



# **Rolls-Royce Net Zero Pathway Roundtable Discussion**

Thursday, 17<sup>th</sup> June 2021

## **Introduction**

Isabel Green

*Head Investor Relations, Rolls-Royce Holdings plc*

### **Welcome**

Good morning and good afternoon everyone. I am Isabel Green, Head of Investor Relations and thank you for joining our Net-Zero Pathway Roundtable event today. Firstly, apologies for the late change to a conference call format and for anybody who has not already accessed the slides they are available on our website for you to download. We will start with a short introduction by our CEO Warren East which will refer to those slides. We will follow that with a Q&A session and we have a panel of our senior managers from across our business with us today so we very much look forward to receiving your questions at the end.

## **Pathway to Net Zero by 2050**

Warren East

*CEO, Rolls-Royce Holdings plc*

Thanks Isabel and thank you everybody. I think you can find the slides in the Results & Events section on the Investors section of the website. I am going to start on slide four of the presentation there. We are going to set out the roadmap for achieving net zero by 2050. We are going to explain a little bit more about some of the technologies that will enable us to get there.

### **The science is clear**

*Society must limit global warming to 1.5°C by the end of the century*

Global commitments on net zero have we think reached a tipping point. There are a few pie charts in the middle of the chart there pointing out that 68% of the global economy and 56% of the world's population are now covered by net zero targets. Achieving net zero is an imperative for our customers, it is an imperative for our people and the communities in which we work. As well as being an imperative, for us as a business it is also a great commercial opportunity and we are very excited to be playing our part in this big change in society but also addressing that opportunity.

### **We have a fundamental role to play in meeting the challenge of climate change**

Demand for power is increasing and the industries that we serve are among the hardest to decarbonise. Due to this, our innovation to help our end markets reach net zero is essential to achieve the global transition. As we pivot away from fossil-fuels, we will be both expanding our business in our traditional markets and migrating to net zero through the use of sustainable fuels and new technologies. That will also mean that we will be entering new areas, supporting further growth and technological development. The chart on the bottom of the slide looks like just a migration but actually 100% at 2020 represents 300,000 GWh, 100% in 2050 represents 1.8 million GWh so there is significant business growth in here as well as transition that we are talking about.

**Our journey so far**

Moving on to slide six, we have of course many years' experience in pioneering new innovations that meet some of the world's really tough engineering challenges. In Civil Aerospace the Trent XWB, top-left of the picture there, is the world's most efficient large civil aero-engine in service today. Efficient engines are absolutely vital because they will help stimulate and support the take-up of sustainable fuels. We have been growing and expanding the reach of our businesses as we have aligned ourselves towards championing sustainable power for several years. From testing of hybrid-electric systems like the rail picture at the top of the slide and marine a few years ago, we now actually have real commercial products here.

The microgrid that you can see on the top-right is at factory in Friedrichshafen. It has been on line since 2019. It has enabled us to go from demonstrating microgrids to actually selling them all around the world. Last year we acquired Qinous, energy storage specialists on left-middle of the slide. That is now our microgrid competence centre and the picture there is our battery container unit manufacturing plant in Ruhstorf in Bavaria.

In aviation, we took a significant step towards electrifying flight with the acquisition of eAircraft back in 2019 and that is the picture in the middle. As far as engine testing is concerned with sustainable aviation fuels, we have tested Trent 1000 engine with 100% sustainable aviation fuel in Derby and also the Pearl 700 business jet engine. Finally on the bottom-right of the chart our Small Modular Reactor Consortium is up and running. It is aiming to be the first design to be assessed by UK regulators starting in the second half of this year.

**Our emissions footprint**

Moving on to slide seven, the pie chart shows our total emissions footprint and you can see that emissions from our own manufacturing, production and office facilities, excluding product development and testing, make up a very small but nevertheless important proportion. We have actually halved those emissions over the past five years and last year we declared our target to get them to net zero by 2030. However, the chart shows clearly the vast, vast majority of our emissions are Scope 3 emissions associated with both the supply chain and more importantly the use of the products that we sell. The abatement of the product-related emissions during their use is where we can have most impact and therefore that is the primary focus for our decarbonisation plan.

**Our decarbonisation strategy**

There is no one single solution to this. It is going to require multiple technology solutions and partnership across policy makers and across industry. Our pathway involves introducing new technologies, ensuring that our products are compatible with sustainable fuels and making our products more efficient to stimulate and assist in the take-up of those fuels. This way we believe we can take our emissions, bend that curve down to net zero by 2050. In fact, our business as a whole could be said to be there sooner, as we introduce zero carbon technologies like SMRs into new areas that are outside the scope of our current business. To emphasise just how significant we see this opportunity is, we are focusing our R&D investment on the necessary next generation and lower carbon products and we expect to

spend 75% of our gross R&D in these areas by 2025, compared with approximately 50% in 2020.

### **Making Rolls-Royce a net zero company by making our products compatible with net zero**

Today we are committing to ensuring that our new products will be compatible with net zero by 2030 and all our in-use products will be compatible therefore with net zero by 2050. A new engine that can use SAFs though is only part of the solution. We expect that our current products are going to be used for several decades so today we are pledging to have proven all our in-production commercial and business jet aero-engines to be compatible with 100% SAFs by 2023. That will mean that two-thirds of our Trent engine fleet and three-fifths of our business jet fleet currently in service will be SAF-ready. We are also exploring the use of SAFs in Defence applications, including as part of our involvement in the Tempest programme here in the UK. We have carried out extensive tests with our US Defence products.

In our Power Systems business we have defined a science-based interim target to reduce the lifetime emissions of new products by 35% by 2030. That is relative to 2019 and that we believe is an industry-leading ambition. We are also testing hydrogen fuel cells in the middle of the slide there on the left and we are putting four of those together into a new demonstrator that we hope to have up and running by the summer. We are also targeting to have integrated many more modules to create a 2MW solution in an operational microgrid for demonstration by 2030.

On the bottom of the slide we are also planning to have approved the MTU Series 2000 and 4000 class engines, that are extensively used in marine and power generation applications, for use with sustainable fuels by 2023. These engines together represent the majority of the MTU engines that we make and sell today.

### **Making Rolls-Royce a net zero company by pioneering new breakthrough technologies**

Moving to slide ten, the transition to net zero represents a real opportunity for us. In aviation, we have opportunities for hybrid-electric and all-electric applications across a host of completely new markets for us including urban air mobility, commuter and regional markets. We have learnt a lot from our work on the Spirit of Innovation all-electric plane that is bottom-left on the slide. The characteristics that air-taxis require from batteries are very similar to what is being developed here. We are powering the Vertical Aerospace urban air mobility aircraft, top-left, which will be able to undertake zero emissions flights of over 100 miles on a single charge. Vertical has already secured conditional pre-orders for 1,000 aircraft worth \$4 billion with entry into service from as early as 2024. Middle-left, we are working with Tecnam and Widerøe to deliver an all-electric passenger commuter aircraft which will be ready for service in Norway in 2026.

Further up the power scale we recently started testing the first elements of a powerful hybrid-electric propulsion unit specially-designed testbed in Bristol. Back on the ground, we have developed a solution called GridUP in Power Systems which brings together renewables, grid power, hydrogen production, fuel cells and back-up power into an uninterruptible CO<sub>2</sub>-neutral power supply system. That can be used to provide power for data centres. On the bottom-right of the slide our SMR technology will be able to create competitive zero carbon power for communities and for industrial processes. It opens up a really significant export market

opportunity for us. Another potential area for SMRs is to provide zero carbon power for things like direct air capture and sustainable fuel production.

### **Targets – summary**

Let me summarise what we are doing. We pledged to achieve net zero carbon in our own operations by 2030, to be a net zero carbon business as a whole by 2050 and take a crucial role in stimulating and enabling the sectors in which we operate to reach net zero by 2050. To help us achieve this we have set a series of short-term targets, and yes they are all connected to executive remuneration, to make many of our current products compatible with sustainable fuels. At its heart, Rolls-Royce is really all about taking stored energy and turning it into useful power. We believe that that must and can be made compatible with net zero carbon emissions through the development of technologies with which we operate. In summary, we can see a clear pathway to net zero by 2050.

### **Q&A**

**Isabel Green:** Thank you Warren. I can start now by introducing the rest our panel and really keen to get questions for all of those who have volunteered their time today to help answer your questions. With me today we have Tom Bell who is the President of Defence, Rachael Everard, our Head of Sustainability, Andreas Schell is President of Power Systems, Paul Stein, our Chief Technology Officer and Rob Watson, Director of Rolls-Royce Electrical.

Whilst we wait for people to register their questions, Rachael, if we could start with a question for you please. How does the pathway we have published today align with the other public and industry frameworks? Particularly I am thinking about things like Sustainable Aviation's UK roadmap and ATAG's Waypoint 2050?

**Rachael Everard (Head of Sustainability, Rolls-Royce):** Thanks for the question Isabel. Broadly the pathways are aligned. The ultimate goal is to reach net zero carbon by 2050, as science tells us we must. There are some differentiating factors. Rolls-Royce is a technology-led company, it has a technology-driven transition to net zero and that is what we are setting out today. Many of the levers are the same, more efficient engines, increased use of sustainable fuels and exciting new breakthrough technologies. Of course, our pathway reflects the breadth of the Group and the diagram that Warren talked about shows the potential role of SMRs, as an example, for further bending the curve, as well as net negative emission technologies like DAC in accelerating our transition.

**Isabel Green:** Thank you Rachael.

**Robert Stallard (Vertical Research):** Good afternoon. I have a couple of questions. First of all, a lot of what you are talking about relies on SAF, sustainable aviation fuel, which at the moment is very, very expensive compared to kerosine. What can Rolls-Royce do to get the SAF down and also expand its availability to your customers around the world? Then secondly, realistically at what point in the future do you think we will be in a situation to replace a large, civil aircraft engine with an alternative power source like all-electric or hydrogen? Thank you.

**Warren East:** Let me chip in to begin with on SAFs and what we can do with the cost. First of all, one of the reasons for the cost being so high at the moment is that we are at the very early stages in terms of proportion of SAF that is used. Around about 0.1% of the aviation

fuel used in the world today is SAF so scale is a key factor. Another key factor is the cost of electricity that is used in the production process. We do believe that there is a lot of SAF that is going to be required which means a huge amount of energy is going to be required and that is where off-grid, zero carbon energy from things like our small modular reactors is going to come into play. Then on the other side of it of course we perhaps recognise that SAFs for a long time are going to be somewhat more expensive than fossil fuels and so we believe we have a part to play in stimulating the take-up of those by making it more economically possible by making progress in improving the efficiency of our engines.

**Paul Stein (Chief Technology Officer, Rolls-Royce):** I might also suggest Tom, when I have finished the next bit, you might want to say something about what is happening in the States to help stimulate the growth of SAFs under the States' net zero path. On the question about powering large aircraft, before 2050 we firmly believe that large aircraft flying medium-to-long distances will continue to be powered by ever more efficient gas turbines fuelled by sustainable aviation fuels. As Warren indicated earlier we are exploring a number of very exciting technologies in electrification, hybrid-electric and hydrogen power, but none of them really are suitable for those very long-range flights or carrying large numbers of people. We see the future of aviation really being ever more efficient engines, which is one of the reasons why we are investing in UltraFan, a rapid ramp-up of SAFs in the way that Warren just described and then the investment in those novel technologies to really transform aviation. Not just to achieve net zero but to really redefine the way communities are connected. Tom, are you happy to take up the question about some of these activities going on in the States to stimulate SAFs?

**Tom Bell (President, Defence, Rolls-Royce):** Absolutely Paul, thank you. Here in the United States we know that the Biden administration has made climate change a focus of the new administration and the Biden administration has committed over \$2 trillion to this problem in the next budgeting cycle. It is a significant issue that is gaining a lot of momentum and as a result of that we see many legislators in our House and in the Senate that are advancing bills to help the industry create SAF fuels to meet the emerging demand. As Warren spoke to very clearly, our job is to facilitate that emerging demand and make sure the engines are compatible with SAFs. We are partnered with companies to create the SAFs and our legislators around the world are looking at ways that they can help lower the barrier to entry to make SAFs more economically viable for the producers and therefore put it at all the points where it will be required to make it a significant part of the civil aerospace market. Very exciting times that we are witnessing emerging all around us.

**Robert Stallard:** That is great, thank you very much.

**Andy Jones (Federated Hermes):** Good afternoon. Congratulations on the new strategy, in particular the science-based target for Power Systems. I would imagine it was both a large amount of work so well done and thank you. I have three quick questions, if that is okay. The first one is a clarification between net zero carbon and net zero, if you could explain that differentiation and whether that is a question of data materiality or something else. The second question, I am interested in the feasibility of science-based targets in the Civil Aviation business before 2050 and how much that would depend on the changing goals at the value chain level to be able to do that. Thirdly, I am interested in how the company's

reporting will evolve in regard to the alignment of capital allocation with the net zero goals. Thank you.

**Rachael Everard:** Hi Andy, thanks for the questions. First up on the net zero versus zero carbon, the primary focus of the report is on carbon emissions but we are talking at a broader level around Rolls-Royce's impact on the climate and greenhouse gases more collectively. We have been quite clear where we are talking specifically carbon or we are talking CO2 equivalent and hopefully you find that clear throughout the report. However, broadly we are talking about a position of getting to net zero carbon by 2050.

On your second question on Science-Based Targets Initiative, at the moment I think it is fair to say we do not yet have clarity on the convergence of the breakthrough goals that we require to get the whole of Rolls-Royce Group to be able to set a science-based target. Particularly some of the more complex sectors that we are part of in terms of aviation, as well as the articulation of the role that new technologies that we are pursuing like SMRs, like electrification and also the net negative technologies like DAC that will not be abating current Rolls-Royce Scope 3 emissions but can play a really important role in accelerating the global energy transition. We are working in partnership with the Science-Based Targets Initiative at the moment to understand how we can make sure we can set a verified Group target through their net zero global standard consultation over the coming months. I am really excited about that continued engagement with them. We are continuing to talk to the Race to Zero Coalition that we are really proud that Rolls-Royce is one of the founding members in there. Warren participated in a launch event about a year ago today to work with them on the sector breakthrough goals that they have identified as being the significant tipping point we need to reach by 2030 in order to reach net zero by 2050. Such as the 10% SAF uptake goal for aviation.

**Warren East:** The third question was on reporting and changing the reporting. Obviously we will be reflecting some of this in our external reporting in due course as and when it becomes appropriate but FYI internally we are for the first time now adopting ambitious objectives for the medium-term in terms of the proportions of our revenue that we expect to be at zero carbon by intermediate dates. We are not just planting a flag in 2050 and saying we are going to go from here to there. We have a pathway with interim milestones but we are not here today to discuss those interim milestones. However, we will be prepared as and when it is appropriate to report externally.

**Andy Jones:** Thank you, that was very helpful.

**Celine Fornaro (UBS):** Good afternoon everyone, thank you for taking my question. I would have one which I would hope is more like food for thought. I was wondering, how should we think about evaluating management teams? This comes to probably topics of variable remuneration or incentive plans to make sure that the decision that they take today are compelling and relevant for things that are actually going to influence 2035. Maybe the next management team is not going turn back and say, 'Actually, we got that one wrong. We need to reinvest again.' How are you thinking about that? You answered on the previous question about the reporting on the revenues but also in terms of your own performance assessment, how do you think about that?

**Isabel Green:** Thanks Celine. That is a question that is going to be answered probably slightly differently by some of the executive leaders of the business units because the actions and the targets, whilst we have Group level targets, there are obviously individual achievements that are being set at those levels as well. Warren, would you like to kick off but perhaps we could also ask to hear from Power Systems and Defence on things that have impacted them specifically?

**Warren East:** Yes. While I am talking Andreas and Tom please contemplate how you are going to add to this. Actually Celine, I think it is just a build on what I said in terms of we have some internal targets. We are not making many of those internal targets public today but remuneration is connected. Some of the things we have said today, remuneration targets and the testing of our existing engine products by 2023 for instance, there is a very, very tight link there. Come March 2022 you will probably be able to read about that in the remuneration report. Today we talked about the proportion of our R&D expenditure that we are targeting at net zero products and activity, moving up from 50% in 2020 to 75% in 2025. Clearly, in order to achieve that we will reflect an objective like that in the internal objectives and there is a tie to remuneration. We are not going to be doing anything special with remuneration just because it is a different type of objective. It will be the same sorts of linkages that we apply to normal financial measures.

**Tom Bell:** For us in Defence obviously we are going to be doing everything with our customers to help the existing suite of products run on synthetic fuels and we are also in discussion with Warren and the Remuneration Committee about measuring that. However, the more exciting opportunity for Defence is actually helping our Defence customers become net carbon neutral themselves. We are looking at it more as a growth opportunity for Defence because what happens is as governments turn their attention to net zero economies and they want to lead the way in showing that it is possible, they quickly realise to the degree they have not figured it out already, that their militaries represent the lion's share of their carbon footprint. Militaries around the world are always one of the dominant carbon emitters of any government. The opportunity is there for us uniquely positioned as Rolls-Royce as not only a gas turbine manufacturer but also a power systems company and a company that has unique capabilities globally in the nuclear world to bring that together to go to militaries, to go to Ministries of Defence, to go to Departments of Defence and talk about our partnership with them to help them become net zero across the whole estate. For us, yes remuneration is the net zero target of our business and our products but it is also a growth opportunity for us in Defence.

**Andreas Schell (President, Power Systems, Rolls-Royce):** For Power Systems you noticed in the announcement there is a clear science-based target out there which is for new products sold really to reduce carbon dioxide emissions by 35% on the basis of 2019 by 2030. There is no mistaking the organisation. It is very clear what needs to get done and those get flowed down. There is a heightened sense of urgency in the Power Systems business because we are in comparison to Civil Aerospace and Defence in a much shorter business cycle and actually the demand on behalf of the customers is arriving a lot sooner there. For that reason we really have that science-based target now to reduce. In order to really accelerate that we did change our organisation earlier in the year and we created a business unit structure. One of the four business units is totally dedicated to developing sustainable power solutions so

there is a team that comes to work where the 100% objective is to create the sustainable solutions in order to get to the carbon dioxide reduction.

**Celine Fornaro:** Thank you all. That was great, thanks.

**Chloé Lemarie (Exane BNP Paribas):** Thank you for taking my questions, I have a couple. The first one would be on making your existing portfolio compatible with 100% sustainable aviation fuel. What would it look like from your customers' perspective? Would it be offered as an upgrade option or simply a matter of certifying the existing hardware? The second question, I noticed the link you made, Warren, between your small modular reactor solutions which could help make sustainable aviation fuel scalable and affordable. Are you currently seeking partnership that could make you involved in that part of the supply chain?

**Paul Stein:** Thanks for the question, Chloé. Sustainable aviation fuels, you are probably aware we can blend them up to 50% right now within the certification that is open to us. To move to 100% we have to do a little bit of recalibration of the engines because sustainable aviation fuels have actually got a lot more energy density than fossil fuels. Secondly, we have to deal with a technical issue to do with the material we use in the seals of the engines. Once we have taken our engines through certification we have not actually come up with a specific formula but I can imagine we simply at engine rotation time when the engines come in for overhaul we would simply upgrade the seals and recalibrate the control systems. We do not really see that as a major issue for us in making our engines compatible with our 100% sustainable aviation fuels.

The second question was about whether we can use SMRs as a pathway to hydrogen and sustainable aviation fuels. The answer is a clear yes and we have been working with some major oil and gas companies in looking to see how we can use the energy and residual heat of a small modular reactor in order to drive down the costs of what is called e-fuels, these purely synthetic sustainable aviation fuels. So far the results look quite good but these will not be available in quantity probably until the middle of the next decade. We certainly see initially a ramp-up of waste-to-fuel and biofuel processes and then moving to e-fuels with time.

E-fuels are also being used in our Power Systems division and perhaps I could just ask Andreas to come in on the non-aviation side. Andreas, do you want to add something?

**Andreas Schell:** Yes, absolutely, thank you Paul. In Power Systems we really pursue a strategy that in applications where today we do not really see the physical capabilities of new technologies to be applicable, for instance in [inaudible] marine applications, that is the place where we then need to go for e-fuels. Of course we need to deliver complete solutions to our customers and that in cases will evolve or will include also that we supply them with the equipment to generate synthetic fuels, although of course in smaller quantities. Wherever we can shift technologies, where that is physically possible we are going to pursue technological changes. We are present in 13 different industries and some of these industries are already in the process of converting right now. Examples are rail propulsion where instead of a pure diesel propulsion system we are offering a hybrid propulsion system with significant fuel consumption reduction of up to 25%. Another example is data centres where the owners of data centres have declared that by the year 2025 they do not accept basically diesel-powered backup generators as a backup. Some of these industries we really need to convert sooner on but there we will pursue technological changes.

Last, we are converting our major product lines, the series 2000 and the series 4000, to be 100% compatible by the year 2023 with e-fuels and I think that is a very important milestone. To be clear, I think this also applies to the pressure then to come up with the fuel in [inaudible].

**Chloé Lemarie:** Thank you very much.

**George Zhao (Bernstein):** Hi, good afternoon everyone. My first question is, what is the pivot from 50% to 75% R&D expenditure on lower carbon for aggregate spending? Does this represent incremental spending or is spending simply being redirected from legacy systems that naturally would have faded anyway? Secondly, can you talk about the technology overlap between what you are doing in the Civil Aerospace and the Power Systems side to help accelerate the development? Thanks.

**Warren East:** I will kick off on the R&D one and I think then points towards Andreas and Rob between them possibly to talk about migration of Power Systems technology into the aerospace world. We are talking proportions of our R&D rather than absolute terms because we do not want to talk about absolute levels of R&D in 2025 today and effectively be issuing guidance. You are right, some of the expenditure that we have been applying to our large gas turbines in Civil Aerospace, for instance, over recent years would have probably had a tendency to come off a bit. As a large number of new engine programmes reach maturity there is less work to do and so on. However, it is more than that. If I step back and think about the whole Covid pandemic I can observe there that the world of commercial aerospace is definitely contemplating a period where commercial aerospace is going to be a smaller proportion of the global economy than we would otherwise have expected it to be. That is well-known from other discussions that we are having with you guys and I am sure you are having with everybody else in the sector. At the same time, probably a reflection of the last 18 months, is that the general push around society for migration to a net zero world has gathered huge momentum and I indicated that in probably the first or second slide that we presented this afternoon. If you take those two things together it makes a lot of sense for a business like Rolls-Royce to tilt the balance a little bit of that R&D expenditure, a little bit more than would naturally have occurred just because of engine programmes reaching levels of maturity. That is what is behind the migration, rather than a pivot, from 50% in 2020 to 75% in 2025.

**Andreas Schell:** When it comes to R&D what I think first when I think about us as a Group is Rolls-Royce being a technology company and within that company Rolls-Royce Power Systems really due to its shorter business cycles is exposed sooner to some of the required transformation due to customer requirements or legislative changes. Hence, we really feel the need to also change our product portfolio much sooner than, for instance, in some of the longer cycle businesses. In that regard, we benefit really from the central R&D capabilities that exist within the Group, for instance in Rob Watson's area when it comes to Electrical. In exchange I think the Group then gets the benefit from Power Systems really being first in experiencing what it means to deploy the technology into applications and hand it over into the customers' hands. I think this is some of the benefit that we can deliver at Rolls-Royce because we are integrated as one group.

**Rob Watson (Director, Rolls-Royce Electrical):** From an Electrical point of view, as Andreas says, we have been able to leverage some of the Power Systems capability, firstly

around batteries, microgrids and the electrical systems architecture that Power Systems are out in front developing. Then at the same time we have some great examples such as out in Singapore with our Power Electronics team where we are taking megawatt scale convertors we developed for the [inaudible] programme for Aerospace and using a lot of the topology, software and algorithms to then help develop megawatt scale convertors for the Quinoas battery solutions. There is a really good two-way flow of technology both in hardware, software and in engineering skills. Thanks.

**George Zhao:** Thanks.

**Liren Li (MFS):** Hello. Thank you for the update and I just have three questions please. The first one is quickly, I wonder in the Scope 3 emissions disclosed today could you give some colour on how that breaks down into your different segments of Power Systems, Civil and Defence? Then my second question comes back to Paul's comments on the long-term outlook for medium and long-range Civil Aerospace aircraft still being gas turbine powered. I guess most estimates say SAF adoption will only be maybe 10% by 2030 so I am curious about longer-term beyond that and by 2050 your thinking around what level of SAF is required to actually help the longer-range aviation segment to reach net zero. Are you expecting that to be 100% SAF or does it have to be offset by some kind of carbon capture or offset schemes? Then my final question is around your thinking around how your R&D and capex is aligned with the rest of the supply chain, so Airbus and Boeing. Any colour on whether you are thinking along the same lines and how you plan to work with them and the entire sector. Thank you very much.

**Rachael Everard:** Thanks for the question Liren. A reminder that the nature of the Scope 3 emissions reporting means that figure is always an estimate and it is of course always someone else's Scope 1 and 2. For that reason we are not providing any further detail on the breakdown across the different businesses. We do consider that to be commercially sensitive and restricted, particularly in relation to our Defence business. However, it would not be inappropriate to assume that the breakdown of revenues across the Group is broadly proportional.

**Paul Stein:** Thanks Liren. I think one thing that we all have to bear in mind is that we are at the start of the growth of a massive industry in SAFs, Liren. Right now we are only powering 0.1% in the fleet with SAFs and the world's energy companies, including our own pathway through SMR for SAF, are now gearing up for a huge global industrial scaling. IAG has already predicted that they will have enough SAF to commit to 10% by 2030 and they made a statement to that recently. The EU is going through the Refuel Initiative which is likely to commit to a much higher figure by 2035 and we believe there is a pathway to get to 500 million tonnes of SAF per year by 2050, which is what we need to completely decarbonise aviation.

**Warren East:** In regards to R&D alignment with supply chain and customers I think there are two parts to this answer. The first is that there is a natural alignment. Whatever the topic, whether we are talking about a journey to net zero or whatever, we as a business have to be aligned with our customers. If our customers are applying a lot of R&D on net zero technologies, whether that be ships or aeroplanes it does not matter, we have to be aligned with them otherwise we are not going to sell any products to them. I think from that point of view, from our existing customer base we are pretty aligned. The same is true with our

supply chain because if our suppliers did not align their businesses with ours as you move along the value chain then it just would not work.

However, one thing I should bring out here is one of the things we have been talking about today is the opportunity that is in the net zero report and the energy transition and that is for us as a business to be working in other areas. We have highlighted a couple of examples today. We have talked about electric aviation and how electric aviation brings us to urban air mobility, brings us to small commuter aircraft, smaller regional aircraft and so on where we are just not present today. Yes, we do have to spend some R&D there and we are aligning there with future customers. What we are doing with Rolls-Royce Electrical is taking new technology but we are applying it very much into a field that we understand and a market that we understand. However, surely they are going to be different customers in that market.

Then with SMRs we are taking some technology that we are quite familiar with, the underlying nuclear technology there, and we are applying it to a completely new market. In those two areas where we are really creating completely pure growth opportunities obviously we have to get our R&D out a bit ahead of our customers.

**Mouchumi Bhuyan (Spinecap):** Hi, good afternoon everyone. Thank you for the presentation and congratulations on setting up a science-based target. I just have one question. Are these targets only internally verified or are these also verified and certified by SBTi already? Thanks.

**Rachael Everard:** A great question. As I set out earlier, we are engaging with the Science-Based Targets Initiative. The target itself that we are setting for Power Systems that Andreas has described is not yet verified. You might be aware, it is quite a lengthy process to go through but it is fully aligned with their methodology for new product lifecycle emissions reduction and does align with an emissions trajectory to maintain global warming well below a two-degrees emissions trajectory. We are just in the process of having that target verified.

**Question:** Okay, thank you very much.

**Andreas Schell:** If I could add, we are working with SBTi to get this set up and we will communicate about the specifics behind the 35% reduction for Power Systems later in the year.

**Isabel Green:** Thank you and I am very sorry for everyone who had a question that did not get answered today. It has been a popular call. Unfortunately, that is all we have time for so if you do have more questions that you want to come back to me or my team with, obviously there is a lot of information also available on the website. Please do continue to engage with us as we proceed along this journey but thank you for joining the call and thank you to our panel for providing all the answers.

**Warren East:** Thank you for joining us. Thank you for your support.

**Isabel Green:** Goodbye.

**Warren East:** Bye.

[END OF TRANSCRIPT]