

## Exchanges at Goldman Sachs

**Race to Zero: How Companies Are Deploying Decarbonization Strategies**

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**Recorded: July 12, 2021**

**Allison Nathan:** This is Exchanges at Goldman Sachs. And I'm Allison Nathan of Goldman Sachs Research. Today we're going to talk about climate change and what companies are doing to reduce their carbon footprint, a trend broadly known as decarbonization. To do that, I'm joined by John Greenwood and Cindy Quan who are spearheading an effort within our Investment Banking division to help companies and sovereigns reach their net zero goals. John is a partner within the Financing Group and is Co-Head of the division's Sustainable Solutions Council. And Cindy is leading corporate conversations for the newly formed Decarbonization Group. John and Cindy, welcome to the program.

**Cindy Quan:** Thank you.

**John Greenwood:** Thanks, Allison.

**Allison Nathan:** The pressure on companies to reduce their carbon footprint continues to build. John, start by first explaining to us what decarbonization actually means for companies and how it's fitting into their overall ESG framework?

**John Greenwood:** So, we often say that decarbonization and net zero is the new ESG. So, ESG is obviously a very broad concept covering a company's environmental, social, and governance practices. But in the last year, there has really been a strong focus on the E part of ESG, primarily coming from our institutional investors who are now integrating ESG into their investment decisions.

So, decarbonization is simply the reduction of carbon intensity, removing carbon from a process. Why is that important? There has been a massive focus on climate change and how does the world combat climate change. And I think most of this is around the Paris Agreement, which is now that there is a kind of broad alignment across the world to try to reduce temperature rises to 1.5 degrees Celsius. And we all have a part in this: governments and regulators, companies, and consumers. And I think there's a broad awareness that this cannot only come from government regulation. And that companies really have to change their own way that they go about doing business in order to be able to reach the goals that we've set forth for the world under the Paris Agreement.

**Allison Nathan:** But as you just said, the Paris Agreement is not new. So, why now for increased efforts from companies?

**John Greenwood:** I think what has really changed over the last, say, 18 months is not just companies acknowledging that climate change is a big issue and the fact that they need to start thinking about their own carbon footprint and ways into which to reduce their carbon footprint, it's really coming from their shareholders. It's really coming from institutional investors.

There has been an increased focus now from institutional investors to actually embed ESG into their investment decisions. And so, what that means is that there is now a direct financial impact for corporate clients that do not embed decarbonization into their core business strategy, it will have an impact on their cost of capital. It will have an impact on their valuation.

**Allison Nathan:** So, how are you seeing companies generally respond to this pressure and these climate goals?

**John Greenwood:** So, I think simply, what we've seen is just corporate clients now making public statements with respect to their decarbonization strategy. They are saying, "We will become net zero by X date." And so, just in the last year we've seen a massive increase in the number of clients that have publicly stated a carbon reduction goal. In less than a year, in the first half of 2021, one in five of the world's 2,000 largest publicly listed companies have now committed to a net zero emission. That represents over 14 trillion in sales.

**Cindy Quan:** And Allison, one of the things that we've seen changing with regards go company disclosures is really their focus on accounting and disclosing of historically scope one emissions, which are direct emissions from sources that are owned or controlled by the company. So, think combustion of fossil fuels from boilers, generators, vehicles. Plus, historically, companies have also reported on their scope two emissions, which are indirect emissions from purchased electricity.

One of the things that we've seen in the course of this year is that companies are now expanding this emissions reporting as well to include scope three indirect emissions, which extends into their supply chain and their investments as well. And so, not only has the scope, ultimately, increased, but the breadth and depth of the carbon emissions.

**Allison Nathan:** And so, John, companies have clearly prioritized this as you and Cindy just explained. But ultimately, what strategies are they actually pursuing to implement some of these goals?

**John Greenwood:** So, there are effectively three ways in which a company can reduce its carbon emissions. So, one is through its own operations and operational efficiencies. And there are a broad number of things that companies can do with respect to its offices, its factories, how their employees travel, for an example. And so, there's a whole host of things in terms of reducing carbon emissions in your own operations.

The second way is through procuring a larger percentage of your electricity from renewable power. And so, that can be through wind or solar. And there are now a host of ways to do that. One is that you can implement on-site solar on top of your rooftop of your headquarters. There are ways to do it virtually through virtual power purchase agreements where the solar or wind power plant can be hundreds of miles away from where your actual need is, and you'll get the benefit of the renewable credit.

And then finally, for those emissions that you can't reduce through your own operations, or you can't procure renewable energy, it's about offsets. And so, purchasing carbon credits. And there is a ton going on right now and a discussion around what is a good carbon offset versus a bad carbon offset in the voluntary market or in the compliance markets. But that's another big area of focus.

**Allison Nathan:** So, just a quick follow up on that, how has that evolved? Is that a big market today? When did it all start? I mean, how do we think about just the perspective? Give us some perspective on the offset market.

**John Greenwood:** Sure. So, the carbon offset market has been around for several years. It basically started in the EU around the compliance markets. But what we're seeing now is the evolution is evolving into the voluntary market. And the challenge that we're finding is that trying to define a standard for what is a good carbon offset versus a bad carbon offset. And what are the standards that companies should be looking at?

A carbon offset in the voluntary market can cost anywhere from a dollar to \$150. And so, it's really understanding what is really providing additionality from a carbon offset. And there are a number of things that we're currently discussing with our clients. A number of companies like Microsoft and others have set up their own standards and said, "This is what we consider to be a carbon offset that we're willing to procure." And a lot of this is around going from just purely carbon avoidance to carbon reduction. So, as an example, one of the most obvious places for carbon reduction offsets would be in forestry and nature-based solutions, right, where you're making investments in the reforestation or afforestation of an area.

**Allison Nathan:** So, Cindy, let me ask you, how widespread are net zero policies across large corporations today?

**Cindy Quan:** Sure Allison. So, as John had mentioned, we've seen a tremendous increase in carbon commitments in the public space since last year. 2021 has really been a pivotal year in the race to combat climate change. I mean, we started at the beginning of the year with the EU making a legally binding commitment to achieve net zero targets by 2050, followed very closely by China's commitment as well to achieve carbon neutrality by 2060. And hopefully, everyone has also seen that President Biden has also returned the US to the Climate Accord, which ultimately has many companies, and also countries, achieving net zero by 2050.

So, these commitments and these announcements have ultimately led to a domino

effect across the global corporate community race in their race to zero. And this trend is only going to be accelerated in the anticipation of COP26 in Glasgow later this year. With numerous companies ultimately looking to, between now and then, announce additional net zero ambitions prior to the summit.

And so, week on week we're seeing, you know, in the double digit announcements every single week, typically on Mondays, where corporates across all different sectors, all different, all different countries are now joining in the race to zero. Where historically, many of these companies have been competitors of one another, but ultimately with the same goal now to be able to ultimately reduce their emissions down to zero.

**Allison Nathan:** So, Goldman Sachs achieved carbon neutral operations in 2015 and is looking to further reduce its carbon footprint. How is your group leveraging the firm's experience to support the decarbonization efforts of clients across industries and geographies?

**Cindy Quan:** So, Allison, we understand that these markets are changing very, very rapidly as we've talked about. And our clients' priorities are obviously rapidly evolving as well. And our firm, along with our corporate and workplace solutions team she been committed to ESG leadership over the past decade and more. And our progress and our learnings over this time has really provided a blueprint for our market making teams.

So, in 2005 when the firm established its environmental policy framework, which provided the firm with its own roadmap for how we leverage our commercial businesses to address critical ESG issues, while also serving our clients and our shareholders, we in the Investment Banking team have really created a decarbonization group that ultimately is meant to be the entry point for our clients, as well as their newly changing commitments, specifically in space, and who are also looking for solutions to meet their own net zero targets.

**John Greenwood:** I think what's interesting about this, right, is that like any company like Goldman Sachs, we're trying to figure out our own path towards carbon neutrality and now to net zero. We learned a lot, you know, in that process. We learned a lot about how to set up the goals themselves. What is appropriately aggressive? We've learned a lot about how to ensure that our ESG and our carbon emissions story is consistent with our own corporate strategy and that it's core to our business. And then also, you know, how to disclose that to the market.

I think in that whole process we have now thought about we've been through that process, so how can we help our clients go through that process? Right? And so, it obviously makes sense for our own decarbonization group now within the investment bank as we start to advise and support clients in their own targets for carbon reduction, for Cindy, for example, who did it for Goldman to now help advise our clients in terms of how to get there.

**Allison Nathan:** And so, what sectors are most active in these efforts?

**Cindy Quan:** Yeah, I would say, Allison, you know, ultimately, it's really the carbon intensive sectors, right? The majority of the activity has really been driven by large tech. As John had mentioned, you know, the likes of Apple, Google, Microsoft have really been very innovative in a lot of the structures that they've brought to market. And some of the targets, ultimately, Microsoft was the first to come out with their own carbon negative goal, which was a new term that ultimately they coined and followed very closely with by this onslaught of just net zero targets. But we've also seen just a tremendous uptake in heavy industry, as well as the transport sectors following big tech.

And so, over 400 companies now across some of the largest greenhouse gas emitting industries from, like, shipping to steel making have now all come together to ultimately decarbonize not only their own operations, but given that they are in numerous supply chains as well, to be able to bring down to emissions by 2050.

**John Greenwood:** You know, it's interesting, people often say, "Well, obviously, big tech have been the leaders in decarbonization because they have the liquidity in balance sheets to focus on it," right, and thinking through innovation. So, for an example, if you think about Google who now has a big focus on 24/7 renewable, right, and grid optimization, but you also have to think that some of the carbon intensive industries where there is less liquidity on balance sheet like the airlines, et cetera, particularly during COVID, this continues to be a big focus for those companies as well.

And so, when you think about the airline industry, even in the context of what's happened in the market, they are looking at ways in which to adopt and procure more sustainable aviation fuel. Right? And so, we're seeing this across all industries, this focus on how can we reduce our carbon emissions because, ultimately, they are seeing that the market is going to, one, punish those that are ESG laggards. And they're also seeing an opportunity in terms of being an ESG thought leader and what that can mean for growth.

**Cindy Quan:** One of the things that we're actually seeing is that from a key performance indicator perspective, the one thing that binds all of us together, every industry, every country, is around emissions. And so, regardless of, you know, what industry or sector the company is in, all of us have the same responsibility to be able to reduce our emissions. Which is what is meant for the Paris Climate Accord is to bring together all of these disparate countries as well as these disparate sectors to really come together under a single common theme, which is around emissions.

**Allison Nathan:** And is there a region that actually is leading, though? Talk about the pace of adoption between the US, Europe, China.

**John Greenwood:** So, I would say certainly this has been a focus that's in Europe, right, and the EU has had a head start. I think this has become more of a phenomenon and a focus in the US in recent years. Goldman Sachs did a survey of institutional investors, 1,600 institutional investors and looked at the adoption of ESG integration in

terms of their investment strategy. And what you'll see is that for those who already adopt ESG into their investment thesis was much higher in the EU than it was in the US. But then when we asked the question in terms of whether you expect to integrate ESG into your investment thesis within the next 12 months, we basically saw an equilibrium with almost all investors saying that, yes, this is going to be a critical item in terms of how we make buy and sell decisions. And so, while the EU had probably a number of years head start, we see the focus now being global across the US, EU, and Asia.

**Allison Nathan:** Right. I mean, there is certainly a narrative that companies should be doing this, people should be doing this, obviously, for the broader good of climate change. But it's really when the investors start to get focused on it where you potentially could see real change that impacts the bottom line. You know, there have been some high-profile examples of activist investors who actually punish companies that aren't moving quickly enough to reduce this carbon emissions, not to mention other sticks, such as carbon taxes. But talk about the carrots that increase the incentives for companies to decarbonize? What are the tangible impacts from a balance sheet or lending cost perspective?

**John Greenwood:** It's very interesting because I think when most CEOs and boards have previously thought about ESG, one was from an investor relations perspective. But two was trying to avoid pitfalls and punishment if you got it wrong, right? And so, there are a number of ESG controversies that now everyone is very aware of and tries to avoid.

But I think what is more interesting is, as you call it, the carrots for companies that really become thought leaders in ESG and truly try to integrate sustainability into their business strategy. The impacts that we're seeing now which we probably couldn't have articulated just 18 months ago is that there does seem to be an impact both on valuation and on cost of capital for those companies that get it right.

So, again, why is this happening? It's driven by investor capital allocation into ESG. In 2020, ESG mandated funds represented 31 percent of all passive inflows, versus only 3 percent in 2018. So, again, the driver for this really coming from institutional investors. And so, what has been the impact? One is that it's driving pricing valuation between low carbon intensive companies and high carbon intensive companies. And so, for an example, when we look at the enterprise value to EBITDA multiples for low carbon intensive companies very high carbon intensive companies, the wedge is just growing each year. So, on average, between 2010 and 2015, that premium valuation was about 4.4 percent on average. And in 2019 through 2020, that has increased to 14.6 percent. So, a real increase in the difference in valuation of companies that are considered kind of low carbon emitters versus high carbon emitters.

The second one is that it's driving cost of capital. If you had asked us about 18 months ago when our clients asked, "Can you see a discernible difference in the cost of capital or the coupon on an ESG-linked bond just versus a plain vanilla bond," the answer, probably, was no. But we were saying it was a good thing to do and you should spend

the money to get an opinion provider to say that the proceeds of this bond are going into a green activity.

During COVID, we saw a huge increase in the number of companies that were issuing green bonds or ESG-linked bonds, KPI-linked bonds. And we're now seeing an important difference in cost of capital. So, for some of the largest issuers, both in the EU and the US, we're now seeing anywhere from a ten to 20 basis points savings in terms of a company's ESG-linked bond versus just their plain vanilla bonds. And we expect that the adoption of green bonds and ESG-linked bonds are going to continue. And the wedge between pricing will also continue to widen. This was a phenomenon that was mainly for large investment grade companies. There's been a huge increase on investment grade. And in fact, I think already this year in the first half we've surpassed total issuances in 2020. But we're now seeing it being adopted by a broader swath of the market. So, even smaller high yield companies. In the first two months of 2021 surprised all high yield issuances in 2020. And why is that? It's because people are seeing that issuing an ESG-linked bond has really cost of capital implications. It's no longer nice to have, but something that can truly impact the financials for a company.

**Cindy Quan:** And Allison, if I can add to that as well. On the people side of ESG and sustainability, companies are realizing that it's a great way to recruit and retain human capital from a carrot perspective. Companies that truly embody their ESG strategy in their day to day businesses, so it's no longer become just a standalone strategy that is only managed by, you know, a small team. It's part of the on-boarding process for all of their employees to really understand it's a corporate value, ultimately, at the end of the day. And we're finding that from a next generation perspective, a lot of the new recruits to companies are looking for companies that truly value what the impact of the company is on the broader environment, given that, ultimately, you know, we're all working towards the same goal with regards to ensuring that companies are minimizing their impacts directly on the environment and the legacy that they ultimately leave.

**Allison Nathan:** And from your seats in investment banking, how does the focus on decarbonization affect M & A and financing activities and these other activities that are part and parcel for companies?

**John Greenwood:** So, it's impacting it in a number of ways. I guess the first thing that I would say is, again, even 18 months ago when we were having discussions around ESG with our corporate clients, we'd be having those discussions with the head of sustainability for that company. And that person would often sit either in the investor relations group or be reporting to the CFO, or maybe even sit in their operations.

What we've seen is that this conversation has gone from periphery to core. And it's the expectation now of consumers and investors that this be a core part of the discussion of the CEO, the board, the executive management in terms of how are you addressing ESG themes.

And so, clearly, we've seen a number of recent situations where activist investors have

used ESG as a wedge. Obviously, there's the recent situation with Exxon and Engine No. 1. Engine No. 1 is a fund with only 250 million in assets under management. They only had a 40 million ownership stake. But through a broad campaign they were able to get support from a large majority of shareholders to support the replacement of three board members for Exxon. And so, within the that frame of activism, we're starting to talk to our clients about what is your ESG vulnerability? And so, we are starting to build tools to help our clients think about in what areas are they potentially exposed from an ESG perspective? How should they be disclosing their ESG initiatives and objectives? And ultimately, how to think about ESG as a growth opportunity as opposed to just a punishment.

And so, there are a number of discussions, and it can be quite complicated, when you look at the landscape for an example, just of ESG scores, there are dozens and dozens of different types of organizations that provide ESG scores to companies. And so, it is obvious that a CEO or CFO is going to be very confused which ESG scores matter less versus more? And I think, generally what we're telling our clients is the following. One is that you obviously can lose if your ESG scores are significantly lower than your competitors. But you're not going to win by just having a good ESG score. You need to have an ESG profile and strategy that is aligned to your core business, not something that's just attached.

And so, setting your ESG objectives that align with your specific business. Setting KPIs that are relevant for your business, and then disclosing your progress towards those goals in your annual financials.

**Allison Nathan:** Absolutely, because it is part of that overall narrative. And it has to be credible. Does that go to your point?

**John Greenwood:** That's exactly right. If it's just some standalone tick the box, it's going to become very obvious, not just to institutional investors and the NGOs that care a lot about this, but also your consumer.

**Cindy Quan:** And that's where there's been significantly more scrutiny in this space over the last decade or so. And the term greenwashing that has popped up, given that many companies are realizing that they are being outperformed by other companies that have true credibility and value add in the sustainability space. And so, in order to really be able to kind of, quote/unquote, "jump on the bandwagon," they've also done the check the box exercise. But however, it's very clear to, ultimately, shareholders and investors when it becomes a check the box exercise versus something that's actually core and part of the values of the company.

**Allison Nathan:** Let me just ask you about carbon capture technologies. There seems to be a lot of skepticism, broadly, around them. That they're too expensive to be practical. That nature-based offsets aren't really removing carbon from the atmosphere. What's your view on that? And how does that sit among all these other options?

**John Greenwood:** It's definitely an evolving debate. And I think when people thought about energy and energy sector and ESG, there has traditionally been a focus on renewable power, wind and solar. And obviously, the reality there is that while that's important, it's really carbon avoidance as opposed to actual reducing carbon and capturing carbon and taking it out of the environment.

We are seeing an important uptick in investments in these carbon reduction technologies. Clearly, the first and most obvious one is through nature-based technologies, through reforestation and afforestation. And there are a number of things that are becoming clearer in terms of what really from a nature-based solutions is considered to be additional as opposed to just saving forests that already exist, for an example?

On some of the other carbon capture technologies, direct air capture, there are also other types of technologies around green hydrogen or biodegradable plastics, there's a real debate in terms of the technologies themselves. You can prove that they reduce carbon or take carbon out of the atmosphere. The bigger question is, is it sustainable from an economic perspective? And I think where we're sitting in that debate today is that premium of the economics of a carbon reduction technology applied to steel and cement and all of the big carbon emitters versus the plain vanilla is still extremely high. But the view is that this is going to reduce over time. And why is it going to reduce over time? It's because it's going to come from the demand side.

When all of these corporate clients are making public statements that they are going to become net zero by 2025 or by 2030 or by 2050, the only way that they're going to get there is to start spending capital against it. And so, I think as the capital flows in from the demand side, there's just going to be a proliferation of technologies, just like in the semiconductor space, and you'll start to see that pricing premium between, you know, low carbon technologies and carbon reduction technologies to the base case shrinkage over time.

**Cindy Quan:** And Allison, I think one of the biggest debates that has only recently come up just given how new a lot of these technology-based solutions are, is just one theory around leakage and then another theory around permanence. Given that these are, and I'm just going to say, quote/unquote, "artificial" technologies that actually actively, like manmade technologies, that take carbon out of the environment, but they have to put them somewhere. Right? Or they have to transform the carbon into another product.

Many of these, as John had mentioned, direct air capture technologies, are putting them back into the earth's surface. And so, the conversation that would be around leakage and permanence is, is there any possibility that once they get put into the ground, does it come out of the ground at some point in time, whether it's the next, you know, five to ten years? Or is it in 100 plus years or so? And then, also, how permanent is that solution? So, if we're just taking it from one location and putting it into another location, is that really, truly permanent? Versus some of the long tried and true technologies that John had mentioned around nature-based solutions, which are trees. Right? Part of the

DNA in the biophilia nature of trees is to actually, actively take carbon out of the environment. That's how they survive.

And so, the debate that has recently come up is, is one better than another is one solution longer term than another? And I think, you know, there still needs to be significantly more research and development in this space to really understand the long-term potential of trees versus technology-based solutions. As John also had mentioned, the technology-based solutions are very expensive. And so, right now they are not scalable. They are independent solutions that require a lot of real estate to be able to situate some of these technologies, and open spaces to be able to actually capture the carbon.

And so, hopefully, in the future as the research and development ultimately continues in this space in the next, hopefully, ten to 30 years or so, we will see a lot of these technology solutions become more integrated as part of day to day. And so, if you look around significantly in cities and metropolitans, what you see are buildings, right? And what are buildings made of? Concrete, glass, steel, aluminum. And so, what we would hope is that the R & D really kind of picks up with regards to incorporating a lot of the capture components into everyday activities, into everyday materials where it becomes significantly more scalable from an economics perspective. Where it's any product that we as individuals can purchase, any new developments that actually come out of the ground that are new and additional from what was already existing, ultimately has that component of carbon capture to it.

**Allison Nathan:** Right. But we are far from that.

**Cindy Quan:** Very, very far from that.

**Allison Nathan:** Thanks so much for joining us today, John and Cindy.

**John Greenwood:** Thanks, Allison, for having us. It's been a pleasure. And certainly, it's been a great opportunity for us to discuss these topics of ESG as they go from periphery to core for our core clients.

**Cindy Quan:** Allison, thank you so much for having us. This is a topic that John and I and the rest of the team, as well as the firm, really enjoys taking a front foot on and being a thought leader in this space.

**Allison Nathan:** That concludes this episode of Exchanges at Goldman Sachs. Thanks for listening. And if you enjoyed this show, we hope you subscribe on Apple Podcasts and leave a rating and comment.

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