Aspects of the electric vehicle supply chain and financing EV infrastructure

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Welcome to "On the Move", the podcast in which experts from the BNP Paribas group decipher major challenges related to sustainable mobility. In today's episode, we're going to discuss some challenges related to financing the electric vehicle supply chain, with a focus on European solutions. Joining us to answer our questions, we have the pleasure of welcoming Fabien Levaillant, Managing Director at the Low-Carbon Transition Group and specialist in transition minerals, metals and batteries.

Welcome Fabien. Could you please tell us a little bit about the Low-Carbon Transition Group and what you do in that group?

Fabien Levaillant [FL]

The Low-Carbon Transition Group has been created in 2021. It is headed by Severine Matteo. It gathers a group of experts. Their principal mission is to assist our key clients: large corporates, institutionals, and startups to foster a greater transition to a lower carbon economy. We are organized into four verticals: there's of course the well-known renewables and hydrogen. There's also everything related to carbon capture and carbon capture solutions for all the hard-to-abate industries, and downstream energy that is related to sustainable fuels. And, last but not least, the one I am part of is, as you mentioned, transition minerals, metals and batteries, and I'm in charge of the battery value chain.

[JM] Could you explain how these components are an important part of the development of electric vehicles in Europe?

[FL] Let's start maybe by setting up the scenery around electric vehicles and the market related to that. Despite all the bad press that we've been reading recently, and some form of U-turn in the US recently, electric vehicle sales are growing and there's a forecasted 25% growth for 2025 globally, which is impressive. This is mainly driven by China, where one car sold out of two is an electric vehicle now. So, there's a long-term trend, and this long-term

trend is sustained by two key factors. The first one is price. As a customer, the primary focus that you have is the price of the car. And now we're seeing mass market vehicles going on the street that are on par in terms of price with the ICE cars - ICE meaning Internal Combustion Engine - with the combustion engine cars and now we are at the same price. So that's very important for penetration of EVs (electric vehicles). The second element is performance. Because you don't want to buy a lower performing car compared to the one that you have. And now, there have been a lot of improvements in batteries: for a given performance, the price is also declining. These two effects, combined, will sustain a long-term trend of stronger EV penetration in the market. So that's the scenario around the electric vehicle market and why this is important. There's kind of a revolution now, because when you look at the car, the car is not a car anymore, it's a computer. You know, you ask the car to do a lot of things that are not usually done by a car. So, the two key critical components of a car now are the software that is driving the car - managing your interactions with your car object. And the second one is the battery pack.

[JM] Batteries power all of this technology, within the car ...

[FL] Exactly. I mean, I think more than 50% of the value of the electric vehicle is now in, in the battery pack. And what is a battery? We've had batteries and many mechanical and technical and now electrochemical batteries, for ages. The dominant technology at the moment is lithium-ion. And within the lithium-ion, there are two key chemistries that are very dominant and that offer the best performance for a given price. It's LFP for Iron Phosphate, and NMC for Nickel Manganese Cobalt. So electrochemical batteries are composed of a certain number of minerals that will define its performance. Its cost, but also its performance. And why are we seeing an increase in better electric vehicles on the street? There's a simple fact: to get on par for the performance of a nice vehicle, you need to be able to have performing batteries for a given weight. Because back in the days, electric vehicles were not possible because you had to carry tons and tons and tons of batteries, which was not even possible or practical. Now, you can, within a very short battery pack, have the same power output as a nice car. That's the key decisive factor for electric vehicles being developed and growing.

[JM] Fabien, how's Europe doing today with the production chain? What sort of regulations are being put in place so that we can stay up to par?

[FL] If you take a step back on the electric vehicles, you quickly understand that the value of the electric vehicles sits within the batteries, within critical minerals and materials that are composing the batteries: the nickel, the manganese, the cobalt, and the ability to refine them, manufacture them, and wrap them up into batteries. The entire battery value chain is very much located in Asia, and notably in China. The Chinese have taken a very strong lead, in refining materials and in making batteries. As of today, 80% of the batteries are made in China. 80% of the lithium is refined in China. Almost 100% of the graphite is also refined in China. And same for the cobalt at an 80% level. So, they have made a lot of progress and effort to develop this value chain, which is close to non-existent in Europe at the moment. As it is very important for the transition and for the electrification of mobility, there's recognition in

Europe that we have to move forward. To ensure a bit of independence and sovereignty of Europe, we have to accelerate the development of this value chain in Europe.

[JM] Europe has really a strong manufacturing history in the car industry, so one can imagine: how do car manufacturers in Europe keep up? I guess that's where the Low-Carbon Transition Group can really step in, that is to try and find solutions or help clients to transition in that field.

[FL] Yes, also with the European Union support and the ability of all the stakeholders to work together. First at the political level or the law-making level, the European Commission has identified critical industrial projects to develop further this value chain. And then there are also a lot of significant investments made by car OEMs and key European players to take part in this development. And this is a very vast topic because this is tapping from the metal and minerals refining to the end manufacturing and the car production at the end - car or trucks. So that's a very large demand and requirement.

[JM] A Battery needs to be charged too, and I understand that recently BNP Paribas has helped IONITY to develop their fast-charging infrastructure. Could you tell us a little bit more about that, about IONITY, which is a group? And what are the key problematics behind financing such infrastructure that's so necessary, in fact, for electric vehicles of all kinds to roll?

[FL] We are very proud to have accompanied and advised IONITY in their debt-raising process. So, we've been working with them for years. We advised them on their equity raise and divestment years ago, and now we've just completed the debt advisory and arranging for their financing. So IONITY is a pan-European independent charge point operator, the so-called CPO, owned by several car manufacturers and investment firms. It is the leading CPO in Europe. It's present in 24 countries and it is specialised in fast charging, for 'en-route' and destination charging. Indeed, if we want the EV market penetration to be a success, we need to address two main challenges from a customer standpoint. The first one is the price. We discussed that: you need to have an electric vehicle that has the same performance and that is competitive on price. The second element which is very important - and that is, up to now, the main limit for better acceptance of electric vehicles - is what we call driving range anxiety. You don't want to be left with no power in the middle of nowhere with no charging station around. You can address that by improving the battery performance and the driving range of your cars - which is done at the moment as we speak - but you can also address these questions by densifying the charging network and making sure that you have sufficient charge points, everywhere you go.

[JM] I understand it's a fairly competitive sector. What are the particularities related to financing CPOs, for example?

[FL] As a CPO, you have to address very diverse and somehow conflicting demands sometimes. You need to address the fast-charging needs for the long journey, but also the charging needs for everyday life when you're getting out. You also need to address the charging need for people that could not charge at home. And with the development of the mass market vehicles there will be a lot more of these demands. And at the same time, you're completely exposed to the traffic risk. As a CPO, revenues are made when your charging stations are used. It is very simple. So first and foremost, you need to have sufficient electric vehicles in demand outside in the streets. And then you need to have a competitive offer compared to your competition. And it's a completely open market. So not only are you facing traffic risk, but you're also facing completely open competition with a very limited barrier to entry. Installing charging stations is pretty simple. There's not a huge technological challenge to overcome [laughs] to build a station. You just buy a station, and you put it on the ground. It's very simple. So, there's a lot of competition. There's the former oil and gas incumbents that have the stations, the oil and gas stations that will turn into electric. There are the municipalities, there are the cities, there are other competing CPOs and so forth. From a CPO standpoint, your business case, your business model is very risky. It's much more risky than other transitioning sectors like renewables that have been around for years, for instance. So as debt advisors or as advisors to CPOs, we have to be a little bit more creative and agile with the structures that we've put in place to address these needs. What is fascinating with this sector, and globally, the battery value chain, is that it's very fast evolving in both technological and technical aspects. Every day, there's a new announcement about a new technological progress: one will announce 3,000 kilometers charged in five minutes, another one will announce capacity to be expanded by tenfold. I'm flabbergasted to see how fast this market is evolving. There will be a reality check at some point. You cannot make commercial products out of all of these announcements overnight, because you need a power supply backbone to make these announcements a reality. What's interesting is that this is a fast-evolving market, where you have to keep a very flexible and agile view on how to support and who to support, and which financing product is the most relevant at this given time, given how fast the market is evolving.

[JM] It's a careful balance, in fact, between being super in tune with what's happening - because it's a fast-changing sector - knowing very much about details on many fronts. But also, as a banker, it’s being really steady and realistic about risk and about the sort of advice you can bring to try and find solutions.

[FL] A word on that, because as bankers we are somehow meaningless. We are not lawmakers, we are, not policymakers, we're not industrials, we're not inventors, we're not technology providers. In a sense, we are just catalysts. We're here to assist and help ideas to become true, and we strongly believe in them.

[JM] We're coming to the end of our discussion, Fabien. What are your thoughts about the direction our clients and society we serve together is moving in?

[FL] You know, working on a daily basis in the battery value chain is very fulfilling. That gathers a lot of diverse types of clients. We are addressing the needs and the requirements of large corporates, but also newly developed startups, or sometimes individuals that have bright ideas and that need support. We are also in touch with a lot of different business lines within the banks because we can't answer everything alone. And as you can hear, in all the 'On the Move' podcasts, there are a lot of business lines that are involved on a daily basis in this transition. And us, at all levels, we are also connecting a lot of dots internally to answer our clients' needs. So that's very fulfilling and engaging. This is a very engaging sector anyway, because as we've discussed, the technological aspects are evolving fast. The commercial aspects are also evolving fast. This is encompassing and factoring in a lot of technical, technological, risk as well as massive investment.

[JM] What do you like most about your job?

[FL] I'm thrilled by what I'm doing. Every day is different from yesterday. The reality of today is not the one of tomorrow. I think we are the sons and daughters of fossil fuels, so we can't get rid of them all, but we have to try to limit its impact in use. When it touches mobility and transportation, this is at least one sector where it could be completely decarbonized if we put the effort in the investment required. If you look at what has to be done to meet the Paris agreements, at least the transportation sectors - and for passenger vehicle in particular - this is one sector that could be completely decarbonized. I'm very convinced that what we're doing here is serving a greater purpose.

[JM] Fabien, thank you for joining us today.

[FL] Thank you, Juliet.

[JM] Thank you all for listening and stay tuned for the next 'On the Move'!