LyondellBasell Industries
Third Quarter Earnings Results
October 27, 2023

Presenters
David Kinney, Head, IR
Peter Vanacker, CEO
Michael McMurray, CFO
Ken Lane, EVP, Global Olefins & Polyolefins
Kim Foley, EVP of Intermediates, Derivatives & Refining
Torkel Rhenman, EVP, Advanced Polymer Solutions

Q&A Participants
Jeff Zekauskas - JP Morgan
Patrick Cunningham - Citi
David Begleiter - Deutsche Bank
Steve Byrne - Bank of America Merrill Lynch
Matthew Blair - TPH
Mike Leithead - Barclays
Frank Mitsch - Fermium Research
Vincent Andrews - Morgan Stanley
Hassan Ahmed - Alembic Global
Aleksey Yefremov - KeyBanc Capital Markets
Kevin McCarthy - Vertical Research Partners
Arun Viswanathan - RBC Capital Markets
Joshua Spector - UBS

Operator
Hello, and welcome to the LyondellBasell teleconference. At the request of LyondellBasell, this conference is being recorded for instant replay purposes. Following today's presentation, we will conduct a question and answer session.

I'll now turn the conference over to Mr. David Kinney, Head of Investor Relations. Sir, you may begin.

David Kinney
Good day, everybody, and thank you all for joining today's call. Before we begin the discussion, I would like to point out that a slide presentation accompanies today's call and is available on our website at www.lyondellbasell.com/investorrelations.

Today, we will be discussing our business results while making reference to some forward-looking statements and non-GAAP financial measures. We believe the forward-looking statements are based upon reasonable assumptions and the alternative measures are useful to investors. Nonetheless, the forward-looking statements are subject to significant risk and uncertainty. We encourage you to learn more about the factors that could lead our actual results to differ by reviewing the cautionary statements in the presentation slides and our regulatory filings, which are also available on our Investor Relations website.

Comments made on this call will be in regard to our underlying business results using non-GAAP financial measures, such as EBITDA and earnings per share, excluding identified items. Additional documents on our Investor website provide reconciliations of non-GAAP financial measures to GAAP financial measures, together with other disclosures, including the earnings release and our business results discussion.

A recording of this call will be available by telephone beginning at 1:00 p.m. Eastern Time today until November 27, by calling (877) 660-6853 in the United States and (201) 612-7415 outside the United States. The access code for both numbers is 13739196.

Joining today's call will be Peter Vanacker, LyondellBasell's Chief Executive Officer; our CFO, Michael McMurray; Ken Lane, our Executive Vice President of Global Olefins and Polyolefins; Kim Foley, our EVP of Intermediates & Derivatives and Refining; and Torkel Rhenman, our EVP of Advanced Polymer Solutions. During today's call, we will focus on third quarter results, current market dynamics, our near-term outlook, and our long-term strategy.

With that being said, I would now like to turn the call over to Peter.

Peter Vanacker
Thank you, David, and welcome to all of you. We appreciate you joining us today as we discuss our third quarter results.

Starting with slide 3, we have three key messages for today's call. First, LyondellBasell continues to generate resilient results despite challenging market conditions. Our team delivered exceptional cash conversion during the quarter. And our balanced approach to capital deployment was on full display, as we repaid maturing bonds, funded investments to grow and maintain our assets, and rewarded shareholders through dividends and share repurchases. At the same time, thanks to great teamwork, we were able to bolster the cash on our balance sheet.

Secondly, we remain focused on executing our long-term strategy. You will recall that our strategy is built on three pillars. The first pillar reflects our commitment to actively grow and upgrade the core businesses that are aligned with our long-term strategy. We are growing our Intermediates & Derivatives segment through the successful start-up of our new PO/TBA facilities, the largest single train propylene oxide plant in the world. In the third quarter, extremely strong margins for oxyfuels produced from our PO/TBA assets contributed to a record-setting quarterly EBITDA for our Intermediates & Derivatives segment. Kim will provide more details on this in a few minutes.

The other half of growing and upgrading our core involve difficult decisions about businesses and assets that do not really fit with our long-term direction. In September, we announced our intent to close one of our two polypropylene production units in Brindisi, Italy. And our plans to exit the refining business and transform the site are very well known.

These actions are examples of how the pillars of our strategy reinforce each other. We're actively managing our business portfolio to reallocate resources toward assets and businesses that support the growth of our core while building the second pillar of our strategy, a profitable circular and low carbon solutions business.

We continue to make good progress in this area, producing and marketing over 250,000 tons of recycled or renewable-based polymers since 2019. As Jim Seward and Yvonne van der Laan discussed in our *MoReTec* webinar last month, we're looking forward to a final investment decision later this quarter on our first commercial advanced catalytic recycling plant in Germany.

And we are not sitting still. In just the past few weeks, we've announced joint ventures in two different Dutch plastic waste recycling companies, a stake in a circular plastic venture capital fund and a joint venture in infrastructure and recycled plastic feedstock's that support our plans for an integrated circular and low carbon solutions hub in Houston and also a renewable electricity supply agreement in Spain.

Our value enhancement program aligns with the third pillar of our strategy, stepping up our performance and culture. I am pleased to announce that our VEP is on track to exceed our target for $200 million in recurring annual EBITDA run rate by the end of 2023. As a reminder, last quarter, we increased our VEP target by $50 million from our initial target of $150 million that we announced at our Capital Markets Day in March. The newfound value unlocked by the VEP supports our investments to grow our core while building a profitable and game-changing circular and low carbon solutions business.

My third key message is that LyondellBasell's focused strategy is strengthening our business portfolio to ensure our company is well positioned to capture value today and into the future. Our track record of effective cost management, operational excellence, and innovation all provide competitive advantages. With a sharper focus on core businesses that benefit from leading positions in growing markets with attractive returns, we can maximize the impact of these competitive advantages. I hope you share our excitement for the future of LyondellBasell.

Let's turn to slide 4 and begin the discussion with our foundational commitment to leadership and safety performance. Safe operations are fundamental to our core values and provide the cornerstone for our future success. LyondellBasell's year-to-date incident rate for employees and contractors is 0.14, which means that our safety performance remains above the top 75th percentile for our industry. I want to congratulate our team for their outstanding safety performance.

Let's turn to slide 5 and summarize our financial results. During the third quarter, LyondellBasell's businesses delivered resilient results and strong cash generation from our well positioned and diverse portfolio. Earnings were $2.46 per share. EBITDA was $1.4 billion. At the end of the quarter, our cash from operating activities was $1.7 billion, with $7 billion of available liquidity.

Now let me turn the call over to Michael first, and then to each of our business leaders, who will describe our financial and segment results in more detail.

Michael McMurray
Thank you, Peter, and good morning, everyone. Please turn to slide 6 and let me begin by describing how we are extending our track record of efficient cash conversion that supports our investment-grade balance sheet and strong shareholder returns.

During the past four quarters, LyondellBasell generated $5 billion of cash from operating activities. At the end of the third quarter, our cash balance was $2.8 billion. Our team efficiently converted 102% of our EBITDA into cash over the last 12 months.

Let's continue with slide 7 and review the details of our capital deployment during the third quarter. LyondellBasell remains committed to balanced and disciplined capital allocation that supports investment in our long-term strategy while providing strong returns for our shareholders.

During the third quarter, our portfolio of businesses generated $1.7 billion in cash from operating activities. Robust cash conversion comfortably covered capital expenditures, paid down maturing bonds, and enabled a return of $448 million to shareholders through dividends and share repurchases.

As Peter mentioned, our team is focused on growing and upgrading our core businesses while actively managing our portfolio. With the completion of our new PO/TBA assets, our capital expenditures are now focused on investments in building a profitable circular and low carbon solutions business and smaller profit generating projects as well as maintaining safe and reliable operations across our existing asset base.

I would now like to provide a brief overview of the results from each of our segments on slide 8. LyondellBasell's business portfolio delivered $1.4 billion of EBITDA during the third quarter. Our results reflected exceptional oxyfuel margins that fueled record quarterly EBITDA in I&D, offset by lower margins from both O&P segments. Results in our Olefins and Polyolefins businesses were pressured by higher feedstock cost, new industry capacity, and very challenging conditions in European markets.

In our last earnings call, we shared our expectation that third quarter EBITDA would decline from second quarter results. Subsequent events led to results that exceeded our expectations, primarily in our I&D segment. During August and into September, unplanned downtime at several assets across the U.S. Gulf Coast oxyfuels industry triggered a significant improvement in margins that increased I&D EBITDA by 50% relative to the second quarter. Our third quarter EBITDA for the company did declined slightly, but clearly exceeded the upper end of our expectations.

We continue to align our operating rates with market demand to optimize working capital. During the fourth quarter, we expect operating rates of 85% for our North American Olefins and Polyolefin assets, 75% for our European Olefins and Polyolefins, and 70% for our Intermediates and Derivative assets.

With that, I'll turn the call over to Ken. Ken?

Ken Lane
Thank you, Michael. Let's begin the segment discussions on slide 9 with the performance of our Olefins and Polyolefins Americas segment. Third quarter O&P America's EBITDA was $504 million. Integrated polyethylene margins were pressured by higher feedstock costs and continued oversupply. Global polyethylene trade flows appeared to be slowly normalizing toward pre-

pandemic conditions. Increasing export prices and volumes helped to support U.S. polyethylene contract price increases in both August and September.

In the fourth quarter, we expect strengthening polyethylene pricing supported by stable domestic volume and continued export strength. We also expect potential headwinds from volatile feedstock and energy costs.

The U.S. polyethylene market is well supplied with recent capacity additions entering the market. We remain focused on our disciplined approach to match LyondellBasell's operating rates with market demand. Roughly two-thirds of LyondellBasell’s North America polyethylene capacity is high density polyethylene. So we are pleased to see high density polyethylene inventories falling across the industry during September.

In support of our growth in circular and low carbon solutions, we announced the venture capital investment in Lombard Odier’s Plastic Circularity Fund. The fund aims to reduce pollution from plastics by investing in companies offering innovative solutions to improve the collection, sorting, and recycling of plastic waste. This fund is another example of our comprehensive engagement and collaboration across the value chain to increase the availability of recycled feedstocks.

Just this week, we announced our investment in Cyclyx, a joint venture between Agilyx, ExxonMobil, and LyondellBasell to accelerate the development of a nationwide circular economy for plastics. The collaboration aims to capture more plastic waste from landfills and provide infrastructure and recycled materials at scale in support of our plans to build an integrated circular and low carbon solutions hub in the Houston area.

Please turn to slide 10 as we review the performance of our Olefins and Polyolefins Europe, Asia, and International segment. In the third quarter, weak demand continued oversupply and higher naphtha costs impacted our European margins, resulting in an EBITDA loss of $45 million. As we approach year end, we expect European markets to remain challenging, with weak demand that will likely persist. We anticipate modest polymer price increases, offsetting higher feedstock and energy costs. The slow but gradual return of Chinese demand seems to be providing some tailwinds for normalizing global trade flows.

Finally, we took several steps during the quarter to advance our long term strategy. As part of our goal to improve our focus on core assets and businesses, we made the difficult decision to close one of our two polypropylene assets in Brindisi, Italy. We also announced the acquisition of 50% stakes in two different Dutch recycling companies, Stiphout and De Paauw Sustainable Resources. Both companies are involved in the sourcing and processing of plastic packaging waste and support our efforts to build scale by expanding the production of our *Circulen*Recover products.

In line with our sustainability goals, we signed a renewable power purchase agreement for 149 megawatts of solar electricity generation capacity in Spain. With this, LyondellBasell has rapidly achieved 78% of our 2030 target for renewable electricity with over 1.1 gigawatts of wind and solar capacity under agreements. I would like to recognize our teams for their quick and decisive actions to advance our strategy.

Now I will turn the call over to Kim.

Kim Foley
Thank you, Ken. Please turn to slide 11 as we look at the Intermediates & Derivatives segment. Exceptional oxyfuel margins resulted in record third quarter segment EBITDA of $708 million. During the quarter, unplanned industry downtime for oxyfuels production on the U.S. Gulf Coast led to higher blend premiums for oxyfuels relative to gasoline.

When coupled with higher crude oil prices and relatively low cost for butane raw materials, oxyfuel margins expanded significantly in North America and Europe. The outstanding performance of our oxyfuels business during the third quarter is an example of how our diverse global business portfolio is capable of providing resilient results through market cycles. With our new PO/TBA asset, LyondellBasell's global oxyfuels capacity is now as large as our North American polyethylene capacity, highlighting the diversity of our growing portfolio.

In our propylene oxide and derivatives business, additional volumes from the new PO/TBA asset were largely offset by the planned idling of two PO/SM assets in the U.S. and Europe for approximately two months at each asset. These actions reflect our disciplined approach to match production rates with the demands during challenging market conditions.

Looking ahead, we expect the end of summer driving season and the higher butane costs will cause oxyfuel margins to moderate towards levels seen in the first half of 2023. In line with our guidance from the beginning of the year, we are conducting planned maintenance during the fourth quarter at two of our existing propylene oxide assets. We expect to run our global I&D assets at approximately 70% of capacity in the fourth quarter.

In September, we expanded the range of our sustainable offerings with the launch of our +LC brand of low carbon solutions. These products are sourced from recycled and renewable feedstocks and offer our customers a solution for meeting their greenhouse gas emissions targets with propylene oxide, styrene, and other products that provide a lower carbon footprint than fossil-based alternatives.

Please turn to slide 12, and let's review the progress of our new PO/TBA asset. As Peter mentioned earlier, the first pillar of our strategy is to grow and upgrade our core by investing in businesses that fit our long-term strategy. Our new PO/TBA asset in Houston, Texas is a key part of that growth. This facility is the world's largest single-train asset increasing LyondellBasell's global propylene oxide and oxyfuels capacities by more than 35%.

Furthermore, we believe that PO/TBA technologies are highly advantaged relative to other widely used propylene oxide technologies. By our analysis, PO/TBA technologies have the lowest operating cost and the lowest carbon footprint for producing propylene oxide. And our strategically located U.S. Gulf Coast assets benefit from the shale advantaged butane and propylene feedstocks.

During the commissioning and the start-up of these assets, we achieved more than 4 million man hours of work without a recordable injury. This relentless focus on safety and the associated attention to detail is a key part of our success. Within two months of the plant start-up, we completed the technical acceptance test to prove out the full capacity of our new PO/TBA facilities.

In 2023, the ramp-up in our new capacity will be largely offset by planned maintenance at our existing PO/TBA assets, but we expect to see more meaningful volume contribution from the new PO/TBA asset in 2024 and beyond as the demand for durable goods returns. I am incredibly proud of what our team has accomplished to quickly reach these milestones and look forward to their continued success.

Now let's turn to slide 13 and discuss the results of the refining segment. Third quarter EBITDA was $105 million. Modest improvements in the benchmark Maya 2-1-1 crack spread were offset by a mark-to-market impact from a distillate hedging program. As part of our ongoing risk management efforts, we will occasionally use derivatives to hedge commercial or financial risks.

During the third quarter, refinery cracks, particularly distillate cracks, were highly favorable relative to historical levels. And we took the opportunity to lock in attractive margins for a portion of our refinery output through 2024. Distillate cracks in September outperformed our expectations, resulting in mark-to-market losses for our distillate hedging program.

In the near term, we expect seasonally slower demand for refined products and the Maya 2-1-1 spreads to decrease. Currently, we are executing planned maintenance on our catalytic cracker, with an estimated EBITDA impact of $25 million in the fourth quarter. We expect crude throughputs at the refinery to be approximately 80% of capacity in the fourth quarter.

We remain committed to the safe operation of these assets through no later than the end of the first quarter of 2025, with a focus on high reliability as we develop new projects to transform the site in support of our circular and low carbon solutions growth strategy.

With that, I will turn the call over to Torkel.

Torkel Rhenman
Thank you, Kim. Let's review the third quarter results for the Advanced Polymer Solutions segment on slide 14. Third quarter EBITDA was $18 million. Margins decreased mostly due to the sales mix for the quarter and lower demand. This was partially offset by incremental volumes from our Mepol acquisition completed in July.

In the fourth quarter, we expect demand to be similar to the third quarter across most APS businesses. With service levels to our customers now restored, our team is highly focused on refilling the growth pipeline for our business. And we are making good progress in increasing the number of sustainable solutions for our customers with high-performing recycled technical compounds from our newly acquired Mepol assets and product developments from across our existing asset footprint.

Our expectations for the fourth quarter of this year are modest, but we look forward to steady improvement during 2024, as the projects in our growth pipeline begin to mature and make their way to the bottom line as we work towards the goals we discussed at our Capital Markets Day last March.

With that, I will turn the call back to Peter.

Peter Vanacker
Thank you, Torkel. Please turn to slide 15 and I will discuss the results for the Technology segment on behalf of Jim Seward. Third quarter EBITDA of $146 million reflected higher licensing revenue and improved catalyst results. In the fourth quarter, we expect that revenue associated with licensing milestones will be unusually low and catalyst volumes will decrease. As a result, we estimate that full year 2023 Technology segment EBITDA will be approximately $30 million lower than full year 2022.

As discussed in the beginning of this call, we are targeting a final investment decision for a commercial scale plant using our *MoReTec* advanced catalytic recycling technology before the end of this year and hope to share more details in our fourth quarter telephone conference.

Please turn to slide 16, and I will discuss the near-term market outlook by regions and end markets. As you heard from our business leaders, we expect that challenging market conditions will persist through the remainder of the year and into 2024. In addition, we expect additional pressures from typical fourth quarter seasonality associated with holidays and year-end inventory management.

In the Americas, pricing is expected to be supported by increased polyethylene exports and stable demand. Integrated polyethylene margins will likely be constrained by higher feedstock costs and new market capacity. We expect that European markets will remain highly challenged. Weak market demand, coupled with rising feedstock and energy costs, are likely to continue to compress margins.

In China, markets are slowly improving and targeted stimulus initiatives seem to be providing some limited benefits. In our end markets, demand for consumer packaging is slow but steady, supported by the consumer and industrial packaging markets. However, our customers continue to keep their inventory levels low.

Building and construction markets are slow, but we're watchful for potential benefits in the United States, enabled by stimulus from the Inflation Reduction Act, the Bipartisan Infrastructure Law, and the CHIPS & Science Act. We expect demand from automotive production will continue to gain momentum. The UAW strike has not yet materially affected our results.

Oxyfuel margins are expected to remain well above historical averages but decline from third quarter records to a level similar to the first half of 2023. Distillate inventories are expected to remain on the low end of seasonal averages and gasoline inventories have risen with the end of the summer driving season. We will continue to optimize our operating rates to remain in step with market demand.

Now let me summarize the third quarter, our outlook, and our long-term strategy for the company with slide 17. Exceptional oxyfuels margins enabled record results from our Intermediates & Derivatives segments. O&P margins were pressured by higher feedstock costs and new industry capacity amid stable but soft demand.

Cash generation was outstanding, with $1.7 billion in cash from operations, which enabled us to return approximately $450 million to shareholders in dividends and share repurchases as part of our balanced capital allocation framework.

Looking ahead to the fourth quarter, we anticipate seasonally softer demand across our businesses, but we remain confident in our proven ability to navigate challenging markets and deliver results. Our team will continue to remain focused on advancing value creation through the three pillars of our long-term strategy.

Our third quarter results demonstrate the benefits from growing our core with new capacity from our PO/TBA assets, and we are upgrading our business portfolio by improving our focus on this core. We are reallocating resources away from non-core assets and businesses.

At the same time, we are rapidly building a comprehensive business model to support a profitable circular and low carbon solutions business where LyondellBasell benefits from participation up and down the value chain. And we are transforming our performance and culture to embrace a comprehensive approach to value creation. Our value enhancement program is unlocking value at an accelerating pace. And I am confident we will exceed our 2023 recurring annual EBITDA exit run rate target of $200 million. We are laser-focused in our goal to deliver a more profitable and sustainable growth engine for LyondellBasell.

With that, we are now pleased to take your questions.

Operator
Thank you, sir. Ladies and gentlemen, at this time we will begin the question and answer session. As a reminder, if you have a question, please press the star followed by the one on your touchtone phone. If you would like to withdraw your question, please press the star followed by the two. We do ask you to limit to one question.

Our first question comes from the line of Jeff Zekauskas with JP Morgan. Please proceed with your question.

Jeff Zekauskas
Thanks very much. Have a two-part question. Can you talk about profitability of your Bora joint venture in China? How that's changed through the course of the third quarter and into the fourth? And I think in the quarter, you bought back a minimal number of shares. Do you have a weighting between dividends and share repurchase that you think about? Or why was the share repurchase so small?

Peter Vanacker
Great. Thank you, Jeff, for your questions. I mean, situation pretty much on Bora has not changed compared to the previous quarters. We continue to run at minimum capacity. Ken, do you want to add something?

Ken Lane

Yes. I would just say that we did have a turnaround that impacted the asset in the third quarter, Jeff. But what we are seeing is signs of some domestic growth in the market there, which is encouraging. However, the growth rate is still not where we need it to be to absorb all of the new capacity. But that asset is approaching breakeven levels of EBITDA, which is great to see, but still a very challenging market in China.

Peter Vanacker
And with regards to our capital allocation strategy, also here, nothing has changed. I mean, with regards, I mean to, the share buybacks. Michael?

Michael McMurray
No, sure, Jeff. So what I would say is that our capital allocation priorities remain fundamentally unchanged. I think really pleased with our cash flow performance this year and this quarter, in particular. I think really good execution. Pleased with the amount of working capital that we're able to take out of operations this quarter as well.

And then again, I said looking forward, our commitments to shareholders remain intact. I think this has been demonstrated by our previous actions. You know that we communicated a 70% payout target for free cash flow, that stands. That said, we don't put capital allocation on autopilot. We have a point of view. And then clearly, given all the risks and uncertainties as we sit here today, we're being a little bit more cautious in the near term.

Operator
Thank you. Our next question comes from the line of Patrick Cunningham with Citi. Please proceed with your question.

Patrick Cunningham
Hi, good morning. You guys had a record quarter in I&D, with strong oxyfuels, and now the PO/TBA plant is online. Maybe there's still some weakness in derivatives, but how should we think about margin set up into 2024 across each of the chains? And what sort of ramp up in EBITDA should we see from the PO/TBA plant as it gets to nameplate?

Peter Vanacker
Yes. Thank you, Patrick. Very good question. Maybe let me, first of all, highlight, again that, of course, with a very successful start-up of our new PO/TBA plant, the capacity mix in North America has, of course, changed. I mean, on one hand side, we have about 4.1 million tons of PE capacity in North America. And in oxyfuels, we have a global capacity now of 4.4 million tons. So I think that's important also to highlight that with that successful investment, our portfolio mix has, I mean, successfully changed.

So with that, Kim, you want to say something around your outlook, I mean, for oxyfuel margins?

Kim Foley
Absolutely. Let me start by taking us back to Capital Markets Day. I think what we said then is mid-cycle margins for the cycle would produce an I&D EBITDA segment of about $1.6 billion. So if you think about the new plant as an incremental $450 million, we're just north of $2 billion.

Short term, this segment is challenged by weak, durable demand and capacity oversupply, which impacts both volume and margin in our current environment. But on the positive side, we continue to see really strong demand for oxyfuels. Margins are above historical levels. So as we discussed in Capital Markets Day, again, it's this diversity of this segment, combined with our global low-cost asset footprint that provides positive EBITDA through the cycle.

Peter Vanacker
The team has done quite a lot of very good work as well in the global supply chain management by building up more flexibility in global supply chain and management on oxyfuels as well as on PO so that will also help in the future.

Operator
Thank you. Our next question comes from the line of David Begleiter with Deutsche Bank. Please proceed with your question.

David Begleiter
Thank you. Good morning. Peter, you're having very good success with the Value Enhancement Program. What's the potential this program longer term? Can you get to $1 billion high run rate, do you think, in the '25 and beyond time frame?

Peter Vanacker
Thank you, David, for your question. I'm actually very, very pleased with how the LyondellBasell team has embraced the Value Enhancement Program. I mean, I've done these programs in the past at other companies, and it took longer. We have about 4,000 to 5,000 people now involved. We just went to Phase E in having smaller sites that have now rolled out the Value Enhancement Program, also with a huge amount of success.

As we said, I mean, our original target was first year, $150 million exit run rate EBITDA. We increased it to $200 million. Today, we actually said we're going to exceed that $200 million. We haven't changed our $750 million target. But as we have said in the past, I mean, this is not a project. It becomes part of the DNA. So it doesn't have a beginning and an end. So we can definitely say that it's not going to stop at $750 million as a consequence. So we will be able to capture more value.

And we see that already happening because the sites that were involved in the first phase, they have now already started going again, through new initiatives, new brainstorming sessions that they have captured. So we already start building up that certain, let's say, that first-level sites already have a new group of projects, new projects identified to continue to increase value and creation.

Operator
Thank you. Our next question comes from the line of Steve Byrne with Bank of America. Please proceed with your question.

Steve Byrne
Yes. Thank you. What would you put the probability at that your refinery is selected as the DOE-funded hydrogen hub for Texas? And if it is, would that influence your choice of where to put the

MoReTec process? And would it also potentially lead you to operate the hydrotreaters and hydrocrackers longer than that first quarter of 2025 to keep them functional for longer-term utility and renewable fuels?

Peter Vanacker
Thanks, Steve. Good question. I mean, of course, we were very pleased that amongst the seven projects that have been announced to receive funding that the Houston HyVelocity project has been included in that. Our project that we have on HRO, our refinery, is part of that HyVelocity. So we get very good support, that's great. Of course, we continue to develop that project. There's still a lot of steps, I mean, that need to be taken until we are at investment decision. But it gives, of course, quite a lot of support already to move to the next step.

Having said that, of course, in the transformation of our Houston refinery, we have multiple projects that we are currently looking at. One of those projects is the upgrading of plastic oil that would come out of our *MoReTec*-2 investment. Remember, *MoReTec*-1 is the Cologne hub. *MoReTec*-2 will be much larger than *MoReTec*-1. And here, we are looking at the Houston hub. So *MoReTec*-2 investment in Houston, leveraging upon our equipment like hydrotreaters that we have in Houston to upgrade that plastic oil and then having the interconnection through our pipelines with our Channelview steam crackers. That's the second project.

Third project that we are looking at is leveraging upon those hydrotreaters to see if we can produce renewable hydrocarbons in the hydrotreaters that again would leverage upon feeding them into the steam cracker. So they have a multitude of projects currently that we have in a very early phase, but we are having very dedicated teams analyzing these projects, and we will then, of course, follow the usual capex stage gate.

Operator
Thank you. Our next question comes from the line of Matthew Blair with Tudor, Pickering Holt. Please proceed with your question.

Matthew Blair
Great. Thanks for taking my question. Could you talk about dynamics in polypropylene? I think the Lyondell volumes were actually the highest in quite some time in this area. What kind of trends are you seeing on global supply and demand for both this year as well as into 2024? Thanks.

Peter Vanacker
Thank you, Matthew. I'm going to give that question immediately to Ken.

Ken Lane
Yes. Thank you very much, and thanks, Matthew, for the question. The dynamics that we're seeing in polypropylene around supply and demand is similar to what we're seeing in PE. There's still a tremendous amount of new capacity that has come online over the last 12 to 18 months, especially in China. China has now pretty much become balanced and even has been exporting some polypropylene.

So that market is challenged, but we have seen the demand come back in polypropylene and have started to see some growth quarter-over-quarter. One of the market segments -- frankly, when I look across all of the market segments for our division, the automotive segment this year is showing signs of improvement when I compare it to others like packaging. We also have seen some improvement in *Catalloy*, some bounce back in volumes in *Catalloy*, driven by commercial construction. So, in general, we still have a very good portfolio of assets, but a very challenging market environment.

Operator
Thank you. Our next question comes from the line of Mike Leithead with Barclays. Please proceed with your question.

Mike Leithead
Great. Thank you, good morning. I wanted to ask a bigger picture question on O&P EAI profitability. EBITDA has been quite challenged for maybe the past five quarters or so. I know you highlighted the polypropylene closure. But is there any larger scale asset shutdowns or restructuring being considered here? And is it simply a question of demand recovering? Or I guess how do you think about a potential pathway to get this segment back to its, call it, $1 billion or so historic EBITDA level?

Peter Vanacker
Thank you, Mike. Very good question. And as you well noted, we are in the midst now of negotiating with the union representatives on the shutdown of that one particular line that we have in the southern part of Italy and Brindisi.

Of course, as usual, we continue to look at all the other assets that we have, not just, I mean, limited to the O&P business, but also the I&D business as well as the APS business. I mean, some actions you have seen that we have taken. Like, for example, I mean, our joint venture that we have in the Maasvlakte on PO/SM. We have idled that a couple of times already this year, just like we did at the end of last year. So that continues for us to be very important that we look at all these different opportunities. But we have taken, I mean, that decision that we are planning to shut down that one line in the southern part of Italy.

Operator
Thank you. Our next question comes from the line of Frank Mitsch with Fermium Research. Please proceed with your question.

Frank Mitsch
Thank you and good morning. And congrats on the nice results. If I look back three months ago, the Street consensus was at $1.41 billion for the third quarter in EBITDA and the company thought that that was probably too high and proactively went out with a guidance of $1.1 billion to $1.25 billion. Obviously, you outlined the reasons why the results came in better, actually right in line with that $1.41 billion.

But my question is, having taken that tact in the third quarter, as we stand here today, the Street's at $1.1 billion EBITDA for the fourth quarter, it begs the question in terms of no guidance that I would assume that Lyondell feels more positive about that results. Any color you could provide would be great.

Peter Vanacker
Frank, thanks for your question. And absolutely, I mean, you're right. I mean about what we said on Q3, I mean, we didn't call it guidance. But anyhow, the fact is, of course, I mean that during Q3, there were a couple of elements that happened in the markets. Like, for example, some of our peers had issues with their oxyfuels capacities. They had to take them offline. And due to the fact, of course, that we had our holy grail, I call it, of PO facilities in the world's successfully online, we were able, I mean, of course, to profit from that, not just I mean, with the volumes that we had available, but then also skyrocketing margins in that business.

So our team -- there's a lot of details behind it, I mean, how our team was able to steer that between the different regions. And it shows the agility that we have in that business that we -- with those huge capacities that we have available in different parts in the world that we can maximize also the value. Remember, this is a core part of growing and upgrading the core, the first pillar that we have in our strategy.

Now we've alluded also, if you talk about Q4, we've alluded to the fact that we have a normal seasonality in Q4. Kim also said with regards to Oxyfuels margins, they are higher, I mean, than what we have seen historically. We have the capacities, I mean, in place. But of course, one cannot always leverage on a situation whereby competition has issues, I mean, with their units. And therefore, we've said, I mean, margins in oxyfuels are going to be more, let's say, on an above historic level, but not on a peak level like it was in Q3.

And then as said, I mean, you know what is happening, I mean, at polyethylene and polypropylene and the olefins business. So I think we continue to be prudent when we are looking at Q4.

Operator
Thank you. Our next question comes from the line of Vincent Andrews with Morgan Stanley. Please proceed with your question.

Vincent Andrews
Thank you, just the Lombard ODA investment, is that purely a financial investment? Or do you have opportunity to interact with the companies and collaborate with the companies that are being invested in? And does that give you an edge on any potential new technologies or things like that?

Peter Vanacker
Yes. Thank you very much, I mean, Vincent, for that question. We've been, let's say, more strategic when we are looking at these kind of investments in funds. So of course, based upon our clearly articulated strategy at the Capital Markets Day, when we look at the second pillar of our strategy, building up a profitable circular and low carbon solutions business, it's clear that in that area, we are looking at enhancing also our knowledge on what is happening in the marketplace. So that fund ticks that box because we have more visibility on the market.

In addition to that, of course, we also want to make sure that we are supporting these early-stage technologies, companies that were in that fund so that they can continue to grow. So it is not a pure just venture financial investments. It's much more also looking at it from a strategic and conceptual point of view.

Operator
Thank you. Our next question comes from the line of Hassan Ahmed with Alembic Global. Please proceed with your question.

Hassan Ahmed
Good morning, Peter. A quick one. Recently in the news, there's been a lot of talk about lower water levels in the Mississippi. So I was just wondering whether that's impacting you guys in any way or form or broadly the industry as well?

Peter Vanacker
Thank you, Hassan, for your question. No impact, I mean, for our business.

Michael McMurray
No. We're fine.

Operator
Thank you. Our next question comes from the line of Aleksey Yefremov with KeyBanc Capital Markets. Please proceed with your question.

Aleksey Yefremov
Thanks, good morning everyone. Your Cyclyx announcement comes on the heels of many other acquisitions you've made in this area, and perhaps not one of them separately is very large. But I mean, it adds up to potentially quite a bit of capital. Could you provide any clarity on how much capital so far went into these acquisitions? And what would be the sort of the run rate going forward to spend on deals like this?

Peter Vanacker
Hey, Aleksey. Thank you for your question. Yeah, sure. The second pillar of our strategy, as I just mentioned, is mainly focused at the beginning on building up these renewable and circular hubs. One in Europe, and that is around Cologne, Wesseling, Knapsack where we have our assets. And the other one is around Houston, so HRO, Channelview.

The way how we have at the Capital Markets Day articulated our strategy is that we both go upstream in working together with partners, so also investing in the upstream to get access, I mean, to plastic waste because we do believe that getting access, I mean, to plastic waste is important.

Then secondly, investing in both mechanical recycling and then also advanced recycling, leveraging, of course, upon the relationship that we have with start-up companies, but also upon our own advanced catalytic recycling technology, the so-called *MoReTec* technology, with the two first investments no FID yet, that I have mentioned before.

And then thirdly, also, we are looking at or access that we have in the marketplace through our APS business. And here, we have done this Mepol acquisition so that we actually were closer to the brand owners, closer to the OEMs, where the demand is actually coming from. So we have the entire value chain where we are taking positions and that's why you see all these smaller deals that we are making because there is no one company that is covering the entire value chain or that is covering, let's say, the upstream or the downstream in the value chain.

We've said at the Capital Markets Day around 15% of our investments, maybe a little bit more than that 15% in the investments over the period of time that we were talking about, I mean, 2027, 2030. So pretty much, I mean, in that ballpark, has not changed our view substantially, but I said maybe a bit more than the 15% because we see that we have very good traction. Michael?

Michael McMurray
Yes, and then to specifically put a breadbox maybe around these investments, just to give people a bit more perspective. While they're important to the strategy, they're not material in amount. And so kind of what we've invested thus far is less than $200 million.

Operator
Thank you. Our next question comes from the line of Kevin McCarthy with Vertical Research Partners. Please proceed with your question.

Kevin McCarthy
Yes, good morning. Maybe two questions on your I&D segment, please. First, as I understand your comments on oxyfuels, it sounds like you expect profitability to regress based on butane and maybe some other factors. Have you seen that already in October? Or is that just an expectation for the future? Would be the first question. And then secondly, are your PO/SM plants still down? Or have they come back up? And maybe you can help us with the timing of those outages 4Q versus 3Q in terms of sequential modeling considerations.

Peter Vanacker
Thank you, Kevin, for your questions. I mean, remember, I mean, oxyfuel margins what we said in Q3 were exceptional, but we continue because we are the lowest cost producer. We continue to be very comfortable, I mean, with higher margins than what we have seen historically.

So I will lead it to Kim to answer in more detail your two questions.

Kim Foley
Absolutely. So let's talk about the profitability of oxyfuels first. So some of the key drivers for the profitability there would be the price of crude, would be your gasoline cracks, would be your ratio of crude to butane, as well as the premium that the market will pay to put octane into the gasoline pool. So what you really saw blow out in the third quarter was that premium that people wanted to get that octane into their gasoline pool.

So to answer your question as it relates to October, yes, we've seen that premium come down. We’ve seen some volatility in crude, right? But that's why we're saying they're higher than historical, but not the peaks that we saw in the third quarter.

And then to answer your question on PO/SM operating rates, the guidance that we've given earlier in the presentation was 70% operating rates for the fourth quarter. So we have two of our PO/TBA plants down and we've got our PO/SM plants up to meet that 70% operating rate.

Peter Vanacker
And as you can see, I mean, we have the investments on the PO/TBA plant is a very successful investment as we are running at 70% in total of our capacity. That gives us a huge opportunity also to continue to grow. And again, that fits them into the first pillar of our strategy, growing and upgrading the core because these are markets that are growing.

Operator
Thank you. Our next question comes from the line of Arun Viswanathan with RBC Capital Markets. Please proceed with your question.

Arun Viswanathan
Great. Thanks for taking my question. I just wanted to, I guess, get some more detail on your thoughts on how you're thinking about polyethylene markets from here. So as you noted, there were the two increases for August and September. But we're still seeing some challenging conditions in China, and then some new, absorption of new capacity. So as you look into '24, do you think that we've bottomed out on PE markets and we should see some sustainable increases here? How would you characterize that with, against the backdrop of U.S. demand and your operating review as well? Thanks.

Peter Vanacker
Before I lead, I mean, to Ken to answer that question, I mean, the comfortable, I mean, the positive thing that we have seen is, of course, that continuously PE exports have gone up during the last quarter. So that is, of course, a positive sign. But one would need to, of course, also look at additional capacity that has come in the markets or that has not really hit the markets because of some perceived, I mean, what we're reading the paper technical difficulties. Ken?

Ken Lane
I'll just add to that, Arun, that we're seeing very good support for those exports with a high oil to gas ratio that we expect is going to continue, especially with the volatility around oil markets and gas production being relatively robust. So we do feel good about what's happening in the North American market.

Europe is going to continue to be very challenged in terms of demand. That is still significantly down, mainly because of the inflation impacts, but also the margins are challenged there with the higher naphtha pricing that we saw. So we've got good momentum coming out of the third quarter going into fourth quarter, seeing some signs of growth in China and really a very challenging market that's going to continue in Europe.

Operator
Thank you. Ladies and gentlemen, our final question this morning comes from the line of Joshua Spector with UBS. Please proceed with your question.

Joshua Spector
Yeah, hi, thanks. Actually I want to follow up on the last point that when you're looking at China. I think -- can you give us an update on what you're seeing in terms of inventory? And are we over the hump on the capacity additions there? Or does that impact the shape of the curve as we go into next year? What's your view around that? Thanks.

Peter Vanacker
Thank you, Josh, and going to take that to Ken because that's related, I mean, then to PE, your question.

Ken Lane
Yes. So Josh, we're still going to see more capacity coming online next year, and that's why we're going to kind of be bouncing along the bottom, overall, as an industry, I think, first half of next year. And then the hope is in the back end of next year, we start to see some recovery as the market growth comes back to absorb the additional capacity, but there's going to continue to be pressure around new capacity coming in, and that's going to be the biggest watch out for us.

Peter Vanacker
Yes. You see, I mean, that from Beijing, there is continuously evaluations and incentives that are being put in place. We don't see the construction market now picking up yet. But if you then look, for example, in China, automotive has been 10% year-on-year increase and EV has actually been closer to 40%.

But on the other hand side, I mean, we see the consumers continue to save, I mean, a lot of money. So savings continue to be at a high level. But more and more of these incentives, one would expect and, of course, also that the confidence will grow in the population in the middle class. And that, of course, would have then its influence on their spending on durable goods as well.

Operator
Thank you. Ladies and gentlemen, I'm showing no other questions at this time. I'll turn the floor back to Mr. Vanacker for any final comments.

Peter Vanacker
Thank you, again. Very good questions. And let me highlight again that we are very pleased, I mean, with the results, considering the market environment that we are in Q3. Great job that has been done by all the teams. We, of course, continue to look forward to sharing updates over the coming months as we continue to also make progress on the implementation of our long-term strategy. We hope you all have a great weekend and a safe one. Therefore, we wish you a great weekend. Stay well and stay safe. Thank you.

Operator
Thank you. This concludes today's conference call. You may disconnect your lines at this time. Thank you for your participation.