



AI-powered climate action

ESG voices podcast series

Host

Hello, and welcome to another episode of ESG Voices. This podcast series addresses the opportunities and challenges within ESG through interviews with ESG specialists from KPMG and beyond.

Throughout this series, we will discuss a broad range of environmental, social, and governance issues, aiming to support governments, businesses, and communities in creating an equitable and prosperous future.

In today's episode, we dive into the dynamic intersection of artificial intelligence and climate goals. Joining us today, we have Mike Hayes, Climate Change and Decarbonization Leader, KPMG International and Anish De, Global Head of Energy, Natural Resources and Chemicals KPMG International who will discuss how leaders can harness AI to drive measurable progress toward net-zero, balance innovation with responsibility, and align with long-term climate strategies.

This is a topic with much to discuss, so let's jump right in.

Mike How can AI technologies be leveraged to accelerate corporate decarbonization strategies?

Mike Hayes

I lead KPMG's global climate and decarbonization business and the rapid acceleration of AI related solutions is, I believe, going to have a transformative impact on the climate and decarbonization agenda. And I am of the view that there should be no project that we should undertake with our clients that should not in some way incorporate some element of AI thinking and to some extent, I think it's going to be one of the most important levers in trying to figure out solutions. I'm going to give you just 1 or 2 examples if I could try to bring this to light. But before I do that, I want to emphasize is that when we talk about this particular topic about the benefits of AI for the climate agenda, it's normally framed in the context of emissions reductions. And that is very true when unexplained us in a bit more detail in a second. But it's not just about emissions reductions. AI is going to have a profound impact on some of the adjacent topics. Adaptation and nature biodiversity being two very good examples where the ability to analyze, to extract

information, to do things that are clever way is actually already starting to have a profound impact. And the other topic before I come back to emissions is this whole area of circularity. We're increasingly going to be looking at the way products are designed to reduce the carbon content of these products. Some of the big technology companies are focusing specifically on what this new area that we call material science, and using AI to really change the way we think about products are made to make them more carbon friendly and carbon efficient. Coming back to the emissions question, there's so many different examples. And if you think about AI fundamentally, what really does it help with optimization and with efficiency. And these are things that are very relevant across the climate agenda. So, some examples. Energy efficiency. We are finding things that we used to manually can be done in many cleverer and better ways through the use of energy efficiency. The example I like to quote most though, is when we look at the climate agenda, we look at scope three, and transportation is one of the really, really big drivers of emissions the role of AI in helping to optimize transport routes. One of the best examples we have is contrails, which call out of aircraft and a huge source of carbon emissions over and above the whole issue about the fuel. AI is helping to change the way in which flights are routed, and such a way to make the contrails much, much less. And therefore almost automatically having a positive impact for the aviation sector. There are lots of other examples across manufacturing, across agriculture, but the key point is we have to really think about AI as a key driver of a solution right across the climate agenda.

Host

Anish can I come to you next?

Anish De

Yes, certainly. So, you know, Mike and I have been working closely on the whole decarbonization agenda. Mike, in his own role, as he has described, and I as the energy and natural resources and chemicals leader for the firm. Now, in the last 18 months, I've actually been working a lot more on AI - AI is not new. It's been around for decades now, maybe since the 1950s, but it's only in the last couple of decades picked up momentum with data becoming more valuable. And in

the last two years, with generative AI coming in and agentic AI coming in, it's completely acquired a life of its own. So whatever you do, if you look through the eye lens, you see that there's some gain out of it. So it's a question of then how we organize everything to deliver the outcomes that we want. That becomes important question. And decarbonization is one of the biggest areas because you know, this is, irrespective of the politics, this is really a challenge. You know, the climate change is a real challenge so we need to decarbonize quickly. And what we are seeing in various areas, including the ones Mike has described around energy efficiency, logistics, channel optimization everywhere. You know, AI has a big role to play. But what modern AI is doing is actually taking it a little further. It's actually empowering humans to ask the right questions, get the right answers, very, very quickly. And as a consequence, the responsiveness to some of these challenges becoming much more nuanced, much better, granular and effective. And so I see that, you know, the application of AI is going to be universal in bringing around decarbonization at scale, be it a large scale industries, how to be build sectors where, you know, we have always looked at it but have found it incredibly hard to get outcomes. AI is allowing for many of those things to happen. And the second thing is the responsiveness which I talked about. You can do this quickly. You don't have to wait for years. Now with the AI you can do can get to outcomes very, very quickly. You can explore those as we go forward in the conversation.

Host

So Mike, what are the biggest challenges in aligning AI-driven initiatives with climate goals, and how can leaders address them?

Mike Hayes

The reason I guess we're having this podcast is because there is a lot of debate about the more on the negative impact of AI on the climate agenda. And that's because of the single biggest challenge, which is the energy demand for the data centers and the AI factories, which go with the AI revolution that's happening. And we've been aware of this issue for a long time, and particularly with the use of all sorts of digital applications. But really, it's in the last couple of years as AI has become mobilized and started to be used globally, not just in by governments and big industry, but for AI, by consumers as well. And that is right, leading to exponential energy demand. So all of the previous forecasts, even if I go back to 18 months ago that we were making about energy demand up to 2030 and 2040 and beyond, we've had to revise all of those estimates. And the challenge when we come back later in this discussion, talk about the impact that will have on the energy transition. But the challenge the governments and industry is facing around this is how to get the energy while type of energy. First of all, to AI. And this is actually becoming a geopolitical issue because governments want to attract the AI companies, which by definition means they're attracting into data centers that go with that. But the reality is that unless they can meet the energy demand of these data centers, they're going to lose out on the economic opportunity that goes with this. And that's why governments all over the world compete for what we call foreign direct investment. This is really becoming a critical issue and a critical dimension to

AI, And that's why we are seeing data centers becoming concentrated in a number of locations around the world. I live in Ireland, and we've for many years been a big data center location. But we we have constraints on the amount of energy that we can provide. And that's why regions such as the Middle East and particularly in Saudi Arabia, are now very much positioning themselves as a place to host data centers. And that's really what governments around the world are starting to think about in terms of meeting that energy demand. And leaving aside the emissions question, which we come back to. So I think that's the future discussion that's going to be around all of this. We talk a lot about energy, but the other topic that comes up in the context of AI as a challenge is water. An access to water required for cooling purposes. And, you know, water is already being something that's been surfacing as a big issue. On what I would call the environmental agenda and I would say anything AI has helped to really focus a lot of attention on availability of water as a as a key issue. And that is actually turning people's minds to that particular problem as well. So there are two biggest challenges. I think the way leaders are dealing with us is really trying to position their own locations, whether it's government, they're trying to sell their own locations, is the place to host AI centers. Industry clearly, it's a bigger challenge, and it's also giving rise to the concept of the off grid solution for data centers, because national grid systems are struggling, and we're now seeing the emergence of what I would call the combined energy data center campuses, where the energy is produced and generated onsite to deliver to the data centers.

Host

Anish would add anything to what Mike has outlined?

Anish De

The demand for AI comes because we as users want AI in our lives, right? We want it on our phones. We want it in our gaming consoles. We want to know financial transactions. AI is everywhere and that is why the energy demand comes. So it's not that the energy sector is contributing to the AI, to the challenges that AI is so universal. As consumers, we are consuming the service. And hence, there is a requirement of energy. How we can solve that is the question. And I think this is where AI is a part of the solution rather than a part of the problem on energy, because the way you will develop the renewable energy resources, bringing them to making the whole development cycle, making it much shorter will bring about energy efficiency, including in the data centers, which can be in a 50% more efficient with the use of advanced AI and the cooling systems and how the chips are designed so the chips consume energy. So all of them have AI application. So as, one of our colleagues commented that it's like a fish drinking water, if the fish is in a in the sea or a river, you know how much water the fish drinks is not material, but the rest of the water is a much larger body. So it's it's in some sense the energy consumption of AI is not the material question. We have to meet that, but what outcome it produces is actually quite phenomenal. And that's that's why we all, as consumers want AI in our lives. And, you know, the energy problem will get solved over a period of time, including through the use of AI.

Mike Hayes

And I would build on that as well maybe just to think about what it needs you just said about solving the energy problem, we should recognize that in 2025. We live in a world where energy security and independence has now assumed paramount importance for a mix of geopolitical and other economic reasons. And therefore, things that consume greater and greater energy put much greater pressure on that energy security question. But my own view is that the ultimate solution here is a mixture of innovation and government policy, because renewable energy remains one of the greatest sources of energy available to us onshore and offshore. And these days in particular, we talk about the ability to mobilize and scale solar energy, but also offshore wind, which I know has got burnt, challenges I believe will happen. And it goes to the point where AI is here to stay, and we should recognize that as a reality. What I think is going to happen is that governments around the world are going to work with industry to help remove the barriers to scaling renewable energy, and a lot of these issues are around promoting and processing and grid investment. They're probably the two biggest issues that we have today in terms of renewable energy projects anywhere, but particularly in the context of AI. So I think governments are really going to go out of their way because they have to have AI, as Anish said, that we have to find a way to bring the energy. And if we're serious about the climate agenda, we're going to have to figure out a way that we bring clean energy to the data centers and importantly, the users of the data centers, in particular, the hyperscalers. First and foremost is energy that they recognize and have a strong preference. And they've been very explicit about this. That would be green energy. And if we're going to be serious about balancing the two agendas, that's why I believe that some government intervention is critical.

Host

AI can enhance climate risk assessments, but it also consumes significant energy. How can executives balance AI's carbon footprint with its potential to drive decarbonization and energy efficiency? Mike can I come to you first?

Mike Hayes

It really goes back to what I think I've just been saying the problem. I think in reality is that because executives can only do so much, this is where macroeconomic policy has a real impact on what we can do as an individual executive or a corporate level. You know, we are constrained by A grade capacity and b, the ability to actually scale renewable projects, which is why I think government policy will play a role. But I think it really depends on where you are across the corporate ladder. I think it is forcing companies to decide very carefully if they're investing in AI operations, where to host and where to build the new data centers in particular, because these executives recognize that the climate agenda is still here to stay, they're still incredible pressure, but it's from investors and consumers. So the idea that we're going to, you know, currently we're using a lot of natural gas to power data centers. I think that's going to come

under increasing pressure. And we're seeing this in some countries. So I think that this is going to be, you know, we're going to have to think about locations for AI factories and data centers and then in turn, I think follow to some extent not. There's lots of other considerations, but it will follow energy policy, which is why I think that in turn will be the catalyst for government action.

Anish De

Alas I said, can be applied everywhere you touch anything, you will see that any corporate process, you will see that there is some application of AI. Do we need to do it everywhere? No. Indiscriminately? No, because that's actually going to result in very, very confusing outcomes for the corporate. So the best way to do it is actually to have a proper plan for implementing AI so that we are not overdoing the thing. You have an organized approach to work implementing AI, which means and then some of our clients, CEOs have said that that we should help them map the whole value chain and then see where the bang for the buck is the most for AI. So that's the first step. And we have done that. So we have consciously now in every segment of energy, natural resources and chemicals where we operate, we map, those value chains seen, the use cases and then seen what to prioritize using a fairly rigorous framework. The second thing to look at is the how does this whole hang together? So the technology architecture and the data architecture is very important because if we don't do this right, then you can actually consume a lot of compute, a lot of memory and a lot of energy. So how do you optimize that? Make it a lean system, which optimally delivers for your business applications is a very, very important question. So there has to be a certain amount of discipline in the way you approach AI. And the third thing is that while AI itself is energy consuming, a lot of these applications result in net reduction of energy use. For example, if I'm using a genetic AI in today's work processes, a lot of the waste stages which are out there inherently get reduced. So the ROI and the payoff has to consider some of those reductions, which we are going to see in other theaters, even if I itself, the application, a specific application is going to consume more than what we had because it's a new application. So I think that whole method, the discipline and all of this is very important. And as KPMG, we have evolved those structured approaches. We just brought out a publication called Intelligent Energy where you can use the AI application. Yeah, you know, tools much more intelligently than just description indiscriminately throwing in the AI, everything.

Host

So Mike why do you believe AI can be an accelerator for the energy transition?

Mike Hayes

So this is a point of view I've been putting forward for certainly for some time. Nothing is definitive in life, but I look at the evidence, and we've already spoken with Anish about the need for AI. It's here to stay. The mass of energy demand. There was an energy demand come from, and I believe in the longer term, certainly, if appropriate, the

much quicker than that that demand will be will be met by renewable energy. And the energy demand is so great. A couple of things are happening. Number one, we are seeing some of the newer energy transition technologies been deployed. We're seeing geothermal and biomethane in particular being employed in the context of data centers. And also we're aware of announcements from some of the hydroscalers it has helped to accelerate the advent of nuclear as a solution and particularly small modular reactors. And these are very different, even from the small hours of five and ten years ago. They're much safer. Yes, they're expensive to build, but I think, the demand is so great that it's helping to catalyze some of those new technologies. The other reason I'm so confident about the fact that this will help crystallize the energy transition, and I've seen this in practice. It's helping to accelerate new research and development. I'm seeing some wonderful technology starting to emerge, particularly around water and the ability to produce water from air, all the types of cooling technologies, and figuring out new types of energy solutions for data centers. So I'm quite excited about what's going to come. Clearly, this is going to have to be backed up by government policy as I said earlier.

Host

Thanks, Mike. Anish, regulatory frameworks for climate and AI are evolving rapidly. How can executives use AI to stay ahead of compliance requirements while driving innovation in decarbonization efforts?

Anish De

So the first thing is that the regulatory requirements will evolve because AI uses lots of data sources where there are security concerns, privacy concerns and so on. We have to, the corporates have to be impressed with what is the latest regulation, which is imposed for right reasons, but could also, you know, violation of those norms. So it's and best way to do that is actually to use AI. So you can have AI based tools which keep you on top of those compliance requirements and provide you what is the direction of travel, which you need to have. The second thing is that, I also have the point I mentioned earlier that it's important that we use AI efficiently. So not indiscriminately, not on any data source, but on more control data sources. So I think the important thing is to define the data sources which you're going to use, and then ensure that you know they are within the red lines, which are drawn out by regulation. The consequence will often be much more impactful. Sometimes it can be suboptimal because you don't have enough data. But I think those are the use cases you should park for later. And there'll be enough and more, which you can do within the rules of regulation and within control data sets. And most corporates don't need to develop fundamental models in the foundational models. Those will be available from third parties. They need to use those models efficiently and for them for that their internal data sources or external data sources on which they have the right to use should be adequate. So I think we will get to the answer to this question over a period of time. But for most corporates, which are just users of AI, I think it's not terribly difficult to find ways to answer this as long as you know how to

go about it. And as I mentioned at the beginning, using AI smartly for that purpose can be quite helpful.

Host

And Anish looking ahead, how do you see the convergence of AI and climate shaping the future of corporate leadership and stakeholder expectations?

Anish De

See, the climate issue is here to stay. We'll deal with the type of model that we'll be able to solve it or not, but at least we have to deal with it, be it mitigation or be it adaptation. Similarly, AI is the technology is here to stay. It will evolve very, very quickly as you go along, like the basic genre of technology is here to stay. If we have two things which are all here to stay, you need to see that. How do you harmonize the two and how do you keep them together in your corporate strategy? I think that's what corporate leadership has to do, that they have to keep both of them as legs of their own, corporate strategies, full cognizance of both aspects, but also realizing, as we were discussing previously in the conversation, that one leads into another, that I can help you deal with some of the climate change challenges which inevitably will come so smart managements will actually see not only those two in isolation, but also in combination. On seeing how we can solve for some of the challenges around climate change.

Host

Thanks Anish. Mike for companies just beginning to explore AI's role in their climate strategies, should C-suite leaders take to align AI investments with long term decarbonization and energy goals?

Mike Hayes

It's really important that, the C-suite really starts to understand the point I made at the outset of this podcast, which is the fundamental role that I can play on a decarbonization strategy, on the climate agenda more generally. We're now seeing a big shift towards focusing on real action, particularly action that can produce value, because if we can produce value, that in turn, is going to incentivize companies to take the type of interventions that are required to drive this climate agenda. So I really would urge C-suite executives to embrace AI as a fundamental part of the solution. The investments will very much be determined by the particular sector of the industry is in, and it'll be determined by the particular issues. But once you understand the power and the relevance of AI, I think this will become fundamental to any company addressing its climate and decarbonization goals going forward.

Host

Anish would you add anything to what Mike said?

Anish De

So the first thing is to get comfortable with the technology and not just the leadership, but actually across levels of the organization, because these are new technologies sometimes evolving, but they're not terribly hard in the

sense that many of the applications are on our phones. Right? So we do use them in every day, we use them. And typically our apps and everything uses the AI. So it's just in the corporate context, we just need to enable the organization to move forward with using AI. And as you go forward, then you need to bring in specific AI applications, which are accelerators which actually allow you to do things very differently, very efficiently, and in sometimes transformative years compared to what you would do that at KPMG, we call that the embed stage really embed AI into the various facets, but maybe as individual applications. And then when you take it to the broader enterprise level, beyond the functions and bring full enterprise transformation, that's an evolved state. Now that requires very different skill sets, that requires architecting, that requires much more native AI skills for development in that organizations. So you can do that. But that's a third stage. My own belief is that given the pervasiveness of AI, even if you start with enable, most large organizations will go quickly to embed, and many of them will go into an evolved state over a period of time. And that period of time is not too long. You know, it's maybe a couple of years, not everybody will make it because, somewhere, you know,

you can't develop all of that or have the skills and talent, but then there will be enough providers of services who will be involved, who will provide managed services for your organization to do that. So I think in some sense, either you build it yourself or you buy it or you use it as a service. All these organizations of the future will be using AI in different ways, starting with the enablement, then going and embedding the technologies and having them and evolve state either internally or in services from other organizations which have evolved.

Host

Mike and Anish, it sounds like many opportunities and challenges remain when it comes to the intersection of AI and broader climate goals. Thank you so much for covering this topic for our audience and I am sure it is a topic we will come back to.

Join us again next time for more insights from ESG leaders and innovators. You can also find the latest KPMG insights covering a range of ESG topics by visiting kpmg.com/ESG.

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