Sylvie: You're listening to a Toronto Centre podcast. Welcome. The goal of TC podcasts is to spread the knowledge and accumulated experience of global leaders, experts, and world-renowned specialists in financial supervision and regulation. In each episode, we'll delve into some of today's most pressing issues as it relates to financial supervision and regulation, the financial crisis, climate change, financial inclusion, FinTech, and much more. Enjoy this episode.

Babak: Hello everyone. I am Babak Abbaszadeh the CEO of Toronto Centre. Welcome to our discussion on supervisory challenges of climate change risks to the financial system, which is part of our building back better the road to cup 26. Since our inception in 1998, Toronto Centre has trained more than 15,000 central bankers and supervisors in 190 jurisdictions around the world. Climate change, sorry. And in 2016, we began incorporating climate change to financial systems into our programming. The Bank of Canada considers climate change a threat to financial stability alongside imbalances in the housing market, in depthness and cyber-attack risks. [inaudible 00:01:29] has launched a consultation on climate-related risks in the financial sector. Together these organizations are developing climate change scenarios and stress tests that are critical to understanding better the resilience of Canada's financial system to a transition to a low carbon economy.

Canada's action is not taking part in a vacuum. It's part of an international conversation in line with the undertakings of the Network for Greening the Financial System. This proactive crisis preparedness is essential for all countries to mitigate against the impact of climate shocks in the aftermath of the devastation of COVID-19 on economies and people's livelihoods. Financial institutions could sustain large losses or even fail as a result of climate-related risks. These risks include physical risks, transition risks, and reputational and litigation risks.

There are two fundamental questions for supervisors; do financial institutions have sufficiently strong governance and controls to manage these risks, and do these firms have adequate financial resources to cope should these risks crystallize? Quantifying the risks and disclosure are essential considerations in the interplay between climate change and financial institutions and their supervisors in the global conversation about net-zero transition. To help us navigate this landscape, it is my honor to welcome our distinguished speakers; Nathalie Aufauvre is the Director General sorry, Director General Financial Stability and Operations and Chair of Climate Change Centre Banque de France.

Kevin Stiroh is the Executive Vice President of the Federal Reserve Bank of New York. Kevin co-leads the Basel Committee's Task Force on Climate-related Financial Risks. You have received their bio's. Bonjour Nathalie. Hello, Kevin. Toronto Centre's mission is generously supported by global affairs Canada, Swedish Cedar, the IMF, Jersey Overseas Aid, Comic Relief, and the United States Agency for International Development. We will have three rounds, I will pose three questions alternating between each speaker and then I will take questions from the audience. Please use the Q&A tab to submit your brief questions again, brief questions, not speeches. Thank you.

Let's begin. Nathalie, let me start with you. Banque de France serves as the secretariat of the Network for Greening the Financial System (NGFS). You have been involved in the development of this pivotal international network since day one. Could you please tell us why NGFS was created and, more particularly, why should central bankers and supervisors worry about climate change? Thank you.

Nathalie: Thank you very much, Babak, for this invitation. It's a real pleasure to have this conversation with you. So, you asked two questions first, why NGFS was created. It's true that it's a real success story. Actually, back in 2017, following the change of stance by the US on climate change, it had actually become nearly impossible to make progress on the subject in the official forum, but there was still a strong desire to work for many central banks and supervisors. In the wake of the Paris Agreement, there was momentum for the financial sector to be part of the effort, and we thought we could try to continue the work informally. At the first Paris One Planet Summit in December 2017, the Banque de France, together with seven other central banks and supervisors, launched an informal network of willing institutions. And really, we did not know what would be our future at that moment.

Let me highlight one of the key success factors for the NGFS. Our network was centred on central banks and supervisors. This means that the NGFS brought together very homogeneous members and with similar mandates and long experience of working together under a lot of trust. And this was really very helpful. Another key success factor was that we based our work on our mandate, preserving price stability and ensuring financial stability. And because it is clearly in our mandate, it is not nice to have it is a must-have. And this explains the success of the NGFS. And now the NGFS has grown to more than 91 members, including the Fed and the coalition of the willing philosophy of the NGFS has definitely had a lot to increase awareness among our community and inspire its members to take action.

So, your second question is why central bankers and supervisors should worry about climate change. The first work conducted in the NGFS was really to recognize that climate change is a source of financial risks, and it was really a very important step for us. And as such, it is within central banks' and supervisors' mandate to assess this risk and put in place the appropriate mitigation tools. So, it was really the foundation of our work, and that's why in its first comprehensive report published in 2019, the NGFS called for collective action and issued a set of recommendations. Taken together, they reflect best practices identified by NGFS members to facilitate the role of the financial sector in achieving the objective of the Paris agreement. So, this was the founding of our foundation of our work.

Four of these recommendations are aimed at central banks and supervisors. What we recommend is first to integrate climate-related risk into financial stability monitoring and micro supervision. Second, integrate sustainability factors into own portfolio management. Third [inaudible 00:08:21] and fourth finally build awareness and intellectual capacity as you do at the Toronto Centre it's very important. These recommendations are non-mandatory, but they provide a guideline for central banks and the supervisor's action.

So, the NGFS published a number of reports that are really addressing its recommendations. It's a very practical guides to provide central banks and supervisors with really hands-on tools. And I would like to mention in particular the NGFS guide for supervisors and our climate scenarios, which lay some groundwork for monitoring the framework of climate-related risks in the financial system. And just a final word. We are very careful about capacity building and helping less advanced jurisdictions, adapting their own framework to cope with climate-related risks, and that's why we try to share the best practices. And we organize frequent outreaches to first acknowledge sharing. And we think that it is the best way to improve this knowledge and the best practices within our community. I stop there.

Babak: Nathalie, that was excellent. Sorry that we have to contain you. I mean, we could have a whole hour on this and be a little bit better than the CNN so, we give you more than 20 seconds to describe. Just one follow-up question it's an impressive body with 91 members, as you said, and it includes both developed countries and developing countries. Am I correct?

Nathalie: Absolutely. It's very important for us to be open. The only thing which is important is to be willing to work on this. So, we ask our members to join some workstreams. It is we want to share capacity, we want to share best practices, but we want them also to be really involved in our work and to contribute through one or two or three they won't offer our workstreams.

Babak: Great. Thank you. Kevin, turning to you, you're a good friend of Toronto Centre. It's great to see you again, Kevin. We just talked about NGFS, and as you know, the UN and many national governments have declared climate action a key priority. The G7 just backed making climate-related disclosure and the financial sector mandatory, yet some standard setters have not been visible in this space to provide needed advice and guidance to supervisors. Therefore, in my opinion, your role as the co-lead of the Basel Committee's Task Force on Climate-related Financial Risks or TFCR is a really welcome development. What are the current policy priorities and objectives of Basel's TFCR? Thank you.

Kevin: Great, thanks, and it's a pleasure to be here today. I really appreciate the opportunity to participate. As you all know, the financial risks of climate change are a topic of considerable and growing importance within the financial sector. We see large firms building their capacity and core areas of risk management, developing new tools such as scenario analysis and enhancing their own disclosures. At the same time, the supervisory community around the world is assessing oversight frameworks in developing internal models and furthering our capacity to assess the risks. So, I'll talk a little bit about the Basel Committee's work through the Task Force on Climate-related Financial Risks. And I'll begin with a bit of background.

So, the Basel Committee's mandate is to strengthen the regulation, supervision, and practices of banks worldwide with the purpose of enhancing financial stability. And last year, the Basel Committee noted that climate change may bring both physical and transition risks that could potentially impact both the safety and soundness of individual institutions and have broader financial stability implications.

So, in response, the committee established the Task Force on Climate-related Financial Risks in February of last year to begin work. And I'm acting as co-chair of this, as you mentioned, along with Frank Alderson of the ECB and also chair of the Network for Greening the Financial System. And our work has proceeded in three stages. First, we did a stock take of the activities the existing initiatives across members, and we published that last year. And then, we turned to the analytical work that underpinned the Basel assessments. So, we published two analytical reports in April of this year, one on transmission channels and one on measurement methodologies. And both of these are available on the BIS website. And together, they really serve as the foundation, the foundational documents for the Basel Committee's assessment of the financial risks of climate change.

In both cases, these reports leverage extensive reviews of the existing literature. This includes publications by scientists and academic central bank supervisory authorities and a review of discussions that we had with large internationally active banks. And the goal is that this work will both leverage and complement the work that's already been done in other international areas such as the NGFS or the financial stability board. Building off of that analytical base, the next step is that we'll begin to investigate the extent to which climate-related financial risks could be addressed within the existing Basel framework, identify whether there are any potential gaps in the framework and then consider measures to fill those gaps. But to be very clear, at this point, the TFCR doesn't have a view on whether there are gaps in the framework or not. We have to do the analysis and see where it takes us.

A few context points that I think are helpful to frame the entire discussion. One, the Basel Committee is focused on the impact of climate change on the risks that banks face, not on using the financial system to promote greening of the economy or the financial system. And that's the mandate of the Basel Committee. It's also the mandate of many of its members. So, it's very much a risk management perspective.

We are also within our Task Force focused on the impact of climate change, not broader environmental issues related to things like biodiversity or pollution. Again, that's at the direction of the committee. And then finally, at the inception, when the TFCR was created, we were given a set of instructions to follow a gradual and sequential approach. So that means to build an analytical foundation first and then discuss the potential policy implications. And in my view, that sequencing is really critical. First, build a positive perspective, which is the strong analytical foundation to understand what the risks are. And that's critical for the Basel Committee's value added to the discussions that are happening within the industry and the official sector. And only then move to a more normative perspective to think about an assessment of the Basel framework, which will depend ultimately on the initial analysis or its credibility and its legitimacy. So, I can come back to what we found within those analytical reports and some of the policy work that might happen going forward, but I'll turn it back to you.

Babak: Thank you very much, Kevin. I was just still waiting to unmute. So, thanks for leading this comprehensive effort. Any good guidance from the Basel Committee definitely would be very helpful, especially to us who are teaching climate-related risks courses to various supervisors. And just to let you and the audience know, we are really very happy to have

a large number of people from frankly every continent. We have people from Afghanistan all the way to Zimbabwe and Europe, South America, so welcome and hello to everybody. Nathalie, the French Prudential Supervision and Resolution Authority, recently ran a climate stress test. What are the early lessons from this exercise? What feedback have you received from the industry? Thank you.

Nathalie: Yes, we thought that we should walk the talk as soon as possible, and so when the NGFS released last year its first climate change scenarios, we decided to use them and to launch our first pilot climate stress test exercise and the results were published in last May. Its goals were two fronts. First, better assess the exposure of French banks and insurers to climate risks. And second, assist the industry to better factoring climate and risks. Improve models and methodologies. And also identify the targets.

It was a very ambitious exercise and the first of its kind actually. It was ambitious because of the time horizon over which the risks were assessed until 2050, which was very unusual for supervisors because of the methodology used. It was so based on a scenario analysis relying on NGFS scenarios also because of its innovative hypothesis. For example, it was possible to have a dynamic balance sheet for commercial banks, because it was a bit difficult to say that their balance sheet won't to be change up to 2050.

So commercial banks and insurers were able to adjust their balance sheet to climate changes and the events that were included in the scenarios. And it was also ambitious because of its coverage of both physical and transition risks for more than $56. So you see a huge existence. This was a voluntary exercise with a large success actually because a large number of banks and insurance companies participated. And of course, it was a pilot exercise, so it means that it will not by itself transact into a supervisory action because we are at the very beginning. So, what did we learn from this? First, it has improved the understanding of climate-related risks. Within financial institutions, we moved from a kind of theoretical approach to something which was much more operational. So, it raises the awareness of the impact on the risks.

Second, this exercise provided the first measurement of risks and vulnerabilities for French financial institutions. It revealed overall moderate exposure for French banks and insurers to climate risks by 2050. And this is an important element because climate change risks are really rising very fast beyond 2050. So, it does not mean that because it is moderating 2050 that it will always be moderate. And also, what we saw is that we can have significant impacts on some sectors as regards to transition risks or in some French areas as regard physical risks. For example, the insurance costs for physical risks could be multiplied by five to six in some regions. So very significant costs in some areas.

However, these conclusions are subject to loss and certainty concerned in both the speed and the impact of climate change. So, we have to accept this uncertainty within the exercise, and we also met, of course, methodological difficulties. And also, we have to take into account that the outcome really depends on the assumptions. So, we have to remain very humble.

So, it's my last point. It shows that considerable efforts must be made to integrate climate risk into financial risk assessment processes. So for us, it is just a starting point for further work to improve the methodology of climate stress test. And it is very useful to have this kind of cool building with the banks and insurers in order to make it a more operational. And what we think also it's my conclusion of this is that it's really crucial that a growing number of supervisors carry out climate scenario analysis. Because it will contribute to developing a common base of knowledge and climate risk assessments in our community. I stop there.

Babak: Thank you, Nathalie. That was great. And I think you're underscoring the point that there are consequences to inaction. Although there's uncertainty in your scenario testing and everything else that you've talked about let's just for a moment reflect on the pandemic. I was talking to Kevin before the program started. I've heard people make an analogy between pandemic and climate change in a sense that the climate change is a benefit slow-moving pandemic.

The difference is and there's lots of tests, we didn't pay attention globally to those tests very well. The key difference is when climate change comes in full force, we will not be able to self-isolate and there is no vaccine. So, the better prepared we are, the better. Kevin turning back to you last April, your Task Force published two analytical reports, climate-related risks drivers and their transmission channels and climate-related financial risks measurements and methodology's. And Nathalie talked a little bit about methodologies. What are the main conclusions and results from these analytical papers and the challenges identified? Thank you.

Kevin: Yeah. I'll talk about each of the two reports. So, the first one in transmission channels tries to explore how climate risk drivers can give rise to financial risks at financial institutions through a range of different transmission channels. And we really identified two broad mechanisms. Macroeconomic and microeconomic transmission channels that follow through the now-standard lexicon of physical and transition risks. Now, one key conclusion from this work is that these climate risk drivers can be mapped into traditional and very familiar financial risk categories like credit risk, market risk, liquidity risk, and operational risk that are used currently by financial institutions and are reflected in the Basel framework. So that's an important point because it suggests that the existing risk management frameworks are fit for purpose. And we need to think about how we can enhance them to include these additional risk drivers.

So that conceptual point is relatively clear. But the report also discusses the significant challenges that differentiate climate risk drivers in practice. The report highlights, for example, how the impacts of physical and transition risks can vary enormously across economies, financial markets, and have very different impacts on banks, depending on geographies, the level of economic or financial system development and the individual business models that banks face.

And I think this heterogeneity is one example of the challenges that we all face in trying to understand the ultimate impact of climate change on bank risk profiles. And Nathalie mentioned this in some of their own work where they showed the range of outcomes that you mentioned across regions. The report also highlighted the complexity of this

undertaking. How risks can be both amplified by interactions among risk drivers and feedback loops within the financial sector, but they can also be tempered by risk-mitigating factors things like insurance or securitization. But then that's further complicated by the indigenous response of market participants as both amplifiers and mitigants may change over the forecast horizon.

And then finally, the first report concludes does an assessment and the amount of research that's been done as banks try to explore how climate risks feed into financial risks. And the existing analysis tends to focus on very specific climate risk drivers that impact narrowly defined sectors of the economies, individual markets or these broader top-down assessments. So as a result, further work on the impact of climate risk drivers and banks exposures across various specific risk types would be useful.

And the second reporter on measurement methodologies. This report provides an overview of the conceptual issues regarding the methodologies to measure climate-related financial risks and surveys the main types of approaches being used by both banks and supervisors. I think one really clear observation is that climate-related financial risk assessment requires forward-looking measurement methodologies that are linked to sufficiently granular data. And that approach is somewhat different than what might have been used in the past.

And these are challenges that show how difficult it will be to incorporate climate-related financial risks into the existing framework. For example, more detailed data on the physical location of assets of borrowers is one topic that we hear a lot from the financial industry and forward-looking models that might have different relationships or correlations than we've seen in historical data reflect another challenge.

Based on our outreach to the industry, the report finds that bank's efforts to assess climate-related financial risks are really focused on mapping near term transition risks to exposures and work it at an earlier stage when thinking about some of the physical risks. On the physical risk side so far credit risk measurement has attracted the most effort with a lesser focus on market risk and a very limited focus on liquidity or operational risk. And finally, the report provides a high double overview of the strengths and weaknesses of the main types of approaches that firms are using in the industry now. Thanks.

Babak: Thank you, Kevin. This is certainly very thorough work. And just as you were talking, I wanted to mention to you, you probably know our board member Bill Coen who's the former secretary-general of Basel Committee and he's on the webinar. So, hi Bill to you and thanks for your help in helping us with these events. Nathalie, back to you. Both you and Kevin are very busy people as if Nathalie you didn't have enough to do as the Director General for Financial Stability as the chief spear header for NGFS. You also chair the climate change Centre at Banque de France. So, I'm wondering what else is that you don't do? But anyway, in that capacity, what are your objectives and chats at the national level? Thank you.

Nathalie: Thank you. I think really this climate change Centre is a platform as you say to steer the work at the Banque de France and the ACPR our French super region authority to steer

all the work. As I said, central banks have a role to play according to us and should lead by example. When saying that, I don't say that central bankers and supervisors can do everything. It's very important to remind that we can't be the only game in town and nothing, for example, will replace an appropriate carbon price. So government have to design their climate change policies and have to have a long-term policy for all players to adjust to this policy. But once that's said, I really think that we should lead by example and apply to ourselves all the recommendations we provide to others.

And also, as I also mentioned, it's very important to act according to our mandate. And for us, we see that we can do a lot within our mandate, and our actions are based on four main pillars. The first one is acting to preserve financial stability. We have already covered this topic with for example this pilot climate stress test conducted by the ACPR. The second pillar is about responsible investments. You know that central banks manage large portfolios and we think that we could apply responsible investment also as central banks. Since 2018, the Banque de France has been implementing a responsible investment approach for its own investments, and we have published a dedicated report on this. And I think it's very interesting because it helps us to understand also the difficulties that can have all their investors.

The third pillar is integrating climate issues into monetary policy. This is a very new area, but we also think that climate change matters for our price stability mandate, and we think that central banks should recalibrate their monetary policy tools to take into account climate-related risks because the effects of climate change will have an impact on both inflation and growth. So, we are very much contributing to the collective debates on this particularly in the context of the ECB's strategy review.

The fourth pillar is developing research. Research activity is crucial in order to better understand the financial issues related to the effect of climate change, and we need to include this in our modeling and to of course have a longer-term horizon in our modeling. So we already think that we need to work with all the universities and to develop this research activity in order to better factoring climate risk change in our financial modeling.

And I could even add an additional pillar we are now considering whether we could include ESG criteria in our internal corporate rating tool. And if it is the case, how we should do that. So you see that we have a number of activities where we could and we should develop our action in regard of the climate change risks and that's why the climate change Centre has been set up to steer and monitor all our climate-related initiatives in order to ensure that they are well-coordinated and also to further strengthen our ability to act. It is that this financial sector in the broader sense. And of course, the Centre will also ensure that the bonds initiatives are consistent with the priorities of the NGFS for which the Banque de France has provided the secretariat since its creation in December 2017 and we are of course very committed in its future work. So, lots of good reasons for this climate change Centre.

Babak: Great. That's just fantastic and music to my ears. I used to work for institutional investors back in 2005. They were actually incorporating ESG into their work. I mean,

these are big pension funds with trillions of dollars and the financial sector needs to catch up, and that's at least one of the things that you're doing that's important.

You also covered a couple of things before I go to Kevin. One is government action. So, we see a lot of governments around the world that are making a lot of pronouncements for the opportunities, announcements, doing things, but they're still bucking those hard decisions, carbon pricing and everything else. So, supervisors are sort of left on their own to sort out some of these issues that you and Kevin are trying to work through in response to government changes.

So, it's really important for supervisors to be equipped and to be resilient because if a crisis happens, they're the ones who are going to get blamed. They don't ever write a good press release, but they're going to get blamed. The other thing is that many of the things you're talking about here also have a lot of relevance to developing countries in terms of what you're seeing. So, the coverage could be that way. Kevin, let me ask you the last question of the formal part, and I'll encourage people to start putting your questions in. I see some questions already, and the courageous anonymous has a couple of questions, but I'm going to go to the people who identify themselves first, so we have a couple of minutes to write those. Kevin, what is next for your Task Force TFCR and how are you thinking about policy implications?

Kevin: Right. So, as I mentioned since its inception the TFCR has been pursuing a gradual and sequential approach. First to stock take an analytical foundation, and now we're moving on to the potential policy implications. And that's where we are now beginning to do the work in terms of a more normative assessment around policy. And our goal again is to be consistent with the committee's mandate to pursue strengthening the regulation and supervision of banks worldwide and ensuring that banks are prepared to address the risks that climate change might bring.

Our current work program is comprehensive in the sense that we're approaching all three pillars of the Basel framework. Regulation, supervision and disclosure. And work is already underway on these three broad strands likely to proceed at different timelines. For example, the work on supervisory practices would likely be completed on an accelerated timeline compared to some of the other components. We understand though that much of the public discussion around the Basel Committee's work as focused on asking questions around regulation. And our approach is really to try to be as open-minded as we can be to consider the full spectrum of tools that could be available to the committee in particular forward-looking tools that could include things like supervisory guidance, scenario analysis, or disclosure that are all part of the possibilities that we're investigating.

And each of these could be a powerful tool to help financial institutions mitigate the financial risks of climate change. But to emphasize we don't have any views at this point, we're doing our analysis, we're doing our assessment of all three pillars we would then make recommendations back to the Basel Committee, who would ultimately decide on the path forward. So to just summarize our current focus is trying to do the most rigorous and thorough gap analysis that we can without any bias or any predetermined outcomes. We'll do the work and see where it takes us.

When we'll pursue this work with a goal of ensuring a common minimum baseline across member jurisdictions. Part of that will be to identify what is most appropriate conceptually and not to limit ourselves based on the known limitations now in terms of data or analytical ability. We know the landscape is changing rapidly, and we don't want to be deterred by constraints that we face now but might not be as big of a constraint after further investment in the future. All of our work will be evidenced and risk-based and any deliverable will reflect the perspectives of the broad members of the committee. So thanks all for your attention. I look forward to the questions and comments.

Babak: Thank you, Kevin and your Task Force certainly has his finger on the pulse of the key issues. So, we look forward to those deliberations and decisions from the Basel Committee. So, I'm going to go through the questions here. The first question is from your colleague from Central Bank of Morocco Halim Jadi Head of the Macroprudential Department there. The question is, what is the rule of macroprudential policy? Could you give some examples of macro instruments to mitigate climate-related risks? Which of you would like to take that? I mean, it's a question for both, but we don't have time for two people to answer. Are there any volunteers, or should I assign one?

Nathalie: Maybe I can start.

Babak: Sure.

Nathalie: It's a difficult question because we started with the micro approach in terms of risk management, and Kevin could come back on this. So the macroprudential tools and the activation of macroprudential tools is a bit more difficult to assess at this stage. I think we have not really assessed this aspect; it will come. Because we are really seeing that climate change could have a macro impact. And that's why we work on macro-financial scenarios. In the regulatory rules and the capital requirements, you have some capital buffers that could be used, but I think we really need to work much more on that to be able to build on a macroprudential tool and the macroprudential policy.

Babak: Thank you. And Kevin, do you have any views on this?

Kevin: So, my work is focused on the microprudential side, but Nathalie did mention the question of scenario analysis as a tool. And I think that is a potential tool that could have value-added for both microprudential and macroprudential objectives as a way to better understand how risks might evolve across a range of plausible future scenarios. I do think it's important to distinguish these kinds of climate-related scenario analyses from our existing regulatory stress testing machines.

And this is something that we try to be very clear on in the Basel Committee's Task Force report on measuring methodologies to compare these and contrast these. Generally speaking, the way they're used now. Climate-related scenario analyses are longer-term in nature built more on developing a risk identification, help firms understand risks from a strategic perspective as opposed to the more traditional regulatory stress tests that are typically shorter-term in nature, and more linked to

assessments of capital adequacy or the capital planning process. And from that perspective, I think these are best viewed as complementary tools rather than substitutes. So we're trying to keep a careful distinction, and I think that's consistent with the way some of the other jurisdictions to have implemented these scenario analyses think about them.

Babak: Thank you. I have a couple of really good questions here. I'm going to turn to you, Nathalie. They're on ESG, so I'm just going to try to combine them. So, I guess there's a lot of work has been done on ESGs triple bottom line books have been written. The questionnaire references are seen in a book in 2006, but also at the end of the day assessing that information and what is being done to bring together the expertise to establish best practices and influence emerging data standards for ESG? And I guess I don't presume that this is what the questioners are asking, but it's something that I ask myself very much. It looks like today you can put a label of ESG on any exchange-traded fund or mutual fund, and people rush to buy it, and then they, later on, open it up, and you'd see some of the very same companies that are in it that there are elsewhere. So, when it comes to ESG and the work of your group, how do you deal with that, and how do you bring some of the best practices into this?

Nathalie: That's true that one key point with the ESG implementation is data and disclosure. So, this is a key point not only for us supervisors but also for central banks and for all the investor community. We need to have data, we need to have good quality data, we need to have comparable data, and this is the key point. So, in this field, we have tried to identify the important data and the data which are needed to assess the ESG performance of our portfolios.

We have worked on these items and these topics within the NGFS. So, we have produced a report on best practices regarding ESG investment. So, it's central banks can use it in order to build up their capacities, and it's a very pragmatic approach and a guidebook in order to start this work. As I mentioned, you need data, so in our case, we bought data from providers, and we compare them, and we need to build our own capacity. And we were supported by experts from consultant firms. We need it to really increase our capacities, and we were able to assess the alignment to Paris agreement of our portfolios to identify a past way to lower carbon-intensive portfolios, and we decided, of course, to exit from some industry in the particular coal industry by 2024. So, it's progressive work, and you need to build up your capacities to understand where you can improve your ESG performance, and it's true that it requires resources. You have to be humble, pragmatic and have a long-term strategy because you can't change everything in a very short period of time.

Babak: Thank you very much. Kevin, I'm going to turn to you on a practical question. How should regulators and banks' balance the desire to reduce banks' carbon footprint with the impact of doing so on individual clients, particularly borrowers? How do we manage this transition?

Kevin: I think that's an important question. One of the things that we are thinking about when we talk to the banks is the different types of pressures that large financial institutions face. And this has come out in some of the discussions that the Basel Committee Task

Force had with large internationally active banks. Who has a number of objectives in this space that goes back to the mandate question that we talked about earlier but from the private sector perspective?

So, on the one hand, banks might have corporate social responsibility goals where they think about how they want to contribute to sustainability goals, and many large banks have voluntarily made net zero commitments to align their portfolios to, for example, the Paris agreement. At the same time, banks are thinking about the opportunities to work with both new and existing clients to help finance the transition to a low carbon economy, and they're thinking about that from a risk management perspective. What are the new types of risks that physical and transition risks can bring onto their balance sheet or their income statement or to their business models?

So that's a very complex strategic decision that individual institutions need to make in terms of their own objectives in terms of their own risk appetite. From a supervisory perspective, we're beginning to think through what the risk management frameworks might look like, and colleagues and other jurisdictions have put out supervisory guidance on this already. The Basel Committee our Task Force, we haven't developed views yet on what an appropriate risk management framework might include, but that's the type of work we're going forward with.

Babak: Thank you very much. And I want to combine a couple of questions from Schwabmark and our friend Calvin. Hi Calvin. So, they're talking about the day-to-day activities of supervisors. So, in terms of day-to-day supervision, Nathalie, this is to you. What would you suggest as supervisors? How should they include climate risk in their risk-based framework works? Should an assessment of climate risk be a separate risk or assess the impact of climate change across set off all kinds of risks such as credit market operational compliance strategies? What is your recommendation for those who are just getting started?

Nathalie: Within the NGFS, we have worked on these and produce guides for supervisors. The idea is to for supervisors to release their expectations. Supervisors' expectations as regard climate change. It's the best way to start the work in order to inform all supervised institutions of the supervisors' expectations. And what we have seen here, at least in France, is that the issue of climate change, which was more or less within the ESG division or ESG chief officer, has moved to the risk department. And this is a very important move, a very important change because now being taken into consideration by risks departments in commercial banks or insurers. They have started to identify these risks, and they start the work to identify them, and when you have identified them of course, you start to mitigate them.

And the work starts with conversations and discussions between the supervisor and the banks and insurers. Because we are all on the learning curve. But the only fact that it is now within the risk management divisions and that this conversation has started is very prominent. It is very powerful, actually. Because it means that it is something which is taken into consideration in the risk management tools and that they have to adjust the risk management tools. It requires a lot of work because the time horizon is different. We have to adopt a forward-looking approach. So it requires a lot of technical work, but

since it has been now taken on board by risk management divisions, all this work of adjusting our management tools, risk management tools can start.

Babak: Thank you very much for that. That's true. Starts with a conversation. Because raising awareness is really step one for people to understand that they're dealing with material risks. This is not about protest movements. So, Kevin, there's a question here since you help steer through some kind of a methodology, stress testing questions. What are some of the challenges encountered in deriving at stress test methodologies relating to climate change risk?

Kevin: So, I think the two biggest challenges are around the complexity and the uncertainty. So let me talk a little bit about each and embedded in that is the overriding or consistent question about data availability. So, on complexity if we think about the chain of events that might go from emissions to climate change, to impact on the economy, to changes to risks on bank balance sheets. Each one of those steps is enormously complicated and complex, and hard to model. Each one of those steps is subject to considerable uncertainty about the timing of impacts, about the magnitude of impacts, about things like broader policies, technological innovation, consumer behaviour, all of which are very hard to model in a forward-looking fence.

So, what we heard from large institutions is that they're breaking this into pieces to try to understand specific linkages from risk drivers to certain exposures. For some depending on their business model or a balance sheet exposure, that might be focused on the changing structure of an economy as it transitions to a low carbon footprint. For others it might be a greater focus on geographic exposures, depending on the concentration say of their loan book. But all of those steps are complex require new data.

In some cases, historical models might be different or might be less useful as predictors. In a world where for example, the frequency or severity of extreme weather events is different, the distribution of potential losses is different, and that requires more forward-looking different models to understand those. How that all plays out is very challenging to predict. This is why scenario analysis could be a very powerful tool. They're not necessarily predictions about this will happen, but if this happens in your business model, is your strategy robust to this range of plausible outcomes? So I think that is really the important component of this scenario analysis work. To test that resilience across a wide range of plausible scenarios, where we don't know how it will work because of the uncertainty around technology, the science, policies that governments might choose to implement.

Babak: Thank you very much. Nathalie, the last question goes to you. It’s an interesting question; we're all kinds of technocrats sitting around working about and thinking about things, and sometimes we try to balance values against the facts. The question is, if coal could be made clean as in carbon capture, would your position change with NGFS position on carbon change?

Nathalie: It's difficult to say. What is behind this question is the issue of the transition. We also need to support the transition, not only the final goal of net-zero. Because the net-zero

will be in 2050, it is at least the commitment for a number of countries and the case for European countries. But we need to support transition and all aspects of transition. It can be the pathway to low carbon activities and also, of course, carbon storage. But I am tempted to say that about coal, which is the most carbon-intensive activity in the world. I am quite thankful that we could change our minds.

Babak: Okay. Thanks. Well, I mean, it's true in the sense that we all have companies in our countries; you have Exxon in the US elsewhere, where petroleum is really key. And then you can think about the coal equivalence, and you need everything for this transition, so it doesn't happen overnight. So it gives me great pleasure to thank both of you and thank you very much for lending us some of your time. I know you have a very busy day job portfolio wearing multiple hats.

We will take advantage of your views and perspectives in our future capacity-building programs. I would like to thank everyone who did provide questions, my apologies to the courageous anonymous, we didn't have a chance to get to yours, but we are going to keep all these questions as part of our work. And what the two of you underscored here really is that climate change is no longer an issue or a cause; it's actually a mainstream risk to the financial sector. So, thank you. Keep up your amazing work, and let's stay in touch, Namasté. Goodbye.

Kevin: Bye.

Nathalie: Bye-bye. Thank you very much.