, including SMRs. And we can be the go-to partner for critical metals and minerals.

So just to bring it back together, look, it is a huge challenge, but as we move from philosophy to practice, as we move from global to local, as we're building, and we're not there yet obviously, but as we're building this combination of policy and finance and business and crucially, public pressure, we're creating the conditions for the enormous investment that's needed. So, it's, you know, time to build a simple message that is not a top-down process, it's not trickle down, it's inclusive, it's broad, it's everything everywhere all at once, because it touches all parts of the economy.

And to go back to purpose, we need to build for Canadians. It's the same in the U.S. and the UK. And your contributions, hopefully you have a sense, I mean you probably do anyways, but a sense of the breadth of contribution the students of this great university can provide, which is everything from research in public policy, research and engineering, research and AI, practical applications of that policy development advocacy.

Advocacy is crucial, because it helps drive, reinforces this consensus. Those of you who go into politics again it's crucial because that's how you translate the consensus into action. Innovation in business, business and finance. So, my only request would be to remember the purpose of all this is a more sustainable livable planet for a stronger economy, a fairer society, for children and grandchildren, even your children and grandchildren, definitely my children and grandchildren. Let's build together and thank you very much.