China Net Zero: The Clean Tech Revolution

Liz: Hi, Sharmini.

Sharmini Chetwode: Hi, Liz.

Liz: You and the team at Goldman Sachs Research are out with a new report called "China Net Zero: The Clean Tech Revolution," in which you explore China's recent pledge to become carbon neutral. Explain why China is so important to this effort and what we know about the pledge so far.

Sharmini Chetwode: So you're right, Liz, it's huge in terms of its scale as a country. It accounts for 30% of global emissions. But also, it's accounted for 64% of the increase in global emissions that we've seen since 2000. Now, the country has said that it's targeting to get to peak emissions by 2030 and to get to net zero by 2060, which is slightly further out than other countries' pledges which generally anchor around 2050.

However, it's still ambitious as a target given the growth rate of China as a country. The other important fact to note is that the country has significantly reduced its emission intensity per unit of GDP in the last 20 years. And it only stands behind the UK in terms of its progress on that front.

In terms of the details, we don't really have much beyond peak emissions in 2030 and net zero by 2060. Next month, there'll be details in the 14th 5-year plan, which will really give us a sense of the road map towards 2060.

Liz: And so what are some of the key drivers on China's path to becoming net zero?

Sharmini Chetwode: The main one is the changing political environment. We've seen the US rejoin the Paris Agreement. Joe Biden has a number of stimulus initiatives that relate to climate in his stimulus plan and is very focused on decarbonization. The EU has clearly got a lot of similar initiatives in their very significant stimulus plan. And so there's a lot of political pressure sort of globally on China to sort of follow suit.

Also, I think more broadly we have to bear in mind that carbon could become part of trade negotiations. And this is to avoid leakage of industries from jurisdictions where there is a carbon

tax to those that there is none. And so you could see carbon taxes coming into play as a negotiation factor. And China's exports actually account for 20% of its emissions, so there is quite a lot in the scope for negotiations should that become, you know, a consideration.

Also, another driver is the China Central Bank, the PBOC, which is very focused on sustainability, climate risk, and green lending.

Liz: And what are some of the key technologies that you expect we'll see?

Sharmini Chetwode: In terms of the technologies, they're the usually ones that we know of which are renewables, hydrogen, and carbon capture. But in China, the economy's structure is slightly different. So there's a huge preponderance of utilities and industrials. And that means that, you know, there's a big contribution of about 80% from those sectors to China's emissions. So given the importance of power in the emission profile, it's really critical that they evolve their energy mix.

Renewables can only unlock about 50% of China's emissions. After that, the cost curve of decarbonization rises very sharply. So we think clean hydrogen could decarbonize a further 20% for the difficult to decarbonize sectors such as industrials and heating. And also carbon capture for a remaining sort of 15% or so. And that's really geared towards industrial processes. But both carbon capture and hydrogen clearly need to become less expensive over time.

Liz: And what sectors do you think will play a role in moving the balance of emissions in China?

Sharmini Chetwode: The structure of the economy is such that the bulk of the emissions are in the power sector and in industrials. So by that I mean chemicals, ferrous metals, nonferrous metals, cement, and things like that. So the power sector is going to be crucial is number one. In fact, especially because electrocution found other sectors is going to be happening in parallel with the decarbonization of the power sector and industrials. So everything that can be electrified will be electrified, and that of course creates a huge demand for renewable energy. And so we project that energy demand into 2060 could grow three-fold from where we are today, which is quite a sobering statistic. So a lot of renewables needed on

that front.

But just diving into one sector, transportation. Currently transportation is about 9% of China's carbon emissions. We're relying really on electrification for the short and mid haul parts of the transportation system and then hydrogen for the long haul portion. But this is really important because again by 2060 we see the road fleet increasing three-fold. So as you decarbonize, you're seeing increased demand as you get to greater levels of electrification in the economy.

Liz: And what do you think this greater demand for energy in China will mean for the demand of natural resources?

Sharmini Chetwode: Yeah, I mean, clearly all this electrification is going to be in huge demand for base metals, copper, aluminum, lithium, nickel, anything that is exposed to renewables. The better sector, EVs, and anything really to do with decarbonization. So we see a huge uplift in commodity prices. And correspondingly, coal under pressure in terms of pricing as we get to 2030 and beyond and you see increasing retirement of coal plant.

Liz: And how do you think things like carbon pricing initiatives and carbon taxes could play out in China?

Sharmini Chetwode: Yeah, this is a really interesting one, Liz. Carbon pricing is hugely important in terms of setting a price on carbon and really disincentivizing continued investment in heavy carbon sectors and incentivizing, you know, investment into renewable sectors. At the moment, we don't have a price on carbon in China, but they have launched their emission trading scheme. They did that last month. It's firstly targeting the utilities sector, and we see renewables as a direct beneficiary from that scheme. There are plans to roll out that emission trading scheme, as was done in Europe, in China into seven other sectors over the next five years. So we're going to see progressive gradual accountability for a price on carbon.

Carbon tax is an interesting one. The EU has proposed or is working on a proposal for a carbon border adjustment. This is to really protect their industries from leakage, which I mentioned earlier, where industries migrate from high carbon tax jurisdictions to low carbon tax jurisdictions. And so any kind of carbon border adjustment could potentially affect China's exports. We did some analysis in our report that basically showed that at a carbon price of $100 per metric ton of carbon,

you could see an increase of up to 30% in the price of a ton of Chinese steel. So potentially significant effects there.

Liz: Thanks, Sharmini