

Linde Presentation Virtual JP Morgan 12th Annual U.S. All Stars

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Presentation

Jeffrey J. Zekauskas:

Hi. Good day. My name is Jeff Zekauskas and I analyze chemicals for JPMorgan in North America. It's my pleasure today to introduce the management of Linde. Representing Linde is Matt White, who is Chief Financial Officer, and had been CFO before that at Praxair for the last seven years. Matt during his tenure at Praxair held positions both in financial management and business management, and he knows the business very, very well. The form of our discussion today will be a fireside chat. If you have a question, please email me at jeffrey.zekauskas@jpmorgan.com or shoot your question through the queue on the dashboard. And what I'll try to do is to weave it into our discussion. Matt, maybe we should begin by, if you could describe the current demand trends for industrial gas in the Americas, Europe, China, and maybe speak a little bit about different industries and how they're performing for you.

Matt White, Executive Vice President & Chief Financial Officer:

Sure Jeff, and thanks for having me on and thanks everybody for joining today. To your point, maybe I'll talk about it through our end markets and maybe a little bit of geographic exposure as well. And to start, I'll talk about the 40% that are consumer-related which we call our resilient end markets. And those three are healthcare, food and beverage, and electronics. And when you think about those three starting with healthcare, which is about 20% of our gas sales, primarily we've been supplying oxygen both into hospitals as well as home care services and we saw a spike last year in support of the oxygen required for the pandemic, then a second spike earlier this year. And it's kind of been working its way through. We hope that by this quarter we should see that start to get back to normal levels, especially in the emerging markets, which is where we're starting to see it subside. In the developed markets, we're almost back to normal levels. And when I think about healthcare kind of going forward, it's about a mid-single-digit grower based on demographics. But also, there is some incremental opportunities there as you see improved diagnosis and also trends like telehealth, given that our home care business tends to be in the homes as medical professionals. And as we see more and expansion of medicine through telehealth, our focus tends to be the connection with the patients.

Food and beverage is pretty steady and pretty stable, especially when you think about bulk food, food safety, large beverage. But we have seen in the last few quarters a dramatic improvement in our restaurant business, which is primarily in the United States and United Kingdom. As you've seen economies reopen and restaurants begin to serve again, that's been a good trend in those two nations, and I'd say broadly food and beverage has been quite stable.

And electronics, probably our fastest-growing end market both right now and what we expect in the near-term, clearly supplying existing fabs with their needs, primarily in support of a chip shortage, but also in display, photovoltaics and other areas, but also in new fab construction. In fact, we recently announced a large win for a world-class fab that will be built in Phoenix, Arizona and we'll be the gas supplier for a multitude of gases. So, you're seeing a lot of new fab

construction to meet the demand. Now, the 60% which we view more industrial or cyclical, that includes metals, chemicals, refining and general manufacturing. Now, these tend to be more correlated with industrial production, but we do have a lot of fixed elements of payment which help insulate some of the volatility. And I think last year, 2020, was a very good example, given the resiliency that we had. But the last couple of quarters, these have been growing quite strongly, in fact, most recently Q2 these markets year-over-year were up for the most part over 20% and sequentially we've been seeing mid-single digit growth for at least the last quarter too. Right now, Q3, I think when you look at macroeconomic drivers, the U.S. is still slowly improving on IP sequentially. China is decelerating. You see the deceleration in growth there from industrial production. Places like Brazil, Germany it's kind of a mix bag, they're up but some negative, so I would say flat to down overall. So, when I think about the industrial environment based on macroeconomic data, I would say it's a mixed bag right now, as we look at Q3. But recall that when we gave our guidance for Q3, we assumed sequentially flat volumes from that view. And then finally, the one I would just add is engineering. Now, that's obviously our sale of plant business, we are seeing some pretty strong demand in the capital cycle. So, I expect to see some pretty healthy growth in that business for the backlog which will give us good future growth in the next several years.

Questions and Answers

Jeffrey J. Zekauskas:

(Question and Answer)

Jeffrey J. Zekauskas:

I think in the second quarter, your sequential volume growth was maybe about 4%. In the scheme of things, would you expect a deceleration from that number in the third quarter and then into the fourth quarter, or it's too hard to tell?

Matt White, Executive Vice President & Chief Financial Officer:

Well, to your point, we have the 4% volume sequential climb. And when you look back past the last three or four quarters, we've had sequential increases. So, we've seen that recovery and enjoyed that, especially in the industrial end markets. As I mentioned earlier, our sequential guidance right now for Q2 to Q3 does assume flat. And since it's a mixed bag, time will tell. We definitely are seeing some end markets still growing, and we are seeing some either decelerating growth or plateau. For Q4, it's always hard to tell. I mean, the direction things are going, you could see some slowing down. But I would say that at Linde, we don't try to project the economy. You're never going to get it right.

Jeffrey J. Zekauskas:

Sure.

Matt White, Executive Vice President & Chief Financial Officer:

So, what we want to do is, design a business that's really insulated to the economy. And this is why we laid out a 10% EPS growth rate in our strategy, and that's irrespective to the economy. We expect to deliver that in the good or the bad. 2020

was an example where we did grow EPS over 10%. And so, we'll see how things play out in Q4. But either way, I think our business is well prepared to navigate whatever the economy brings.

Jeffrey J. Zekauskas:

I think your prices increased about 1% sequentially in the second quarter. Do you continue to see upwards sequential price movement?

Matt White, Executive Vice President & Chief Financial Officer:

So, I would say industrial gases is an industry a bit more unique than what you would think on a classic materials or industrial sector. And it's primarily because the majority of our products, they're very local, they're critical to our customer, transportation costs tend to dominate the value of the product, so it doesn't move. And given those factors, we're really a portfolio of contracts. The vast, vast majority of what we sell is under contract, and these contracts can range anywhere from a couple of years to as high as 15 years. So, when you're developing these contracts, you have to have a multi-year forward look. We tend to embed pricing mechanisms and inflation recovery mechanisms as part of the contracts. So, given that, inflation tends to be one of the best proxies for our pricing because of this nature. And therefore, when you look at the last 25 years, I'll use Praxair as my legacy knowledge, we've got positive pricing every single year. And that pricing was very closely aligned with the underlined inflation globally weighted around the world, because we're obviously getting local inflation in each jurisdiction. So I would say that sequential increases are a function of what you're seeing in the inflationary market and that's coming through our contracts and that's pricing.

Jeffrey J. Zekauskas:

Maybe if you could just touch on China one more time. You've spoken about a deceleration in the rate of growth. Does that mean that the growth rate in the third quarter versus the second is a little bit less and that you're a little bit more pessimistic about the fourth? And when you think about the Chinese business, there's been some deceleration in the steel industry, but it's always complicated with industrial gases and that many steel companies sell some industrial gas and if they close down or they reduce their production, there's less gas that goes into the market. Can you sort of be a little bit more specific about how your China business is doing and whether some of these other trends are good or bad for industrial gas profitability?

Matt White, Executive Vice President & Chief Financial Officer:

Sure. Yeah. China for us is a single-digit percentage of our sales, but it's an important market. When I think to your point about maybe steel specifically, we've seen these curtailments before and an important thing for Linde is, we want to make sure that we align ourselves with the Tier 1 customers, and that is really for any industry, whether it's steel, refining, electronics. We want to make sure that when we signed a long-term, on-site, take or pay contracts that the asset that we're connected to is an asset that can weather the storm, whether it's changes in dynamics and political views and anything from taxes, etcetera, raw material costs. And so that's something that's been true for many decades and we've built up a portfolio I would say of pretty high-quality customers. So, when you think about these curtailments, they've happened before, we've seen them in China before. This is why you contract the way you contract. I mean our contracts in China are similar to how we contract everywhere in the world. You do have fixed element payments to navigate that, you tend not to take the risk on the customers' volumes because you don't get the upside when the customer has volume higher as well. So, given that, I'm not anticipating much of an effect for Linde on that. Clearly, you will see some

slowdowns, this happens at times when customers that are above their minimum take or pay volumes lower. And to your point on the merchant market, there could be some effect because of the merchant liquids that come off of some of these other mills. But given prior scenarios, I think this will play out similar that ultimately there is a lot of steel capacity in China, you will see some curtailments. And ultimately, there probably will be some mills that may be permanently shuttered. But that's not something that I see is a concern for Linde today, but I think that's a normal part of the cycle we've seen. In fact, we've probably seen this, six, eight years ago happen as well.

Jeffrey J. Zekauskas:

On that, many investors have been struck by the changes in energy prices. And I think in Europe, natural gas year-over-year, maybe has gone from \$2 MMBtu to \$22 MMBtu. And in the United States, maybe it's \$3 to \$5. When those events take place, are your pricing structures I guess accurate enough or precise enough to capture that kind of inflation or just to capture some but they're relaxed?

Matt White, Executive Vice President & Chief Financial Officer:

So, based on the supply mode, I mean, on-site, who will be a large consumer of power and potentially natural gas if you're making syngas, we have automatic pass-through mechanisms, and they tend to be fairly immediate in the month. Because from that perspective, again, we're getting mostly fixed fees, we don't take the risk on the commodity, our customers usually get the spreads, enjoy the spreads on those. So, from that perspective, we pass it through. And for example, last quarter, we had about a 2% pass-through. And so, what that simply means is for every dollar, the variable cost goes up in these either power and natural gas inputs, we put a dollar higher in revenue. It's zero economic profit to us. It does protect us. But obviously, it will have optical or accounting effects of either raising or lowering the margin.

So, for example, every 1% of pass through is probably about 30 basis points margin impact up or down depending upon the direction. So that's kind of a vehicle that normally works through. And then to my earlier point, we do have pricing mechanisms on merchant and package. They tend to lag more. They could be a two- to six-month lag depending upon the supply mode to be able to pass that through in either delivering the product or procuring or making the product that we need for the customer.

Jeffrey J. Zekauskas:

So, given the sharp run up in energy costs in Europe, when you look at your European operation, do you think, oh, the profitability of this is a little bit different than I expected?

Matt White, Executive Vice President & Chief Financial Officer:

No. Again, I think we like to look at economic profits, we like to look at returns on capital. And so, when you think about passing through the commodities, I mean, that's an important part of our business model, because we're not structured or engineered to take the risk on those spreads. And so, given that, I mean, we enjoyed a time of low commodity prices and now we're in a current time of higher commodity prices. And we benefit from that on our model, besides the points I made about passing through and some of the pricing. But we do tend to see higher demand at times in higher commodities. We have certain customers that make commodities and certain customers that consume commodities, and they need our gases on both sides. So obviously in a higher commodity world, if you make them, you want to make more, and if you use them, you want to use less, and our gases help achieve both of those initiatives. So, we do tend to see higher consumption in these areas and oxy-combustion is a good example. So that is something that we are seeing more of and it

also inevitably you tend to see a capital cycle on the back-end as people want to build more when you see these inflationary periods.

Jeffrey J. Zekauskas:

When natural gas prices rise up because of your own energy efficiency, do you tend to benefit economically from them?

Matt White, Executive Vice President & Chief Financial Officer:

Yeah, we can. I mean, when we have our pass-throughs, they tend to be at fixed rates. But if we do better, we are able to enjoy that; and if we do worse, we have to absorb that. So, we are able to make investments to try and mitigate that when we have that opportunity. But probably more importantly is really the demand opportunity it creates when you see these commodity increases I mentioned earlier. You just tend to see more either production, and like I said about oxy-combustion, I mean, it tends to bring two benefits, especially in today's environment. First of all, you reduce the amount of natural gas or energy you would use. But secondly, you can actually make a more pure CO2 as your emissions, which today when you want to capture that, it could be more capture-ready, which helps on some of the other initiatives on sequestration and minimizing greenhouse gases. So, we're seeing kind of a double benefit in that regard to reduce energy consumption, but also to better position emissions for capture. So, I think right now, this commodity effect we're seeing, what I'd say are normal patterns we've seen plus the ESG benefit kicker on top to try and capture those emissions in addition to just reducing energy. And remember in 2008, we saw a similar pattern around reducing energy costs, because at the time, you had very high oil and natural gas assumptions.

Jeffrey J. Zekauskas:

In the popular press in Europe, there's talk of carbon dioxide shortages. Is that something which is prevalent or meaningful?

Matt White, Executive Vice President & Chief Financial Officer:

So, carbon dioxide in our industry, you tend to source from various byproducts sources. So, you'll get it from various offtakes of other suppliers that it'll be a byproduct of what they make. So, they make some primary chemistry and then we'll take the CO2 off, purify it, distribute it, liquefy it, store it. So, within Linde, we make it an important point to make sure we have a diversity of supply. Both the type of assets we're pulling from, so you don't have a correlation, let's say, of many assets at once going down because of negative conditions, also geographic diversification. So, we want to make sure that from a supply perspective that we're able to keep our customers running. Now, that being said, sometimes competitors will have disruptions or suppliers will have disruptions. And what we can do, and we do is we pull from further sources, now that obviously incurs logistical costs and we have to put surcharges through to recover that. But CO2 can travel by rail, it can travel by ship, it does incur incremental costs. So, when events happen like this, where you may have a large source down, our team is well versed to work through this to identify the right logistics of sources to make sure that our customers are cared for, and then if the opportunity presents itself spot business that we can help other non-customers keep running, we absolutely will do that when we can.

Jeffrey J. Zekauskas:

Matt, in terms of your cost structure, this has been at least for me an unusual year in that maybe in the first half, you took \$380 million of charges to restructure your operations, and maybe you still have \$500 million still to spend from charges that you've taken. Why were that you did your merger with Linde AG a few years ago? Why now is there sort of an acceleration in your restructuring activity? And when you look at these sort of larger charges, what are the real benefits to your income statement from them?

Matt White, Executive Vice President & Chief Financial Officer:

So, take a step back, when we initially merged, we said we would have a three-year integration window, and it would take us about three years for integration. Now in certain parts of the world, we've accelerated that. But during that period, it would be a time where we would be reorganizing including certain charges. Now, I expect starting next year, you're just not going to see those type of charges to that level. But obviously, events can happen, right. You can have certain shocks to certain end markets or local geographies that we will realign our costs in line with that. So that being said, when you take these charges, it's different time lags in different parts of the world and it's all a function of what the specific contract structures, labor structures are. So, in some areas, the charge has immediate effect. In other areas, there might be a lag just based on various negotiations or contract structures that have to happen. So, given the charges that we have on the books, these are things that we've met all the accounting criteria for communication, for the reorganization and then that gets paid out over time as we reorganize the company. And so, some of them are paid out faster and some are paid out slower based on the local structure on how that occurs, but it will occur. And so, we've said from the very beginning that when we did our merger synergies, we expected that Americas and APAC would be faster than EMEA just given how the structures are there, and that's what's happened. You're seeing some time lags based on different areas of the world, but this was anticipated, and this was communicated. I would say there's nothing out of the ordinary what we're seeing, but that all being said, we live in a dynamic world, it's constantly changing. We have a very local business. So, we always have to be thoughtful to make sure that our local costs are aligned with what we're seeing in all of our regions around the world.

Jeffrey J. Zekauskas:

So, do you think that you'll pay out that \$500 million over the course of the next 12 months roughly or is it too hard to tell?

Matt White, Executive Vice President & Chief Financial Officer:

So, I would say when you take these reserves, the payout can be anywhere from immediate, so within one month, two as far as potentially 18 months, depending upon the length of severance the person gets, which obviously is a calculation and again different in each jurisdiction and depending upon the contract structure that might exist when they actually depart the organization on timing. So, that's kind of how the timing will work. But it will get paid out and it just gets paid out at different lengths. So obviously, we map that, and we bridge that and walk that in all of our filings with the cash restructuring as it's taken out of each time and each quarter.

Jeffrey J. Zekauskas:

Maybe we can talk about some of your uses of cash. I think you bought \$2 billion roughly of shares back in the first half. Is that a normal -- is that a normal rate for you, is it an unusually high rate? And when you buy shares back, do you think about what the intrinsic value of Linde is, or do you think what we do with excess cash is we buy back shares? Can you sort of describe how you think about that process?

Matt White, Executive Vice President & Chief Financial Officer:

Sure. It starts with the capital allocation policy. And ours is very stable, disciplined, consistent and simple, it's not complicated, and we could put it on one page. But basically, our mandate is a single A rating and grow the dividend every year. Our priority is to invest in the business. That's what we want to do once we meet the mandate. And that can include acquisitions, that can include decaps, that can include capital projects, that can include what we call base Capex. It doesn't matter, because we treat it all the same, because our expectation, the investment criteria and how we evaluate risk and reward, we apply consistently across that use of capital. And so, we have a process, we review all these things, we have very low levels of authority that get aggregated up for review. And from that perspective, we're able to review and analyze that capital, but we always want to invest in the business as a priority as long as it meets our investment criteria. Now, we're in a position, a fortunate position that we have significant excess cash than what we need.

And part of that reason is our non capital-intensive portion, that business is growing very nicely. We are less capital intensive than I think people realize. We have a large package business; we have a large healthcare business and we are growing at a pretty healthy clip without the need for capital. So, that's resulting in an excess cash position. And then our final leftover of excess cash is to repurchase shares. So, that's our capital allocation policy in a nutshell. And so, we've been in a position with a lot of excess cash, and we've been repurchasing shares. To your point about how we think about it, we think about it the same way we think about investing in the business. We look at an unlevered after-tax IRR, we look at a 15-year model, we do sensitivities on everything from multiples to EPS growth rates to dividend growth rates. And that is how we get justification and approval from the board on a program. And another I'd say, something to think about is, we expect efficiencies and productivity around the world of all our employees. And it's no different on how we manage capital.

Today, by far, equity is the most expensive form of capital for Linde. Our after-tax dividend yield is 1.3%, 1.4% depending on the day. And from a debt perspective, our after-tax cost of debt is lower going pretty far down the curve. In fact, we're in the bond market today. And so, we do need to recapitalize the firm a bit as well. I mean, we need to account for that because of the cost of differentials and capital. So, the combination of all that is kind of driving the underpinning capital allocation policy, to your point, we had excess cash and we've been on about a \$1 billion a quarter buyback run rate. My view right now I'd see that as sustainable looking at least in the near-term and beyond, but we'll see.

Jeffrey J. Zekauskas:

In the old days when Praxair was a public company, maybe your -- maybe Praxair's level of leverage was 2.5 times to 3 times EBITDA and maybe lengthy today by the end of the year. I don't know a little bit more or somewhere between 1 and 1.5. What's the optimal level of leverage for Linde PLC?

Matt White, Executive Vice President & Chief Financial Officer:

Single A. So, to your point right now, we are better than the single A. And so, we have room to expand our balance sheet a bit, and obviously, the buybacks are a way to do that. But again, we've been performing quite well in the non-capital intensive portion in terms of our operating cash flow levels. And so, we are -- we have been stepping up the buybacks here. As you know, we're on a pace much higher than what we finished last year and that will be the way to try and again recapitalize the firm and soak that up a bit. So, we do have a lot of room to A and our goal is to be an A. But at the same token, we are by no means capital constrained in any growth initiative and we're going to pursue all of those that meet our criteria.

Jeffrey J. Zekauskas:

It's funny Matt because the EBITDA of Linde is about \$10 billion. And so, if you were 3 times levered instead of 1 times levered, you would be putting \$20 billion and capital to work, it would seem that one of the real challenges for the company is trying to use so much capital that's available to you. Do you see that way?

Matt White, Executive Vice President & Chief Financial Officer:

Well, again, I mean, from a growth opportunity perspective, we've talked about not only a \$7.5 billion project backlog, we have \$10 billion of I'll call it pre-backlog opportunities on a probability weighted basis. So, we see a lot of areas to deploy capital going ahead, but to your point, we're still going to have a lot of excess based on how the current numbers are playing out. We do see incremental sort of tuck-in, I'll call it acquisitions, that can be quite accretive, but we don't see anything of a significant scale at this time. But from the buyback perspective, we have a lot of ability to do that and to flex that up and down. Remember, we trade in two exchanges, so we have the ability to buy back in both exchanges.

And that is a very flexible use of capital that we can flex up, flex down and we've demonstrated that. So, I'm not concerned. I mean, yes, we have a few, if you want to call it a good problem right now, but it's something that I think our plan and our capital allocation policy in the long run will absolutely manage. And again, we have long-term views, right. I mean, it's -- our -- we look at 10-, 15-year models when we deploy capital. So, our view is always long-term and how we think about things. And the current scenario, yes, it's important to understand but how we deploy capital, we always want to look at the longer haul.

Jeffrey J. Zekauskas:

So, your return on capital continues to rise. Can you talk about the levers behind that and how you see your return on capital over the next few years?

Matt White, Executive Vice President & Chief Financial Officer:

Yeah. So, how we calculate it, I think is pretty straightforward. So, the numerator is a net operating profit after tax, and that's a four-quarter trailing average. And the denominator is a five-quarter trailing average of basically our capital, which is essentially net debt plus equity. So, you've got the last 12 months of NOPAT over an average five quarter capital number. And to your point, when we first merged, we were around 10% ROC and as of this last quarter, we were just below 16%. So, we've had a pretty rapid increase in that number, and it's been a function of a couple of things. I mean, we've been growing the numerator double-digit percent consistently since merger quite healthy, but we've managed to maintain a relatively stable capital base. So obviously when you grow the numerator faster than denominator, you're going to improve that metric, and this gets back to my point that we've seen strong growth in the non-capital intensive portions of the business, but also we've been managing capital well. I mean, we have a very strict discipline on how we define project backlog, our backlog has been starting up as expected, on time, it's been contributing. The use of capital has been I think quite disciplined, which has helped improve that number. And we've been able to keep up with various factors, inflation, obviously facing some challenges last year to be able to improve that metric. So, it's a big part of our compensation, it's something from my view that return on capital is probably one of the most important if not the most important metric for this industry. And it's something that we're going to continue to work to improve and grind higher by proper management.

Jeffrey J. Zekauskas:

Yeah. I mean, if you buy back \$3 billion or \$4 billion worth of stock and your dividends are a couple of billion, and your net income is I don't know \$5 billion, that is really not much growth in the denominator. You can really get some pretty good numbers. Can you talk also Matt about one of the things where the industrial gas companies were unusual as operating cash flow as a percentage of EBITDA? Can you talk about what a normal range is for a company like Linde in that ratio?

Matt White, Executive Vice President & Chief Financial Officer:

Yeah. So, for Linde, it's been evolving. So, when we initially merged, I had said about low-70%. So operating cash flow as percentage of EBITDA of low-70%. And within the last two years, we've been increasing that number. We were getting more comfortable seeing the benefits of bringing the two companies together and we've gotten to low-80 percentile range. Right now, I'd say probably low- to mid-80 percentile range. And where we are in the engineering cycle could alter that a little bit in the fact that if we're in the growth area of engineering, I'd be on the higher end. Because of how they get paid upfront. And if you're on a declining side of engineering working capital, you might be on the lower end. But I could see us mid-80s is a number low- to mid-80s is an area we can be and we're working to improve that every day. I mean, operating cash flow is also part of our near-term incentive plan. For growth in operating cash flow, it's a very important metric for us. And we're continuing to work to try and get that ratio higher, but we've been stepping it up in the last few years and our goal is to try and find ways to make it even better.

Jeffrey J. Zekauskas:

One of the characteristics that really draws investors to Linde are your opportunities in hydrogen. Can you spend some time talking about how you see the hydrogen market generally and how it pertains to Linde?

Matt White, Executive Vice President & Chief Financial Officer:

Sure. Maybe if I take a step even back and just talk about energy transformation maybe at a high level.

Because obviously hydrogen is an important molecule in that. But just from my perspective, I would think about sort of three basic buckets on how we think about where this transition is going. And the first bucket would be decarbonizing some hydrocarbon fuel, okay. The second bucket would be displacing or replacing combustion of a hydrocarbon fuel with a non-hydrocarbon fuel, like hydrogen or ammonia, so you would combust and use that as a fuel. And then the third would be electrification of the economy. So obviously, an example would be using electrical motors as opposed to internal combustion engine. So those are three things that you're seeing kind of throughout the economies right now. And when I think about each one, especially as it pertains to the Linde.

So, starting with decarbonizing a hydrocarbon fuel stream. This is the one that we're seeing right now the most, it's the one that has the best chance of success given existing technology, existing incentives, existing infrastructure. It includes things like carbon sequestration, oxy-combustion, dry reforming, a lot of these technologies that we have today. Injecting hydrogen into natural gas streams, replacing natural gas with hydrogen, replacing coke with hydrogen coking coal. So, these are things that our customers right now are very eager to do, where we see the most immediate impact, and it also helps our customers have a very quick win on their own greenhouse gas emissions, right. Because obviously, they have mid-term and long-term targets and this can give them the quickest win. So, that's one that is a big part of our \$10 billion opportunity today as far as the clean energy part. And it's something that I think will move fairly quick and out of the gate.

The second one is replacing the fuel. Now, today we do, and we have been for many years supplying hydrogen into rockets. So, hydrogen as a fuel in addition to oxygen into RP-1 fuels. But other than that, I would say there's not a lot of

combustion of non-hydrocarbon fuels. So that requires obviously some engine redesigns, fuel injection systems, potentially drive train systems, storage systems into whatever vehicle it is. So, it's going to take time, it relies on other parties. I mean, aviation is an industry today that's analyzing this. Now, we're well positioned with our distribution assets. I mean, remember, we have almost \$100 billion of assets in the ground. So, we have the ability to make, transport, store, deliver this product now. And so, as that develops, time will tell, but it'll take time.

The third piece is the big one. I think that's the one that's got a lot of complexity and it's regarding electrification of the economy. The obvious role for industrial gases there are, you use them as a carrier of the electrons. So, when you make power today, especially if you use renewable power, obviously, you need to store those electrons. And one way to do it is, use an electrolyzer, right. Use an electrolyzer and you convert electrons into hydrogen. And then as hydrogen you store and transport, and then you take that hydrogen and you put it through a fuel cell and then it turns back into electrons to run a motor or to do whatever you want to from an electrical basis. So really, hydrogen, and ammonia is another example, would be carriers of the electrons and that's to electrify. Now obviously, there's a lot of moving parts. There's cost, there's some issues. But I would say two things right now that sort of create some of the challenge in the backdrop. One is electrolyzer technology, while it's been around for a while, it's still got to scale up the modules. I mean, whether it's alkaline, whether it's PEM, SOEC, you've got to get that scale up to be able to meet some of the larger scale demand and you need that long tested reliability at large quantities. But secondly, it really gets into renewable power, right. Because if you run an electrolyzer off a normal grid today, it's actually one of the most carbon intensive things you could do, way more than burning a hydrocarbon. So, the renewable power is a bit of a challenge, because on a megawatt per acre basis, it can take up a lot of land. In fact, if you kind of efficiency adjust it, it could be hundreds of times more land than say a steam methane reformer on a megawatt per acre basis. So, you've got to find the land, develop the land, you've got to put these either solar panels, wind mills there and it's just going to take time. So, what we're seeing here is depending on what part of the world you're in, you have some economies, and Asia is a perfect example, where they are converting electrical, they are using fuel cells, but they're going to do it on what's called gray hydrogen right, or maybe blue hydrogen. We're going to run it out of steam methane reformers, autothermal reformers, and run that economy. You've got other regions that are trying to go green all the way, but they got to get the renewable power in place, some like Canada and Brazil have hydro today. Nuclear obviously still up in the air whether that'll count, but these are kind of the dynamics. Now, we're absolutely engaged, we're a player, we're involved in different aspects. But overall, when I think about these three areas of hydrogen, we're going to apply our investment criteria, we're going to bring our technology, our expertise, our many decades of experience, our entire asset network. And this is how we're going to play. And so, that's kind of how I think about the three, but I would say definitely the decarbonizing is happening now, immediate. The other two are happening in various stages, but time will tell how fast it takes.

Jeffrey J. Zekauskas:

Hopefully. The decarbonization of the economy, there are various Q45 tax incentives in the United States, which seem low to really push decarbonization work quickly. In the way that you assess the regulatory environment in the United States, do you see much, much change and do you think that we need some regulatory changes before you can really decarbonize in the U.S. at scale?

Matt White, Executive Vice President & Chief Financial Officer:

Yeah. I mean, when you think about around the world and U.S., especially to -- obviously it could be a carrot, it could be a stick. 45Q is a carrot, right. So roughly \$50 a ton or so is kind of the value you can apply to that. And I would say, when the U.S. specifically, when you think about a 45Q, it can get certain projects over the hump, but only a small portion, and why is that? You've got to have a pure enough carbon stream and obviously things like oxy-combustion can get that. You've got to be an identified area where there's enough value to putting all that infrastructure in compression equipment,

capture equipment, pipe systems and you want to be near a geology that you have the ability with empty pore space to essentially sequester that. Otherwise, you have a use for it, like you could inject it into a cement application, or you could use it for a CO2 merchant product, but that obviously is not going to be as much quantity. So, 45Q can help on some smaller projects in my opinion, but when you want to get to a larger scale, you're probably going to need something more and whether it's a larger carrot or maybe some other disincentives that kind of drive the behavior, time will tell. But I do think from my perspective at least, when you have a densification of assets and for example, think of the U.S. Gulf Coast, they're actually in a very good position where you can aggregate the CO2 more cost effectively than trying to capture it on lots of small plants scattered. Because when you capture it, obviously it's about compression and it's about moving a product and you also need the geology, which the geology down there is well developed and well understood obviously from oil exploration. So, I think that's an area where you can see with a slight more push on legislation or incentives that could really help tip it to the next level. But we do have some projects today that can be economical on 45Q, but we'll just have to see how legislation plays out for some of the broader opportunities that exist.

Jeffrey J. Zekauskas:

Matt, some investors wonder about the trade-offs in the hydrogen market. And that hydrogen is used for the desulfurization fuels, whether it's gasoline, diesel fuel, and as hydrogen economy moves forward and trucks convert over to hydrogen fuels or maybe there are more electric vehicles, there's a reduction in demand or pressure on growth in diesel fuel and in gasoline. So, how do you think about the opportunities in hydrogen in the mobility area for Linde counterbalanced against parts of the business that may become weaker over time?

Matt White, Executive Vice President & Chief Financial Officer:

So, I think starting with the hydrocarbon piece to your point on the refining, I mean, first of all, we sell a fraction of a fraction into a multi-trillion dollar market. So, if that transitions at a fast pace, and I'd say a fast pace is 10 to 20 years, it's going to create more opportunities than risks for us. So, I definitely believe that and I see that opportunity, because again, we're only participating a very small portion today in the refining space. Now, that being said, when I think about sort of today's scenario on the refining side, I mean, to your point sulfur standards are not going to get any looser. So as long as we are burning gasoline or diesel, kerosene, you name it, or obviously a bunker fuel type for shipping, it's going to need to be low sulfur right, for the either IMO standards or the fuel standards for transportation. So that's not going to change anytime soon. If anything, you could argue might even, there could be tightening in future, which would require more hydrogen. So really then it's a function of how long are people going to be using internal combustion engine with hydrocarbons as a fuel. I think the next 10 years you're probably safe, we'll see beyond that. But on top of all that, we make it a point to always want to partner with our on-sites to what we view is Tier 1, high-quality customers. And when I look across our customer base in that space, these are highly complex, highly integrated assets in very dense regions. And so, a lot of our refinery customers are some of the lowest cost producers in the world and they are integrated with downstream procedures where they're sending their carbon into a plastics chain. And so even if you see a more rapid transition, meaning 10 to 20 years away from some of the refined hydrocarbon products, we're still going to consume plastics, we're still going to consume some of those downstream products, rubber, what not. And so those are the ones in my opinion that will adapt and thrive in this. And we've seen this in other industries, in metals, for example, when you have this transition, the lower cost, well-integrated ones adapt and thrive. The higher cost, isolated, non-integrated ones, they tend to become casualties of these secular trends and changes. So, I feel quite good about our customer base. I think the transition will create more opportunities for us, but it'll take time. And until then, we're going to keep desulfurizing and making hydrocarbons as clean as we can as we participate and support the transition.

Jeffrey J. Zekauskas:

What we see are all kinds of interest in green ammonia. Do you have any interest in integrating back into green ammonia or do you see yourself more as a partner with green ammonia that may come on stream now?

Matt White, Executive Vice President & Chief Financial Officer:

Well, I'd say today, we build ammonia plants and we run ammonia plants. So, we have experience with ammonia synthesis plants. We supply hydrogen and nitrogen into ammonia synthesis plants. So, we're well integrated across the entire stream already today. With blue ammonia specifically or green ammonia or whatever color you want to use, I mean, it depends back to my earlier point. I mean, ammonia can be a chemical, right. In theory, it could be a fuel, or it could be a carrier for electrons. So, when you go back to that concept, I mean, clearly there is a lot of interest with decarbonizing the chemical ammonia. We're already actively involved in a lot of these, right. How do we make ammonia for -- obviously it's current uses as either a precursor or into the agriculture industry, how do you make that more sustainable? This is a conversation right now with applications right now that are going to lead to projects in the near-term. So, these are things that we're working on today. Now ammonia as a carrier, it just requires, I'd mention all the things that requires on the electrical and hydrogen as a carrier, ammonia is one more step, obviously you're going to put the hydrogen, make the ammonia through synthesis plant, then the ammonia gets disassociated back to hydrogen to run the hydrogen fuel cell. So, we have seats at the table on some of these projects, it's just a function of what participation do we want to have that meets our investment criteria. So, I mean, clearly, they're going to be blue ammonia projects that make a lot of economic sense. And it's just a function of how is that ammonia going to be used ultimately. Now, the more layers you have, it's just going to add some complexities on cost, but I can say for a fact that everybody is trying to find ways to decarbonize their ammonia. Now to what extent, it varies. And to what end use, it varies. But for ammonia that's being used today, decarbonizing is in my opinion is a big priority right now.

Jeffrey J. Zekauskas:

Well, Matt, we really appreciate you taking the time to discuss these issues with us. Certainly, you have a lot of capital to figure these things out and you have a nice industry position. We wish you well, and we hope to see you again. Thanks for it.

Matt White, Executive Vice President & Chief Financial Officer:

Thank you, Jeff. Appreciate it. Thank you. And thanks for everyone's time on the phone as well.