

Umicore Capital Markets Day

C: Evelien Goovaerts;Umicore;Head - IR
C: Marc Grynberg;Umicore;CEO
C: Pascal Reymondet;Umicore;EVP - Catalysis
C: Marc Van Sande;Umicore;EVP - Energy and Surface Technologies
C: Kurt Vandeputte;Umicore;VP - Rechargeable Battery Materials
C: Stephan Csoma;Umicore;EVP - Recycling
C: Luc Gellens;Umicore;SVP - Precious Metals Recycling
C: Denis Goffaux;Umicore;Chief Technology Officer
C: Filip Platteeuw;Umicore;CFO
P: Adam Collins;Liberum Capital;Analyst
P: Wim Hoste;KBC Securities;Analyst
P: Tom Riddlesworth;Citigroup;Analyst
P: Mutlu Gundogan;ABN AMRO;Analyst
P: Simon Fickling;Exane BNP Paribas;Analyst
P: Frank Claassen;Rabobank;Analyst
P: Zeb Billow;Web;Analyst
P: Andrew Benson;Citigroup;Analyst
P: Cheddi Panday;Goldman Sachs;Analyst
P: Martin Dunwoodie;Deutsche Bank;Analyst
P: Peter Olofsen;Kepler Cheuvreux;Analyst
P: Joe Dewhurst;UBS;Analyst
P: Matthew Waugh;Credit Suisse;Analyst
P: Junior Cuigniez;Petercam;Analyst
P: Unidentified Participant;;
P: Unidentified Company Representative;;
P: Unidentified Audience Member;;

+++ presentation

Evelien Goovaerts^ Good morning to all of you and welcome here in London at Umicore's Capital Market Day. Also, welcome to those of you joining us via webcast today. My name is Evelien Goovaerts and I'm Head of Investor Relations at Umicore.

Cautionary statement. I trust all of you are familiar with the text on these slides and that we can just move to the next topic which brings me to the purpose of today. The purpose of today is to give you an update on Umicore strategy. We will talk about our growth ambitions for the coming five years, and our senior management here present will explain our unique position in the different areas we operate and our strategy to create value.

If we have a closer look at the agenda, you will see that we have a very busy schedule ahead of us. Marc Grynberg, our CEO, will start today's presentation and he will reflect on the achievements and the challenges of the period 2010 to

2015, and he will also outline our growth ambitions for the coming five years. He will show also our uniqueness in the areas of resource scarcity and clean mobility. This morning's presentations will all be around clean mobility.

Pascal Reymondet, Executive Vice-President, Catalysis, will give an introduction on his business group and will then focus on the growth opportunities for Umicore in Automotive Catalysts. He will also tell you more about our position in the light-and heavy-duty diesel segments.

After the coffee break, we will give you an introduction on our business group Energy and Surface Technologies, and we will talk about the different drivers in the business units. Marc Van Sande, Executive Vice-President of this business group was supposed to host this session, but unfortunately, he couldn't be here today so Marc will be taking over. He will then hand over to Kurt Vandeputte, Vice-President, Rechargeable Battery Materials, who will talk about the exciting opportunities for Umicore in his business unit and he will try to explain how we are well placed to benefit of the megatrend electrification of the car

After lunch, we will focus on our unique position in Recycling. Stephan Csoma, Executive Vice-President, Recycling, will talk about the short and the long-closed loop recycling, and he will talk about the different business units for which he is responsible. He will then hand over to Luc Gellens, Senior Vice-President, Precious Metals Recycling and Luc will try to explain what our growth ambitions in his business unit, and he will also explain more about the benefits of the ongoing expansion of the Hoboken recycling plant.

Now after this deep dive into the different businesses of Umicore, we will have Denis Goffaux, our CTO and Executive Vice-President, explaining how Umicore focuses its R&D efforts in order to achieve the goals of our growth strategy. He will also shed some light on a few projects that have the potential to create growth beyond the 2020 horizon.

And then last but not least, our CFO, Filip, will try to explain how Umicore aims to turn this huge growth potential into returns and value for you, our shareholders.

Now before I hand over to Marc to officially kick off today's presentation, there're a few practical topics that I would like to discuss as well. We hope we will have a lot of questions today so in order to have sufficient time for questions, we have scheduled several formal Q&A sessions. However, there're a lot of breaks as well in between the sessions. We have our senior management here present so please take the opportunity to interact with them. Make use of their time.

The presentation set will be shown today; it'll all be made available on our website every time a session ends. Today's event is being recorded and a replay of the event will be available as of tomorrow morning on our corporate website. Finally, can I ask you to switch off your mobile phones, also to the presenters?

And with this, I would like to hand over to Marc, so Marc the floor is yours.

Marc Grynberg^ Thank you, Evelien, for this introduction and good morning, ladies and gentlemen. And today, indeed, the purpose is for management of Umicore to outline for you our growth aspirations, actually our outstanding growth potential. And we would like also to make use of the day to outline what makes Umicore so unique, and therefore, so well positioned to take advantage of growth opportunities and to create value.

Before we do so, however, I would like to address a couple of recent developments that for some of you may have become sources of concern, concern about the short-term or the near-term profitability of Umicore. And of course, I'm talking about the slowdown in China and the impact of metal prices with, of course, a certain interrelation between the two, the fall of metal prices is partially due to the slowdown of the economic activity in China. So let me briefly address these two topics first upfront and then we'll talk about the strategy.

Impact of metal crisis, it is a fact. It is a reality that we are sensitive to metal prices. The higher the metal prices, the higher the profitability. And in reality, our sensitivity to metal prices comes mostly from the pricing mechanisms in the recycling activities and Luc will talk a bit more about that later this afternoon. For the short term, I've given already an indication of the possible impact of lower metal prices and also combined with the currency FX for next year. I gave that indication back at the end of July when we have published our first half results. But that's a near-term indication.

For the longer term, I think it's important to bear in mind that the impact of metal prices should not be extrapolated in a linear manner because if metal prices stay for a long period of time at the lower level or at an extremely high level, you'll start to see changes in the market environment. The pricing mechanism or I should say the competitive dynamics start to be impacted as well. And it is clear that when metal prices are very high, it is easier for a large number of players in the recycling world to make a lot of money, and therefore, could be aggressively competitive in terms of pricing.

When metal prices stay very low for a long period of time, it's the other way around. It's difficult for most of our competitors to keep their head above water and you'll see then changes in the pricing environment. So clearly, there is a metal price impact, given indication for next year, but don't extrapolate in a linear manner for the longer term. It is also the reality that we like our sensitivity to metal prices because this is one of the distinctive factors of our recycling activities in terms of financial performance.

Let me now talk a little bit about China, and you will hear during the course of the day about China several times, so you will hear about the growing importance of

China as a market for several of our activities. So I think it's important to talk upfront about how we see, how we experience the slowdown in the economy today. And actually, our exposure to the Chinese market today is predominantly in two business units, that is Automotive Catalysts and Rechargeable Battery Materials.

In Automotive Catalysts, we see somewhat lower demand for our catalyst systems in China and that will have an impact in the second half of the year. However, let me reassure you this was fully factored in the forecast, the earnings range forecast that I communicated back at the end of July. This being said and despite the slowdown in demand, China is and will remain the largest automotive market in the world. It is a market that has unique characteristics in the sense that it is the largest; it is growing and will continue to grow in the long run because of the growth of the middle class in the country.

And it is also a market where you have found a stringent emission norms so you're in a way have a unique combination between volume, growth and emission norms, and that's why we need to be well positioned in that market regardless of short-term fluctuations in demand. And I'm happy in a way that we have made all the efforts in the past few years to have the technical, technology and production infrastructure in place so that we can really benefit and capture the growth of that market in the long run.

In Battery Materials, actually we don't see any slowdown of demand whatsoever in China. And this is probably due to the fact that the demand for battery materials is driven to a large extent by the government push for new energy vehicles and that is for cars as well as for electric buses. So we don't see a slowdown in demand. And for the contrary, we see a very high level of traction in the markets and we will continue our expansion efforts in the country, and the strategy is definitely not to be revisited nor is the investment policy in that business in that country.

Again, when it comes to near-term impact of metal prices or the slowdown in China, let me reassure you that these elements have been fully factored in the earnings forecast that I communicated back at the end of July.

This is being said, let me now turn to the strategic part of the presentation and that's what we will focus on for the rest of the day. Let me start by recapping our vision 2015 ambitions, what we said five years ago and how we fared against these ambitions. Five years ago, we identified four key megatrends that we believe were most relevant for Umicore; the trends of growing metal scarcity, the trend of electrification of the automotive industry, the trend of a growing production of the renewable energy, and finally, the need for better air quality.

Why are these trends particularly relevant for Umicore? Because we do have competencies and technologies in-house to address these trends and bring part

of the solution to these societal problems, and we decided to make that the core of the strategy five years ago and to focus our growth efforts on these four megatrends. The purpose was to benefit or to take advantage of these megatrends to achieve double-digit growth in four activities, while the other businesses of Umicore that were not directly connected to these megatrends would grow in line with global GDP.

We also set ourselves the target to maintain a return on capital investments in excess of 15% and to do that focusing our efforts and our strategy on technical technology innovation more than anything else. We also expected and said that the journey, this strategic journey, would actually be - would take place in three, more or less, distinct phases. A phase of preparation initially, where we would lay the foundations for the major growth initiatives, and that would coincide at the time where Umicore was actually recovering from the recession, the global recession, of 2008 and 2009.

This would be followed by a phase of focus where our investment efforts would be intensified and where we expected to see the first benefits, the first payoff from our recent investments. And then we said there would a phase of acceleration in 2015 with further intensification of some of our investment efforts and then of course, larger benefits becoming visible of our strategy. Now it is fair to say that some of our growth initiatives have taken more time to pay off than we initially anticipated. Of course, with the benefit of hindsight, it is easier to analyze that, and that today, we should indeed recognize that these efforts have taken a bit more time than anticipated.

The good news though is that if we look at the performance in 2015, we see that the acceleration is truly there. So in a way, we are back in line with the phases, the strategic phases that we anticipated five years ago. All the elements are starting to converge in order to deliver the benefits that we had anticipated from the strategy.

For our financial point of view, our high growth businesses have achieved between 2010 and 2015 some 8% growth, so that is 2% lower than the double-digit targets we had set ourselves. Our other businesses have grown at 3% versus a global GDP growth of 4%, and the difference is probably due to the fact that we have a large exposure for Europe and Europe has not been a very strong and a solid engine for growth in the past few years. And on average, we have managed to achieve a return on capital employed of some 15%, slightly above the low-end of the range that we had set ourselves as an ambition.

These are averages and are masking a little bit of the profile of profitability that was achieved in reality in the past five years. We are off to a very strong start in 2010, 2011 with the help, with the boost of very metal prices. Then we had some more difficult years in 2012 through 2014 with lower metal prices, with the European recession hitting us directly. And now, we start to see our investments

paying off and indeed we are recovering back to the profitability levels that we had aspired to.

In the past five to six years, we have made a lot of progress in executing the strategy. We have made very significant headways. We have added capabilities and capacity in a number of businesses and I would say predominantly in Automotive Catalysts and Rechargeable Battery Materials. And today, we're doing so in Recycling. We'll hear more about that later today.

In total, we spend between 2010 and 2015, about EUR1.4 billion in growth investments. At the same time, we also dedicated some EUR800 million through the research and development of new products and new processes which also underlines our commitment to technology innovation and technology differentiation. For that period of time, we have started to penetrate a certain number of new market segments, heavy duty diesel catalyst is one of them. The rechargeable battery materials for electrified vehicles would be another example. And over that period of time, we have also taken a number of selective measures in order to improve the competitive position and profitability of our businesses as was necessary given the market conditions.

Back in 2010, we also set ourselves ambitious and quantified targets in terms of sustainability. They were articulated around three main themes of eco-efficiency, making Umicore a great place to work and stakeholder engagement. I must say that I'm really proud as a CEO of this company that on eight of these nine objectives, we made significant progress. And actually we're going to achieve eight out of the nine objectives by the end of this year or even in some cases exceed them. In particular, we have been really very good, if not excellent at reducing further our environmental footprint including metal emissions of CO2 emissions.

We have made headways in terms of running out our sustainable procurement policy which you will hear later. It becomes also one of the foundations of the strategy in the future. And we have made some progress, not enough in my mind, in terms of making Umicore a great place to work. There is one area in which we're not aware, I want Umicore to be, and that's in terms of occupational safety where we still have too many accidents, although we have made significant progress in the past five years. So you can imagine that making Umicore a safe place to work, we'll remain high on management's agenda.

What have we learned from Vision 2015 that we can use as a basis, as a foundation for the next step in our strategic journey? Well, firstly, I would say that one of the lessons is that our closed-loop business model is a true and powerful differentiator, and it will continue to be the basis on which we carry out our business and the basis on which we build our strategy. The second lesson is that our pioneering approach to sustainability is also a factor of distinction for Umicore and a true differentiator that we want to build on. It has on one side enabled us to

set very demanding benchmarks for the rest of the industry in terms of how we operate, so that's a plus.

We're trying to make our competitor's life somewhat more difficult if we can. And beyond that, I would say that the fact that sustainability is now fully engrained in the DNA of the company and all its people means that we are probably better able to detect opportunities where others only see problems.

And last but not least, I would say that the megatrends on which we build Vision 2015, at least three out of four of them, are even more solid than they were five years ago and we'll continue to support the strategy. Of course, our PV, so the photovoltaic industry has not taken off as we have expected. So we had to shelve in a way our ambitions and to scale down our development projects in that area because the industry has not moved in the direction that we had envisioned.

But the other three megatrends are actually even more - they are not only intact, they are even more solid than they were five years ago. Of course, the metal scarcity continues to grow as the world population continues to grow. And some of the easily accessible ore bodies are getting depleted or getting close to depletion so that trend is, by laws of nature, there to stay.

The trend about - the need for cleaner air quality -- for better air quality is also a trend that is there to stay. And I would say it was evidenced to the extreme by the problems that a country like China is facing in terms of air quality in most of its cities. And also the fact that some of the emission norms that were in discussion five years ago have been enacted in the meantime across geographies is also evidenced that the trend is there to stay and will continue to support our business.

And last but not least, the electrification trend is also now there to stay. Five years ago, there was still a question mark whether the electrification would be solely a factor of oil price, whether we would need really - and actually peak oil was higher on the agenda five years ago than it is today. And so, there were a lot of question marks about the move to electric or electrified vehicles or electrified transportation. Today, the question is not about whether it will happen, the question is about how fast it will take place and you will hear more about that this morning as Kurt will elaborate on this subject.

So all in all, with a, I would say, powerful and distinctive business model, a leading approach in terms of sustainability and very supportive megatrends, we have everything in place to write the next chapter in our strategic journey. And that next chapter, we have called it Horizon 2020, is what I will now describe to you. That works.

So what are the ambitions that we have set ourselves for the next several years? First of all, by 2020, we want to have clear leadership in clean mobility materials

and in recycling. By 2020, we want to have doubled the size of the business in terms of earnings. By 2020, we want to have rebalanced the portfolio in terms of earnings. And last but not least, by 2020, we want to have turned our leadership in sustainability into an even greater competitive advantage for our business.

Let me now elaborate on each of these of these four dimensions of our strategic aspirations in turn and let me start by explaining why we're putting so much emphasis on clean mobility materials and on recycling. In a nutshell, the reason we have selected those business areas is because this is where Umicore has built the highest degree of uniqueness. Let me explain that.

In clean mobility materials, Umicore is indeed absolutely unique. Umicore is the only materials technology company that provides a full offering to support the roadmap of the car industry to cleaner vehicles. Of course, you know, we provide automotive catalysts and catalyst systems to clean the emissions and to clean the exhaust gases from internal combustion engines whether it's diesel engines or gasoline engines. Umicore also provides the battery materials and the automotive catalysts that are required to power hybrid vehicles and plug-in hybrid vehicles.

We do provide as well the materials, the battery materials that are required to power full electric vehicles. And last but not least, we also have in our portfolio the fuel-cell materials or fuel-cell catalysts and the battery materials that are required to power fuel-cell-powered vehicles. And in a way, if you look at fuel-cell vehicles which combine a fuel cell - which includes a platinum or platinum-containing electro-catalyst and contains lithium ion battery, you have there probably the ultimate form of electrification.

So in a way, by offering all of these materials to the automotive industry to support the full roadmap to cleaner vehicles and we have made Umicore agnostic to the choice of our customers in terms of drivetrain technology. And I should add to that that Umicore is also the only player that has the capability of recycling all of these materials and components of the drivetrain when they reach end of life.

Of course, we do have competitors in each drivetrain technology but none of them has the ability to offer a similarly versatile offering. So Umicore has the full offering as I mentioned earlier from automotive catalysts for combustion engines to battery materials and fuel-cell materials. Our automotive catalysts competitors particularly are strong in automotive catalysts but have very limited presence in the other drivetrain technologies. They do have aspirations for some of them in battery materials but they are I would say at a very early stage in that segment and they have little incumbency in automotive applications for battery materials. So that's a significant differentiation to Umicore.

Our battery materials competitors are strong in battery materials but have no presence whatsoever in automotive catalysts, and so for a limited number of them, a limited presence in fuel-cell catalysts. And our fuel-cell competitors with a note of an exception of one of our key competitors in automotive catalysts have no presence in the other segments of drivetrain technologies. And of course, again when it comes to recycling these materials, at the end of their lifetime, Umicore has a unique service offering to the automotive industry.

So again, we have made Umicore agnostic to the choices made by customers in terms of drivetrain technology and that is a unique positioning in that industry. And we will definitely build on that to grow fast in all broader markets in catalysts activities and at the same time to establish a leading position, a clear leadership position in cathode materials for electrified vehicles. My colleagues will later this morning elaborate on these two aspirations of course.

In recycling, I have built a totally unique position. So if you are familiar with what we do in our flagship recycling facility in Hoboken, where actually we have a unique combination of three different recovery routes which are integrated in one flow sheet, and that enables us - I mean, from a technology point of view, to recover some 20 metals from the most complex residue streams and we are able to process about 200 different types of residue source. So that is unique in itself. Actually, that facility is one of its kinds.

And what makes Umicore also unique in the recycling world is the fact that next to this long-loop recycling which we do in Hoboken and long-loop recycling will be explained later, that's actually the recycling loop that addresses the most complex residue streams. Umicore is the only player in the recycling space that has also a short-loop recycling that enables us to recycle residue streams that have a much higher concentration in precious metals and a lower degree of complexity. That's typically, for instance, residues from the jewelry industry, that would be one way to illustrate that.

And this is the short-loop, it's a loop that is important for a number of customers which are seeking to have a one-stop shop approach where they can buy precious-metals-containing materials from us and have the closed loop service available to them at the same time. We will build on this uniqueness, having a unique long loop, a unique combination of short and long loop in the same company to further strengthen our position with customers requiring the one-stop shop approach. And of course, as you have already heard from us, as far as the long loop is concerned, the ambition is to grow the capacity that we have in Hoboken by a significant factor and to successfully ramp it up in the next few years.

By 2020, we want to double the earnings of the company. When I say doubling the earnings, I mean doubling the earnings from the 2014 basis and already excluding the zinc or the contribution of the zinc activities which we are on the

course to divest. And actually when I talking about doubling the earnings, what I mean is doubling the earnings from organic growth initiatives, so this is not meant to come from acquisitions. Filip later today will talk about the firing power that we have to look at acquisitions but this is solely meant to come from organic growth initiatives.

And if we are successful in doing so, this will bring our returns back above the 15% target that we have set ourselves and that we continue to impose ourselves. Now let me explain a little bit what's behind these figures because there are two different situations. We have the projections for Recycling and Automotive Catalysts which follow one pattern. And then we have a somewhat different pattern in a way for the Battery Materials growth initiatives.

When it comes to Automotive Catalysts and Recycling, we have actually included in the projections that leads to doubling the earnings, we have included a solid scenario. Because we have - in automotive catalysts in particular, we have good visibility upfront. We're now two, there, four years in advance on which platform we are qualified and which we will serve three to four years down the line so we have a pretty good degree of visibility.

Of course, there is a certain degree of uncertainty because it remains to be seen how well these models, on which we are qualified, will sell in the marketplace. So from one quarter to the other, you can have discrepancies to the base case. But all in all, in the long run, we know pretty well where we're heading; hence, the projections I would say are very solid. And if there are divergences compared to the projections, they are not of a disruptive nature.

For Recycling, we also have a good visibility because of the time it takes to develop and implement new capacity. You know that we have been working on the Hoboken expansion for a while, we will show a bit later today the ramp-up scenario that we have included in the projections. So there again, we have a fairly good degree of creating a visibility.

Of course, the results at the end of the day are also somewhat sensitive to metal prices and that remains unknown. But to suffice to say at this stage that our projection of doubling the earnings does not require a major upswing, any major upswing in metal prices in order to be achieved. They are predicated on internal intrinsic performance of our recycling activities and not on external factors development, so a very solid visibility and figures when it comes to recycling and automotive catalysts.

When it comes to Battery Materials, actually we have integrated in our base case a conservative scenario. There are many scenarios still are there in terms of the degree of pace and speed of electrification, and what it means it terms of demand of rechargeable battery materials. We have used a case that is at the

low-end of industry projections, so a conservative case that we believe provides a sound basis for the projections.

What is not included in the projections is actually a more optimistic scenario that the industry is developing today because we see indeed a number of our customers starting to develop more optimistic scenarios for electrification that actually - because of the leverage in terms of materials' quantity mean a disruption in terms of supply. Disruption in the sense that the difference between the conservative scenario we have in the figures and a somewhat more optimistic that we start to see circulating in the market means hundreds of millions revenues for Umicore. So that is an option that is incorporated in the projections. So in a way, again, it's a fairly conservative scenario that does include an option to participate in a much brighter future for battery materials and an accelerated growth in that business.

By 2020, we also want to rebalance the contribution of the different businesses. In the past four to five years, you've seen our recycling activities accounting for quasi half of the earnings of Umicore going forward. We expect Catalysis and Energy and Surface Technologies to catch up and to grow relatively faster in terms of earnings so that the contribution of the three activities would be more balanced going forward than it was in recent past.

And finally, by 2020, we want to have turned our leadership and sustainability into an even greater competitive advantage. And let me just give you one example to illustrate what I mean by a greater competitive edge. I guess that all of you have a smartphone or tablet, and that since we asked to switch it off at the beginning of the presentation, I guess you have a chance to take it off the pocket of your jackets so you must have one, and that smartphone or tablet contains cobalt in the battery. Now, you also have to know that in two-thirds of the case, that cobalt is coming from the Democratic Republic of Congo.

So there are a number of ways in which the cobalt is being mined in the Congo. You have a limited number of players out there, industrial players, that apply sustainability practices that really meet our standards in terms of ethics and labor conditions. And then you have a number of mining companies that work in a mine that is not acceptable to Umicore and that would not be acceptable to anyone in the world if we knew how it was done. Now the reality is that many of our competitors do buy the cheapest material regardless of the conditions in which it was mined, regardless of labor conditions, regardless of ethics.

Ten years ago, we decided to make a different choice and to only source materials from industrial players that do fully meet, that are fully compliant with our strictest sustainability and ethical standards. So that limits our supply possibilities and increases the costs of the cobalt that we source and that we include in our batteries that we - in battery materials that we sell to our customers. Now so far, this has been a distinctive factor for Umicore but this has

not been a decisive factor in terms of winning new business or in terms of justifying higher prices because most of our customers are not ready to pay for that.

They want sustainable and ethical sourcing, but most of them are not yet willing to pay for that, because most of us are not willing to pay for that. But that's going to change because again that is a trend that is starting now. You have a limited number of industry leaders in portable electronics and in the automotive sector that will not want to take the reputation risk of having unethical materials in their batteries.

And they will set new standards in the future whereby actually having certified ethical supply and sustainable supply will become - should become a decisive factor in selecting a supplier. And we want Umicore to be the first one to be positioned there to take advantage of this trend when it materializes. So just an example of how we want to transform our approach to sustainability into a decisive competitive edge that wins us new business or that for existing business helps us to justify a higher price.

Today, we will address the growth opportunities in the three segments of Umicore of recycling, catalysis and energy and surface technologies. I have to say though that the focus, the emphasis will be on three businesses, precious materials refining, automotive catalysts, and rechargeable battery materials, because this is where we have the highest growth potential where the growth profile is the sharpest. And these are also the areas in which most of our investments and research efforts will go going forward. Therefore, we decided to put the emphasis on these three activities.

So to recap before I hand over to Pascal, I would say that - I would just like to repeat what our ambitions are by 2020, the next leg in our strategic journey, which is to a large degree a continuation of Vision 2015 for which we have laid the foundations in the past five years. And again, I believe that we have now all the elements in place with the business model, the sustainability approach, the megatrends and quite a lot of the investments already have been made, it could be successful for the next leg the journey.

So by 2020, again we want to have clear leadership in clean mobility materials and in recycling because we're most unique in these areas and this is where we have to create the highest degree distinction in the marketplace. We want to double the earnings of the company from organic growth initiatives only. M&A may come on top of that. But this is the aspiration that we have with our organic growth.

With the organic growth taking place to a large extent in the battery materials and in automotive catalysts, you will have some sort of an automatic rebalancing of

the contribution of the three business groups. While in the past five years, most or half of the contributions to earnings has been coming from recycling.

And last but not least, we not only want to be -- or continue to be the leader in sustainability in our industry, we want that to be a clear and distinctive competitive edge that wins us more business or more premiums.

And with this, I would now like to hand over to Pascal who will then elaborate on his business group, the strategy of his business group which is Catalysis.

Pascal Reymondet^ Thank you, Marc. Ladies and gentlemen, good morning. First, thank you very much for taking the time to participate to this event. It's of course a great opportunity to explain our businesses.

Catalysis. I did something wrong here. Catalysis, what is Umicore doing on the Catalysis? What are the business drivers? And what are our growth opportunities? These are basically the three subjects that I would like to discuss with you in the next 15 minutes. I did it again.

The business group, Catalysis, is divided into two business units. I would spend most of the time discussing the activities of automotive catalysts, but first allow me to spend a few minutes on the second business unit, precious metals chemistry. At precious metal chemistry, we start from different types of metals. You have them listed there, you know, platinum, palladium, precious metals and some non-precious metals like cobalt, gallium and indium. We take these metals and we have them go through different transformation steps to eventually come up with what you call a metal compound.

We sell these metal compounds as inorganic compounds through the catalyst industry or the plating industry and these customers use these compounds in their formulation. They make their own product using our compounds. We sell these compounds as organic compounds as catalysts to the chemical industry. And their customers use our organic compounds as a catalyst in their processes to make their own products.

We also sell what we call active pharmaceutical ingredients basically today platinum based, and there what we selected is not a precursor used for making catalysts or is only catalyst. The active pharmaceutical ingredient is a product which is used by customers in the final formulation of their products.

And the last segment where we are selling products is a new segment of activities for us. We sell organic non-precious metal compounds to the electronic industry which is being used for manufacturing LEDs or electronic chips. So this is what we do at precious metal industry.

Growth drivers. I said we sell precious metal compounds to the automotive catalysts industry. Precious metal chemistry supplies compounds to automotive catalysts business unit of Umicore. Automotive catalysts business would grow -- precious metal chemistry will grow together with automotive catalysts. We have, in the past few years, invested into a new process for making active pharmaceutical ingredients. We have received qualification by major pharma companies and on that basis now, we can grow our platinum active pharmaceutical ingredient business.

And the third leg of our growth opportunity is a result of the work we have done in developing what we call a MOCVD business, standing for Metallic Organic Chemical Vapour Deposition compounds. Again, these are the non-precious metal compounds which we sell to the electronic industry which are used for making LEDs or chips.

We rely on our unique production processes. The core competence of precious metal chemistry is not to design a product. The product itself exists. Our core competence is to develop a unique production process to manufacture these compounds in the most efficient - as efficiently as possible so that we can be competitive in the market.

I will now switch to automotive catalysts. I'm available for questions. We'll have coffee breaks. If you have more questions on this business unit, I'll be available for the rest of the day.

Automotive Catalysts, biggest business unit of the catalyst group of Umicore. I guess most of you know what we do, but still so that we all start from the basis, I will in few words explain what we do. Basically, starting from precious metals and buying a number of different chemicals, we design a catalyst which we sell to the OEMs, the automotive industry, which is then installed in the exhaust line of vehicles which reduces the emissions of pollutants coming from an engine. So that's what we do and they often - in automotive catalyst, we say clean air is our business. And actually, I could stop here.

But because you guys woke up this morning, I will go a bit further into what we mean with clean air is our business. So I will go through our business model, the business drivers, some explanations about the different segments we are supplying and at the end, summarize with our growth ambitions and a few key takeaways I'd like you to keep in mind.

Our business model, and there, because words have a meaning, I'd like to read the sentence I have put on slide because these are the key settings for us. At AC, AC means automotive catalysts. I apologize; I might use AC in the course of my presentation. Every time you hear AC, I mean automotive catalysts. So at automotive catalysts, we develop technologies which allow us, which allows our customers - I should have put my glasses on. It looks much better. At AC, we

develop technologies which allow our customers to meet automotive emission legislations at the lowest total cost of ownership.

There are few keywords in that sentence, technologies, customers, legislation, total cost of ownership. Please keep these keywords in mind. They will come quite often in the course of my presentation. We have five pillars to support this business model. The first one is a complete set of technology. We continuously develop new chemistry to reduce the emissions of pollutants in the exhaust of engines.

We continuously develop technologies because emissions are being more stringent and because our customers want us to be more efficient in reducing emissions, be more efficient to reduce the total cost of ownership. That's the first pillar. Technology. Technology. I repeat it; technology has been the driver of this business and will be the driver of this business for the next 10 years at least.

The second pillar is customer focus. We develop technologies but every single engine is different. Every single customer has a different way of looking at it. So from the base chemistry we have developed, we use our test centers to optimize the catalyst's architecture and to provide the best optimum solution for customer. That's the second pillar.

Third pillar is operational excellence. What I mean here is once we have a product, we have to meet the high-quality standards of the customers and we have to meet the high productivity targets of the customers. That's what I mean here by operation excellence.

The fourth pillar is our global footprint. Most of the OEMs are global. Most of the time when we win an award, we requested to supply these engines worldwide, and that's why global footprint in terms of manufacturing, and test center is critical to be successful in that business. And all that together is all good but without the full engagement of our employees, we wouldn't be successful. So these are the five pillars. And thanks for this business model and thanks for these five pillars, we are one of the three world leaders in that market.

Global footprint. I will not go through every single plant. I will use that graph to show you our latest additions. We are about to start - no, we are starting at a new plant in Poland. The first commercial supply would be fourth quarter of this year and that flag here was to address productivity targets that we have set for ourselves in Europe. Latest edition is a new test center in Korea; again, to be able to support our customers in Korea with a right catalyst development. We are also - we don't forget other test centers. We're also upgrading our test center in America because testing methods are always stringent and we have to invest in our test centers to be able to meet the requirements of our customers.

Two other additional investments. Early this year, we started a new plant in India. And more broadly, Southeast Asia is a region in the world where we had no production facility. And not having production facility in India and in Thailand was reducing our growth opportunity. So these two latest additions truly are running up now. In Thailand, which would be operating mid of next year - these two new additions will allow us to participate to the growth opportunities in these regions.

We split our business between light-duty vehicles and heavy-duty vehicles. Even though we split the business, there are things which don't change between these two segments. First, we have the same business model, the one where I needed my glasses to read, that applies to both. What applies to both as well is technology. We have for both segments, the right technology to serve our customers. Technology is the entry ticket. You can have everything else, if you do not have the right technology, no chance of being successful in the business. So we have the right technology for both segments.

But we have a different position in these two segments. For light-duty vehicles, we have been in that business for 30 years. Personal note, I can be witness of that. I've joined that business 26 years ago as a production engineer in our plant in Germany. I've seen that business grow from a rather small venture business for what it is today a brilliant business. I have many stories to tell but what I'm saying now is being recorded so the stories will be for coffee breaks if you don't mind.

So light-duty vehicles, strong position, 30 years of history, very strong track record with major customers, but still a good growth opportunity with Japanese OEMs. Not having a plant in Thailand was hampering our growth opportunity with Japanese OEMs. We are building that so we have now the assets to grow a proper position with the Japanese OEMs.

Different positions in heavy-duty diesel. Heavy-duty diesel, looking back early'90s, we were involved then we stopped. At 2005, we decided to step into heavy-duty diesel again. We are now 10 years later, and within these 10 years, we developed the right product technology and the right process technology to be competitive in that market. That's what it takes to be able to supply this market, very heavy investments.

Now we have the products, we have the processes which allow us to have a strong position in Europe, to have a solid position in China. And China being the market with the highest growth, we will participate to that growth in China.

What are the business drivers of this business? Production of vehicles, the more vehicles are produced, the more catalysts will sell. We'll predict light-duty vehicle production to grow by, you know, under 3% a year. We'll predict heavy-duty engine production to grow, you know, about 5%, to be under 6% a year. So that will drive our growth.

Legislation. Legislation keeps on getting tighter, and tighter legislation - initial legislation, I mean, allows us to provide our customers with advanced catalysts to help them meet these legislations.

Over the next five years, there will be eight different legislation changes in light duty vehicles across the world. 13 heavy duty diesel on-road and full off-road. These are opportunities for us to show what we can do with do with our technology to the customer.

Let's go into more details into the market segments.

Light duty vehicles -- I said, market expected to grow by 2.9%. Growth will be different across the world. We're talking 4.7% growth in China. Today, I have to be brave to talk about 4% -- 4.7% growth.

The business did not grow in July, 4.7%. But still, we expect that business in China to grow by about 5% per year over the next five years. So that would be a growth opportunity.

And we expect the car -- or the engine production for light duty vehicles to grow by close to 8% in Southeast Asia. Remind you, this is the region in the world where we had no production facility. By mid-2016 we have two plants; one in India, and one in Thailand. And then we can participate to the growth in that market. So volume of car production, engine production, we have support the growth of our business.

Another way to look at it is the speed of power train. I said engine production will grow by 2.9% per year. That's all engines all together. That graph shows you which type of engine grows by how much.

The red segment of this bar chart shows the growth of fuel electrical vehicles. So, electrical vehicles, vehicles without any internal combustion engine. This type of vehicles will grow, we expect -- we're expecting them to grow by about 29% per year in -- well tell us what it means for Umicore.

Even though this production of electrical vehicle will grow by 29% per year, the other more classical engines, gasoline and diesel engine, will also grow over the next five years. 4.8% for gasoline, 2.7% for diesel. Gasoline will remain the main power train, but diesel will keep its share. Diesel will remain worldwide at about 20% of the power train.

We'll grow -- we'll not grow in Europe, I'll come to that. Most of the growth of the diesel power train will take place in Southeast Asia.

What you don't see in that graph, and that's on purpose, is the split between hybrid and non-hybrid. I don't show that because as a catalyst manufacturer -- sorry for my language -- I don't care. I don't care. And hybrid vehicle or purely internal combustion engine needs a catalyst.

Actually when I said I don't care, I'm lying, because -- well I'm not saying the full truth -- because in hybrid vehicle, needs actually more complex catalyst than a purely internal combustion engine. So to us, hybrid, non-hybrid, no impact.

So growth through growth of vehicle production and growth through technology because of legislation change, or more tightening of legislation. So that chart is very busy, okay, no intention to go over or different lines. The message here is to say every country is tightening legislation at its own pace, with its own philosophy. But every tightening of legislation regardless what it is means a new catalyst that we have to develop to support our customers in meeting these legislations.

I would dive into more details looking at European legislation because a few things which are relevant to the discussion.

So Europe -- Europe emission standards have been moving for Euro 5, we are now under Euro 6b. We're moving to Euro 6c. With these two steps, the amount of pollutants allow to be emitted by car have been reduced. Every time, opportunity -- I say opportunities, sound like opportunity in obligation for us to supply the right catalyst to the customer. So stricter emission standard. We have to come up with the right technology.

But these emission standards, they not only specify emission, they also specify the way emission are being measured. And what we've seen Europe now is there will be an implementation of what is called real drug emission. Discussions that the way cars are being tested for certification don't reflect the full reality of what is happening in the field.

New legislation will be put in place, so that vehicles will now be tested under real drive emission. That set of legislation is unsettled yet. It would be decided by the end of the year. But we know that this new type of testing will have implication in 2017, 2018 and again in the second set in 2020. And again, these steps of new testing methods will put pressure on us to come up with a right catalyst to help our customers meet these new testing requirements.

Besides emission, legislation is also looking at CO2 emission, or CO2 reduction. There, our customers, they have different solutions. To reduce CO2 emission, they could do different things. They can do smaller engines, turbo-charged engines, and that again is a different catalyst. And naturally aspirated engine don't behave -- it doesn't behave the same as a turbo engine. We have to have a special catalyst for turbo engine.

What customers do as well -- in gasoline, they are developing what they call GDI, Gasoline Direct Injection. Gasoline Direct Injection will help reduce CO₂, and again here, for us it is the development of a new catalyst. Gasoline Direct Injection will actually mean more for us because we suspect that with stage two implementation of Euro 6c, Gasoline Direct Injection engine will have to be equipped with a particulate filter. So that would be again for us opportunities for -- to supply the right catalyst to our customers.

So to reduce CO₂, customers, they can go small engines, GDI. But in our opinion, diesel remains a key element in achieving CO₂ target. Intrinsically diesel is a more efficient engine and will help reduce the CO₂ emission of a fleet.

There are a lot of things being said about diesel. Facts -- today, diesel under Euro 6b, 99.9% of particulate emitted by diesel engine are being captured by the filter. There is no emission of particulate today with diesel engines. I mean, the diesel engines, the new ones, the one for Euro 6b legislation.

The second fact is when Euro 6c stage two is implemented, a diesel engine would be as clean as a gasoline engine. It's a fact. And because of that, we believe that diesel will be key in reaching the CO₂ targets.

Now Marc showed you this graph. I will have a few words to that. So we said to -- because besides GDI, small engines and diesel, our customers have other means of reusing CO₂. So we saw they can stay with the diesel engine and do a few things, and will require a catalyst.

They can decide to go hybrid, so likely the internal combustion engine would be basically used for highway drive. And for city drive, you use the electrical engine there which is powered by the battery, and Kurt will talk to us about -- talk to you about what it means for us. So these are internal combustion engine, hybrid, that's where, you know, I can supply my catalyst.

Customers can go the next step. They can go fully electrical. Full electrical, no internal combustion engine, no catalyst. An electrical motor, big battery, which was to be recharged, and then again Kurt will talk to us about what it means for us. All customers can go combination, small battery with a fewer cell recharging the battery. And for us, it means cathode materials and electrocat.

Marc said we're agnostic. I'll use my own word, it doesn't matter to us. Regardless what the customer decides to do to reduce or to achieve the CO₂ target, at Umicore, we're uniquely positioned and we have the right product to help the customer support meet their CO₂ target.

Heavy duty diesel. So been -- so far, we've talked about large duty business drivers; growth of vehicle production, mostly growth of the light duty vehicles, if I

may summarize. Growth of production, high growth in China and Southeast Asia, where we have our new plants, where we'll participate change in legislations which will give us an opportunity to provide value to our customers.

Now heavy duty diesel, that's a segment where we are relatively a newcomer. Production of heavy duty diesel will grow by 5% -- 5.8% per year. What is specific to this market is half of the production of engines -- it takes place in China. That's the green part of that bar chart. 50% of heavy duty diesel engines are produced in China. It's a significant difference. And China is a big market for passenger car, but not at the level of 50%.

Again, a busy chart. The same message as for light duty vehicles. There will be continues change in legislation, again allowing us to support our customers with, you know, latest and most advanced catalysts.

Two things -- I said China is the biggest market in terms of engine production. China offers the biggest growth opportunity, not only because of their big -- the big amount of engine being produced but also because China is in course of a very rapid introduction of legislation. We are now, you know, wrapping up China IV. China V will come very soon. For our business assumption today, we have to look at China VI. China VI, which is the next step again is in discussions. We assume VI will come in 2021. China VI will come sooner. And when China VI becomes sooner, it will increase our growth opportunity.

So including this rapid introduction of China IV and China V, our prediction of the catalyst market is as follows. And that graph shows [latest] of catalysts worldwide per year. What you see there is the biggest market remains North America in terms of catalyst market for heavy duty diesel. The biggest growth will come from China. And the growth will be even more if China VI is put forward.

So what is our position in heavy duty diesel? We have a solid position in Europe. Actually we've invested in dedicated production lines in Europe will [ring] at full capacity. We are in a process of debottlenecking and even considering increasing production capacity.

We haven't talked much about Korea and Brazil, because the biggest market is Europe, North America and China. But we have a position in Korea, in Brazil, in heavy duty diesel. We have won major awards, China IV and China V awards, which would allow us to participate in the expected growth in China. We have the production line, we have the customer awards, now we can participate in the growth of this market.

In the last point is I've said continuously that we have a strong position in Europe, a good position in China, I haven't talked about North America implicitly. I'm saying that I don't have much of a position in North America. But things are happening.

What you see in North America is a new greenhouse gas regulation phase two coming in. After 10 years of work, going back to 2005, now we have the right set of products, we have the right processes, now we can participate and offer solutions to our customers in North America. We will do that and you know, the best will win. So these are the growth opportunities that we have in heavy duty diesel.

So what are our growth ambitions? First, in light duty gasoline, we want to increase our position, largely for our new involvement with Japanese OEMs. I repeat, it's to investment in India, in Thailand, it's our first new plants, we start from scratch, we can only outgrow the market starting from nothing. So with these new assets which on place, we will outgrow the market and increase our position in gasoline -- in catalyst for gasoline engines.

In light duty diesel, we have made solid gains which you see now in 2015. Now we've published some numbers. The result of the catalyst group are much better in 2015 than they were in the past two years. This is the result -- partly the result of a better position that we've acquired in diesel catalyst, to implementation of Euro 5 -- Euro 6, I'm sorry.

This good position that we've acquired through Euro 6b implementation, we want to consolidate that position over the next five years.

And in heavy duty diesel, we want to go faster than the market. Why we believe we can do that? Because we have the technologies and the production line capacity in Southern China, that's where growth is happening, we have the awards, we will outgrow the market for these capabilities.

So if I may summarize why we believe we can outgrow the market, we have secured contracts in light duty vehicles, in heavy duty diesel. We have the production capacity in heavy duty diesel and in Southeast Asia for gas and catalyst. We have the technical capabilities. We have a competitive product portfolio. And again, all that will work without the high engagement of our people.

So few takeaways I like to keep in mind that would be my last slide. What are the market drivers? We saw growth of engine production. So the more engines being produced, the more catalysts will be required.

And the second driver is legislation. And I repeat again, are started with the work technology and we stop with technology. Legislation means technology. We will at all these catalysts invest in R&D and process development more ever for the next 10 years because technology is the entry ticket in this business.

We have the potential to grow faster than the market. We have the Capacity in China in heavy duty diesel. We have the capacity in Thailand and in India for

passenger car, we have the right product set. With all that, we will outgrow the market growth.

And the last point, Umicore is uniquely positioned, and if electrical vehicle happened to go faster, that's good for Umicore because we have the right product to address the electrification of the power train.

So that is the end of my presentation. That was faster than expected, which is good. We will now open the floor for questions. Thank you very much for your attention. And again, we are open for questions.

+++ q-and-a

Evelien Goovaerts^ So thank you, Pascal and Marc. So we are indeed a bit ahead of schedule. So we will have plenty of time for questions. When you have a question, please raise your hand and wait until the mic is brought to you. And before asking your question, please clearly state your name and company. Thank you.

Unidentified Participant^ Good morning, it's [Hubert] from [Impacts].

On volume and value, this is quite interesting for the catalyst. Is the penetration rate 100%? Any vehicle in the world that is produced thus straightway have a catalyst on there? The penetration of catalyst -- so any car in the world that is produced now, does it have a catalyst on them?

Pascal Reymondet^ In the major countries -- a few countries in Africa where catalysts are not required yet. But 98% of the countries in the world, you know, this is a requirement.

Unidentified Participant^ Additional growth coming from penetration rate is increasing, that's all done?

Pascal Reymondet^ No. In passenger car, it's all done. In heavy duty -- heavy duty diesel, they still -- penetration will increase. There is a legislation in China for heavy duty diesel. We suspect today that the compliance factor, meaning vehicles meeting legislations is about 70%. So there's still a need -- you know, the introduction of catalysts for on-road heavy duty diesel will increase. And you have the off-road. The off-road market in China is not legislated, and that is the opportunities for heavy duty diesel.

Unidentified Participant^ Thank you. And then [whilst have you mate]. You compared the new diesel engine is as clean as a new petrol engine. The definition of clean, does it mean CO2 and NOX and SOX and all the other particles?

Pascal Reymondet^ Clean? I mean, in terms of emissions or pollutants?

Unidentified Participant^ So all the pollutants, not just CO2?

Pascal Reymondet^ No, no, not CO2, NOX, hydrocarbon, particulates, all the pollutants. When Euro 6c stage two is implemented, diesel would be as clean as gasoline engines.

Unidentified Participant^ Thank you.

Marc Grynberg^ In terms of pollutants, because CO2 -- in terms of CO2, diesel keeps a significant advantage at 20% to 25% CO2 advantage compared to gasoline engines.

Unidentified Participant^ Because ...

Marc Grynberg^ So in a way -- sorry -- you could say that diesel engines at Euro 6b or Euro 6c will be cleaner than gasoline engines because they will have no more pollutants in terms of hydrocarbons, NOX, et cetera. And at the same time, they will emit less CO2. So that's why we believe that they will remain so relevant in the overall mix in order to achieve the CO2 targets that Pascal showed earlier.

Unidentified Participant^ Yeah, because there are some analysts that assumed that the diesel participation from new production will go down relative to petrol. But it shouldn't be necessary that both as clean as they are.

Pascal Reymondet^ No, I say we predict the production of diesel engines to stay flat in Europe, at about 10 million engines per year. But because of that characteristic of being emitting less CO2 than the gasoline engine, they will, you know, keep a strong hold in the power train infrastructure, Okay.

And again, the big argument today on diesel is today diesel are not tested under what you call real drive emission, okay. And today diesel under real drive emission, you know, are not as -- maybe not as clean as gasoline. And once this real drive emission stage two is implemented, then diesel will be as clean as gasoline.

Unidentified Participant^ Yes, thank you. It's [Peter] coming from the side of [Fisk].

I was very surprised by your projections in particular for CNG and in appears to address both CO2 and emissions. And I'm thinking of things like them taxis in Mumbai.

Pascal Reymondet^ CNG remains a very small portion of the power train, largely less than 5% of the total power train. Challenges of CNG is under -- you know,

CNG has its full interest -- I'm going to get technical here. CNG has its full interest when it is used as in lean conditions, okay.

And a catalyst for CNG in lean conditions under Euro 6b is a big, big technical challenge. And at the end of the day, if CNG is used in a [stock metric] condition, then it loses a bit of its interest. So that's why we don't see a big introduction of CNG. And then on top of CNG, you need a big tank of gas in your vehicle. This is a sort of a -- an obstacle to the further introduction of CNG.

Adam Collins^ Hi, Adam Collins from Liberum. Three questions, a couple in HDD. Pascal, you mentioned that it might be an opportunity to break into the US because of the impending GHG regulations. But it won't be any tightening on the clean air side before 2020, which is only will trigger to engine re-certifications when your engine launches.

Could you just clarify whether the group growth expectations, the group plan assumes any meaningful HDD penetration in the US before 2020? Or whether you're saying as additional, that's the first question.

Pascal Reymondet^ Okay, first question -- in our business plan which goes until 2020, we don't include any business for heavy duty diesel in North America because you know, it takes time between the time you supply samples can qualify, so that would be beyond the 2020 timeframe.

Adam Collins^ Yeah, Okay. And then on the HDD growth rate, you mentioned the engine growth at 6%. What's your expectation for the development of the catalyst market value? A competitor is talking about the market going from \$2 billion to \$3 billion, 2015 to '20. Is that a sort of an expectation that you would share? Faster growth from the catalyst market because of regulations, perhaps as much as twice the growth.

Pascal Reymondet^ We -- as I said, the market with the highest growth potential is China. And this growth expectation largely depends on what you assume in terms of introduction of China VI. Now, if China VI is introduced in 2021, then we're talking growth from 10%. If China VI is introduced sooner than 2021, then growth would be higher.

Adam Collins^ Okay. And then just finally on the light duty ...

Marc Grynberg^ If I may add, Adam, there is one caveat. When we talk about billions of revenues in HDD, they do not compare like for like with the billions of revenues in light duty. Because in the light duty application, the line share of the value in the revenues is actually going to the catalyst manufacturers and the PGM component.

In heavy duty, the portion of the coating revenues, that is actually the true income and margin source for the catalyst manufacturers is relatively smaller because the filter makers have managed to capture a bigger share of the entire pie. So I think that's a caveat that needs to be born in mind because the billions of revenues are not fully comparable and do not lead necessary to the same bottom line.

Adam Collins^ Okay, understood. And then final one is on the light duty side. You talked about Euro 6c being a value driver. With the treatment of filters to gasoline direct injection vehicles in Europe. What are your assumptions for the percentage of gasoline cars by the regulatory stage which will be GDIs? And very roughly, what percentage of those GDIs you think will have filters?

Pascal Reymondet^ In 2020, our assumptions that most GDI in Europe will have a filter. To give a number, you know, I would say we'll go with 6 million cars in 2020 GDI with filter.

Adam Collins^ Okay, thank you.

Pascal Reymondet^ In Europe, huh, in Europe. Because I mean -- you didn't ask the question but I give you the answer, you know. There's also GDI potential in China. And they are getting bigger to -- potential for gasoline particle filter in China is potentially bigger. But the set of legislation is not as developed yet as what we see coming in Europe. So that's harder to talk about it.

Marc Grynberg^ Ant it would be beyond 2020, most likely. So it's not in the projections.

Wim Hoste^ Good morning, Wim Hoste, KBC Securities. A question on HDD and your ambitions there. You mentioned Q1 to outgrow the markets. Can you maybe share with us some of market share ambition or by how -- factor of how big you want to outgrow the AGD market over to 2015/2020 horizon?

Marc Grynberg^ Now when -- if you are familiar already with the company, you know that we don't communicate on market share, for the simple reason that we're not driven by market shares. We want to be effective and profitable in a given segment. And this is the drive of the market shares.

Suffice to say when it comes to market shares in heavy duty and Pascal mentioned that also, that one, we are late entrants, and secondly, we're too late for the first wave of development of the North American market which in terms of value in liters, is the largest market today. So our aspirations are somewhat kept by these factors. But we're not driven by market shares and it's suffice to say that because we're late entrant and we're in the rampant phase of the heavy duty business by definition, we are outgrowing the markets.

Tom Riddlesworth^ Thank you very much. [Tom Riddlesworth] from Citi. Two questions if I may, firstly with regards to your doubling of earnings by 2020. How much of that growth is already in place? How much is that already coming from CapEx and deployed over the last couple of years versus the CapEx that will have to be spent?

And I guess secondly, to pick up on your point that you're agnostic on drive train in the future, you know, is that to say that you see the margins being relatively equal across the different drive trains? Can you relate drive train and margin outcomes over the future?

Marc Grynberg^ Let me start with the first question and then -- yes, quite a bit of the CapEx has already been incurred than some of the indeed infrastructure, whether it's production or technology development infrastructure, is in place to support the aspiration of doubling earnings. And you see some of that already in the 2015 results. You see that some of our recent investments are starting to pay off indeed, and bring us on track to achieving that aspiration of doubling our earnings.

Filip will go into more details about that and we'll show you what are the investments that have already been done and that have yet to yield their full benefits, so that will be shown later this afternoon. So I would ask you to be -- to bear with us a little while and we will go into more detail.

In terms of margin or profitability potential for drive train, I would say that today, they are not the same indeed. And there are indeed potential mixed effects. And you know for instance that a diesel engine typically today has a more sophisticated system of catalyst that commands a higher value and margin.

For I would say, electrified vehicles, it is too early to tell because in a way the industry has not yet reached any degree of maturity or scale effect that would enable us to commence in a reasonable manner about the margin potential or to compare these margins with those of a more mature market for combustion engines.

What I see though is that in the future, the choice of drive train is going to be dictated to a large extent by CO2 regulations. And the margin potential will also be determined to a large extent by these regulations. So it's a complete different landscape in terms of margin that we will see where today the margins are determined by a number of factors other than legislation. There are -- I mean, they are being driven by scale effects, by customer's preferences, consumer's choice, etc. In the future, there will some sort of an equalization if the CO2 targets start to prevail.

One example is that typically today, if you compare the exhaust system cost over diesel engine and a gasoline engine, it is more expensive on the diesel side. But

the diesel is also producing much less CO2. If you equalize for CO2 and want to bring your gasoline engines to the same level of CO2 performance, then you need to go into technologies like GDI which require then a filter.

Then the cost of the gasoline configuration will increase and will get much closer to that of a diesel engine. And you will have these effects starting to play out in the future as legislation becomes the driver for the -- the main driver for the drive train choices by the customers.

So I expect that we're not going to be agnostic only in terms of customer's choices because we have the full offering, but we'll become also -- sorry, a bit less sensitive to mixed effects in the future as legislation becomes a primary driver.

Mutlu Gundogan^ Mutlu Gundogan, ABN AMRO. Just two questions. First, on the expansions, I always have a little bit difficulty to gauge what the impact would be because we don't know what the size of the new plants will be and what the various products will be that will be coming out of the door. So could you help us a little bit with that? How much of an increase we expect next year due to the capacity increase?

And then secondly on profitability, given the high growth that you expect for the company and also for the segment, I would assume that you will also expect an increase in margins. And we know for the last decade, you've invested a lot in HDD.

So can you share with us what you think is the potential in margins? I know there are a lot of moving parts. But any idea would be helpful.

Marc Grynberg^ We don't comment on the capacities of the various investments in individual sites. Suffice to say that in the overall scheme of things and for the near term, what we're -- I think in terms of capacity in Southeast Asia, India and Thailand is relatively small compared to the overall configuration that we have in Umicore.

The capacity addition in Poland is more meaningful in terms of size, relative size, because of the growth that we see in European demand, which is driven to a large extent by the implementation of Euro 6b today and Euro 6c going forward. So that will be more meaningful in terms of size. It will be of a larger -- I would say the contribution will be much larger relatively speaking.

And then sorry, your second question was about?

(Off-Mic)

Marc Grynberg^ Yeah, the margins in the automotive industry -- sorry, I had forgotten the question -- the margin -- margin stands to be relatively stable in the long run in a way, because the model works in a way that -- you know the automotive industry, and as an automotive supplier, euro supposed to bring cost downs. And in many cases, these cost down programs are fixed contractually for a number of years.

And typically what the catalyst industry has managed to do well in the past two decades or so is to bring new technologies to the customers that reduce the PGM loadings to achieve a given set of emission legislation. And in exchange for that, you manage to offset some or all of the cost downs through pricing.

So margins are relatively stable. Again, the name of the game in that industry is to reduce the total cost of ownership for the full system for the customers, and that comes to a large extent through PGM thrifting technologies. So margin potential relatively stable over time.

Simon Fickling^ Thank you, Simon Fickling, Exane BNP Paribas. Three hopefully quick ones on catalysts.

First, on the real world testing coming in Europe, is Umicore expecting any change to the limits that are currently set on the Euro 6? Will the legislations -- your expectations with the legislation just simply changes the methodology of testing or could those limits change given what's widely perceived to be quite a big gap between current laboratory emission levels and where they're looking on the real world. And what sort of impact could that have on your business?

Pascal Reymondet^ I mean, initial limits will ...

Simon Fickling^ Milligrams per kilometer, those kind of you know, the numerical limits under Euro 6. Could they change as we move to the real world methodology? Or is there no expectation of that?

Pascal Reymondet^ Okay. The emission limits will not change, going from Euro 6b to Euro 6c. The emissions limit will not change. What will change is how it is measured. And because the measurement method will be more in line with real driving conditions, the real emissions in the field for Euro 6c vehicles will be lower than for Euro 6d vehicles.

Simon Fickling^ Okay. And secondly on the China HDD opportunity, is that part of that contingent on what the country and its refineries can do for reducing sulfur content? Or is that where they've got to with China IV in terms of diesel prioritization of fuel, is that where they need to be -- to bring in, say China VI legislation?

Pascal Reymondet^ That is all -- that is a package, Okay. That is all worked together. China VI implementation -- date of implementation -- you know, I cannot decide for the Chinese government, you know. By the end of this year, they will decide what is appropriate for the country and the quality of diesel is part of that equation.

Simon Fickling^ Okay. And thirdly, I suppose in five years' time, looking beyond 2020, what do you think in developed markets where emission limits are -- where they will be in five years' time. Where could sort of 2020 to 2025 be? Could we see the same type of legislation tightening? Or do you see emission limits post Euro VI and post where they are on developed markets? See the pace of that slowing slightly beyond 2020 and growth becoming a bit more aligned on emerging markets.

Pascal Reymondet^ No, I don't see that -- I don't see that for -- we talked a lot about Europe. Let's talk about North America. North America is in the course of implantation of what they call [Live-3], Okay. Live-3 is the gradual implementation which will go until 2025, Okay. So until 2025 in America, there will be a tightening of legislations.

Japan hasn't changed its legislation limits for quite a while and is in discussions for tightening. But regardless of that, what we have our business model is to offer catalyst to lower the total cost of ownership to our customer. And even, which I don't believe, emission limits would stay stable, our customers request from us more efficient catalyst so that we can be more efficient reducing pollutants, use less metals, and again that is an opportunity for us to develop new technologies and offer value to the customers. So you know, technology makes 10-15 years at least.

Marc Grynberg^ Yeah, what I would add is that's -- Pascal addressed the pollutant part of the equation. And there is another part which is CO₂. And so you know, there is a big step in legislation coming up in 2021 with the reduction of fleet average emission in Europe to 95 grams of CO₂ per kilometer. You have also similar or equivalent, although not astringent legislation coming up in America with new mileage requirements per gallon, et cetera, which is another way of expressing the same objective of reducing CO₂ emissions.

I would expect that Europe will not stop at 95 grams, because technology development will not stop. And what we -- what I see is that technology will be developed and it will be demonstrated that we can do better than 95 grams on average, and that will drive the legislator to move ahead and continue to tighten the norms in the longer term.

So I would expect that beyond the emission of regarding pollutants, there will be a continued tightening of emission on regarding CO₂. And that will also continue

to drive all the technology development efforts that we do both on the catalyst's side and for the other drive train technologies.

Frank Claassen^ Yes, hi, Frank Claassen, Rabobank. I've got a question on the phasing of growth. I can remember back in 2010 that you added the comment that growth will not be linear with the 2015 target. Will at this time be more linear to double earnings by 2020?

Marc Grynberg^ I'm afraid not, because nothing is linear on this world, or not many things besides railways in some cases.

So no, I would not expect the growth to be linear because we have to always bear in mind that the economy is cyclical, the industries that we serve that their own cycles, the development of technology is not linear, because it depends on how R&D efforts are being phased in and then starting to deliver. And you cannot predict that, and make sure that it works in a linear manner.

No, there is cyclicity in every aspect of how businesses is being conducted and how the markets are developing. So I would not expect a linear evolution.

This being said, as I mentioned during my presentation we have a pretty good visibility of what the potential is at the horizon 2020. And I believe that the projections we have are solid enough to support that. But it's not going to be linear, I'm afraid. It would be too easy.

Zeb Billow^ Thank you very much. [Zeb Billow] from [Web]. I have a couple of questions, just for clarification really. Marc, you seem to -- I think infer what you quite explicit about I think, that you'll see CO2 regulations become the dominant force in the kind of whole picture around car or automotive emissions. The GDI example you gave suggested that that's a useful thing for you as you see petrol vehicles having to struggle harder to achieve the same CO2 emissions because of high temperatures, whatever it is. Is that always the case, or could CO2 regulations actually drive a shift to, you know, lightweight vehicles that don't need as much catalyst? That's my first question.

And then the second one was on the real world testing, which I wasn't sure I totally understood the implication of that, because obviously the absolute emission standards stay the same.

But the implication of having to redo the testing protocols suggest that actually they're not currently achieving the targets that they're supposed to achieve. So clearly, there will be some implications for the catalyst technologies that you use. Another way to say it, we'll have to work harder to achieve the emission targets in a real world scenario. So perhaps you can unpick that as well. What is -- what exactly is the implication for Umicore for real world testing?

Marc Grynberg^ I do not expect the demands on catalyst to decrease in any scenario because in a way it is not just the CO2 regulations that are becoming a predominant factor in that picture. It is a combination of the two sets of emission standards. The fact that CO2 needs to be reduced, CO2 emissions, and at the same time, the emissions of pollutants have to be reduced also.

So even if you downsize engines, you still end up with more complex engines because they have at the same time to reduce -- to be cleaner in terms of raw emissions of pollutants.

So it's the combination of CO2 and pollutant emission reductions that drives the complexity and the need, and the demands on the catalyst. So I do not expect that to change. And even if you use lightweight materials and change the configuration of the body of the car or whatever, this is will not alleviate the demands on the catalyst side.

That being said, the move to lightweight vehicles is an important enabler for the electrification trend because it reduces the demand on the battery side. And you know that the battery, the lithium-ion battery is one of the key cost components in an electrified vehicle. So that's an important driver as well.

But I do not expect the demands to become any less than what they are today.

Pascal Reymondet^ And your second question on real drive emission. To be clear, today all vehicles meet legislation. Today, the OEMs are required to meet legislation under a given test cycle. So vehicles are tested on a given test cycles, and after these test cycles, the reduction of the pollutants have to reach a certain limit. So all vehicles meet that.

And vehicle, while they drive in real world, under any conditions reduce pollutants. But this reduction is not being measured under all real drive emission. So catalysts reduce pollutants in many conditions today, in many conditions, but they only test it under a given cycle. And all cars meet that cycle.

In the future, catalysts will be tested under real drive emission. So we will know under real drive emission, there will be a target of reduction under all conditions. But they were used today under all conditions. Just the target will be measured under all these conditions in the future.

Marc Grynberg^ One of the shortcomings -- yeah ...

Pascal Reymondet^ That means the catalyst system will have to be more robust, because we'll have to be 100% efficient in all driving emissions -- all driving conditions. More robust, I'm sorry.

And at the expense of repeating myself, more robust means technology again.

You may.

Marc Grynberg^ I just wanted to add that one of the shortcomings of the current testing protocol is that it was designed many years ago and driving conditions in the meantime -- real driving conditions in the meantime have changed, especially in urban conditions because of the traffic congestion. So it was time to update I would say the protocol, the testing protocol and make it move closer to what real driving conditions are today.

Andrew Benson^ Yeah, thanks very much. Andrew Benson from Citi. Three questions. You're going for the growth outlook for light duty and heavy duty, I think it's 2.86%, whatever the precise numbers were. So I guess you're looking for you're like, total catalyst growth of around 3.5%, or vehicle production growth of about 3.5%.

Is it possible in your mapping to give what you think the percentage increase in like, catalyst activity above and beyond the engine growth is in order to get some sense of how fast you see the market growing, and clearly you've set the aspiration to create faster than the market? Just so that we can understand that.

Secondly, if you look at what you said as your target for 2010 to 2015, you achieved that, I guess between 75%-ish of what you set out achieving, and I guess, you know, euro crisis and global financial crisis and you know, all the rest of that challenges you've had, that's not a bad result.

You're aiming now to double your next income from 2014 to 2020. But can you set out what the major, if like, the critical factors are, just so we can dimensionalize the risks?

But also lastly, can you just update, you know, the guidance you gave in July was based I believe on certain precious metal prices that were prevailing in July. Can you just update that guidance to where we are with metal prices now?

Marc Grynberg^ Okay, let me work in reverse order, that will be -- may be easier. So the guidance is unchanged for this year. The earnings range forecast that I guided to at the end of July for the full year of 2015 did factor in the developments that we discussed, the development slowdown in China and the lower metal prices.

Taking to account that our metal price exposure at the time I mentioned that in July was to a large extent hedged already for the second half of the year. Of course part of the exposure cannot be hedged because it relates to metals that cannot be hedged for which there is no forward market, secondary metals in particular. And these have not moved in the right direction for us in the

meantime, but that was factored in the earnings guidance range that I gave. So no need to change that today.

So that was your third question. Your second question was about the -- sorry, can you repeat that?

Andrew Benson^ So the other two other two questions was -- I was saying you achieved, you know, substantially your targets 2010 to '15. And now if you look at 2015 to '20, you know, I don't know whether we should just say we're factoring 75% of it because -- what the major criteria rather to build that expectation.

Marc Grynberg^ Well let's put it this way. The growth is -- and the doubling of the earnings is predicated on organic growth, coming predominantly from three initiatives. One is the expansion of our recycling capacities. So one of the key factors in achieving the doubling will be the successful ramp up of the new capacity in Hoboken, and Luc will talk a little bit more about that later today.

The second factor will be of course, the growth of the automotive industry and of the catalyst business relating to the automotive and the heavy duty diesel industry. That's a very significant contributor to the doubling in earnings that we are projecting.

And last and but not least, the third critical factor will be the demand for -- the growing demand for our rechargeable battery materials. And there, one of the driving forces behind the projection is the electrification of the car industry. It's not only cars, it's also electric buses. So new applications coming up there, which require quite a bit of volumes of the materials that we make.

So these are really the three critical elements in reaching the three main sources of growth that are critical in reaching that figure of doubling the earnings.

Of course, we are subject to how the economy is fairing, and we have seen in the past, seven or eight years that we haven't had any single moment where the economy globally was firing on oil cylinder, so that's something that we need to bear in mind.

There is a certain sensitivity to metal prices of course. But as I mentioned we have not factored in a major upswing in metal prices in the projection. So we're not dependent on a major improvement in these conditions in order to achieve the earnings objective. If metal prices were to recover, that would add a little plus over and above what we have projected there.

Andrew Benson^ Sorry about this. It was just -- you know, you've given the percentage growth of vehicle production. And I just wonder if there was a very simple role projected additional catalyst percentage growth from top of that.

Marc Grynberg^ Yeah, that's a complicated one, I would say. Typically, the catalyst industry, or historically I should say, the catalyst industry has grown a little bit above the car production or engine production levels. So I would say historically I believe the factor has been 1.3 to 1.5 times at the rate of the car production.

So if car production is growing at 3%, then catalyst -- the catalyst business -- the catalyst industry would grow at let's say 4.5%.

This being said, in our projections, we have included the fact that in certain cases, we're starting from behind. And as we're catching up, we're all growing the industry. And this is the case in heavy duty as a late entrant. And this is also the case in the light duty applications where we are catching up in areas where we were a little present, that is the case with Japanese OEMs, and in particular in Southeast Asia.

Cheddi Panday^ Yeah, thank you. It's [Cheddi Panday] from Goldman Sachs. Just two questions. Firstly, could you talk about pricing and competitive environment in emerging markets versus the developed markets especially given that in emerging markets, some of the legislation that is coming has been already implemented in the developed markets? So surprising for catalyst in emerging markets and is the competitive environment in the emerging markets more competitive than in the developed world?

And the second question is just on your CapEx requirements to fulfill the double digit earnings growth that you're talking about. What sort of CapEx should -- are we talking about here? Is it similar to the 2010 to 2015 days, or is it lower or higher?

Pascal Reymondet^ In emerging markets, would you include China as an emerging -- Okay.

For emerging markets, so the worldwide -- I mean, we are basically -- regardless of market, there are three main supplies, Okay. Because to be successful in that market, regardless of the supply in the emerging market or not, you need these five pillars I've talked about. And one of the pillars is this global footprint.

And the only three major players with a real global footprint and these are our main competitors, and yes, there's a little bit more pressure in China because there are strong local suppliers. But at the end of the day, we compete against the other two globals. And you know, there's a bit more pressure, but not extraordinary.

Marc Grynberg^ Then the question about CapEx, I would ask you also to bear with us. Filip will show that in his presentation towards the end of the afternoon.

Martin Dunwoodie^ Martin Dunwoodie from Deutsche Bank. Just stepping back a bit and looking at what you're talking about getting to 2020, and you obviously talked about organic growth. But in terms of M&A, has your appetite increased on that? This is not a big feature of recent years.

But clearly with the loss of the CapEx done, potential sales, you can have a little bit more capacity for that in the future. And I'm just wondering what your thoughts are on that. There's clearly areas that are more difficult to acquire in being recycling catalysis. I guess you're featuring more on the other division. But thoughts around that and maybe the financial criteria you have there.

And then secondly, going back into the catalysis area, you talked about more competition in the emerging markets. But I guess as the legislation develops going forward, it becomes more difficult for these people to compete against you.

So presumably, you would anticipate the three major players taking market share versus locals within China, whether you can talk around that, [as best] as well. Thanks.

Pascal Reymondet^ Yeah, today in the passenger car business in China, the three globals have over 80% of the market (inaudible) 80% -- [70 of us] in the markets, we already have a few others. The biggest share of the market. And we will be ready to stay, you know, that way for the future. Because the global OEMs are gaining market share and are being successful in China. So we will grow together with our global OEMs.

We support as well the local OEMs. But with the aligned share of the global OEMs are taking that market, will -- these three main suppliers will remain the biggest supplier in China.

Marc Grynberg^ And talking about M&A, the appetite is intact, it is there even if we have not done a lot of acquisitions in the past few years. And again, I will ask you to be a little bit more patient because Filip will address the topic later today. And we'll outline our criteria for acquisitions.

And now the appetite is clearly there because we have indeed the firing power to accelerate the growth through acquisitions. One of the limiting factors is the fact that in many of the industry segments in which we are active, the number of possible acquisitions is extremely limited because in many cases, we're operating in niche markets, or sometimes large niches. But still niches with a limited number of relevant players, so that limits the possibilities to start with.

And secondly, no need to probably to tell you that the -- it's easy to make an acquisition, it's more complicated to create value from an acquisition. So we remain extremely disciplined when it comes to the financial criteria associated

with an acquisition. And with the multiples where they are today. In many markets indeed, it is more complicated to generate value.

I mean, if you have to pay 10 times, you know, EBITDA to start with, you end up with a return that -- I mean, if you don't have significant synergies, you end up with a return that is way below our target returns on investment.

So M&A, yes, there is an appetite. But because of what I've just mentioned, M&A remains optional while organic growth is a must and will continue to be a top priority for the group.

Evelien Goovaerts^ Thank you. We are 54 seconds behind schedule. So I think that's good to start with. We have a break now and we expect you all back just before noon to kick off with the rest of the presentations. The break is just outside this room. Thank you.

(BREAK)

+++ presentation

Evelien Goovaerts^ So welcome back everyone. We are now ready to continue with the presentations. So as it states, normally Marc Van Sande was going to host this session, but Marc Grynberg will take over and he will give an introduction on the business group energy and surface technologies and talk a bit about the drivers in the different business units. Marc?

Marc Grynberg^ So indeed, I'm stepping in for Marc. And then I'll try to bring the messages across that Marc had intended to give you this morning.

Energy and Surface Technologies is a newborn. That's the latest creation of Umicore in terms of business group. So we thought it would be worthwhile and important to tell you which activities this business group covers and what drives the business there.

So we're going to talk about the profile of the business, what actually binds these activities together, and so why we have created this new business group, this new grouping of businesses. And I'm going to talk about a number of shared characteristics including the close loop approach, the importance of Asia in the overall business mix. And I'm going to talk about the growth and profitability drivers for these activities.

Let me start with a short descriptive part. We have five business units in the business group Energy and Surface Technologies. Cobalt is specialty materials, rechargeable battery materials, thin film products, electro-optic materials and electroplating.

These activities have a certain number of characteristics in common. I will talk about that in a moment. One of them to start with is the fact that they mostly transform a number of minor or specialty metals, in some cases precious metals that's mostly the case for electroplating. Otherwise, it transforms minor and specialty metals into functional materials that go to a number of high tech industries. And they all close the loop with recycling capabilities.

Let me elaborate on that. All of these activities, all of the five business units make products that are related to energy applications. Energy applications being as diverse as the production of renewable energy, or the storage of renewable energy. It could be also related to energy saving lighting such as the technologies being used in LEDs, can be cathode materials for batteries used in portable electronic devices or in electrified vehicles. So quite a number of different materials and materials technologies going into energy applications.

Now, it is also worth highlighting that four of the five business units have materials and technologies going into surface applications, surface technologies. And it could be through sputtering, it could be through the positions, it could be through other technologies. The common denominator is that we make materials that bring specific properties, that adds specific properties and functionalities to end products. It can be like, you know, bringing the conducive productivity -- properties of displays. So we have quite a number of applications or materials going into surface coatings.

All of the activities close the loop, so they offer a closed loop service for their customers. It is in many cases what we refer to as a short loop. And for instance in battery materials as you know, we have a pilot facility which is not located in that business unit. It's in Hoboken.

But we have a pilot facility which has proven its capability of recycling spent lithium-ion batteries. And this technology is ready for scaling up at the time that the electrified vehicle market will reach a commercial size and a certain scale and will be a need then for larger scale recycling capabilities, but the technology is there.

And cobalt and specialty materials, we do recycle cobalt and nickel containing residue streams coming from our customers. For instance customers in the tooling industries, into hard materials industries have [renew more] cobalt containing residues that we do recycle for them, and then we deliver fresh product containing recycled materials.

In electroplating, in the bath from the electroplating customers can be recycled and all the precious metals can be recovered. Of course, these are high value metals that should be recovered and reutilized.

And electro-optic materials, many of the products we make contain germanium. And in certain number of cases, and that is true in the optical fiber industry as well as in the solar cell industry, the production processes of our customers generate a lot of residues, germanium containing residues. So the overall economic viability of that industry depends on the capacity to collect these production residues from our customers, recycle them and reuse the germanium -- high priced germanium that is contained in there.

And in thin film products where we make rotary indium tin oxide targets for to coat glass or LCD displays. There again, the value of the indium that is contained in the coating -- that is contained, sorry, in the targets is extremely important and the spent targets have to be recycled to make the entire value chain sustainable.

So this is one of the common denominators. These businesses not only provide functional materials for high tech applications. They all need a close loop system in order to offer the full service to the customer and to make their businesses sustainable.

Another common denominator of these businesses is the growing importance of China in the overall business picture. For three reasons -- one is that many of the industries that we serve through these five business units, many of these industries are already Asia-centric and the extreme example there is the lithium-ion battery industry with research, development, production, being almost exclusively centered in China, Japan and Korea. So that's a bit of an extreme case today. And that's why we have a number of years ago made the step to move not only production but also research and headquarters to Asia as well, to be fully in sync with our customers in terms of location. But that's an extreme case.

We see a number of other industries that are moving gradually to Asia, and where Asia is becoming a big contributor to the -- or a big -- represents a big portion of the market. That is the case in the plating industry. That is the case in thin film products where a lot of the display industries moving today to Asia, and actually moving within Asia from countries like Japan and Korea to China as well.

So shift -- I mean, either Asia-centric businesses or shift of these businesses to Asia, this is one of the common denominators.

In a number of cases, the ingredients that we use, sometimes the metals that we use are also predominantly to be found in Asia. One example there is germanium. About two thirds or close to two thirds of the germanium reserves in the world are in China. And China has become a dominating force in the supply picture for germanium. So it is important indeed to have a certain degree of presence so that you can secure raw material availability, primary or secondary raw materials availability to support the business growth.

And finally the other common denominator -- the other aspect of this common denominator is that Asia has to a certain extent a lower cost base, which for some activities, is important especially when it comes to certain refining and recycling activities that are supporting the energy and surface technologies businesses.

So Asian presence increasingly important for that business group. And as I mentioned, with the extreme case already today of the battery materials which is located 100% in Asia.

Let me now go through some of the growth drivers of the activities. And let me start with the most obvious one, and this will be also addressed in a few minutes. That's rechargeable battery materials. The growth driver there, and this is one of the strategic pillars of our strategy, is the electrification of transportation. The electrification of the car industry, and also the electrification of mobility more generally speaking because it also includes electrical buses.

This is the biggest growth driver. It also has a consequence on the growth in cobalt and specialty materials. Another business unit of that business group -- because that business unit is producing quite a number of the ingredients and precursors that are essential for the rechargeable battery materials business units. So these are two sister business units that tend to grow in sync.

In electroplating, the growth driver is mostly related to GDP and to a certain extent the Asian GDP because a big chunk of that activity or that demand is already in Asia today.

For the thin film products, the growth driver is the growth of the display industry.

And for electro-optic materials, of course we have talked over the years about satellite launches, which continue to be a driver for that activity. And with projects like internet in the sky, there is probably potential indeed for growth in the future. We've talked in the past about CPV. That is not materialized to the extent we had envisaged.

But there is a new growth option that has developed for that business and it's related to the commercial use of infrared optics for a certain number of electronic devices.

But I would say if you look at the magnitude of the different growth possibilities and options, the biggest driver by far will be the electrification of transportation.

In terms of profitability, what is going to drive the performance improvement that we are projecting or the improvement of contribution -- one is, and by far scale effect. In the past few years, we mentioned on several occasions that we're on the process of making significant efforts including investments in infrastructure to

lay the foundation for future growth. Part of that is related again to the battery materials activity. And indeed, we now have to reach scale effects in order to have the full benefits of the infrastructure investments that have been in the past several years.

What is also important in terms of profitability driver and which is also a distinctive factor for Umicore in the marketplace is the fact that we are trying to be as integrated as possible throughout the value chain. As I mentioned initially, these businesses rely on minor and specialty metals.

These metals have inelastic supply. You don't mind -- you don't find specialty metals mines, they don't exist. These metals typically when it comes to primary production come as a byproduct of other metals. It can be copper, it can be nickel, it can be zinc mining activities.

So their supply is inelastic and it is therefore extremely important to have the possibility, the capacity to secure your raw material supply. And we do that extensively through our recycling capabilities on one side and also through some other alliances or corporation agreements with upstream players.

But this is going to be essential in the future in order to be able to guarantee continued supply to your customers. You need to also ensure supply security of some of the most critical ingredients. So profitability will be driven as well by the quality of your supply chain integration.

So I would say these are the main couple of factors in terms of profitability going forward, supply chain integration and scale effects for the large scale applications like battery materials.

So what I would like then to take away in order to complete this snapshot or brief overview of energy and surface technologies is one, that these activities are all related to the core competencies, all make significant use of the core competencies of Umicore in transforming metals, minor metals, specialty metals into functional materials. And then closing the loop to recycle these end of life materials and thereby securing part of the supply of these inelastic products.

Also, the growth potential is fairly big. We have quite a number of growth options that I have listed. The biggest single -- the single biggest option to grow there is of course with the electrification of the car industry and our unique position in the battery materials industry and Kurt will elaborate on that subject in a moment.

And then I would like also to -- you to take away that these businesses have as a common denominator also a very significant or a growing Asian presence and exposure. And I can say that Umicore has already taken steps in the past few years to be extremely well positioned in that region so that we can capture a decent share of the growth going forward.

And with that, I would like to hand over to Kurt who will elaborate on the outstanding perspectives that we have in rechargeable battery materials. Kurt, it's yours.

Kurt Vandeputte^ Thank you, Marc. Good afternoon, everybody. Just before lunch, difficult task but frankly speaking I'm used to that. Whenever I address my colleagues in the morning, it's always good afternoon because they are already in the late time zone.

Whenever our technology is tested, it's critical, it's when people or when technologies or batteries already 70% discharged. Think about to plug in. That's where you still want to overtake somebody on the highway and that's where Umicore typically excel.

I would like to guide you this morning through the fantastic growth opportunity that lies in front of us for battery materials. I will start representing a business profile, what are we today, what have we achieved in the last 15 years to reach this position.

Obviously, I would like to explain you a little bit more about what is driving this growth. I mean, is this real? When will this come? Small difficult to ask but I will help you to give a bit of perspective.

And then finally, I will go deeper into the growth opportunity in terms of materials for us. What does that mean? Car growth is one thing but material growth is another. And obviously, I will wrap up with some key takeaways.

Let's start with the business profile. As Marc explains extensively this morning, rechargeable battery materials have a very obvious link to one of the key megatrends. It's electrification of our transportation but it doesn't stop there.

We have also strong ties to the other megatrends that for the strategy of the company are critical. More stringent emissions controls, Pascal gave a fantastic introduction already for me. Electrification is also contributing to lower CO2 emissions.

Resource scarcity, the materials that we are using in rechargeable batteries contain metals. Contained metals can be indefinitely recycled without giving in on performance. So there you are as well very well positioned.

Umicore battery material is a leading player in the industry. Let me describe a little bit characteristics of this market. First one, lithium-ion battery technology is an established reference for the main applications we finally serve.

Lithium-ion battery technology is key for portables. Lithium-ion battery technology is undisputable, the technology of choice for electrification of our transport system. Within lithium-ion battery technology, cathode materials play a pivotal role in the performance and the cost equation of this application.

What do we currently offer to our customers and end users? First of all, we have a broad spectrum of products. I'll come back to that later. There are four main families today. We have presence in three out of these four families.

We have established a large production footprint today. Thanks to our nearly 20 years effort in this young industry we reached this position. We have a fantastic track record on cumulated production volumes.

Just to give you an example. If we were today to power 1 million EVs, the amount of cathode material that you need for that is equivalent to what we already produced to the market. Under these most stringent quality parameters, I think this tells it all.

How did we do that? Thank you, Pascal, the presentation started with technology, the same story is true for me. Technology is the key. The business starts by offering a performing product to your customer. Something that works that doesn't work on a 10 kilogram scale that works on a 5,000 ton per year scale. That's the real test.

Like I mentioned before, we have proven quality track record which is for the automotive industry a must have. It's not a matter of will you do it, it's have you proven it already. We did so. So we gained confidence of the final users.

And last but not the least, knowing your application is important. Understanding the language of the customer and that starts by understanding power handling because in the end that's what your customer is doing.

He's handling your power, he's handling your product but it ends by understanding what a mobile really requires from the battery and from the material. These are key important factors.

Thanks to all these elements, we have reached a strong global presence. Please get used to an Asia-centered world map. This is not a coincidence. This is on purpose.

Like Marc mentioned, research, engineering, industrialization capabilities, we have all the world but, of course, our operations are in Asia, we need to be there and we need to support these guys with process innovation.

The operations mainly focused in Asia. Of course, there's still some intermediate production in Belgium as well. Production is one thing, industrialization is another, however, convincing the customer that you bring value for money is critical.

We have application technology labs for doing that but before going to the customer, this lab really served as the final test for product development. A product only works if the battery works.

Whatever 20 parameters you test on the power, I'm pretty sure I'm convinced with our experience already that the 20 first parameter power will either make or break the final application.

So we need to test within a battery for product development. We need to run battery test for quality control purposes of our industrial production and, of course, we need to handle our power in the normal practical way as our customers do. So making printing ink because that's the way the material is use is also a critical step in this process.

And then last but not the least, of course, customers are present globally, we need to have people that they can talk to in their own time zone with their equal language.

Talking about the head count of RBM is a difficult things, it's trivial but whenever you mention number, it's almost guaranteed wrong. So I will stick to the number, we are about 500 right now. In fact growing industry, it doesn't -you don't fix the number on an individual.

We have already offered this morning a unique position in the value chain. I think rechargeable battery materials are one of the most prominent examples of that. The uses of lithium-ion batteries are, well, I assume they start to be known consumer electronics, portable devices, of course, electrification of transportation but there's more than that.

We also have now energy storage systems, I'll come to that later, they are another important use. Obviously, the end use needs the battery. The battery is produced by limited number of very big cell producers.

Asia center, 98% of cell manufacturing today is done in Asia. These cell manufacturers are our direct customers. The picture shows you clearly that we, in the supply chain, occupy a unique position.

We source raw materials, cobalt, nickel intermediates. We resource scarp material which needs to be recycled. On top of that, we have pure cobalt and nickel sources and a very cost-comparative mix at all times is being transformed into an active lithium cathode material.

Having this unique position in the supply chain is at this moment in time industry development a key answer to your customers' need. Our customers are facing extreme growth perspective, are facing very strong demand or supply things, and we need to show the responsiveness and the agility to address these fluctuations. Having control over this supply chain is quite critical.

Where are we today after 20 years of presence in this business? First of all, we have established like I said a very important supply basis. We focused early on in this process on process innovation, production process innovation.

Of course, good products are key. However, very cost comparative, high volume production processes are going to be the differentiator of the future. Producing these products at such a large scale with automotive quality standards is going to be a main challenge in the future.

I probably kick in an open door if I tell you that Umicore has the natural competences in terms of industrialization. We have a large scale industrial competence base from which we can tap although we are extremely [empty].

Some of you might recall a couple of years ago, one of the visits in Korea for Capital Markets Day and for me this is a picture with lots of history, lots of story. Of course, I cannot bank on 26 years of experience Pascal as you have but nevertheless, I'm proud together with some other individuals here that we started basically in this green part of the plant in 2000.

And to be in line with the company guideline to use green and blue for the next phase, we changed to roofing color all to blue. It's taken with a wide lens also in purpose because in the end as I mentioned we need to have an integrated supply chain so it's difficult to draw really the boundaries of our plants but having a cell make it very close really in the neighborhood is quite important for your development.

So the people who have been there, who have felt the vibe in the Asia probably understand what I mean. I want to mention that just behind, this small hill you see here so which is about 2 kilometers away from our site one, we have this year started the production at site two.

So we were really at the end of the capabilities on the first site, we have to expand to a new location. Thank, God, it's close to our existing facility and we can definitely share on the scale effect there.

That's where we are today. Let's look for further now to the market, what drives our growth. Let me start by explaining that market growth in lithium-ion batteries is usually expressed in gigawatt hour.

Gigawatt hour is the metric that tells you about the total energy storage of the batteries produced. For us, this is an important metric because there is somehow a good correlation with material or material use.

The first main segment for us is portable. Portable is a key market today and remains significant for the years to come. However, without any doubt, electrification of transportation is going to be the growth engine for the future.

Today, we are at the start of this evolution and I'm saying evolution on purpose. I don't believe in a revolution. This is a huge industry so it will take time to establish the industrial footprint to make this electrification happen.

Like I mentioned earlier on, there is a third application interesting for us. This is energy storage system. The storage systems are new. They are traditionally coupled to non-fossil fuel-based electricity generation that can be centralized, that can be decentralized but they will serve as a buffer in the new electricity generation and distribution world we will see in the next decade.

We expect this to be the smallest of the three segments but nevertheless important enough to dedicate some minutes on that. Like Marc mentioned, this was the base case. However, if we look around and if we look at certain market prediction, some market studies, if we listen to participate -- to participants in this industry, people talk about different numbers.

Different numbers coming from the fact that in the electrification introduction, well, whenever a new technology is being introduced, you have somehow a linear phase in the beginning and at a certain moment of time, it accelerates.

When will this acceleration happened? I invite you to pick a number in the next 10 years. I'm happy to discuss about that over a coffee or a beer in the course of the day. Let's see who has it right in 10 years from now.

What is the fact is that if an acceleration happens in the next decade, we are going to face not a small piece of growth but we are going to face a huge growth in front of us.

Let me dive into the three main applications. The first one is portables. On purpose, I mentioned portables, I'm not talking about portable electronics because portable is to our understanding, to our definition of the market segmentation, it's more than consumer electronics.

Of course, consumer electronics is the main part. However, we have seen the last couple of years very strong growth of what we call power two-wheels. People who have a bit of experience in Asia will realize that when we talk about e-bikes, we don't talk about e-bikes like you're used to see them in Europe for retired people. No, we talk about e-bikes for all people going to work like in China.

E-bikes or e-scooters, let's take Shenzhen as an example. A scooter based on an small engine or a double stroke engine isn't allowed, only electric scooters are allowed in the citizen. So you can imagine what this means as a market.

The references in terms of growth within the company differ a bit. I'm talking about growth rates, stabilizing growth rates for these segments of 4% to 6% which is maybe not that fancy if you work 10 years in this industry but I see always other people smiling when I talk or discuss about growth rates.

Let's move to electrified transportation. This is a very diverse segment and car electrification is very visible. However, I would like to throw your attention that it is much more than that. We see developments going, of course, in the e-bus segment. We see developments already going in to heavy duty applications.

Think about mining equipment or container unloading equipments in ports for instance. There are vast amount of opportunities for lithium-ion technology there. However, let's focus for today on the automotive opportunity first.

I look at the automotive market with a different lens than Pascal does. I make different segmentations in my market analysis. And if you look at today's situation, more than two thirds is internal combustion engine. There is roughly 30% hybridized already but let's call that really micro or mild hybridized, I'll come to that later, and there is only 1% plug-in or EV who talks about electrification of the car park, 1%.

However, where we look at the situation for 2020, the situation is going to change quite rapidly. We see a very fast growth of the mild and micro hybridization. So in numbers of cars, this is going to grow very fast and where we look at plug-in and EV-type cars, we predict something like 3%.

Like I said, base case, evolution, no revolution. The rollout of electrification is going to be completely different in terms of geography and it's going to be very tech diversified.

Pascal has explained to you very well what the drivers are. The car OEMs need to comply certain legislation and they are going to do in an extremely well-planned way and that's going to be different geography by geography.

Number of cars, that's one thing. Understanding the underlying market opportunity for Umicore battery materials is another. With this graph, I would like to give you a flavor of what kind of different animals were talking about.

Let's move from left to right on the graph. The first one is a micro hybrid. A micro hybrid, ladies and gentlemen, this is a car that you buy without knowing that you bought a hybrid car.

In the meantime, people don't talk anymore about, yes, you have a start-stop or whatsoever. It's already in the standard package of certain segments. When you buy a micro hybrid car, you buy a battery of let's say on average 0.4 or 0.5 kilowatt hour. This is no more than a small EV battery to give you a bit of a flavor.

When people buy a hybrid car though, it starts to be in the mind you make an obvious consideration when you move into this car purchase. And then you basically buy a battery of 1 kilowatt hour and this all the way moves up to the segment of plug-in and EV where you start to buy a sizeable battery and a little bit less of a car.

So when we talk about EV long range so car, models car types with 300, 400 miles driving range, you have about 75, 80 to even 90 kilowatt hours battery. This is not something you carry on your back though, let's be clear about that.

Like I said, automotive transportation or electrification of automotive transportation is much more than that. We see huge traction on the e-bus fleet introduction in Asia and e-bus typically has like 200 to 300 kilowatt hour battery size. You know, this is an animal -- this is a dinosaur battery. But just like my children, I like the dinosaurs because there is quite a bit of business potential inside.

The size of the battery matters but also the characteristics of the battery matters. When you look at the micro hybrid battery, you want this battery to be powerful. You want to be able to start your car at minus 30 a couple of times in winter. So you need a huge flow of electrons in very fast shift.

However, if you drive a 400 kilometer range electric car, you want to drive 400 kilometers and not be emptying your battery after 150 kilometers. So these are completely different requirements on the battery and so on the key materials, the cathode materials.

We've seen number of cars for the future. We've seen a segmentation on the batteries that is used or there are going to be used. Let's kind of multiply this information or these two packages of information what does this now represent for us as a market opportunity.

Well, this pie chart shows what our key future markets, full EV, plug-in electric, and e-bus market. In terms of energy opportunity, cathode material opportunity, these are the key segments. Remember, we talked about only 3% of the numbers of cars. So this is an important understanding that you need to have when you look at our market opportunity.

Like I said before, aligning the right material with a right application is critical. If you look at the main applications for us, so let's call that the energy segment of

the market opportunity. One of the key drivers is cost of energy. In our world, we talk about the dollar per kilowatt hour cost.

This is what it's all about. That is going to either make or accelerate introduction of electrification. And that driver also is a key driver for the material choices on the cathode side because we have levers both on performance and on the dollar per kg scale.

Like I said, energy storage systems, an important third segment, growing segment, less known and I would like to draw your attention that what we know typically about energy storage systems are the home base, the individual systems that you could connect to a small private windmill or to your -- maybe to your solar cells in the roof.

Frankly speaking for us, this is a small market. This is really a subsegment which is small. The main opportunity in energy storage systems lies for us in bigger systems connected to the electricity distribution, future distribution network. This is going to be the key segment.

Because of that key segment, the real driver, the real technology driver there is total cost of ownership on a very long term. People want to install these large systems for 25 years on the grid and have a reliable low cost system. They don't really care whether that system is the size of one container or two containers, space is anyway available.

We've seen the market, let's look what is the growth opportunity for us as cathode material maker. What kind of product do I have to produce? How much product do I have to foresee in the next five to 10 years?

Before we do that, I'm going to help with this heat map or material heat map to explain a little bit in more depth where -- battery materials are positioned in the market. In the market segmentation, I give a little bit more granularity.

Portables is a very right market, however, there is a big difference between what we call portables premium and portables standard. Portable premiums are whatever is in touch screen devices.

Touch screen devices are slim, the batteries are embedded. You have, in terms of electricity requirements, very, very heavy loads needed in these devices. So therefore, you need an absolute high-performing cathode material.

Umicore's strongly presence which is proprietary high energy LCO there. However, high-performing, high-end NMC and NCA material could serve this segment as well.

Let me give you in one minute an additional comment on NMC and NCA. For simplicity, we typically combine NMC and NCA in one category. NMC stands for nickel manganese cobalt, NCA stands for nickel cobalt aluminum.

Honestly speaking, NCA was the very first type of NMC in which people have kind of changed the aluminum into manganese. They did that because the product, the NMC-type product is safer, it's cheaper, it's easier to produce. So it was also easier to introduce to the market.

There is, however, an appealing factor to NCA, it contains or it can contain lots of energy. Remember, we are focusing more energy in the future. So for simplicity as of now, we combine that because in the end, in terms of production technology, overall product development, there is little or no difference between a high-nickel containing NMC and an NCA product.

For the portable standard segment as you can see from the heat map so you don't see any blue color there, this is a market segment which is strongly commoditize which is serving usually the aftermarket for consumer electronics and for that reason is extremely cost competitive. A couple of years ago, we decided to kind of pull back from that segment especially with our presence of NMC at that moment in time.

A similar segregation is made for automotive. I mentioned before, you have energy requirements, you have energy applications and you have power applications.

For the energy applications, NMC is providing really good value for money. Another product lithium manganese oxide is still present in this segment because LMO was introduced in the first generation of batteries and we see over time that that share is reducing.

For the power segment here as well, NMC and NCA are important product but in that segment, we clearly see that LMO and lithium iron phosphate also do play a role. And then last but not the least for the energy storage systems, there is a pretty wide diversity but the key materials in today's market are lithium iron phosphate and NMC.

Looking at the total map, you will clearly see that we have in the past focused on sizeable segments offering the main growth opportunities. That has driven our product development choices.

Over time, the chemistry split is going to change. If we look into market projections within five or 10 years from now, we have to take this into account. For the different segments, I will try to help you give an insight on what will be the natural tendencies into different chemistries.

You will see in each pie chart the same color code coming back, let's start with portables. I mentioned before for portables, high energy LCO is currently really the main material. This is the mover of the industry, the volume mover. Whatever device you have in your pocket, I dare to guarantee it's high energy LCO inside.

Is this going to stay? Well, history tells us that over time, the technology of the cells of the batteries is improving, people understand better how they can integrate an NMC material offering the same performance so we expect that the share of high energy LCO in a span of five years is slightly reduced and in favor of high end NMC components.

Transportation, today it's our estimates that over half of the volumes going into that application are NMC. And the two other main components are LFP and LMO.

As I mentioned before, LMO is going to be phased out in favor of NMC in the next five years due to the gradual replacement of the generation one lithium-ion batteries that we know. LFP will keep a certain share because it serves certain power segments in this market.

For energy storage systems, this market is going to follow mainly the developments for the automotive segment; however, with the stronger focus on cost comparativeness. So lower total cost of ownership is an absolute must here and that's the reason why you continue to see in the future a higher share of LFP and LMO.

A second reason is the energy storage market is quite geared towards China. There are huge amount of very large energy storage systems being installed now and in the next couple of years in China and most of these systems are based on LFP.

Looking at this pattern and knowing that our key materials are high energy LCO, NMC cathode materials and LFP I think you agree with me that we are very well positioned to capture the future market growth.

Let's out this all together in a nice graph. We start today with a market of 100, 100 tons let's say of cathode materials and it's nicely split over a number of cathodes. Today like is said, LCO was almost half of it, NMC is in nice second position and then top that with LFP and LMO.

In 2020, we see the market more than doubling in terms of cathode material volume. And our expectation is that the absolute amount of LCO will stay relatively constant, relatively flat. The main market growth will be taken by NMC.

Looking at current market accessible volume for Umicore materials, this is a tremendous opportunity. I forgot to mention that there was still a non-linear

scenario which brings me another headache and making these volumes facing this market growth is going to create different challenges in the industry.

In order to capture this growth, it's not going to suffer to just two more of the same. We have no ambition to build four of the same plants anymore. This doesn't make any sense.

We have to do better. We have to do better in terms of product performance. We have to do better in terms of industrialization and we are preparing for that. We are going to really build on the key competences of the company and we are going to make sure that when this scenario kicks off, when the frame is non-linear phase of the introduction starts that Umicore is ready

There is a fantastic market opportunity how do we see our key growth areas or focused areas for the next five years. Our base foundation is good products. However, without a cost leadership strategy in this high volume business, you will not make it.

Thanks to our existing position and our focus on cost comparative innovative new production processes, we strongly believe that tying the gap with a strong integrated supply chain together with our colleagues of cobalt and specialty materials, we are or we have the strong foundation for growth.

Foundation for growth, what do we want to achieve? We have a nice business opportunity already or we have nice business position important roles already. We're going with our ambition to keep that.

And on top, our ambition is to establish real technology-based leadership and the electrification of the transportation and all this together is going to give us the necessary profitability or at least sustainable profitability targets in the years to come.

If tonight you're wrapping up the chapter of rechargeable battery materials of Umicore, I would like you to remember these three key things. Lithium-ion is the base tech, it's the reference technology and it's an undisputed technology today for the main market applications that these technologies serve you.

Secondly, the market opportunity is big. It's extremely sizable, it's going to grow fast, how fast, let's see. And last but not the least, Umicore battery materials, rechargeable battery materials is really uniquely positioned today.

We have a strong foothold. We have a very large spring board to grasp this fantastic growth opportunity for the company. We have the good products. We can produce them at large scale. We are backed up with very strong supply team basically offering us the key materials, cobalt and nickel from our colleagues of

cobalt and specialty materials and all that gives us the needed responsiveness that we have for our customers.

This being said, I would like invite you for questions for this session.

+++ q-and-a

Evelien Goovaerts^ Thank you, Kurt. So we have a bit over 15 minutes for questions before we break for lunch.

Peter Olofsen^ Peter Olofsen of Kepler Cheuvreux. Two questions if I may. First on the battery materials, on the evolution of the market, you talked about volumes. Could you also talk about pricing, what do you foresee in terms of pricing for the coming years and will pricing dynamics change with the shift in the business mix from portables to automotive applications?

And then the second question is for Marc, early this year, you indicated that two units within this division in terms of scale were let's call it suboptimal. I think you were considering strategic options. Could you elaborate on this? What kind of options are you looking at and what kind of timeframe should we think of?

Kurt Vandeputte Let me start by tackling the first question. So will the pricing dynamics change over time when the mix of our business is changing from let's say more portables oriented towards more automotive applications?

To some extent, yes, it will change in the sense that portables pricing mechanisms are usually driven more on short term. They tend to be a little bit more volatile. Whereas we see for automotive that pricing mechanisms expand much longer lifetime.

So this is the main change or the main difference we see in terms of let's say absolute levels of pricing schemes, there is not much that difference.

Marc Van Sande^ If I may add, the pricing in automotive works a little bit the same way as for automotive catalyst is that when you qualify technically with your customers, you also need to show a cost roadmap and that is extremely important for the automotive industry.

And then, of course, it's up to us to continue to develop the technologies and to continue to improve the technology in order to maintain the margins and, of course, rescale effects in order to reach the desired profitability levels.

Let me address the question about the other business units in energy and service technologies and indeed, in the first part of this year, we indicated that we would look for partnerships for electro-optic materials and thin film products in

order to reach scale effects I would say faster than if we were to grow this businesses organically alone.

This remains on the agenda and we are looking at the number of possibilities. We have already looked at a number of possibilities, continued to do so and if and when significant progress or significant steps are being reached, in that respect, we will communicate about that but that's not yet the case. We have more homework to be done in that respect. But that remains the roadmap and that remains on the agenda. We want to reach scale faster.

Andrew Benson^ Yes. Thanks. Andrew Benson from Citi. Can you just -- you've talked about the competing technologies in the [oil well players]. Can you just talk about where you sit competitively with the other players?

Obviously, when we're talking about -- we talked earlier it's a pretty well-established market and most people know. But probably below the curve on who the competitors are, what you think your strengths are, where you think you sit in the spectrum of some market share, market potential and how strong those links are into automotive sector at the moment?

Kurt Vandeputte^ Are you strictly referring to the automotive market segment or is in general?

Andrew Benson^ Also in battery materials but obviously the portable segments more mature and more established. The automotive is less established.

Kurt Vandeputte^ Okay. Somehow in contrast to what you've heard this morning already for automotive catalyst that Marc structured, for us it's a completely different market organization right now.

We are facing -- we are the only western player in the cathode material field. We are facing very diversified landscape of cathode material producers and typically these players are small and million-sized companies who focus on one or let's say maximum on two chemistries.

So people who are bit longer in the industry are focusing on the lithium cobalt oxide segments, others are focusing more on new segments being NMC or LFP. In that respect, I think Umicore is uniquely positioned that we offer really broad spectrum.

And the last three or four years, we've really noticed that our direct customers, the cell makers in the end, yes, these companies are active in all segments so they really value the fact that you can offer for their different requirements a solution.

And, of course, the competition in China or Japan or Korea differs a lot. It's really company A, company B, depending on the country where you are active in.

Andrew Benson^ For portables?

Kurt Vandeputte^ For portables, for NMC obviously, it's a bit different because you are competing for larger platform for the size of the business is larger and by definition, you need to have demonstrated the very credible existing reliable supply basis.

Marc Van Sande^ And if you look, if I may, on the -- if you look specifically at incumbency and who's qualified for existing platforms or the platforms that will roads in the next five years, the competitive landscape is much less fragmented in automotive applications than it is in portables.

In automotive applications, you have a handful of players that are qualified for significant platforms and I would say our competitors are to a large extent in that respect in Japan. While for portables, I would say the landscape is more fragmented with, as Kurt indicated, a lot of small to mid-sized companies being located in China, Korea, Japan, etc. So it's a different competitive landscape depending on the application segment.

Joe Dewhurst^ Hi, it's Joe Dewhurst here from UBS. Just with the sort of differentiation between NMC and NCA. I already see in the pie chart, you've now gripped it together I presumed on the sort of the current split.

I mean, where does that stand? I mean, we're just kind of indicating that maybe NCA is almost not transitioned closer to NMC as a technology. And on that future pie chart, you -- I mean, does NCA almost cease to exist in automotive applications by 2020 do you think or, you know, how does it, you know, how does that kind of split out?

Because, I mean, the understanding is that the NCA characteristics are lot less, you know, it's not, you know, lot less, it's a los advanced say, versus NMC or applicable on automotive?

Kurt Vandeputte^ Very interesting question. So actually it's quite dangerous question to ask to a chemist so I will try to be concise in my answer.

NCA is not -- let me paint a little bit of history. NCA was actually one of the first cathode materials that was developed together with lithium cobalt oxide. It has a long history. It has a proven history in a very specific segment of the market.

And that was a market which was focusing really on energy density long reliability. So think about space application in these countries. That's where NCA got the traction, of course, for very small volumes.

Because of its long history and its promise on the energy side, it was the first material that was considered for automotive applications. Unfortunately, now a number of key drawbacks to this product for fast and massive introduction in automotive applications because the size of these batteries, they are huge. I mean, like -- don't forget this is not a battery that you should carry on your back.

And people need to integrate huge amount of [peripheral] equipment to keep this system safe and stable. This adds to the cost and, of course, lowers the total cost of ownership.

When you compare that to standard NMC material, so NMC material that's called as generation one reference materials today. These products are easier to produce. They are easier to integrate in your system. They are also cheaper. There is one drawback, they offer less energy.

So it's always about compromise. We currently see though that within the NMC triangle, people gradually move to a higher nickel content and in the end, you will come to something which is very similar to NCA. Whether you integrate an NMC component with 80% nickel and 10% manganese, 10% cobalt, you basically bring in the same energy as NCA.

In terms of product characteristics, energy content, production processes, you talk about really similar systems and that's the reason why we group it. That's also the reason why I'm saying NCA is not going to cease to exist. It's going to be one of the NMC products used now and in the future.

Adam Collins^ Hi, it's Adam Collins from Liberum. I have three questions. So firstly, at the Korea -- yes, I'll ask them one at a time, at the Korea CMD that was three or four years ago, you gave us an idea of the platforms in automotive you're qualified on and you said 15 at that stage. So could you update us on the platform number now? That's the first question.

Kurt Vandeputte^ Thanks, Adam, for the question. I'm glad you're referring to our previous encounter. Unfortunately, the market is getting complex. So that's also a good thing. I mean, the market is growing.

However, the visibility on platforms is getting extremely difficult from our point of view. We don't have a clear visibility on in which car model finally certain battery platform is ending up.

So honestly speaking, I don't think it makes sense to still talk about how many platforms. The only thing I can look at is what kind of volume do I see moving into the total application and how large is the total application today and how large is it going to be in the future. And then my conclusion is that we have reached already a very significant position.

Adam Collins^ Second one is on ethical cobalt, you mentioned that is competitive advantage and becoming increasingly important perhaps with the Japanese automotive in particular. Could you just explain how you're able to ensure that the cobalt you're sourcing from Congo is ethical?

In other words or I guess it's about the non-use of child labor and so on. So could you explain how you could be certain that what you have is certifiable?

Marc Van Sande^ Well, first of all, we limit ourselves to sourcing from a very limited number of players that have industrial scale activities in Congo and which accepts to be audited by us.

So we have -- and that's one of the first things that we installed in the process something years ago is a compliance audit mechanism and you know immediately if your supplier accepts to be audited regularly, that's a good indication, that's a positive sign.

So we conduct -- we have our compliance audit teams that conduct these ethical audits that verify on the spot the labor conditions, the ways that the mechanization works avoiding handpicking, child labor, all kinds of practices, making sure that our suppliers meet all the legal requirements locally of working, with all the necessary permits, with declaring all the quantities, working with invoices, etc.

So there are dozens of criteria that we do check on the field through our compliance audits. And it is fair to say that today, the only limited number of large industrial companies that have made very significant investments in Congo that do meet these strict I would say sustainability and ethical criteria.

Adam Collins^ And the third one is on consumer actually --

Marc Van Sande^ Sorry if I may -- sorry, just to complete the story, the other aspect of traceability that we provide to our customers is that part of the materials that we use are coming from our own recycling capabilities and, of course, through recycling we provide the best possible traceability mechanism. So that's also an important part of the selling proposition when we talk to customers that are intrinsically sustainability minded.

Adam Collins^ Okay. On the consumer electronic side, couple of related questions, nets on that area are positively surprise as battery size is increased, you know, 4G and high resolution requirements.

How long do you expect that positive trend to continue? Will the battery in the iPhone 7, for example, be bigger than the iPhone 6? Is this going to mature as some stages smartphone penetration becomes pretty high?

And then the second question you said that by 2020 you expect the high end of the market to become NMC from LCO where you have a high share today. To what extent, is there a risk that the place you are strong in commodity in NMC today, i.e. Chinese developed a capability for high energy LCO by that point such that that becomes a commodity to top end of the market for consumer?

Kurt Vandeputte^ To answer your first question, Adam, honestly speaking, it's also a surprise to us that this segment remains so positively. On the other hand, with an average growth of 5% to 6%, well, that's still attractive but it's less than as it was before. So that's why we say it's modestly.

How does it come that this market continues to grow? Well, you know, the answer is at home. I have teenagers in the house and I now realized how it comes then it goes so fast. They lost their phone, they let it fall, they break the screen, and they always want something new and it doesn't stop with the smartphone, it has to be a smartphone and a tablet and a nice notebook.

That's one thing. So replacement is very fast of the toys and the devices we know. But there is also more than that. You see new gadget, new devices come on the market. For most of that, the battery size is smaller but it all adds up.

Portable devices, that's electronics, these are the gadgets but also not -- let's not forget there is a very sizeable market on just portable things. I mean, travelling on a train, people come in to check your ticket and he has portable device.

Being on a plane, they come to you, they ask to buy something, it's all portable, it all contains batteries and all lithium-ion rechargeable batteries. So, yes, consumer electronic is a big segment but there's much more to that and this adds up to this total segment which has continued to grow.

To answer your second question, are we scared or are we afraid of the move somehow away from lithium -- high energy LCO? Honestly speaking, I'm not. The current application or the current requirements for the batteries in these devices are extremely difficult to meet.

The fact that the battery is embedded in a device means that the quality requirements are very strict. You cannot afford any bulging. You cannot afford any risk that the battery would die before the device is at the end of its life because there is a huge liability.

That means that to some extent, we will see NMC being introduced but it's going to be not that fast, it's not going to be abrupt and it's going to require very high technology standards of both the cathode and the system and that's the reason why we believe we are even well positioned to also serve that NMC market segment.

Mutlu Gundogan^ Mutlu Gundogan, ABN AMRO. I just want to go back quite a time ago actually to 2004 when the whole segment is still named [fast] materials and if I look at the returns at those days, you had a [row key] of about 11 -- sorry, 21%.

If we look at 2014 and before the adjustments of electro planning, that was significantly lower. So can you talk us through what has happened in that decade and whether you still have that risk going forward? That's the first question. The second -- yes.

Marc Van Sande^ I don't have the same short-term memory as Kurt so I would prefer to take one question at a time. So the -- what has happened in the meantime is very simple in a way and that's to a large extent the story of other segments of Umicore too is that between I would say 2000 and 2007 or '08, we had a very significant period of transformation through M&A combined with very strong organic growth because the world economy was growing fast and in interruptive manner.

And that time, the only motto was the sky is the limit and growth will never stop. Of course, in 2007 and 2008, the world came to a different realization. This being said, we didn't have -- we had a lot of mature activities and advanced materials or in catalysis, etc. with limited growth potential outside of GDP growth.

So we were actually benefiting from a large installed investment base and mature activities growing like the world was growing. So there was not a need for at that time major research and development efforts. There was not a need to increase investments, step up investments above the depreciation levels.

And what we have started to do five or six years ago is prepared Umicore for a new phase of growth such that we could now talk about what we are discussing today and such that we today have the chance of capturing the growth from new applications, from emerging applications and being well positioned. That's the story in catalysis.

I mean, if you go back to 2004, the business was not even present in China in catalysis. The business was not present in HDD as Pascal indicated. So we were benefiting from a certain installed investment base and we're riding the waves as they were coming.

Back five to six years ago, we decided to prepare for new growth options and that came with a very significant investment effort, one, and secondly, with huge research and development efforts in order to develop the right technology offering in order to make the efforts in terms of testing applied technology, commercialization and scaling up.

And so it will take a bit of time and that's what I've also mentioned all along before we go back to more normalized levels of returns in activities like the former advanced materials or catalysis because we now need to rescale effects on the new investments in order to go back to decent profitability levels. So what has happened is simply that we have prepared for a new phase of growth.

Mutlu Gundogan^ Okay. Thanks. Second question is on batteries, can you give a price tag or an average cost for an NCA battery versus NMC battery today and what you expect that to be in five years?

Kurt Vandeputte^ This is extremely difficult question. First of all, the market for battery is fast evolving. Secondly, the battery is not just the battery. If you would talk about an NCA power tool battery, it's going to have a completely different price proposal I would suggest or I would expect compared to an NCA-based automotive battery.

I think regardless of the chemistry base, over time due to overall cost reductions in the system, improvement on the cell design and so on, the battery prices are expected to go down and most of the components all contribute to that.

Evelien Goovaerts^ Thank you. I know there's more question for Kurt so Kurt, I'm sorry, I don't you will have the time to have lunch because he will remain available to answer your questions during the lunch break and we expect you back in 55 minutes to continue with the presentations. Thank you.

(BREAK)

+++ presentation

Evelien Goovaerts^ So welcome back, everyone. I hope you had a chance to interact a little bit with our management during the lunch break. This morning, we focus on our unique position in the area of clean mobility and we will now carry on with demonstrating our unique position in the area of resource scarcity.

We will have first Stephan and afterwards Luc explaining you more about it. So, Stephan, the floor is yours.

Stephan Csoma^ Thank you. Thank you. Good afternoon, ladies and gentlemen. I will now introduce you to the business group recycling.

We'll go to the business group profile, the short loop and the long loop which has been introduced to us by Marc this morning. The Asian presence, the growth drivers and the profitability drivers and finally the takeaway as it was done for the other business groups.

The business group recycling is composed of five business units. At the center of the business group recycling, you have precious metal refining which will be presented at large by Luc Gellens right after me.

The specificity of precious metal recycling -- refining, sorry, is that it is represented long close loop business model but also it's going through a major capacity upgrade which has very close link with the research and development center of Umicore as this is technology driven.

In that respect, precious metal refining reports at the ex-com level to Denis Goffaux, the CTO of the company while the other four business units report to me. The other four business units have more commercial, business, challenges and opportunities though they still have as any other activities within Umicore a strong link with technology and with innovation.

The closed loop business of Umicore which was already largely talked about in different presentation is that the heart, of course, of the recycling business group. The long loop represented by precious metal refining treats many different types of secondary materials and raw materials from mining, smelting and refining by-products residues to production scrap, industrial residues, and end-of-life consumer products.

It usually contains lower previous metal concentration. Just saying the sampling and assaying is more complex and the processing is longer than the short closed loop recycling and it can extract up to 17 different metals in our main operations in [Hoboken].

The short closed loop recycling is mainly treating production scrap, industrial residues from our all operations but as well from operations of our customers. It recycles a smaller amount of metals usually materials with higher concentrations of metals and precious metals and easier assaying and sampling and a shorter process.

Of course, there are very close links and relationships between both closed loops and whenever the material cannot be fully recycled in the short closed loop, it goes to the longer closed loop and to Hoboken to extract the final metal content.

In the short closed loop recycling, the business unit jewellery and industrial metal is at the heart of this activity. Jewellery and industrial metal produces different types of products, products for the lifestyle industry such as cases of watches or rings for the jewellery industry as well as industrial product such as silver catalyst and investment products such as coin blanks or silver bars or gold bars for investment products.

It is integrated with recycling and refining capabilities for its own production scrap and for the production scrap or industrial residues of its customer. The other

business unit producing product uses jewellery industrial metals capabilities, recycling capabilities for the recycling of their products and customer products.

Platinum engineering materials produces equipment for the glass production of high-tech application such as display glass as well as catalytic gauzes for fertilizer industry. When these products reach their end of life, they contain very high precious metal. They are taken back from the customers, recycled at jewellery and industrial metal facilities, given back to the product business unit, in this respect, platinum engineering material which produces the equipment and hand it over back to the customer.

On the other hand, you have technical materials which is silver base in terms of precious metal operation producing compact material for electric -- electronic application following different applications including the building industry, the automotive industry as well as brazing alloys. There again, the production residues from the production of the business unit as well as from these customers are being recycled and refined in jewellery and industrial metal operations. The metal goes back to the business unit and it's used again to produce these products.

These three business units are supported by precious metal management business unit. Precious metal management offers metal services to these business units as well as to other business units of Umicore using precious metals in buying these precious metals, leasing the metals, hedging the metals.

So with this support from precious metal management combined with the products and the recycling, we have a full value offering for the customer. These businesses as well as the other businesses which were presented to you earlier have presence in Asia which is a growing market, has been a growing market and where some of the activities are really concentrated.

For instance, jewellery and industrial metals has an operation in Thailand in the heart of the Southeast Asia jewelry industry where we produce some products for the jewelry industry but mainly recycle their production scrap and offer once again fully integrated closed loop business model.

Platinum engineering materials has an operation in Yokohama in Japan in the heart of the high tech glass operations for display where we do produce the equipment for our customers. And technical materials have a production in China where it has accompanied the international OEM. It has been serving in the rest of the world for many years to supply them in China but as well to supply, of course, the growing local producers.

In terms of growth and profitability, growth wise, all these businesses follow more or less GDP growth, market growth. There are some niches where we can outgrow the market or the GDP but overall it's a GDP-based business.

In terms of profit drivers, these businesses have strong profitability. They benefit from the global closed loop value proposition, the three pillars I have mentioned, product, recycling, and precious metal servicing.

The fact of having all these business units within the same group will enhance that possibility, will enhance our ability to optimize this global value proposition to the customer. And among -- in terms of performance, we have had a bit of mitigation -- mitigating work to do with the business unit technical material which might have to be pursued in the foreseeable future but overall these are strong businesses offering the performance expected by Umicore.

The key takeaway I would like to leave with you, first of all, once again, the integration of this short loop business model with the product business unit, the recycling business unit with the same business group which offers opportunity to enhance the competitiveness of our product offering.

The growth which is in line with market and GDP and the strong performance of these activities with nevertheless a continuous attention to being cost competitive focused on cost of all these activities and being present where it is required geographically and in particular, of course, as I've just explained with the growing activities in Asia.

Now that I have finished this short presentation about the overall business group recycling, I will leave the floor to Luc Gellens who will dive with you into the precious metal refining activity. Thank you.

Luc Gellens^ Well, good afternoon, ladies and gentlemen, and I'm very pleased to be able to explain to you today about precious metals refining and the agenda today is going to follow a little bit the same topics as for the other speakers. So, first, I will introduce the business to you. Also, talk a little bit about the competitive position and what differentiates us from the competition and how we generate business going forward.

Then, we will focus on the business drivers, external factors that allow us to design a growth strategy and then finally we'll give you the key messages in summary.

So, let's start with, maybe, with the business model and competition and maybe for some of you, it's a repetition because I have to introduce this business because it's fairly difficult, fairly complex, what our specialty is, really, is mastering complexity. So, we are a global leader in refining of all kinds of complex materials thereby recovering 20 different metals.

You might be a little bit confused because some -- some people mentioned 17 metal, some people mentioned 20, but I mention 20 because that's all what we

do in our fully integrated plant in Hoboken, Belgium. Seventeen coming from the precious metals refining and three additional metals added, thanks to the battery recycling activity.

We process more than 200 different types of raw materials, very wide area and I will explain more in detail where exact -- what exactly these materials are. And we apply in doing that world-class environmental standards. As a matter of fact, from all over the world, we get visitors to come to see Hoboken, to see how we master the environmental challenges dealing with so many different metals in the environment and we also are in the forefront of promoting sustainable way of working, an ethical way of working.

Now, if you look at our feat, so what do we process? And that's where I would like to show you the value chain of metals all the way from the mines to the consumer. We go through different steps. So, after the mines, the ores, or the concentrates, go to smelters and refiners, mostly specializing in one particular metal, zinc, lead, copper, or precious metals refiners. And finally, come out with refined metals.

These refined metals then are used by the industry to be processed into materials, into products, and finally, find a way into the -- to the consumer and at each step of the value chains, some waste is generated, some byproducts are generated even by the consumer end-of-life materials are generated and they -- these materials are all feat for our business.

In fact, we make a distinction between two different types of materials, the ones on the left side coming from smelters and mines, we call them industrial byproducts whereas the ones in the more advanced value chain downstream, we call them recyclables.

So, the industrial byproducts are usually products coming from mines where they have to -- where they have waste or they separate some products which are, let's say not useful for the base metal smelters. In the smelters and refiners themselves, they focus usually on one or two or three metals and all impurities, they remove them and they create byproducts and these byproducts have to be recycled and that's usually a very complex material with a lot of different metals in it and that's what we process.

And so, the industrial byproducts activity represents in tons about 86% of a ton and so this is the distribution we had in 2014 but my guess is that in the next couple of years, it will not change dramatically. In terms of revenues, we're talking about 75% whereas the recyclables -- whether the recyclables, our focus is really on industrial catalysts, e-scrap, and industry catalyst. There, we even team up with our sister business unit, Precious Metals Chemistry, to close the loop.

So, basically, we take back and spend catalyst from the petrochemical industry and we recover the precious metals, the platinum group metals and then feed that to our sister business unit who converge that back into an active ingredient for a catalyst either as a precursor as a finished catalyst.

And then end of life. We're talking about electronics scrap, mainly printer, circuit boards, but also spent mobile phones and things like that.

So, the recyclables themselves take -- represent about 15% of the tons and about 25% of revenues. Why is that difference? Because recyclables are usually much richer, especially richer in precious metals. We're talking about a couple hundreds of grams per ton of gold in the case of electronics whereas materials on this side of the spectrum, we're talking about less than 100 grams per ton.

Usually, there is also -- it's a chemical residue. It can be really dirty, mud, and things like that. So, there's quite some moisture also. So, that's why the value is lower and the tons are higher because you carry away a lot of deadweight.

Now, in terms of where our business is coming from, we have a global customer base and this customer base is really all over the world but it's different in -- when we look at the segments, these segments are different continent by continent. If you look, for instance, to South America, Latin America, the bulk of the business is coming from industrial byproducts and only a very small share is coming from recyclables.

In other continents, it's different. Like, for instance, Asia and Australia because you have to combine both. You see it's dominated by industrial products like in the case of Latin America but not to the same extent because there is much more business of recyclables.

And then if you -- there's only one exception, one continent where we get more recyclables from that's North America with mainly US and Canada. You see that that -- it's dominated and this is revenues that are represented here.

Our business is very complex. That means we have not only 200 types of different materials. We have, on an annual basis, more than 500 different customers. We have to process thousands of lots of materials so it's a fairly set up not only in terms of diversity of materials but also in terms of commercial set up.

And maybe it's useful for you to understand how we generate our revenue. We have, basically two revenue drivers. First, when we receive material, we charge a service fee to our customer and this service fee is to process the tons or to refine the metals inside the materials and that's why it's called treatment and refining charges. And, of course, that depends on the complexity of the material, the competition and the type of process that we have to use.

The other revenue driver is metal yield. So, when we make a contract with a customer, we guarantee a certain return. We say, while we will recover so much of all the metals inside your material. Either we will return the metal to them and then it's called a tolling contract or we purchase the metal and resell it in the marketplace ourselves and then it's purchase contract.

But in both cases, we guarantee a certain metal yield and, of course, it's our challenge to make sure that we -- when we process the material, that we recover at least as much as what we have promised to the customer and preferably even more because that's an additional revenue for us.

So, the revenue is really made out of the sum of the refining charges, the treatment charges on the one hand and the additional recovered metal above the metal yield guaranteed to the customer.

And in order to do that, we have to analyze everything that comes in in the plant. So, the business model that we have built is one where we don't buy at site. Whatever we purchase, we will first sample it, as we call it. We will try to take a representative sample and determine the metal content of the material.

And based on that one, we can then agree on the terms and conditions for us to process this material. So, that's fairly complex. And as a result of this complexity and this dual component. We have some metal price exposure.

The metal price exposure which can be direct, of course, because of this metal yield, if we recover more than what we have promised to the customer, then, the metal is ours but that is also depending on what we have to sell it in the marketplace and we are exposed to metal price variation. Indirectly, we're also exposed because of the different types of materials and depending on what type of material we're taking, it can be different.

In global terms, we can split our 17 different metals in three different group. On the one hand, gold and silver; the other hand, the platinum group metals; and the third group, being all the base metals and the minor metals and the impact on fluctuating metal prices is about equal for all -- for these three groups.

But we tried to mitigate these effect and this metal price exposure. We can -- we have several ways of doing that. One way is to systematically hedge the transactional exposure. That means that, yes, whenever we purchase metal, we, at the same time, find the buyer for the metal and we sell it at the same price as that we have to settle with our supplier.

Second way of mitigating it is by hedging more on the long-term and what we expect to get as additional metal during the year, try to hedge it in the

marketplace, and that's only possible, of course, for those metals where there is a terminal market.

The third way of mitigating our exposure is by agreeing with the customer that he takes the risk so that we agree on a tolling arrangement whereby we return the refined metals to him and we only charge him a service fee.

I said we are -- we process complex materials. That means that commercially, our process is fairly complex -- is set up in a fairly complex way. But also, our technology is extremely important to process these materials. And we use three base metals, copper, lead, and nickel to really capture all the 17 different metals and to separate them further in the process flow sheet.

This is process that was developed overtime our business. We are in business for more than 130 years. And so, it's a lot of experience. It's all in-house design using proven technologies so it's not something one can purchase in the marketplace and this really differentiates us from all the players.

And not only differentiates us but it also gives us a flexibility to process different types of materials. When I said we have the whole range from byproducts to recyclables, is we can shift from one to the other depending on market conditions. We also make sure that we have a very high yield because that's part of how we make money and we can optimize by choosing the right mix of feat. We can optimize our profitability.

Most of -- today, we said three different metals and all the others are collected on top of it and this has broad enough scope for us to even think and consider going to new types of materials in the future.

So, this unique technology has been developed thanks to a lot of R&D and in-house development and we continue to invest in it. Not only to have the best recovery but also to make sure we have the right environmentally friendly process conditions which becomes more and more a conditio sine qua non.

We have, as an example, introduced over the last couple of years a new technology which we called the UHT technology, the ultra high temperature technology, for battery recyclables and I will talk about that later on as well.

How is the competitive landscape of Umicore? I think we can -- we have a lot of competition, a lot of competitors but they are really in different -- we can split them up in four different groups. We have the base metal smelters, refiners, the primary platinum group metal refiners, the specialized precious metals refiners, and then specialized refining companies.

I made this four groups. I gave you a number of examples there. A number of company names that compete in certain areas with us and as you can see, there's always a certain niches where they compete with us.

For instance, the base metal refiners, some of them can process some e-scrap. Why? Because they are a copper refiner and electronic printed circuit boards, contain a lot of copper so they take some of these printed circuit boards also. But they could also take a couple of rich materials whereas the lead industry then maybe is after some products in containing a lot of lead and so on.

And that -- this is always the case. They all operate as a -- in niches and only a minor fraction of their feat will be -- will be coming from complex materials. But we can say in summary, that most competitors are our customers. Because, in fact, the degree of overlap and that's shown here in a qualitative way, the degree of overlap is always partial. And when I say partial, I really mean very small. Maybe, with the exception of the last group where it becomes a little bit bigger but still, I mean, can process as wide as the scope of materials as Umicore.

So, that makes us a little bit unique. And again, not only when I say we have a lot of competitors, they're also not only company like Umicore.

Now, let us turn a little bit to the business drivers and the opportunities for us to design a growth strategy. And we have three different long-term business drivers which we take into account, resource scarcity, it's been mentioned by many people before, the increased complexity of materials, and then ecoefficiency.

And through -- by designing our strategy around these business drivers, we are capable of capturing value, and hopefully, we can do more so in the future and we will use capacity expansion. The use of technology, once again, we heard it on a couple of time this morning as well as new streams of recycling coming in the marketplace.

So, let's first take a look at resources scarcity. Resource scarcity is -- and here you see the graph of three base metals from the global product level from 1980 to 2014 and you see that all of them follow the same line growing and growing and growing and this is the sum of primary as well as secondary processing so the recycling is included in there.

For platinum, it's only the primary production. You see the primary production, the last couple of years has declined and the -- but the demand curve has continued to go up and that is made up, once again, by recycling.

So, the increase of the output of metals creates, obviously, on the primary end is scarcity. I mean, for each of these metals now, the tables exist and statistical data exist for how many more years reserves do we have and it becomes more

and more critical. That means that recycling will become more and more important. That's an opportunity for a company like Umicore.

At the same time, due to the fact that all the refineries, processing, primary and secondary materials, the tonnage is increasing systematically overtime. That means that more and more, they generate waste products, byproducts which are a potential feat for a company like our business.

Secondly, and that's a little bit the result of the first driver, increased complexity of materials. So, what do we see today in the marketplace? We see starting from primary metals, primary ore bodies that they become more and more complex. And the traditional base metal smelters, the zinc, lead, copper, precious metal smelters, have more and more trouble processing everything that is mine today and what happens and you see there's a number of statements which come out of publications, some companies have to prepare for that and have to also make sure that they can process a little bit more complex materials. But what they call complex, for us, is still very much a pure material.

But by processing these materials, they will generate by default waste products because they have to remove the impurities and that is, again, a feat opportunity for Umicore. At the same times, in the mines themselves, some fractions have to be set aside and because they are so complex, nobody wants to treat them. And that's where we come in to play -- into the play and where we can offer technology solutions.

On top of that and that brings me also to the third business driver, there is a pressure more and more from the outside world to process materials with stricter guidelines in terms of environment, in terms of safety and health issues and eco efficiency becomes not only for the primary smelters or the mines, a must, they have no choice anymore but to get rid of their waste products in a sustainable way, that means by somebody -- with somebody processing these materials.

It's also true in the end-of-life market. More and more, there's pressure by society to recycle end-of-life materials. And that means that this trend generates more and more opportunities for a business like the one we are in.

As an example, I've added here a publication from United Nations that says that if we look at electronic waste that this is a total waste, not the printed circuit boards but total waste close to 42 million tons in 2014, out of the 7 billion people, only 4 billion people are covered by legislation which means that there's still 40% of the population that is not required to recycle.

So, there's a huge opportunity going forward that this recycling business will continue to develop.

The fact that we can process this complexity, that we do it in an environmentally friendly way gives us or positions us, of course, in a very excellent way going forward to design our growth strategy. And that's where we're going to be moving towards now.

The strategy, we have designed a number of actions to use as a lever for growth. And these are, first of all, to increase the capacity. I think, most of you are aware that we are in the midst of that so I will talk a little bit about that.

Also, continuous upgrade of our fixed asset base. I'll explain that later. The need to continue doing R&D to maintain this technology leadership and finally recycling development and that's where I will touch upon the topic of battery recycling.

Let's first look at the increase in capacity. You know, that we have announced in end of 2013 that we were going to increase the capacity by 40%. So, last year, we produced about -- we processed about 350,000 tons of materials so the goal is really to go to 500,000 tons. This is an investment program spread over three years, 100 million euros and we will do that -- we do that in the same location and, of course, we cannot afford to stop the plant for three years. We have to do it either while the production goes on or during specific shut down periods.

We're now in the midst of this program; 2015 is also the most critical year for us for this capacity increase. We had two major shutdowns. One in May-June. The second one, June-July -- July-August, I mean, and the middle of August, we started up again. We started up half of the plant after the first shutdown while the second half was done and we -- and then we started up the second half in the second half of August.

I can tell you that despite the fact that our time schedule was very tight, that we started up on time and that things are going well. Obviously, we still need a little bit of ramp up and solving some smaller issues but all in all, everything is on schedule and what we hope is that the lost time due to these shutdowns -- encountered due to the shutdowns in the past couple of months, that we will catch up in the four remaining months of this year so that, also, this year, we will be able to process 350,000 tons.

The next year, we will do a little bit -- some of the remaining investments to auxiliary equipments. So, it's not so fundamental anymore. And we don't have to take the plant offline to do that. But that means that from 2017, we really are in a position to operate at the level of -- at the run rate of 500,000 tons.

And here, I show you a little bit, our ramp up. When you see -- so, last year and this year about the same amount of tons, so growing to 500,000 tons, we have said we will reach that in 2018. Why not in 2017? For the very simple reason that because of the cycle of maintenance that we operate under is shorter than one

calendar year and it happens that in 2017, we will be faced with two maintenance -- two shutdowns per maintenance which means that the jump from 2016 to '17 will be smaller and not enough to reach immediately the final capacity.

The refining charges. So, part of the -- of the revenue stream will, obviously, also go up because we will process more materials. But it will not go up with the same -- in a limited way like the capacity and also less than 40%.

So, then the second lever for our growth program is the continuous upgrade of fixed asset base. Why do I say that? because, in fact, we have a tradition of the last 20 years or so to continuously invest. I mean, this one, the program that we're going through now is a little bit exceptional because it's a big -- big investment volume but we have been doing that on a continuous basis. It has allowed us to grow from 250,000 tons to 350,000 between 2005 and 2015.

But, we assumed that this will continue to happen in the future. Why? Because innovation is critical for us to also keep us, let's say, in the lead of the business that we are in to keep our cost under control, to make sure we maximize our metal yields and, of course, that we take care of the environment because that's a very important part of the sustainability of our business, so that debottlenecking will never stop.

Does that mean that we will be able to do more? We hope so. Today, we cannot guarantee that. But, definitely, what we want to do is to make sure we continue to increase the complexity, the capability of taking in more and more impurities and more and more different metals. And so, that's what we will be focusing on after the three-year investment cycle will be finished.

We also continue to do a lot of R&D. And when we compare ourselves with the traditional metal refining companies, I can tell you that our R&D expenses are probably two to two and a half times higher than of the traditional zinc and copper and lead smelters.

And this investment in R&D is essential for us to keep our unique position and to continue to make progress in the field that we are in. And as you can see, the R&D is split about 50/50 between what the group R&D, so the research and development people in Umicore are doing versus what we do as in-house experimentation and a large of that one is in the area of battery recycling.

And that brings me to the last lever for growth and then we looked already a little bit beyond 2020, that's the battery recycling, what we call the recycling development. As I've said, we grow from 17 metals to 20 different metals. And as Kurt has explained to you this morning, this is a very exciting market potential for electrified vehicles.

We look at it from the end-of-life side of the story and we think that sometime after the introduction of the electric vehicles, these vehicles will be taken out of business and will have to be recycled including the batteries. So, today, this market is very small but we foresee that in the period post 2020, it will start taking off and assuming the same -- the same numbers from Kurt, we have made a simulation how much end-of-life material could be available, let's say, by 2025, we're talking about more than 60,000 tons.

Now, when we introduced the technology in 2011, it was, first of all, to make sure we optimize the process to recycle these batteries, and secondly, to already introduce ourselves into the marketplace and to get batteries here and there.

But today, if you talk about batteries for vehicles, we're talking about one container load, maximum -- small amounts available. So, we focus today more on the portable market but we have plenty of capacity. I can tell you that, also, on the technology side, we've made a lot of progress between 2011, the day when we started up that plant and where we are today and we feel very comfortable that we will be ready after 2020 when the market goes will start going up and will start reaching the maximum capacity available in our -- in our existing plant so that we can service this growing market post 2020 so we will have to start thinking about industrializing this particular process for the next 10 years.

So, there's a little movie about the Hoboken expansion before I summarize my talk.

(Video presentation)

Luc Gellens^ Maybe we'll show the video a little bit later on then. But let me, first, perhaps conclude by giving you a number of key messages of my presentation.

First of all, I tried to explain to you the uniqueness of precious metals refining in processing complex materials that gives us a very unique position in the competitive world of metal refining. We have looked at the business drivers and seen that there is an increasing amount of opportunities, an increasing amount of materials that will become available, already are available because we see it in the marketplace today but certainly enough for us to fill up this additional 150,000 tons, both in the recycling and in the industrial byproducts that we have decided to increase the capacity and this 40% expansion obviously will be our biggest growth engine going forward. We will -- we are on track with an investment. We feel comfortable that we will reach full potential certainly, by 2018.

And then finally, we are already making plans for the period post 2020 when we believe that the market for new materials in the form of the spent automotive batteries, lithium-ion batteries will become available in large quantities. And so, we are going to prepare the next phase of our growth in the years to come.

Thank you very much for your attention and I think the floor is open for questions now.

+++ q-and-a

Evelien Goovaerts^ Thank you. So, we have about 25 minutes for questions. There are already some questions. And then we carry on immediately with Denis Goffaux's presentation. So, after the Q&A, don't walk out of the room, please. Thank you.

Tom Riddlesworth^ Thank you very much for your presentation. Question from Tom Riddlesworth, Citi. Does increasing complexity of materials necessarily relate to higher margins for your business? Can it get so complex that it requires more cost and doesn't necessarily translation to high margin for the refining business? That's one question.

The second question is could you talk to a little bit about how the -- how the cycle evolves with pricing in the recycling business. When we do see lower precious metal prices, would we not expect to see lower scrap supply to the market and could you elaborate on how -- how that dynamic plays out in terms of your business and the margins going forward? Thank you.

Luc Gellens^ The fact that we are so unique gives us quite some leverage in approaching the market. The fact that volumes are so big gives us the flexibility to move around from one business area to the other. So, we -- I believe that -- that we are certainly, I mean, very well in a good position to take a lot of value in that marketplace also in our business model but in our plan that we have made. When I said that the revenues will not increase to the same extent as the volumes, it's because we have taken a rather conservative view in going forward and the challenge for us is, of course, to first make it and to make sure that we do better.

So, I feel fairly comfortable that we can -- we can do that because there is a drive for recycling. There is a drive people cannot allow to leave or to dump material or to stockpile material anymore. There's too much value in it.

And so, even if the processing of complex materials is an expensive activity, the business will only go on whenever the supplier gets some value back in return, of course.

Marc Grynberg^ Maybe if I may -- is the mike working? Yes. If I may add, just as a rule of thumb, margin is a functional complexity. So, the higher the complexity, the higher the margin that we make on recycling whether it's industry byproducts or recyclables is the same rule of thumb. So, it's indeed a functional complexity.

Luc Gellens^ So, your second question was?

Marc Grynberg^ The second question was about the cycle and whether the availability was influenced by metal prices.

Luc Gellens^ Yes. But, again, so that's because we see these 200 different types of materials all coming to us. If one market is a little bit down on the recyclables end, there is still plenty available on the byproducts.

And so, I think the drivers are strong enough for us to go through this cyclical event. Of course, the competitive pressure might change overtime and so on but I -- I'm really not afraid of it. Next year, the jump that we will start making next year is already quite big and I can tell you, today, we have a comfort that we will be able to fill up the available capacity for next year.

Marc Grynberg^ And again, if I may add, there are only a couple of supply segments where you have a direct correlation between precious metals price and availability. One of them is jewellery. The residues from the jewellery industry and the availability of old jewellery for recycling is determined by the gold price to a large extent. So that's, indeed, one case of direct correlation.

The other one that we have seen historically in the marketplace is for spent automotive catalysts where some of the collectors have a tendency of hoarding the material in case PGM prices are too low in their minds, what is the exact tipping point at which they start bringing the material for recycling is very subjective but that's the only other supply segment where we see a direct correlation between metal prices and availability.

In other segments, we don't see that. And in particular, in industry byproducts, it is not a realistic expectation that availability would depend on metal prices because the volumes, the sheer volumes of materials to be processed are such that you cannot stockpile these things in most cases and they have to be processed. So, it's different -- different case there.

Mutlu Gundogan^ ABN AMRO. Marc, maybe a very simple question to start with. I mean, you also started your presentation today about metal prices. So, if you look at 2016, will recycling earnings be up or down?

Marc Grynberg^ You know, the timing of the calendar according to which we communicate on results and provide earnings guidance, so today, we're talking about the strategy and we're not there to preempt the February 2016 communication about full year results and first indications about guidance.

Mutlu Gundogan^ Okay. Then --

Unidentified Company Representative^ (Inaudible - microphone inaccessible).

Mutlu Gundogan^ Thanks. Then on the refining charges, Luc, you spoke about what is the expected or the expected impact of the capacity expansion on the refining charges of the new material that you will fill the plant with?

Luc Gellens^ I don't think it will a major impact, any impact at all, as a matter of fact. I mean, we're in a -- I said we have many competitors and we may be losing a number of contracts to in a particular niches and segments but the fact that we feel comfortable with the offering that is so broad that we will be able to shift our attention to other materials where competition might be less or where competition might be a non-existent impact.

Unidentified Participant^ Thank you. Two related questions to lithium ion. One is the chart that you showed. So, what do you think by 2025 or 2030 -- I can't remember how far the chart went -- are so dependent on the recycling of lithium ion? And then secondly, how often can you recycle or what is the mix of a recycle lithium ion with a divergent, sort of, what is the opportunities?

Luc Gellens^ So, the first question is whether we are dependent on the lithium ion recycling --

Unidentified Participant^ Yes, with the growth of lithium ion and recycling of the --

Luc Gellens^ Well, this is an opportunity post 2020.

Unidentified Participant^ Yes.

Luc Gellens^ So, today we process and we recycle, spend lithium ion batteries mostly from portable applications. But it's a development business. I mean, let's be fair about that. One, that's not a business where we -- you can make money today. It's --

Unidentified Participant^ No, no. But in -- let's say in 2025 or 2030, how big would lithium ion recycling be of the total recycling?

Marc Grynberg^ How much it will -- I think it will be much smaller compared to the half a million tons, you mean? That's what -- that's your question?

Unidentified Participant^ Yes.

Marc Grynberg^ Compared to the half million tons, how many tons of spend batteries we'll recycle?

Honest answer is that it's too early to tell. Because it depends on which electrification scenario will unfold to start with. Because, in a way, that activity from a volume point of view is not going to be influenced in meaningful numbers by portable electronics battery cycling because even if you recycle zillions of

them, they are so small that you don't need a lot of capacity in order to recycle them. So, the growth option there depends solely on the emergence of the lithium ion batteries for electrified vehicles.

Unidentified Participant^ That's what I meant.

Marc Grynberg^ And it's really depending on lithium ion for -- because the other generation of automotive batteries like nickel metal hydride, et cetera, are being phased out of the -- of the technology or roadmap so you won't see them as a factor in the future in the recycling trend.

So, but, how much volume it will be? It's too early to tell. And that's why we will need the next few years also to prepare the scale up scenarios because we'll need to have a better view on how the electrification is taking shape to have an idea of how many lithium ion batteries and when they will come -- they will become available after their user for lifetime.

Unidentified Participant^ Yes. So, any remarks on the gigafactories for lithium ion batteries? Are you going to be direct supplier in 10 year's time or?

Marc Grynberg^ Well, so that's -- that was a question related to Kurt's presentation. I think that you mean from a supplying the raw materials or the recycling? Well, it was announced a few years ago already that we had a contract for recycling the batteries from that particular car manufacturer indeed.

And typically, we don't disclose individual relationships or contractual relationship but the demand of some of the players, we do that. I mean, Tesla and Toyota have been exceptions. They have, indeed, asked us to publicize that because it was important for them to show that they had not only a car that an electrified vehicle that was available in the dealerships but also that they had thought about the end of life processing of these electrified vehicles.

So, our ambition will be to serve the entire markets of lithium ion batteries used in electrified vehicles in terms of recycling services. We're not targeting one customer more than the other and if I have to make one comment on the gigafactory, the only comment I would make is that aside from any collective comment about the technology side of things is that this is giving some sort of impetus, of momentum to the industry and is basically addressing the real critical factor in moving to large scale commercialization which is reaching scale effects.

And, I mean, in order to reach scale effects, you need to have affordable solutions. In order to have affordable solutions, you need scale effects. So, I think the -- the gigafactory is an interesting attempt to break that chicken and the egg discussion and to get started somewhere. So, I think, overall, it's good for the industry.

Unidentified Participant^ Yes. Two questions please. First, on the treatment charges. Historically, if you see how is the development of an average treatment charge per year been, has it been stable over the last 10 years? Has it increased over the last 10 years? And does that have any sensitivity with precious metal prices? That's the first question.

Luc Gellens^ I don't think we want to disclose how the treatment charges are evolving overtime. And as I explained to you, so depending on the type of material, there is a difference, of course.

And depending on the metal prices, obviously, a supplier would only ask us to recover a metal if it makes sense for him. So, if the cost of recycling becomes so high that it's -- or the metal price is so low on the other hand, then it does not make sense. So, then the negotiation stops by default, I would say.

Unidentified Participant^ And the second question is just on the growth, the 150 kilotons, where do you really see the additional volumes coming from regionally? Would you say that it's -- does it have any regional bias or is it basically all over from -- for your customer side?

Luc Gellens^ We really see it from all over the place. It's really global. It's a global trend.

Unidentified Participant^ And the percentage between industrial and the other bucket is not going to change that -- the volumes --

Luc Gellens^ Well, it'd difficult to predict but we think it's going to be same order of magnitude. Yes. It's not that it will, all of a sudden, reverse.

Matthew Waugh^ Thanks. It's Matthew Waugh from Credit Suisse. You've given us a good idea of how volumes ramp up in recycling and revenues. Just on the cost side, given it's quite a high fixed cost business, can you give us any sense of additional headcount that you're going to need to handle the extra material and any additional variable cost you're firing up smelter and how that scales over the next three years with volumes?

Luc Gellens^ I cannot give you any -- any precise numbers because we don't want to do that. But, obviously, I mean, whenever you -- whenever you process raw material, you will need more reagents, you will need more energy. But that's always in relation to -- I mean, it's the same for the first 350,000 tons. So, there is no change.

In terms of number of people, it's clear, the fact that we -- we do that on the same side but we also did that as an exercise in increasing productivity and that we take advantage of the economy of scale to hopefully do better in the future. So, I mean, I have the same talk with my trade unions, how many more jobs will we

create? So, we will create some more jobs, for sure, but it will not be same line as the one that you've seen by far not.

Marc Grynberg^ And that was -- if I may add -- that was a significant factor in the decision to expand in Hoboken rather than build a green field facility was, indeed, the idea to create scale effects and thereby improve cost position indeed. Because all the infrastructure is in place. If you want to build the same 150,000 tons capacity as a green field, you end up with a completely different cost picture. And in terms of competitiveness, that would not be great.

Unidentified Participant^ Hi. Three quick ones, please. So, UHT, you touched on that earlier and that was tryout for the pilot battery recycling plans. Can you explain why you decided not to run with that for the expansion of the main smelter?

And you've also talked about the fact -- despite the fact, you -- concerning we have launched injection technology for the expansion, there are aspects of UHT which you could potentially benefit from. I wonder if you could just touch on that. That's the first question. I don't know if you want to just address that and I'll ask the next two.

Luc Gellens^ So, the capacity expansion, I think, to understand that we're not introducing fundamentally new technology in the capacity expansion. So, basically, it's an exercise in optimizing the different steps in the whole process, the existing process whereby, obviously, we have to take into account that we have to move 150,000 additional tons around the plant so that's a big exercise in logistics requiring quite some investments there.

And for the rest, it's more -- more of the same, I would say. So, instead of one reactor, we can have two or three reactors. And in a number of areas, we are fine tuning the process. And obviously, I mean, I'm not going to disclose to you whether or not we have any benefits from all the tests that we've run with the UHT technology in the existing process but there is no UHT technology in the new plant, for sure.

And so the second question was whether there were any other opportunities that we are looking at in the UHT technology. Was that the question?

Unidentified Participant^ No. No, I think you covered it.

Luc Gellens^ I covered everything.

Unidentified Participant^ Yes. So, the second question, actually, is about the ability to fill the new capacity and a couple of areas that we often get asked about is how you can fill that capacity when the general expectation from mining analysts over the next three years in the current price environment is a rather

flattish outlook for primary mine production, maybe down to zinc, maybe stable for copper, nickel, and lead and so on.

So, can you sort of reassure us that even in an environment where primary production and therefore refinery residue volumes is pretty sluggish, that there's enough available supply out there which is MPV positive, not being processed today, there's a potential source of business for you, good margins? And then on a related note, could you just sort of touch on the extent to which the business will be impacted by the fact that both Aurubis and NuStar offering some of their internal residues for internal processing, increasing their own internal capabilities?

Marc Grynberg^ First of all, even if primary mining production remains flattish for a while, the complexity of mining residues continues to increase and of smelting residues continues to increase because many of the -- the cleanest ore bodies and by cleanest I mean pure with limited number of impurities have been depleted so are getting closed to depletion and mining companies to, you know, even to just maintain their primary production need to access more complicated ore buddies with way more impurities so they generate new waste streams or, I mean, directly, or indirectly these more complex waste streams are being generate down the line by the smelters and refiners, the basement of miner and refiners.

So, the growth in complex residues which is what we target is there regardless of the absolute production level. So, that's one aspect to the -- to the equation. The other element is that so far, we keep turning away contracts because of the capacity limitations that we have. You know, we are being selective. We can afford to be selective and continue to optimize the mix.

We will do so in the future as well. We'll continue to give priority to mix and margin optimization. This being said, among the contracts that we are turning away today, there are things that we would like to process if and when, or I should say, when we have the capacity available to do that.

So, we're pretty comfortable and about the supply picture for the next few years. And actually, the progress we're making on the commercial front in order to secure the supply is, indeed, pretty promising both in terms of volumes and in terms of margin mix.

Unidentified Participant^ So, the second point was about other players becoming more and more active in recycling their own in-house residues. I think this is a process that one cannot stop, first of all. I mean, I think it's -- we see that -- we see that also as an opportunity because the fact that they process more in house residues, somewhere, these impurities will have to go somewhere.

And so we expect them, still, to generate a lot of byproducts and maybe even more so than in the past because they will focus a little bit on a little bit more complex materials and as a result, we don't think it's a major concern.

In terms of NuStar, it's a different story. They have, I think, I would like to congratulate them with a choice of upgrading their plant. I think they've chosen a good technology. The difference is that we chose the technology 20 years ago. So, we think we have 20 years advantage over them and we would like to have -- to keep on having this advantage going forward. So, we continue to invest in our technology and even today, continue to improve it.

And NuStar's drive, I mean, they are not -- they are -- they will remain a lead-zinc player. I mean, that's what their focus is. Even if they can overlap a little bit more with what we are doing, their main focus will not change, I believe, and the drive is mostly to optimize environmental performance of that plant.

Marc Grynberg^ Just, if I may add, the trend of number of smelters moving into more complex refining and recycling is not a new trend. It's been there forever. That's how the industry has worked. I mean, for -- like, forever. So, and in the meantime, what -- while this trend has been the name of the game, we have almost doubled our processing capacity, that's over the past 10-15 years and continuously optimized or mix in profitability.

So, it's not a new trend and it's not disruptive to us. It is just changing, as Luc alluded to, sometimes the mix of materials because one type of residues is being -- is becoming another type of residue stream because at the end of the day, copper smelters focus on copper throughput and copper quality and there are a number of residue streams that they can't easily deal with.

Lead smelter's focused on lead throughput and zinc smelter's focused on zinc throughput. And again, what makes, you may call, unique is the fact that we have combined -- manage to combine three different recovery routes using copper, lead, and nickel as collector metals in an integrated flow sheet that is totally unique and nobody's doing that.

So, even if Aurubis or NuStar is adding some capabilities, the overlap with what we do is and remains extremely limited because they only focus on one recovery route.

So, it's not -- we're not talking about the same technologies. We're not talking about the same complexity and the same scope of materials to be processed with a few exceptions, like, was mentioned when we showed the competitive landscape, you have a few more advanced players like Aurubis, like Dowa in Japan, etc., where the overlap is a bit larger and that was shown also in the -- the pie chart where we showed you a degree of overlap. But this being said remains very limited.

Evelien Goovaerts^ Okay. Thank you. If there's any remaining questions for Luc or Stephan, it can be handled later. We carry on with the presentations.

So, after the dive in our businesses, we now continue with our R&D efforts. So, Denis?

Denis Goffaux^ Thank you, Evelien.

Ladies and gentlemen, good afternoon. By now, you will have understood that technology is behind most of Umicore businesses. So, it will be my pleasure to dig a little bit deeper into technology and innovation at Umicore.

I'll do that in three pieces. First, I will try to paint a picture of what Umicore does in terms of effort. Then I will show you how focused we are on Horizon 2020, and more importantly, on clean mobility and recycling. And therefore, I will give you an idea of what we have in the pipeline post 2020 because, of course, this is also very important.

We have 17 R&D and technical centers are Umicore, 900 people, more or less. And you can see that there is quite a geographical distribution. Nevertheless, the difference between business group.

While catalysis is truly global because we need to be present and develop technologies everywhere the car industry is present, so you will see North America, Asia, even South America, and Europe, of course. Energy and surface technologies, also quite diverse with a focus on Asia. And recycling is mostly European because this is a process industry, this is something that we can develop centrally and then roll out in our plants.

If you look at the distribution between these business group, you will see that -- so, first of all, the total net expenditure is EUR143 million. This is sizeable. This is about 6% of revenues. This is much more than what the metal industry would -- would spend. This is even more than what some specialty chemical industry would spend. So, we are on the high side and there are reasons for that and I will explain them.

You can also see that the majority of the R&D effort is taking place in catalysis. And this is due to the structure of that industry where the car makers, the OEMs are really expecting us to provide a lot of support. We do a lot of joint development. We are doing testing for them. We are calibrating their engines. So, this requires a pretty sizeable footprint in technical centers. Pascal explained that this morning. And that makes a big part of the total.

Then, we have, basically, an equal effort in recycling and energy and surface technologies and you see that corporate makes up 9% of the total. What is

corporate? These are either generic competencies that we create at group level and that are available for everybody but also a number of projects that are sometimes a bit further away, not directly covered by the business unit and that we prefer to put in a separate organization until they've reached a certain critical mass and in which case, we would typically include them in the business unit.

Now, the focus, we told you this morning that we want to focus on the opportunities in terms of clean mobility and recycling and that's exactly what we do with R&D. R&D needs to be aligned with strategy and it is aligned with strategy.

Seventy percent of the EUR143 million are spent on clean mobility and recycling. On the other end, you could see that also 15% are spent on post Horizon 2020 and you will see later that a big part of it is also on clean mobility and recycling. But, Okay, that will come later.

What we have at Umicore is that we do research and development on products because you need to produce to make products too and so your customer demand. They want products. They want good products. They want good technologies but you also need to develop processes.

While the products are mostly developed in the business unit because they need to be close to their customers, close to the application, understand the application, for the process, we are a little bit -- we have more freedom to use the economies of scale and, actually, developed processes that we could use over several business units.

So, group R&D, what we would call corporate, the corporate R&D is focusing on process technology while the business units are really focused on product and -- product technology and system integration.

To give you a number of examples, in terms of clean mobility, rechargeable battery materials. Kurt has been explaining you in details what -- what have in front of us and rechargeable battery materials is actually a fairly young industry. The lithium ion part of it, at least.

The picture of the plant you have seen was not there in 2000. I went there and there was a green field, a real green field, and we had -- I was in charge of that -- that plant at the beginning so we had to build it, the small one, the green one and then it's expanded further.

That means that this is -- this is a technology that is only 20 years old. And what do you do when you develop this technology typically you make a product in a lab at a ground level and then you need to produce it at a kilogram level. You would, instead of making it in a small tray, you will make it in a big tray.

And then you need to produce it in industrial quantities and instead of using one tray, you will use 10 trays or 20 trays or 30 trays. But at the end of the day, what you -- and when you need more capacity, you would put another furnace. And then a third one, and then a fourth one and then a fifth one.

This is fine at the very beginning. But you cannot keep going like that. At some point in time, you need a rupture -- breakthrough in which you developed totally different processes. And this is exactly what LBM is doing. You can see that they still spend 60% of what they do in R&D, in products, of course, the customers are asking for products, they are asking for new technologies but they also spend 40% of their earned budget into developing the technologies for massive production scale up.

Kurt has been telling you even the base case ask for it, very big increase in production technology -- in production volume. So, we need to develop the technology for that.

The two next points, the next-generation cathode material and maintaining of competitive edge and high- energy material or super portable, this is more on the product side and this is not something we can stop. But we need to make sure that we have end of attention at scaling up our processes.

If we look at automotive catalyst, we have an industry which is much more mature as probably 40 to 50 years of existence and that means that the product process has been also improved overtime. There is also a difference in terms of the product you make.

Catalyst are pieces. You need to manufacture these pieces. There are a number of pieces per car and at the end of the day, the process needs to manage all and -- all these pieces. So, spend, typically a bit less in process but don't forget that this pie is much larger than the one of energy and surface technologies. So, the 10% remains relevant but in proportion, this is smaller compared to what we do in LBM.

What we do in automotive catalyst, typically, we develop the function washcoats, the chemicals that are making the catalyst reaction happen, then we need to somewhat build it on the substrate adding layer or nanoclustering. This is the -- the kind of things we do.

And then take into account the system integration. There are these days more than one piece in a car and you need to manage how they interact with each other.

So, these are the typical things we do in terms of clean mobility so let's look at recycling. There -- precious metal refining makes up to 80% of the total of what

we spend for the recycling business group. This is where we have a focus as well.

We are, of course, supporting the 40% expansion in Hoboken. Part of it is already the best because, of course, the technologies has been developed to be implemented today but we are still also developing tools to increase the flexibility of that plant and we need to keep and increase our technology lead. That's absolutely mandatory for [pushing] everything.

And there -- and Luc already mentioned that, you see that we spend quite a lot in the plants and I mean, that might be even a surprise for some of you. You have to know that at Umicore, very often, we hire people through the R&D channel. So, we have bright PHDs and metallurgy chemistry but we would hire typically in R&D and this same people, after some time in R&D, they will move to production.

They will be running that large plant that we have in Hoboken. And of course, they don't forget their inquisitive minds stay with them and they are using the plant to learn. So, they are using the fantastic opportunity of having a stable large scale equipment running 24 hours a day to just increase the knowledge about what we are doing. That's one thing. It helps a lot to increase our knowledge. But also, we are using opportunities like this UHT furnace to test implant, to validate what we do in -- we'd like to develop in R&D.

So, what you can see that is, typically, the ideation, the proof of concept, that lab scale, and even the pilot scale will -- would happen a group research so, it's a central lab that we have -- it's not very far away from Hoboken, actually, in Olen, in Belgium. But a very big part is validating these technologies at full scale. And I can't tell you that you learn quite a lot when you start [anvil], not hundreds of kilos of tens of tons but hundreds of tons or thousands of tons.

Now, let's look a little bit what we have beyond 2020. And I will talk about this tricky projects. But, of course, all business unit have development plans beyond 2020. So, the 15% there is obviously not only these three product. Part of it is what the business unit are doing, anyway, and which goes beyond 2020.

The three key project that I'm going to detail are UHT technology. We have alluded to that already. Fuel cell catalyst was mentioned before and anode materials for lithium ion batteries.

Let's start with UHT technology. What we do there is that we are re-preparing the long-term by developing from scratch, a totally new technology. Some of you may have seen this movies from the NASA showing for two minutes rockets falling apart, misfiring, exploding and at the end of the day, at the end of the movie, they said that's why we know how to make rockets that can bring people to the moon.

In a less dramatic way, this is a little bit what we have been learning was the UHT. We changed completely the boundaries of the technology. We are working at higher temperature. So, the metallurgy is difficult. The activities of the metals are changing so we are -- we are entering unknown territories. We are -- it's true also for slug engineering. The slug are behaving in a total different way. Refractories, same thing.

And so we are eating what our R&D people are calling roadblocks. I would call them entry barriers because the things -- the difficulties that we are encountering are actually building up the entry barriers for the competition.

So, we are going to use this ultra high temperature technology for the battery recycling market. We have talked about that before post 2020 but this is a very important application for this UHT technology, but actually, we realized that the technologies also very useful for a number of other things which are possibly more related to the existing precious metal refining flow sheets.

We have not applied them yet, bits of it. I can tell you. We have -- we have been - - the learning is always used in the existing plant, but as such, we have not developed furnace using UHT technology. But it's probably going to come. And what we see is because adding this large scale furnace, we can really start testing ideas, not in a small but in the R&D but on a real-life large scale furnace.

And we see some potential and further valorization residues and additional metal recovery. We will never stop with getting -- increasing our yields, recovering more metals, valorizing residues, because this is -- this is a trend that the industry is asking us to follow.

Now, let's move to a totally different topic. If your cell catalyst developed industry materials, actually, the electrons are not stored in the battery. They are stored in the cathode and the anode material. In a fuel cell, you have a little bit the same. The electrons, they are not produced -- of course, they are produced in the fuel cell but it's not the fuel cell that produce the electrons. The electrons are produced at the surface of the catalyst.

This is where things happen. This is what -- where you really make the difference between a good and the less good catalyst. And what are -- what are the customers asking us? It's to increase the activity of the materials and to increase the stability of the materials. And what we are doing is we are basically banking, using the knowledge that we have developed over more than 30 years in automotive catalyst, the catalysis understanding, to build the products that are having this better activities and stabilities.

And the techniques are a little bit the same. It's about making nanoclustering, managing the surface, managing the crystal holographic structure of the -- of the materials. There is still a big difference. Typically, a catalyst will work at high

temperature, a fuel cell catalyst is a totally different conditions, also challenging conditions from -- from a ph point view. But the basic catalyst knowledge is the same, basically.

So, what have we achieved? The existing technology was using platinum only and there is a new technology coming on stream which is using platinum alloy. So, platinum is still there. Platinum is very important. Platinum is so far the best thing we have found to catalytic effect for a fuel cell but you can actually boost the efficiency, the activity of the platinum by making it an alloy, it's typically platinum, cobalt, alloy, no big secret there.

And you can see that we have increased significant the activity which means that the fuel cell which have the same performance using less -- less platinum and this is what the customer are asking us and this is actually an enabler for development of the fuel cell technology in transportation because if a car contains too much platinum then it's not a proposition that works.

Today, we, at levels of platinum that make it possible for the car industry to use fuel cells. And you can see that this increasing activity have not -- did not come at the cost of -- of the stability because we can also keep a very good results, electrochemical results, this is cell potential, the potential that you get out of your fuel cell even at the end of life of the catalyst. And this is defined, this is for automotive industry, so this is defined very clearly what is meant by beginning of life and end of life.

So, this is one of the -- one of the topic that we are working at for the post 2020. You know that they have -- there are some fuel cell cars on the road already so the technology is not new. The technology works or platinum catalyst are used and actually in prototypes, cars, and are delivering the quality that is required.

So, it's not a question anymore. Is the technology viable? The question is when is it going to be applied in large scale? And we don't know the answer to that -- to that question. There are lots of question about infrastructure. There is also a chicken and egg problem there. You need infrastructure to have cost.

But the thing is that the point is that we need to be ready for this technology will pop up because fuel cell car have a lot of advantages. They are electric cars, so no emission. They have large autonomy, even for -- even for large cars. So, there are a nice complement to the battery -- to the battery electrified vehicles. So, it's going to be post 2020 and we'll have to -- to watch very carefully when this increase happen.

Now, let's come back to electrified -- to electrification and electrified vehicles. And Kurt has been telling you a lot -- talking a lot about cathode materials and obviously, there is a need for the cathode materials to improve overtime. This is

expected by the customer and this is expected if you want to increase a range of the cars.

Actually, cathode materials makes only half -- serve only half of the problem. Because in a battery, you also has an anode material. And in lithium ion technology, for a very long time, the node material has been -- has remained the same, it's graphite. Graphite can actually capture -- store the lithium because when you get lithium going from the cathode to the anode, you need an anode that is able to take this lithium and graphite works with that.

But graphite, since the beginning, has not changed tremendously. Because you don't have that many levers like we do in cathode materials where you can play with composition. Here, it has been graphite from the beginning. It is still graphite and what we -- if we take the wildest dream of our customers, the carmakers, cathode material only is going to be challenging to achieve their density requirements. But anode can play a role there. And something which is known already, we didn't invented that but silicon technologies, actually, one way to solve the problem of -- to increase significantly the capacity of the anode.

When I say significantly, it's more than 10 times more than what a graphite can give. The big problem is that when you put lithium into silicone, it swells and it swells significantly. And so you have some kind of self distraction of your batteries because when the silicon is swelling, it destroys physically the electrode and cannot last for long.

And so, for a long time, silicone has been the dream candidate to increase the capacity of the anode material but the technology was not ready. And by using our core competence, we -- graphite is a little bit out of the metal -- metal oxide core competence of Umicore. Here with silicone, we are coming back into core competencies, of managing metals that nano scale to achieve functionalities and we can, of course, on top of that, add all the knowledge we have about the application because if you know how a battery works and how -- what the customer expect from the battery for the cathode side, you can also apply it to the anode side.

So, what we have been doing is using this knowledge by developing functionalize silicone compound for high capacity advanced anodes. And I told you that the silicone technology has the potential to be two to 10 times higher in capacity than the current graphite so it's a step change and you can see it here in the capacity, this is milliampere per gram, graphite is typically around the 300 and the silicone composite of today are already at 700 and we have already products in the pipeline that will be above 1,000 milliampere per gram at level of the cathode material.

So, that means that, of course, anode is only a part of the battery. You also have all the other components but this increase the capacity of the batteries for the fuel cells by more than 50%.

So, this is not done yet. I tell you this is something we envision for post 202 but we have made quite some progress in the -- in the recent year and we feel comfortable we have -- one of the few players with the right technology there.

So, this is the -- this was the third example of what we can do with technology post 2020. If there are some takeaways that I want -- I want you to -- to keep in mind about what I said today, first is that we have a consistent eye level of investment in R&D. This is all driven by technology. We differentiate true technology. You have [heard it] in catalysis. This is true. This is between rechargeable battery materials. This is also true in precious metal refining.

And actually, this is, to some extent, true for the other business units of Umicore as well. So, we want to -- to keep this differentiation. We have a very strong focus on the major growth driver. So, clean technology and recycling.

And on the one end, our teams have understood the message, the focus is there. So, there is a self discipline to focus on what's really important and there is also - - we keep an eye on that and we make sure that we measure -- and we make sure that we spend on the right things for Umicore. And the third message is that post 2020, we remain focused on clean mobility and recycling.

The megatrends are there to stay. The competences that we have built in these businesses are also going to play a role for us. So, since there will be growth in clean mobility and recycling post 2020, we prefer to focus, obviously, on these fields than starting to create something out of nothing with potentially less chance of success.

Thank you very much. So, I think we are going to have the coffee break right away and I will be available for question and answer during the coffee break but also after the coffee break when we have the Q&A on the -- on the rest of the presentation. Thank you.

(BREAK)

+++ presentation

Evelien Goovaerts^ Welcome back, everyone. We are now arriving at the final presentation of today. And here, we have Filip Platteeuw, who will talk about driving returns and value in our company.

Filip Platteeuw^ Thank you, Evelien. And I hope you're ready for some numbers by now, but only numbers, because it's my pleasure to basically tie together

organized projects opportunities that the colleagues have been presenting to you from a financial point of view.

And because we have so many projects, so many opportunities, it's really important, the choices we make, the capital that we allocate to those projects and the kind of expectations we set in terms of returns for the projects, so that's one of the topics that I will present.

Secondly, I will explain how we balance the growth priority versus the return priority for our units, focusing on value creation because that's ultimately what we want to achieve, and finally, give you a bit more details as to the specific objectives that we put for ourselves in the next few years and 2020 in specific.

By now, you're familiar with this slide that shows the four key objectives we set for ourselves by 2020. Two out of the four are financial by nature, and the first one is, as Marc explained this morning, is to double the size of the business in terms of earnings. Earnings, we define as recurring EBIT. You know that is, I would say, our core KPI when it comes to profitability. That will not change with Horizon 2020.

There reference here, and this is important, is 2014 excluding discontinued operations or excluding the contribution of the zinc units. You will notice that in Vision 2015, the objective in terms of growth was top-line. So now, we extended basically to the earnings-based.

The second objective in -- with a financial nature is to rebalance the portfolio and rebalance the earnings contribution from the different segments in terms of earnings. You will notice, this is something that is already ongoing. So it's basically continuation of a trend that we see -- that particularly we've seen in 2015.

Umicore in our strategy is built on three strong foundation stones.

The first one is the fact that we have a strong growth profile. We basically grow above global GDP.

Secondly, it's not a single story kind of company. I'm sure you've understand that by now. I mean we have different growth engines which not only helps to sustain growth going forward but also in a certain way from a financial perspective helps to diversify certain of the implementation risks.

Secondly, our growth does not fall out of the sky. I mean we have been investing a lot in growth. Whether it's R&D, whether it's CapEx, we continue to do so. So that is an important factor and one of the themes obviously in Horizon 2020 is the acceleration of the payback from the investments that we've done over the last few years.

Thirdly, we continue to privilege organic growth. The objective to plan is not dependent on acquisitions. M&A, we'll continue to embrace it because it's important from a strategic perspective that the plan we present is based on organic growth.

The second foundation stone is returns. Umicore and our segments have a return well above our current cost of capital, have been consistently value creation -- creative and we'll continue to be so in the next five years.

We confirmed our objective of 15% plus return on capital employed. So we don't lower the bar, we keep it as well as the hurdle rate that we set for ourselves of a pretax return of 12.5%.

While return on capital employed is a key KPI and basically drives a lot of our decision-making internally, we always look at value creation. So we're never going to just optimize or maximize one KPI. Whether it's growth or whether it's return, we always look at the combination to get to the highest possible value and we'll detail that a bit in a minute.

The third strong foundation stone is the cash flows. Yes, we've been investing a lot of money for our size of company. We grow CapEx R&D, but we've also shown, and I will detail that a bit later, a strong self-funding capacity. And we'll continue -- we basically expect that to continue certainly over the next five years and maybe even to accelerate.

Secondly, because if that, we start Horizon 2020 journey with a very solid balance sheet which allows us to accommodate growth, accommodate any cyclicity that we may encounter and also consider M&A opportunities if it's value-creative.

And finally, you will see over the last five years, we've returned a lot of free cash flow back to the shareholders. And that will continue to be a theme as well going forward.

Now, there exist a lot of matrices in finance and business especially in consulting. We have our own. We only have one but we wanted to share it with you because we think it will illustrate how we balance again this growth priority versus a return priority.

Again, we do not expect for all of our business units to maximize their growth or to maximize their return, say, KPI return on capital employed. You know, we really want to strike the balance which creates most value for that particular business.

So this is the matrix and we basically plot every individual business unit on this matrix which results in a very specific development plan and a strategic mandate for that unit.

-

On the vertical axis, it's about growth. We have units which have shown and have the ambition and the objective to disproportionately grow versus the market they serve, to basically outgrow their market.

And then we have units where the ambition and the objective is to grow in line with the served market, which by the way, it doesn't mean that it's a low growth market but it's relative competitor market.

The horizontal axis is about return, KPI return on capital employed. Again, we have units which have the objective to disproportionately increase their return on capital employed and we have a number of levers for that. And then you have units who are more focused on incremental increase consolidated returns they have today.

And so we plot every single business unit on this matrix and derive the strategic mandates from that. And based on where your position in the matrix, you get a different value mandate.

Take -- let's take -- start with the top. If we take the top left quadrant, clearly there, it's about creating value primarily through focus on growth and acceleration of growth. You will not be surprised that one of the units in that quadrant is precious metal refining.

I mean the expansion of Hoboken to 40% and, you know, the returns that that business is making is a clear example of how we create value and focus on value creation through growth.

The quadrants next to that, there, it's about -- in many way, that's the most ambitious quadrant to be in, it's about managing both growth and returns. What does that mean? For example, when we invest in growth, that at the same time, we focus on productivity and efficiency. Pascal has mentioned this morning the new plant in Poland saying, "Well, basically it's an opportunity for us to work and to increase the productivity."

Kurt has illustrated that by saying that, you know, we need to, in terms of industrialization, make a step change, that's why we're investing in that in terms of technology. Those are examples of managing both growth and return.

So the clean mobility units clearly are, whether it's catalysis or battery materials, are situated in that quadrant.

And that the other units basically are spread in the two other quadrants which is if we take the lower right-hand side, it's creating value primarily through margin improvement and margin focus. And the last one, grow value by defending what we have today, the returns we have today and the market share we have today defending the existing market position, sorry.

First message, we have a specific mandate based on this analysis for each unit. Every unit knows what the focus is.

Secondly, if you look at the revenues or capital employed today, 2/3 is basically situated in areas where we have a disproportionate objective and opportunity, whether it's disproportionate growth or whether it's disproportionate returns.

And finally, obviously, depending on where you are in the segment that has an implication on R&D, allocations -- on CapEx allocations meaning if you're in the top side of the most strategic projects, it's about high investments in CapEx and R&Ds because it's secular growth.

If you're in the lower segment, it's more about selective investments in R&D that often offer a shorter term return profile. So significant potential, for disproportionate performance, that's exactly the acceleration theme. And secondly, we maximize value by having the right combination, the optimal combination between growth and returns.

A key theme in the Horizon 2020 is the acceleration theme. It's about having faster growth, not just on top-line but also in the earnings side. Payback is accelerating from the past investments.

Now, first look at the last five years, what have we realized? If you like -- if you look at the revenue sides, the top-line, we have for the group a compounded annual growth rate and this excludes discontinued operations which excludes the zinc units of 6%, so above global GDP.

If you look at the underlying segments, and this is the new segmentation, you see that catalysis and energy and surface technologies actually has been growing at close to the double-digit we set for ourselves, so 9%, even though we've lived in the context of, certainly in Europe of a recession and you know that Europe for us is still about half of our revenue base if we take it to the total group.

And then you have recycling who has had a growth rate of 1%. Clearly, there you see the metal price cycle because the base here, 2010, was the year where we started with very strong metal prices at least, even record metal prices, and that's the trend you see in those numbers. If you look at the underlying volume and throughput, obviously, you get too much -- more significant growth rates as well in recycling.

Now, moving to profitability, recurring EBITDA, to take the cash flow perspective, we've had a growth rate for the group, again, excluding discontinued operations of 2%, again 11%, so you already see especially in 2015 part of a leverage effect coming through in catalysis, 6% in energy and surface technologies, there we see the growth of, if I may, I call it that way, that we have in that unit. And then you have again the metal price impact, the metal price cycle in recycling of minus three.

If you look at recurring EBIT, we dropped by 1%. Why? And this is important and we'll come back to that. We increased our depreciation between 2010 and 2015 by 70%, 7-0. So that's obviously -- because of the important investment and what Marc talked about, the preparation for secular growth, obviously, that's something that we are not going to repeat.

So we'll come to capital intensity in a moment but that's an important lever when we talk about accelerating returns because if we look then at the objectives we set for ourselves in the Horizon 2020, you see that we project in terms of top-line revenue of 7%, so there is an acceleration of the top-line.

We have to be careful with percentages. It actually means that if you take the absolute value that we gave, about 50% more absolute revenue increase in the next five years compared to what we have in the last five years, and so an acceleration also in compounded annual growth rate top-line.

And then a certain leverage effect because of scale effects when we look at recurring EBITDA namely 8%. If we look at recurring EBIT, you see the compounded annual growth rate objective of 10% between 15% and 20%.

Again, this is because of the capital intensity going back to a normalized level. So you have a leverage effect on the cash flow and a more substantial additional leverage effect on recurring EBIT.

Another them that Marc mentioned, actually the second major objective is this rebalancing. So you see already in 2015 in revenues but particularly also in EBITDA that we are already rebalancing the portfolio and that is expected to continue, and by 2020, you see to have -- we expect to have a pretty well balanced earnings profile among the segments.

Discontinued growth is again, built on all the investments that we've been doing in the past few years. If you take the CapEx in total the last five years, we're talking EUR1.4 billion which is a substantial amount for a company the size of Umicore.

Then he talked about EUR800 million in R&D which is also growth investment. But looking at the CapEx, the message here is that you see that actually, we

spent the CapEx in a very balanced way across segments which is again, an illustration of the fact that we have a lot of growth and good growth projects in all three segments, not a single growth story, all three segments have a lot of potential.

Secondly, that we invested less than 10% of our CapEx in discontinued operation. So we were quite disciplined in terms of that. Despite the fact that we have invested in the zinc units, I mean in the next six months, we would be commissioning a brand new state-of-the-art new plant for Zinc Chemicals in China. So it's felt like we have underinvested, it's really that we focus the investments on the key projects.

Now, if we take out the three main segments, where have we allocated that CapEx, so the CapEx over the last five years, where we about EUR1.2 billion if we single those segments out. You see that 70% of that CapEx has gone to units which today already have return on capital employed above our pre-tax hurdle rate of 12.5% so which are value creative.

30% to units which are below the 12.5%, and obviously, those include also growth units which obviously have a certain ramp up before reaching a normalized return on capital employed So not indiscriminate spending, really spending on the units which already are value creative.

If we link that to the four quadrants that we've talked about before, you see that 70% -- 75%, sorry, of the CapEx over the last five years has been going to the units with disproportionate growth focus to the most strategic projects. So again, they're disciplined, and if you would take the same [spread] for R&D, you would get roughly to the same kind of percentages.

So yes, significant investment for the future which helps us to sustain the growth, we continue to invest, we'll come to that in a minute, balanced investments across the segments, and a selective allocation really focused on the most strategic projects.

Our investment intensity obviously follows the strategic development phases that Marc talked about this morning that we have which is the first two, prepare and focus. 2010 and 2012, what was that -- what was the focus there in terms of investment, really to prepare for the major projects coming in the subsequent years.

You see the average CapEx was already still -- already quite substantial, EUR200 billion on average in those years relating to the -- or resulting in the, let's say, the ratios that you see here.

In terms of earnings profile, it was really -- the focus really is getting back to a profitability that we had before the recession and that actually went quite well because we had obviously very strong metal prices which also help to have a return on capital employed of about 18% in that period.

2012, 2015, the period of focus, refocusing on the key projects. There, it's about intensifying the investments in -- again, in the selective way. We have an average CapEx over that period of 250. You know that the guidance for this year is about EUR280 million even which has had an impact on the ratios, meaning ratio is increasing to high levels.

And obviously, the focus is on capturing initial payoffs which we've seen particularly coming through actually in 2015 and that will continue and accelerate in the next few years, resulting over that period an average return on capital employed of 13%. If you take the average return on capital employed over the full five years, we're slightly above the 15% as Marc has mentioned.

Now, looking forward, the acceleration phase, again, we will continue to invest substantial amount of moneys -- money in growth. When we look at CapEx, it means substantially above what we would consider to be our maintenance CapEx level will be above a depreciation level, but we will return in relative terms, in terms of capital intensity of the group to much more a normalized level, which means that if you look at the ratios that you have here, clearly, they will come down.

And again, that will be one of the key drivers in increasing the return on capital employed and increasing also the earnings as we've shown a couple of slide earlier, the difference between EBITDA and EBIT, which means that on average, the return on capital employed should indeed (AUDIO GAP) the most important one.

But you see that we have major projects across the segments, in catalysis, the new plant in Poland that Pascal talked about, and in Thailand, energy and surface technologies, the expansion in China and Korea for rechargeable battery materials to name a couple of examples. So really an important number of projects that we'll -- that are basically ready to contribute in the immediate future.

There was already a question on the M&A. Again, to repeat the plan is not conditional upon acquisitions, but if you look at the history of Umicore, M&A has always been an important part of our strategic development whether it's the acquisition side of the divestment side, and that will continue.

So we do expect for the next five years to continue to see selective acquisition ideas, basically brought by business units, acquisitions that are there to complement organic growth, but at the same time, we've talked about our

balance sheet in a moment.

You also know that we have -- with the balance sheet available to us meaning meaningful firepower, so we will embrace also the thought of considering more sizeable acquisitions. The only thing is they need to bring value, and that goes into the fact that, you know, the last five years, we've been disciplined in terms of acquisitions.

We haven't spent a lot of money on acquisitions so we continue to be disciplined but we have the firepower and we have the ambition to consider (AUDIO GAP) what our acquisition criteria.

First of all, on the strategic fit side, we are a materials company. That's basically what our core competence is. So it means that obviously, we look at companies that also have this material science background.

Secondly, there needs to be a strong competent fit. Now, that can be interpreted relatively broadly. It can be about market positioning, it can be about technology, but there needs to be a clean fit in terms of competencies.

We look for companies that have already a leadership position in their market but it have the potential in a relatively short period of time to get to a leadership position and that really embraced innovation.

I think that has -- completed by the different presentations of our colleagues and the innovation is close to our heart so that's also something important when we look at acquisitions.

And finally, sustainability is not just a word for us, it's a value, so clearly, that's also an important criteria in the way we look at potential partners. And it's basically the combination of those criteria that mean that we get the comfort on integration that we're able to integrate it in a value creative manner for us and for the company we acquire.

And to get to synergy value which brings us then to the financial side of things which is that an acquisition needs to be cash and earnings per share accretive in the short term. I guess you agree with me that is not the most stringent criteria in the current funding context but we also have the second criteria which is, in many ways, more challenging which is value creative.

So it's really based on synergies and it's based on getting the returns above our cost of capital. And we want to stay as a company as a group investment grade. That's also a criterion.

The second foundation stone, we've talked about growth, is returns. It's basically value creation. There are many ways to measure that. We've [opted] here on the left-hand side for post-tax value creation which is basically -- and it excludes discontinued operations, is the difference between our effective post-tax return as a group and the hurdle rate we set post-tax for ourselves of 8.5%.

The messages are twofold. First of all, you see that over the last five years, and actually it stops here in June, we've created more than EUR0.5 billion in value based on this metric. Secondly, you see that it's quite consistent even in the more challenging years, 2013, 2014, we've created value. And finally, you see, again, this acceleration kicking in this year, 2015, that we are indeed turning the corner in terms of returns.

The right-hand graph shows you the return on capital distribution that we have first half of this year based on the capital employed. What it means is that 26% of our capital employed today already goes or is used in businesses that have a return on capital employed today of more than 15%.

41% units that have a return between 12.5% which is our pre-tax hurdle rate and the 15% which is the objective that we've set for ourselves, and 15% of return between 10.5% and 12.5%. Where does the 10.5% from? It's basically an estimate of what is currently our effective cost of capital pre-tax today which is I think pretty much aligned with what our analyst community prescribed for us.

So it means that less than 20% of our capital employed is basically used in units that have a return below the 10.5% where 80% or more than 80% goes to value creating territory, so value-based, resource allocation is very key to us.

Acceleration of the returns, getting to the 15% target, here, you see, we call this the graph of fame internally. We also share it on a business unit level because it's important that basically all our managers understand the objectives.

On the horizontal axis, you have the capital employed per segment, and on the vertical axis, the return on capital employed. What this shows you, and it is basically the first half year return, is that all segments excluding discontinued operations already today are above -- certainly above our effective cost of capital but also above our hurdle rate of 12.5% and getting closer to the target rate of 15%.

You also see in terms of the allocation of capital employed that obviously there is the potential for an important leverage effect looking at the catalysis and energy and surface technologies as we get the earnings acceleration coming through.

Overall for the group, 14.4% first half year of this year, if we exclude discontinued operation, 14.8%. And again, we do not lower the hurdles. Actually, we keep them and we are committed to that objective.

The third foundation stone is about cash flows. Again, we invested a lot of money the last five years in growth, you see that here, it basically shows the operating cash flow over those five years, EUR2.6 billion. You see that half of the operating cash flow actually was operating free cash flow, so a very strong self-funding capacity.

You also see here working capital needs relatively low because that's one of the characteristics also of Umicore is that metal prices actually are stabilizing, in fact, through working capital needs meaning that if metal prices increase, you have an increase in working capital but you also have higher cash flows if we go through a more difficult [path], either, there is a release of working capital or other things being equal.

But so 50% -- across the 50% free cash flow allocation, if you look at how we have utilized that, you see that close to 70% of that free cash flow will actually return back to shareholders whether it's through buybacks or through dividends.

Acquisitions, as we discussed, relatively low allocation over the last five years. And basically, very little, not to say almost no change in our balance sheet in the increase of our financial debt even though we have the important investment in growth and we have returned substantial amount of money back to our shareholders through buybacks and dividends.

Finally, our balance sheet, which I think you're familiar with, but so we start 2020 again indeed with a very sound balance sheet, we remained a robust capital structure. The principles that I showed on the previous slide meaning a strong self-funding capacity and a commitment to a strong cash return to shareholders and having a balance sheet to consider M&A and to accommodate growth is really -- that's basically the theme that we'll continue over the next five years.

You see that over the previous five years at the ratios in terms of capital structure have hardly moved, so that gives us a lot of headroom to fund both organic growth and external growth and we want to maintain investment grade indeed.

To conclude and crystallize the key messages, so a strong growth profile, we've proven that, we will accelerate the growth both on the top-line, and in terms of earnings level, we have the investment to support that. We continue to invest but we return to a much more normalized capital intensity of the group going forward.

Focus on returns, the acceleration team, so again, both of EBITDA but especially on recurring EBIT, we foresee an acceleration of the earnings base and therefore a commitment also to get to our return on capital employed above the 15%.

And solid cash flows are certainly also a theme that we expect to continue over the next five years and that will help us to accommodate the growth both organically and in terms of external expansion.

Thank you very much for your attention and I believe now, we have time for a Q&A.

+++ q-and-a

Evelien Goovaerts^ Yes. Thank you, Filip. Denis and Marc, can you also come back on stage please? So we have a final Q&A session, just plenty of time for questions. We have Denis and Filip in the beginning, but if after the questions to those two gentlemen, if you have questions to one of the other presenters, this is your chance. They're all still here so please don't hesitate. Thank you.

Frank Claassen^ Yes, Frank Claassen from Rabobank. Looking to your balance sheet, maybe if you've sold off the zinc-related business, you're -- yes, virtually -- could be virtually debt-free. So my question is what do you consider as a target net debt to EBIT ratio as an idea ratio for you? And secondly, can you remind us how much room you have left to do share buybacks and what timeframe?

Filip Platteeuw^ Just on, in particular, your last question first, so we currently have about 3% treasury shares. We can go up to 10%. We have a mandate to go up to 10%. You've noticed that we are currently buying back shares. We initiated that off to the half-year results announcement. So basically, we have 7% of treasury shares headroom to go.

The first question on balance sheet, we do not fix for ourselves a target leverage ratio. The fact that we -- again, what's key to us to have the right balance between cash return to shareholders, and you've seen it's quite substantial compared to our -- to our cash flow.

And having the flexibility to consider growth, and again, if you look at the balance sheet, the most sizeable changes would come from acquisitions. So the fact that we appreciate to have the, I would say, the flexibility with our balance sheet means that we still have ambition and we still have ideas to consider acquisitions obviously again, the challenges to make sure that you pick the value creative ones.

So we do not as such have a target leverage except for one thing to stay investment grade at all times, but we basically see the balance sheet that we have today as giving us the flexibility to consider both organic growth and external growth with the balance in terms of cash return to shareholders.

Junior Cuigniez^ Do you hear me? Yes, thank you for my questions here. Junior Cuigniez, Petercam. I must say it was a good surprise this morning by your

communication. It seemed a bit non-Umicore style in which you focus on earnings growth rather than return on capital employed.

Now, when you summarized today's presentation in which you project 10% EBIT growth and a slowdown of CapEx, so obviously, you would expect an increase of return on capital employed without taking into consideration a significant working capital built up. But could you elaborate a bit more on what kind of return on capital employed you see over the next five years? Thank you.

Filip Platteeuw^ I mean we -- nothing has changed in terms of our ambition or objectives in terms of return on capital employed. That's basically the message. It's still 50%-plus and you see that we are already closing the gap as the project start to continue.

The new thing is that we've set a pretty specific target for ourselves by 2020 in terms of earnings. While in the Vision 2015, it was about top-line growth and return on capital employed.

Actually, we added, if you wish, a stake in the ground which is pretty specific in terms of earnings. So -- but in terms of return on capital employed, nothing has changed. To the contrary, I think we tried to show you that actually we are closing the gap towards that objective.

Junior Cuigniez^ 2020 doesn't mean you are aiming for a return on capital employed of 20% for example?

Unidentified Company Representative^ We said 15%-plus. I think that clear enough and that's what it is, yes.

Unidentified Audience Member^ Maybe if you can just first tell us even to some scale in relation to 2010 to 2015 CapEx that the you spent EUR1.4 billion. Going forward, 2015 to 2020, what sort of CapEx should we expect given the fact that most of your growth projects you've just highlighted today, so are there some projects which you haven't announced for which you are already sort of budgeting? That's the first question.

Filip Platteeuw^ Yes. So really, the key message is, we'll get back to more normalized investment levels and normalized -- user ratios, I would say, so getting closer to depreciation, still above depreciation but closer to depreciation.

The one thing, if you talk about absolute CapEx numbers that actually I didn't -- I didn't touch upon is this is -- everything here is based on the base case that Kurt talked about. So the inflection point, to give you an example, in battery materials, obviously, if that would come earlier, it will have an impact obviously also on the CapEx but also in the contribution.

But based on the base case, we do foresee a lower relative capital intensity. We do foresee that the growth that we've had over the last few years in terms of depreciation will clearly slow down therefore you see a leverage effect on EBIT.

And I mean we're continuously working on projects. We have plenty of ideas of future expansion which may have an impact but the key message is looking at the next five years, return to a more normalized CapEx spending level.

Adam Collins^ A couple of questions. So in the first half, there was something like 40% year-over-year growth in EBIT in the two manufacturing divisions. Could you tell us how much of that fairly roughly came from organic, what the FX impact was and the acquisition impact, just to get a sense of the relative contributions to the growth rate in those two areas?

Filip Platteeuw^ So it was basically everything -- I mean close to everything was organic. I mean we did have a contribution from the recent acquisitions in energy and surface technologies, but overall, that was only a small part. So it's really about organic, it's about higher volumes, it's about exactly what we've talked about the leverage effect coming through in terms of contribution.

And there was a certain, I would say, indeed tailwind on the ForEx side be it translational ForEx or structural ForEx. But as we've said, Adam, that is really when you take the overall increase of EBITDA which was about EUR40 million half-year on half-year, was really a small part of that. It was really about contribution volumes coming through in catalysis and in energy and surface technologies.

Adam Collins^ And the second one is on M&A. Are you able to share with us any insights into the rough areas that you are keen to develop if the value is there in terms of application areas? So like I said, this is -- I think it's probably [where the site] might be set.

Filip Platteeuw^ Probably not a wise idea in the capital markets day to be very specific on acquisition target, but -- so I would really -- I think what we're trying to show, Adam, is what basically is the lens or what is the -- what other glasses that we use to look at potential opportunities, competence, innovation, etc.

The segments are all key to us whether it's catalysis, recycling, energy and surface technologies. One is obviously more, I would say, accommodative to external growth. I mean in the recycling, you know that we are pretty unique, not to exclude anything.

But -- so those are basically the guidelines we use in terms of criteria to look at targets for the rest. I wouldn't want to exclude anything as long as we get the value through the synergies and the integration capability.

Peter Olofsen^ Peter Olofsen, Kepler Cheuvreux. Question on R&D, several presenters have highlighted the importance of technology. And you also have mentioned a couple of areas where you're investing in that could provide [profitability] beyond 2020.

What does it mean, and in terms of R&D investments, will it grow in line with sales and stay at about 6% of sales or will this ratio gradually will come down and thereby help you to grow EBIT faster than the top-line?

Denis Goffaux^ I think in the absolute term, we are probably going to be stable, in some cases, increase a little bit when the service that you provide to the customer ask for more R&D. Typically on catalysis, if you need to test more catalysis, you will have to increase that a bit.

But the idea is that if the -- when the revenues increase, the ratio should go down, so we would have economy of scale out of R&D. So that's basically the answer.

Unidentified Audience Member^ A question on UHT, actually on battery recycling, I remember that there was always the question of how the business model would look, who would pay for that? What do you think of that today? Who will pay for battery recycling?

Unidentified Company Representative^ Well, you and I, I mean at the end of the day, the consumer will pay for that. And when buying an electric vehicle, electrified vehicle, I should say, the price tag will include a recycling fee. That's the way it will work.

The good thing about the business model, the way we see each taking shape in the next few years is that the collection and logistics will, to a large extent, be taken care of by the OEMs themselves.

Because they carry the accountability and the liability, they will have to make sure that these batteries get processed in the appropriate manner -- get collected and processed in the appropriate manner when they reach end of life because they are committing or are committed or are liable to meet the collection and recycling regulations that are being enacted in various regions.

And clearly, in terms of the customer-supplier relationship, they will be the ones paying the recycling fees to us, but in reality, that will be some sort of a path through of money being paid by the user to recycle the end f life batteries.

Unidentified Audience Member^ And then a question, I missed the details but there was one slide when you talked about the sales CAGR and the REBITDA

CAGR from 2015 to 2020. And I thought that they were pretty similar, I thought that you have a sales CAGR of 7% and a REBITDA of 8%.

But you also spoke today a couple of times about economies of scale, so should we see a higher REBITDA growth on the back of that?

Filip Platteeuw^ So indeed, there is an acceleration, and again, we have to be very careful when we -- when we use percentages. If you would calculate in your model, you'll see an absolute value, actually, it's -- it is there, and that's exactly the scale effects, the efficiencies that we are aiming for and see coming through.

So there is -- there is the leverage effect there and then you have the second layer which is related to the capital intensity and the depreciation level. So yes, there is -- part of the acceleration indeed is that the payback from the projects and there's the efficiencies and productivity and scale effects coming through like we had in the first half as you saw, for example, in catalysis, the effect of them.

Wim Hoste^ Good afternoon. Wim Hoste, KBC Securities. So I have two questions, first to clarify your ultimate strategy in rechargeable battery materials you are today mainly active in -- not only active in cathodes but maybe tomorrow or post-2020, you will become active in anodes as well. Is it going to stick to those two segments which I presume can -- where you can add the most of value instead of becoming a fully integrated cell producer which would be hugely capital intensive?

Marc Grynberg^ Well, yes, for the avoidance of doubt, we're not going to invest in the full cell manufacturing for several reasons. One is that we don't have the competencies or the IP portfolio to compete with the big players in that area.

And it -- I think it's also a bit too late to try and enter that segment starting from scratch because the big players have been developing technologies and processes and footprint for the past 20 years already, so it's a bit late.

Secondly, I don't think we're a company that is large enough to afford billions of investments in this type of production capacities and research efforts. So it's -- I think that's reserved for another league in terms of the size of the companies.

So our focus indeed will be, in the first instance, on cathodes because this is where we have an established position, a strong position, we have incumbency and we have everything in place to be extremely successful and be a leader and establish a clear leadership in that market segment.

Next to that, indeed, we envisage to grow in anodes because we have also relevant competencies to address the -- our customer's need in terms of better anodes or anodes with more capacity.

Beyond that, I would say that I don't see I would say immediately another component of the battery that would call to our competencies or core competencies and technology capabilities as well as cathodes and anodes would do. So I don't see ourselves venturing into other -- into other kinds of chemistries.

Separators, electrolytes and other components are really not calling to the core of what we can do. I mean this is probably best addressed by companies with core competencies in organic chemistry, etc.

And then system integration is extremely important for us when it comes to applied technology because we use the know-how, the system know-how in order to optimize the functionalities and the properties of our cathodes, and in the future, hopefully of anodes, but I don't see ourselves making a living out of system integration.

Wim Hoste^ Then I have a second question. On the metal availability in electrified vehicles, you're quite enthusiastic about the prospects not only in the coming years but also in the long term. Is there enough cobalt that can be mined to -- yes, to eventually supply all these or make all these batteries? You cannot live only by recycling the batteries ...

Marc Grynberg^ ^ Suffice it to say that recycling will be key and that will be critical in the overall picture and that's why that's one of the reasons why I believe we're so well-positioned because we have the full offering.

Primary production can be expanded in a significant manner so the reserves are there. Of course, the most economical sources of cobalt are being exploited today, so it means that if you need far more greater quantities of the primary cobalt that you have to start exploiting somewhat more expensive [bore] bodies or tailings compared to what exist today.

In many cases, cobalt is being mined as a byproduct of copper or nickel and the fundamentals of cobalt mining depends actually on the fundamentals of the copper and the nickel resources that are mined for.

That being said, there will be enough cobalt even in a very high case scenario if recycling kicks in in a significant manner. And actually, the same is true for a number of other sources, another -- some other ingredients because it's not just a matter of sheer availability, it's a matter of availability at the right costs because, of course, if prices were to increase -- prices of these raw materials were to increase too fast, the affordability would be in danger. The affordability of electrified vehicles might come in danger.

So if there is no other question at this stage and, of course, you're free also to raise questions after the meeting when we meet for the reception. If there is no other question for the time being then I will quickly wrap up indeed.

So let me, as a wrap up, repeat one more time what our four aspirations are in the context of Horizon 2020. By 2020, we want to have clear leadership in clean mobility materials and in recycling, why in these two areas because this is where Umicore has developed the highest degree of uniqueness and where actually we have already laid the foundations for outstanding growth.

So we have a number of things that are in place to capture significant share of the growth in those areas of cleaner transportation and recycling.

By 2020, we want to double the size of our earnings and I should add, of course, while maintaining returns above 15% returns on capital employed, above 15%, so we have indeed not lowered the bar.

And these projections of doubling the earnings include solid assumptions and projections for catalysis, for recycling and a relatively conservative scenario for battery materials.

What is not included in the projections is somewhat more optimistic, although I believe realistic case for electrification, which could actually change to a -- to a significant extent the volume of revenues that we could generate from that activity. So there is next or on top of the doubling of earnings. There is an option to participate in a bigger market and revenue pool for battery materials.

By 2020, with the accelerated growth of earnings in catalysis and in energy and surface technologies partly due to scale effect and leverage effects that were discussed earlier, we want also to have a better balance between the earnings -- the better balance in earnings contribution between the various activities, recycling, catalysis, and energy and surface technologies, and be, as a company, less dependent than in the past on the earnings of one segment only.

And last but not least, you know that Umicore has made it a trademark of being a leader in sustainability and trying to transform the way the industry works or industries work and operate, so the sustainability efforts of Umicore aimed at setting very demanding operating standards for the industry, and also at the same time are geared towards detecting new business opportunities.

So we have this leadership approach, this leadership position in terms of sustainability. We want to make use of that and turn it into a greater competitive advantage into a situation that wins us more business or helps us to increase the margins.

And I hope that my colleagues and I have been able to convince you today that we have many things in place in order to be successful and achieve more ambitions by 2020. Some of the investments have already been made. Of course, there are still more to come in the years ahead as we continue to

develop our business positions in the various areas. We have a very sound technology portfolio and a very unique focus on how we use innovation to win business in the marketplace. We have a truly differentiating business model and a powerful business model of closing the loop.

And you have heard during the course of the day that in many cases we see an increasing interest in the marketplace to have a combination of products and recycling services, which provide our customers not only the full traceability of materials but also a better security of supply. So a lot of the things are in place, and indeed, I hope that we have convinced you that Umicore has some degree of uniqueness that justifies the size of the ambitions that we have presented to you today.

As a closing, what I would like to do is, of course, thank you very much today for attending the presentations and interacting with us. You will have a chance to interact a bit more outside of the room once the presentation is finished.

And last but not least, I would like to thank my colleagues who have prepared and delivered the presentations to you today, and also give a special thanks to the Investor Relations and Communications team for the outstanding work that they have done in the past few weeks. I can tell you that they have been working day and night, weekends included.

And sometimes I was embarrassed to raise questions so to ask, to change some things especially when it comes to changing colors of the slides because they have been working so hard. So congratulations to them, to Evelyn, Claire, [Sigrid, Tim].

Ines could not be with us today, but she also participated in the first phase of the preparation. They have done an outstanding job. Thank you also to Tanya and Diana who have assisted us.

And I would actually like you to recognize them by some applause.

And I think the next part of the program, Evelyn, if I'm not mistaken is the reception, isn't it?

Evelien Goovaerts^ Yes, indeed.

Thank you, Marc. So the presentations have come to an end. So thank you for all of you who were joining us via webcast today.