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PRESENTATION

Operator

Good day, and welcome to Dow's Third Quarter '22 Earnings Call. (Operator Instructions). I will now hand over to Pankaj Gupta, Investor Relations Vice President.

Pankaj Gupta ***Dow Inc. - VP of IR***

Good morning. Thank you for joining Dow's third quarter earnings call. This call is available via webcast, and we have prepared slides to supplement our comments today. They are posted on the Investor Relations section of Dow's website, and through the link to our webcast. I'm Pankaj Gupta, Dow Investor Relations Vice President. And joining me today on the call are Jim Fitterling, Dow's Chairman and Chief Executive Officer; and Howard Ungerleider, President and Chief Financial Officer. Please read the forward-looking statement disclaimer contained in the earnings news release and slides.

During our call, we will make forward-looking statements regarding our expectations or predictions about the future. Because these statements are based on current assumptions and factors that involve risks and uncertainties, our actual performance and results may differ materially from our forward-looking statements. Dow's Forms 10-Q and 10-K include detailed discussions of principal risks and uncertainties which may cause such differences. Unless otherwise specified, all financials, where applicable, exclude significant items. We will also refer to non-GAAP measures. A reconciliation of the most directly comparable GAAP financial measure and other associated disclosures is contained in the Dow earnings release, in the slides that supplement our comments today as well as on the Dow website.

On Slide 2, you will see our agenda for the call. Jim will begin by reviewing our third quarter results and operating segment performance. Howard will then share our outlook and modeling guidance. And then to close, Jim will discuss how our actions and long-term strategic priorities enable us to deliver value growth in a dynamic environment. Following that, we will take your questions.

Now let me turn the call over to Jim.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Thank you, Pankaj. Beginning on Slide 3. In the third quarter, Team Dow continued to proactively navigate higher energy costs and geopolitical uncertainties that are impacting consumer demand, particularly in Europe. As macroeconomic conditions began to erode in the quarter, we responded quickly by implementing a set of actions to prioritize resources toward hiring products, align production rates to supply chain and logistics constraints as well as demand, and reduce operational costs across the enterprise. In addition, our advantaged portfolio enabled us to capitalize on demand strength in higher-value functional polymers in Packaging & Specialty Plastics and performance silicones in Performance Materials & Coatings.

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Third quarter net sales were $14.1 billion, with sales declines of 5% year-over-year and 10% quarter-over-quarter. Local price increased 3% year-over-year with gains in Performance Materials & Coatings and Industrial Intermediates & Infrastructure. Sequentially, price declined 6% and was down across all operating segments and regions. Volume was down 4% versus the year ago period as declines in Europe, the Middle East, Africa and India, or EMEAI, more than offset volume growth in the U.S. and Canada and Asia Pacific. Sequentially, volume was down 3%, led by EMEAI. Continued strength of the U.S. dollar also impacted net sales by 4% year-over-year and 1% sequentially. Operating EBIT for the quarter was $1.2 billion. Our consistent focus on cash flow generation and working capital management in the quarter supported cash flow from operations of $1.9 billion or a conversion of 104% of EBITDA and free cash flow of $1.5 billion. We returned $1.3 billion to shareholders in the quarter, including $800 million in share repurchases and $493 million in dividends. And our balance sheet continues to have no substantive long-term debt maturities due until 2027.

Turning to our operating segment performance on Slide 4. In the Packaging & Specialty Plastics segment, net sales were $7.3 billion, down 5% year-over-year as price gains and resilient demand in functional polymers were more than offset by lower polyethylene pricing. Sequentially, net sales were down 11%, also driven by lower polyethylene prices with reduced volumes as we decreased operating rates in response to both continued global marine pack cargo logistics constraints and lower demand in EMEAI. Operating EBIT for the segment was $785 million compared to $2 billion in the year ago period and $1.4 billion in the prior quarter. These results were impacted primarily by higher raw material and energy costs and lower local prices.

Moving to the Industrial Intermediates & Infrastructure segment. Net sales were $4.1 billion, down 9% from the year ago period, with price gains in both businesses. Volume was down as strong demand for pharmaceutical, agricultural and energy applications in Industrial Solutions were more than offset by declines in polyurethanes and construction chemicals due to inflationary pressures in EMEAI, decreased consumer durable demand and the slowing housing market. Sequentially, net sales were down 7% at stable volumes, primarily in mobility end markets were more than offset by lower local price and currency. Operating EBIT for the segment was $167 million compared to $713 million in the year ago period, and $426 million in the prior quarter as lower EMEAI demand and increased energy and raw material costs were partly offset by higher prices. Sequentially, operating EBIT margins declined by 560 basis points on lower price and higher energy costs.

And in the Performance Materials & Coatings segment, we reported net sales of $2.7 billion, up 5% year-over-year with price gains in both businesses and all regions. Volume was down as resilient demand in mobility and home care end markets were more than offset by declines in building and construction. Sequentially, net sales were down 12% driven primarily by lower demand and decreased local price for siloxanes due to supply additions in China as well as planned maintenance turnaround activity. Operating EBIT for the segment was $302 million compared to $284 million in the year ago period as margins expanded by 20 basis points due to price gains for both silicones and coatings applications. Sequentially, operating EBIT declined $259 million, driven by lower prices for siloxanes and increased raw material and energy costs.

I'll now turn it over to Howard to review our outlook and actions on Slide 5.

Howard I. Ungerleider ***Dow Inc. - President & CFO***

Thank you, Jim. Turning to Slide 5. In the fourth quarter, we expect to continue navigating high inflation, supply chain constraints and the impact of geopolitical tensions. In Europe, high energy and feedstock costs are driving record Eurozone inflation, reaching a new high of 10% in September. As a result, we see reduced industrial production and consumer spending.

In China, COVID-19 related lockdowns continue to hinder economic activity with weaker-than-expected regional consumer spending and infrastructure investments. That said, we're seeing continued strength in the mobility sector with automotive sales up more than 25% in September year-over-year.

In the U.S., healthy consumer spending and low unemployment rates have supported resilient underlying demand despite high inflation, with U.S. consumer confidence rising in September for the third consecutive month. Looking forward, we're closely monitoring the impact of rising interest rates on demand.

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And in Latin America, we continue to see robust demand for flexible food packaging and consumer durables, as well as transportation and infrastructure end markets.

To manage these evolving dynamics, we continue taking actions region by region and business by business. Throughout the third quarter, Dow implemented plans to reduce natural gas consumption at our sites in Europe by more than 15% due to high energy costs. In August, we also temporarily lowered our polyethylene nameplate capacity by 15% and have now implemented a cold furnace idling program at our crackers for fixed and energy cost savings. In parallel, we continue to prioritize higher-margin functional polymers to capitalize on continued demand strength while working to ease logistics constraints along the U.S. Gulf Coast.

We're also reducing operating rates and shifting production across polyurethane, siloxane and acrylic monomer assets in Europe to manage our costs and our inventory levels. And as we plan for next year, we have additional actions focused on production optimization, turnaround spending and reductions in purchased services with the potential to deliver more than $1 billion in cost savings on a run rate basis.

Turning to Slide 6. You'll see our current expectations for the fourth quarter. In the Packaging and Specialty Plastics segment, we see stable demand for consumables and food packaging applications. We anticipate global energy markets to remain volatile in response to geopolitical dynamics, as well as weather in the Northern Hemisphere and continue to expect lower consumer spending, primarily in Europe. While lower turnaround costs will be a sequential tailwind, in total, we expect $150 million seasonal headwind for the segment versus the prior quarter.

In the Industrial Intermediates & Infrastructure segment, demand for energy applications, particularly in the U.S. and a seasonal increase in de-icing fluid demand are expected to positively impact the quarter. Inflationary pressures, however, continue to impact consumer durables and building and construction demand, particularly in Europe. We also expect continued pressure on propylene oxide and MEG margins due to increased supply from producers in Asia. After completing major planned maintenance activity in the prior quarter, on a net basis, we expect similar dynamics with a typical seasonality on a sequential basis.

In the Performance Materials & Coatings segment, demand for personal care and mobility applications remains stable as consumers move toward holiday season buying patterns. However, we also anticipate a seasonal decline in demand for coating applications. Lower spending on planned maintenance activity will partially offset margin pressure from supply of both siloxanes and acrylic monomers from Asia, particularly to Europe. All in, we anticipate a $250 million headwind for the segment.

So in total, for the fourth quarter, we expect a $400 million net EBITDA headwind compared to the third quarter. We have also provided updates to the full year modeling inputs in the appendix of the presentation. Equity earnings have been revised to align with the current market conditions and the weaker margins in Asia. We've lowered full year CapEx from $2.1 billion to $1.9 billion, and the full year tax rate is now expected to be slightly higher than our prior guidance due to the geographic mix and lower equity earnings. This upward pressure on the full year rate is also expected to increase the fourth quarter tax rate to account for the typical year-to-date true-up.

With that, I'll turn it back to Jim.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Thank you, Howard. Turning to Slide 7. As a result of our actions over the last several years, we've created a streamlined portfolio with unique levers to manage through the current macro backdrop. We have global scale and leading positions across a diverse set of attractive market verticals, geographies and value chains. This gives us significant flexibility to quickly respond to evolving demand trends and capture demand better than our peers. 65% of our production capacity is in the cost advantaged Americas, and we have 2x to 3x more LPG flexibility in Europe versus our peers. Our advantaged cost position and unmatched feedstock and derivative flexibility enables us to optimize our margins. And our commitment to operational and financial discipline underpinned by a culture of benchmarking and a best owner mindset have resulted in a low-cost operating model and strong cash conversion. These advantages have served us well since spin, providing a solid financial foundation that supports long-term value creation despite the current unprecedented events impacting the market.

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Importantly, our early cycle growth investments and our efficiency programs are enabling us to raise our underlying mid-cycle earnings above pre-pandemic levels. We've nearly tripled our 3-year trailing cumulative free cash flow since spin across a variety of macro environments, and we'll continue to execute on levers to drive even higher cash flow, including working capital improvements, joint venture dividends and cash interest savings. And our balance sheet is now the strongest it's been in my more than 35 years with the company, creating a solid financial position that offers significant flexibility.

The combination of robust cash flow generation and a strong credit profile enables us to deploy capital in a disciplined and balanced manner as we advance our decarbonize and growth strategy while also consistently returning cash to our shareholders through the economic cycle.

Moving to Slide 8. In 2022, we expect to deliver an incremental underlying EBITDA run rate of approximately $300 million to $400 million comprised of $300 million from growth initiatives across our operating segments, as well as $50 million to $100 million from efficiency levers. We have 2 consolation investments coming online this year to serve high-value home care and pharma end markets. Our 60-kiloton project in the United States started up in the third quarter, and our 34-kiloton project in Spain is on track to start up in the fourth quarter. Our 150-kiloton FCDh pilot plant in Louisiana is also on track to start up in the fourth quarter. And year-to-date, we have completed 13 downstream silicones debottlenecking projects. Longer term, we remain on track to grow underlying EBITDA by greater than $3 billion by 2030, while reducing our carbon emissions by 30% versus our 2005 baseline.

Our suite of higher return, lower risk and faster payback investments will deliver $2 billion in additional run rate EBITDA while we also reduce our carbon emissions by approximately 2 million metric tons by the middle of this decade. These investments target higher-value applications that enable us to capitalize on increasing demand for more sustainable and circular solutions.

Let me highlight a couple of examples. Our ENGAGE elastomers, increase the lifetime of solar panels and enable over 50 gigawatts of solar power generation around the world. And we recently launched SiLASTIC, the world's first silicone-based self-sealing tire solution that can be easily recycled, which is being commercialized in upcoming Bridgestone tires under the technology name B-SEALS. We also remain on track to reach preliminary investment decision by year-end for our Path2Zero project in Alberta to build the world's first zero carbon emissions, ethylene and derivatives cracker complex, which will grow our global polyethylene supply by 15% while decarbonizing 20% of our global ethylene capacity. This project will generate an additional $1 billion of underlying EBITDA by 2030.

As we deliver on our growth strategy, we remain committed to the disciplined and balanced approach to capital allocation that has served us well since spin. Our first priority is to maintain safe and reliable operations. We continue to advance our growth investments with CapEx at or below D&A and drive return on invested capital greater than 13% across the economic cycle.

With adjusted debt-to-EBITDA inside our long-term target range of 2x to 2.5x, we have the financial flexibility to deploy cash to maximize long-term shareholder value creation, and we're targeting to return 65% of our operating net income to shareholders. Since spin, we've exceeded this target, returning an average of 78%.

Turning to Slide 9. Despite near-term macroeconomic challenges, innovating circular and sustainable solutions remains a key aspect of our long-term decarbonize and growth strategy. We see increasing demand for these products, which represent a significant growth opportunity for Dow with attractive pricing that will support longer-term higher quality earnings. We have continued to accelerate our actions to capitalize on this opportunity and create a circular economy.

And we recently announced a new commitment to commercialize 3 million metric tons of circular and renewable plastic solutions annually by 2030. This new goal expands our sustainability targets and our focus on advancing a circular plastics business platform to meet our customers' increasing demands for more sustainable and circular products, as evidenced in the recent letter published by the Consumer Goods Forum citing demand for advanced recycled plastic material.

To achieve this goal, we will exceed our original target to enable 1 million metric tons of plastic waste to be collected, used, reused or recycled. And we're well on our way as we scale a robust pipeline of more than 20 strategic collaborations to enable recycling infrastructure, to partner across the value chain to bring hard-to-recycle waste into the circular economy and to help communities

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address waste management and recycling gaps. This includes our most recent and significant commitment to date to scale advanced recycling with Mura Technology, which positions Dow to be the largest consumer of recycled plastic feedstock for polyethylene globally.

These collaborations are a unique advantage as demand for circular solutions continues to grow. When you consider together the circular and renewable sales target, along with the additional capacity from our Alberta project, in 2030, our combined circular, renewable and zero carbon emissions capacity will comprise greater than 50% of our global polyethylene capacity.

I'll close on Slide 10, our strategic priorities remain unchanged. We will continue to operate with agility as we navigate the current market dynamics as evidenced by our recent actions to balance production while ensuring we remain well-positioned to capture demand as market conditions improve. At the same time, we remain focused on executing our long-term growth strategy, expanding our competitive advantages, and delivering on our financial priorities to position the company for long-term success.

With that, I'll turn it back to Pankaj to open up the Q&A.

Pankaj Gupta ***Dow Inc. - VP of IR***

Thank you, Jim. Now let's move on to your questions. I would like to remind you that our forward-looking statements apply to both our prepared remarks and the following Q&A.

Operator, please provide the Q&A instructions.

QUESTIONS AND ANSWERS

Operator

(Operator Instructions) We will take the first question from P.J. Juvekar from Citi.

Prashant N. Juvekar ***Citigroup Inc., Research Division - Global Head of Chemicals & Agriculture Research and MD***

Good morning Jim and Howard, with the IRA and CCS credit going to $85 per ton, are there any projects in CCS that you could deploy at your existing plants that come into the money now that weren't there before? And then secondly, on Europe, would you accelerate -- incrementally, would you accelerate CapEx in the U.S. given the situation Europe is in? And then if Europe is not producing much chemicals, how does that impact in your mind, sort of the downstream automotive, building and construction businesses in Europe?

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Good morning P.J., 2 really good questions. I think when we look at the IRA, which has a lot of good elements in it for our sustainability agenda, both hydrogen and CCS, as well as advanced nuclear. The challenge right now is where do you have the availability of the existing pipeline infrastructure to get carbon off of an existing asset into a CCS category. That's why we put the project in Terneuzen and the project in Alberta first because we have existing capacity there. And I should say, in Terneuzen not yet, but Terneuzen has got a plan in place to get it in place. This is going to help us get some infrastructure in place in the U.S. Gulf Coast, so we'll make that possible. And as that becomes available, we'll look at accelerating deployment here in the U.S. Gulf Coast. And I would say $85 a ton, we think long term, those numbers are probably going more towards $100 a ton or higher. And that should really help accelerate hydrogen and CCS.

On CapEx in the U.S. and the future of chemicals in Europe, third quarter, the 2 big challenges we had were -- the biggest was primarily electricity related. In third quarter, you saw European electricity cost go as high as EUR 400 a megawatt hour. They've come off a little bit now because natural gas has come off. About half of our footprint in Europe has advantaged electricity. So what we did in the quarter was bring down rates to the advantaged positions. We're kind of running breakeven in Europe and obviously load other assets with that demand. I think in the short term, you're seeing more product flow into Europe from the Middle East and some right now from China. I think longer term, we're working with the governments through energy policy changes that are going to help. One of the reasons we announced the project in Stade, one of the 5 floating re-gas units that will be put in Germany to really help Germany diversify away from just solely Russian gas. I think the European question long term will be in front of us through next year. But in the short-term, we've got a good game plan to navigate the winter and to navigate next year, and that's why we announced the $1 billion worth of cost reductions for 2023.

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Operator

We will now take the next question from Hassan Ahmed from Alembic Global Advisors.

Hassan Ijaz Ahmed ***Alembic Global Advisors - Partner & Head of Research***

Morning Jim and Howard, just trying to reconcile the Q4 guidance you guys have given. It seems to me you're guiding, doing EBITDA of roughly $1.45 billion. If that is the case, I'm just trying to sort of understand what sort of polyethylene pricing you're baking into that guidance. Because it just seems that there's some price hikes on the table, some consultants are out there sort of doubting some of those price hikes going through. So if you could provide any color around that.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Thank you Hassan, good question. Obviously, we saw pricing in polyethylene through the third quarter decline. It started to stabilize at the beginning of the fourth quarter, most of what's in that fourth quarter outlook is more stable pricing in polyethylene. But you get the dollar averaging that happened through the quarter. So we start to lower pricing, and it carries through the quarter. Inventories came down on the Gulf Coast, stepped down from the high levels that they were in the third quarter, and so that's helping. And we've seen some better marine pack cargo logistics.

We had good volumes out in the third quarter. We could have done more. And so we're continuing to try to work on the logistics constraints. And so most of what's in there is dollar averaging, more stabilized pricing, and then a little bit of tailwind because we have lower turnaround costs into the fourth quarter for polyethylene.

The other thing I would mention is that input costs are starting to look more favorable. We started to see a little bit of improvement in the ethylene chain. Oil is obviously -- oil inventories continue to be low and natural gas production continues to be higher. And so that's positive, skewed -- I'd say the estimates skewed to the upside if oil and gas continue on these trends.

Operator

We will now take the next question from Jeff Zekauskas from JPMorgan.

Jeffrey John Zekauskas ***JPMorgan Chase & Co, Research Division - Senior Analyst***

Two questions. Can you talk about MDI prices and volumes sequentially and your general expectations? And secondly, in Performance Materials, there seems to be a fair amount of pressure in siloxane prices. Are we entering some kind of cyclical downturn in that business? And so what we should expect is a relatively level, level of earnings from the fourth quarter going forward.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Jeff, thank you for the question. On MDI and Industrial Intermediates & Infrastructure, the supply-demand balances through the middle part of the decade look good on MDI, where we've seen market weakness is in consumer durables. Mobility has held up pretty well. Electric vehicles are really probably the shining star on growth in that space. But it's housing and construction where we've seen the biggest weakness and then, of course, appliances closely related to that. I would also say what you see in the numbers and what you see in the guide, remember that we have quite a bit of footprint in Europe. And so with the energy situation there that just really compresses the margins there. I think it's less of pricing and less -- that issue than it is the input cost issue. So that's why we brought rates down to low levels in Europe.

China also seeing housing and construction slow. And so I think we'll see what happens after we come out of this Party Congress and whether we see a change in COVID restrictions that might signal that 2023 would be better.

And siloxanes capacity has come on in China, and that's really what's brought the prices down. And we're really back to the kind of the long-term mid-cycle average prices for siloxanes in the marketplace. And yes, we expect that will continue into 2023. And so I think it's more the timing of the supply coming on that's put that pressure on.

Operator

We will now take the next question from David Begleiter from Deutsche Bank.

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David L. Begleiter ***Deutsche Bank AG, Research Division - MD and Senior Research Analyst***

Howard, just on modeling guidance, does the $400 million of sequential EBIT headwinds fully capture the seasonality in Q4? And is there any benefit in the guidance from the $1 billion of cost savings you highlighted today as well?

Howard I. Ungerleider ***Dow Inc. - President & CFO***

David, so yes, look, at an enterprise level, the short answer to your question is it does. So the $400 million net of really EBITDA decline. I would call half of that is enterprise level seasonality or typical Q3 to Q4 seasonality, and the other half is the averaging effect of the margin decline that we saw through the third quarter. And then you've got 2 pieces that are kind of offsetting each other. The higher -- the more favorable turnarounds or the lower turnarounds that Jim mentioned that are getting offset by some currency headwinds that we're seeing sequentially.

Embedded in that are some of those interventions that we listed in the slide that's in the earnings deck. So we are already and have been intervening since the beginning of the third quarter. So we're going to see that continue through the fourth quarter, and then obviously, in a bigger way next year.

Operator

We will now take the next question from Vincent Andrews from Morgan Stanley.

Vincent Stephen Andrews ***Morgan Stanley, Research Division - MD***

Just wondering if you can talk a little bit more about sort of the delta between what you think underlying demand is versus maybe some destocking that's going on just given all the macro uncertainty out there. And part of what I'm getting at is you've obviously made some seasonality assumptions sequentially from 3Q to 4Q. Just trying to understand how much of what we've seen already in terms of weak demand might have been a pull forward of what we might have previously thought could have happened more traditionally in November and December. So just sort of any comments you have helping us bridge sort of the weak volume with destocking versus underlying demand would be helpful.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

That's a good question, Vince. Obviously, the retail sector saw a lot of higher inventories and pullback. I would say, in automotive, things are still restricted primarily by those supply chains of all the different various parts coming together so the auto companies can make their deliveries. That probably shows up more on internal combustion engine vehicles, somewhat on EVs. But EV growth in the U.S. and EV growth in China have been really, really strong. So I think that's going to continue to be good. Our outlook for automotive next year is 86 million light vehicles, up from 80 million projection this year. I think that's good.

Packaging, I don't think we saw a lot of destocking in packaging in the market. I would say we saw adjustment to lower operating rates because of the slowdown of demand in EMEAI. EMEAI being off 12% was a significant slowdown. Consumer pressures in EMEAI are much stronger than even the consumer pressures here and they're significant.

The durable goods and the consumer electronics is a tough one to call. They're pretty tightly connected to housing. China housing is down 38%. Their housing starts are down 38% year-over-year. So that's a pretty low level. I'd say there's opportunity for upside going into next year. The U.S. has slowed down, but we're still working off of finishes of houses that are under construction. And so I think the general consensus is demand is a little bit slower for 2023 on housing here. The other bright spot is infrastructure. And so for those businesses that are tied to infrastructure, we still see very good infrastructure spending.

Operator

We will now take the next question from Michael Sison from Wells Fargo.

Unidentified Analyst

This is Richard on for Mike. Just wanted some color on the $1 billion in cost savings for 2023. Is any part of this embedded in the $3 billion to $3.9 billion that you're targeting to increase sort of your earnings range through the cycle? And also, is that -- does that also include the temporary 15% reduction in polyethylene and maybe additional reductions in capacity potentially in maybe II&I?

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James R. Fitterling ***Dow Inc. - Chairman & CEO***

Yes, it's a good question, Richard. So our target is to come up with more than $1 billion in cost saves. I would break it down into a few different buckets for you. One is what we can do with optimizing our mix. So flexing the assets across geographies and product and application mix to actually improve margins. The second would be what you talked about in terms of planned idlings or shutdowns. Right now, we don't have anything lined up for shutdowns, but we obviously reduced rates for higher cost plans, and we'll continue to do that, especially in Europe, while energy costs remain as high as they are.

And then we're working on always things to drive operational excellence. And the other big moving part next year is we're going to reduce turnaround spending. We're starting to see commodities come down and input costs come down and some relief on freight and logistics costs. So we've got a big effort on purchased materials and freight and logistics to get costs down, and also on purchase services, including contract labor. And then we've been implementing digital and acceleration of finishing those projects, delivers bottom line margins and productivity to us. So those are really the 5 big buckets that we're working on.

The target here, if you look at the earnings corridor that we published back at Investor Day, our 2023 lower end of that corridor is about $7.2 billion. So our efforts here are really driven to protect that earnings corridor that we put out there. A lot of the Path2Zero project growth in that earnings corridor, the Alberta project, which is $1 billion of underlying EBITDA growth, starts in 2027. That project will come on in 2 phases between 2027 and 2030. But the other $2 billion comes on through the years as we bring on these smaller, higher return, lower risk projects.

Operator

We will now take the next question from Kevin McCarthy from Vertical Research Partners.

Cory Murphy ***Vertical Research Partners, LLC - Analyst***

This is Cory on for Kevin. Turning back to a question on the outlook, you had mentioned benefits in the ethylene chain. What are you baking into your 4Q outlook as it relates to ethane costs? And what is your view in light of today's natural gas market backdrop? And then for the cold furnace idling program, can you talk through or quantify what impact you expect it to have on fixed cost absorption at your reduced plants?

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Right. That's a good question on ethane. I mentioned natural gas earlier. So gas production continues to be high, more than 0.5 million barrels a day of ethane in rejection. That has really brought the frac spreads down. And so we've seen frac spreads come back down to about $0.33, 1 million BTU. So off of some of the highs that we saw in first, second quarter. And I think our projection is it's going to continue to be that way. Natural gas productions and a 100 Bcf a day right now, and the outlook for next year is 110 Bcf a day. There will be plenty of ethane available. So I think our feeling is we expect through winter $0.40 to $0.60 a gallon on -- depending on what happens with winter gas demand. That's really where it was $0.35 to $0.65 in third quarter. And I think next year, we're going to see continued availability and lower pricing on ethane.

In terms of the cold furnace idling, I don't have a good number for you to estimate what that is. Essentially, the practice historically would have been to keep those assets on hot standby and ready to go, but with the slower demand, there's no need to do that. And with these higher gas costs, taking them cold and then warm them back up is not going to penalize us in the marketplace.

Operator

We will now take the next question from Steve Byrne from BofA.

Matthew Porter DeYoe ***BofA Securities, Research Division - VP***

It's Matt De on for Steve. Can we talk about the trend in functional polymers a bit? I think price was up year-over-year, but sounds like maybe down sequentially. Did margins in that business improve quarter-over-quarter with base commodities deflating? And when we look at 4Q, did that performance catch up on the downside, or do you still think things should hold in pretty well?

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James R. Fitterling ***Dow Inc. - Chairman & CEO***

Yes, thank you. Good question. Prices typically are pretty resilient through the cycle in that space. We saw prices flat really from quarter-to-quarter. And so that margin declined a little bit because of the higher energy and raw material costs, but the demand continues to be good. Demand in areas like commercial construction, which is holding up relatively well, mixed use, both residential and commercial buildings are holding up pretty strong around the world, and that takes a fair amount of material. Obviously, products into automotive are holding up pretty well. And then energy, energy infrastructure takes a lot from the wire and cable business, and that continues to hold up well. So I think what you'll see is they can -- the margins can ebb and flow a little bit, but the volumes and the price trends are very strong.

Operator

We will take the next question from John Roberts from Credit Suisse.

Matthew Stephen Skowronski ***Crédit Suisse AG, Research Division - Research Analyst***

Morning Jim and Howard, this is Matt Skowronski on for John. Some of the consultants have reported that polyethylene storage levels are very high in North America. Would you consider taking operating rates lower than the 15% reduction you've already taken if demand weakens further? And then sitting here today, do you think it's possible that further reductions in production will need to happen, either through the end of this year or early 2023?

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Thanks for the question. I think the storage levels primarily at the ports are waiting for ships to arrive to get the product out, a lot of that product is packaged for the export market. So it isn't that, that product is going to magically turn around into the North American market. And with what we see with demand growth in the North American market, I don't see a reason to reduce operating rates any further. I'd also say Latin American business is holding up relatively well. So that gives us some opportunity as well. I think it's going to be worked out as we get better ship arrival times and better loading, I think you're going to see those numbers deplete pretty quickly.

Howard I. Ungerleider ***Dow Inc. - President & CFO***

I would just also add the latest ACC data says that inventory levels actually decreased by 7% or about 4 days month-on-month. So I mean, I think you still see fundamental demand in the United States and Canada hanging in there.

Operator

We will now take the next question from Christopher Parkinson from Mizuho.

Christopher S. Parkinson ***Mizuho Securities USA LLC, Research Division - MD and Senior Industrials Equity Research Analyst***

I was just wondering if you can parse out a little bit what end markets and regions you saw the biggest shift in demand versus kind of your original expectations in the second quarter and how those areas are trending into the fourth quarter. Is there any area where you're more optimistic or more concerned as we head into the end of the year in 2023?

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Good question, Chris. So areas of strength are industrial electronics and think about telecom, 5G infrastructure data centers -- and that continues to be pretty good. There can be some supply chain constraints there, but are pretty strong. In Industrial Solutions, we make intermediates and incipients for the pharma industry. That demand has been strong. We're looking at greater than 7% compound average growth rates through 2026. And so that's -- I think that's going to continue. Industrial Solutions in general, I would say, has good growth trends in silicones, downstream silicones in general have good growth trends.

Automotive, we're seeing some supply constraints easing -- and even though sales this year, deliveries this year are flat year-over-year, really robust EV growth, especially in China. If you look at China, EVs are up 90% year-over-year, and automotive in China is up 25% year-over-year. I think that's a bright spot we expect to continue. EVs in the United States are also strong, and I expect that to continue. That's good for us because 2x to 3x more silicon materials in the EVs and similar amount of materials that we would have in internal combustion engine for things like controlling noise, vibration and harshness.

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Infrastructure is going to continue to be strong. And there are stimulus packages out there, many governments around the world, and that tends to pull a lot in functional polymers, which we just talked about. It will pull some polyurethanes and construction materials that will pull some in coatings in that infrastructure space and some in Dow Industrial Solutions.

In plastics, it tends to pull in things like water pipelines, natural gas pipelines. I think we'll continue to see that grow. Steady markets, I would say, would be oil and gas. We're starting to see an uptick in oil and gas production, that pools means from our Industrial Solutions business. Personal Care has been very resilient. Cosmetics have come back after a soft second quarter in China. And packaging for food. So the issues in packaging are really more, not demand, but really more, the higher energy cost and slowing economic activity in Europe.

And then places where I mentioned before a week are related to housing and big ticket items. So appliances, food and beverage activities like furniture and bedding -- I mean, not food and beverage. Appliances and furniture and bedding slowed down third quarter and in the fourth quarter. And then consumer electronics slowed down as well, large TVs, large home PCs and electronic devices. Residential softening here in the U.S. Europe, also in China, but commercial construction has been relatively good, mixed residential and commercial buildings, especially in big cities. I think next year, India, U.S., Canada, Latin America will be bright spots. We'll still have to manage through Europe and the situation with Russia, Ukraine having the biggest impact there. And then China, we had our best quarter in China. We were up 13% quarter-over-quarter and 7% year-over-year in volume. -- and could have been better with the ability to get more plastics out of the Gulf Coast. So I think there's been a lot of concern about what they've reported or not reported. But our view is that demand has been good.

Operator

We will now take the next question from Josh Spector from UBS.

Joshua David Spector ***UBS Investment Bank, Research Division - Equity Research Associate - Chemicals***

So I was curious if there is a way to think about the cost you guys are absorbing in Europe from higher energy. So if we think about 3Q and 4Q expectations versus the level of 2Q, is there any way to quantify how much you feel like you've had to absorb and not be able to kind of shift away from flexing your production or through pricing or other means? So if pricing or energy prices were to move down but demand environment remains similar, how do you think that will play out?

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Simple answer, 2/3 of the total EBITDA decline in the third quarter, whether it was versus previous quarter or last year, was in EMEAI, and that's the impact of high inflation, elevated energy costs on our raw materials and then what that high inflation has done to consumer demand in EMEAI. Volume was down 12% in the quarter in EMEAI.

Operator

We will now take the next question from Arun Viswanathan from RBC Capital Markets.

Arun Shankar Viswanathan ***RBC Capital Markets, Research Division - Senior Equity Analyst***

So my question is around North America and potential -- your outlook there. I know Europe was responsible for 2/3 of the weakness in Q3. And it's likely been the case for a little while now. Are you at all concerned of a weakness that could emerge in North America? Is North America just a little bit behind Europe and China and the weakness that you're seeing there? I mean, I guess, you're not seeing China weakness, but on Europe? And what are some of the factors that would differentiate and keep North America a little bit more resilient? Maybe you can touch on inventories or supply/demand or anything else.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Well, the cost position that we have in the Americas is very advantaged. And so I think that's the most important thing to keep in mind. The consumer demand has been strong, especially consumer nondurables, consumer discretionary has been good. I would say big ticket items, like I mentioned, have already slowed this year. So if anything, there's a chance for upside next year. I think that same is true on automotive. Automotive has really been supply constrained. And so we get through some of that, and we'll start to see that move up.

We're starting to see -- and here I'm not talking just about Dow's business, but we're starting to see prices come down in bulk

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commodities. It takes those prices a while to work through the fabrication shops and get themselves into the price of a product that a consumer would buy in the store. So those prices have come down through the year, and I think you'll start to see those show up in the consumer markets next year. And that may actually help things improve.

European energy situation is totally different than the United States. And right now, we're trying to work through how we can help the government get to a better energy policy that will help them now. I think that will be the biggest improvement globally that will help the economy move.

Operator

We will now take the next question from Aleksey Yefremov from KeyBanc Capital Markets.

Paul Christian Staudinger ***KeyBanc Capital Markets Inc., Research Division - Research Analyst***

This is Paul on for Aleksey. As we approach winter, how are you guys managing the cost front in both the U.S. and Europe? And do you see the potential for any idling of assets in Europe. Maybe not your assets, but just broadly in the industry.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Yes, I think we have seen in energy-intensive industries in Europe like steel and aluminum already, idling of assets. A lot, maybe not complete closure. Some energy-intensive industries complete closure may jeopardize the long-term probability of starting them back up. But a lot of pressure on smaller producers in Europe, especially having some scale matters and having good advantaged cost positions matters. About half of our energy footprint in Europe is advantaged. And so we've dialed back to those rates to take advantage of that cost layer, and then we've loaded that demand onto other locations that are more cost advantaged. We'll continue to do that.

I think the other answer to shutdowns is going to be whether we'd see a way through the energy policy situation, the longer we stay in this situation, the longer the Russia-Ukraine situation lasts, it will put more pressure on the industry to take a look at rationalizing. And they've already got a lot of pressures there. They need government help more than anything.

Operator

We will take the next question from Laurence Alexander from Jefferies.

Laurence Alexander ***Jefferies LLC, Research Division - VP & Equity Research Analyst***

So can you describe how you're thinking about CapEx flexibility over the next couple of years given the credit cycle? In prior cycles, Dow's tended more to look at retrenching. But as you look at the investments required for the circular economy initiatives, could you pull forward or be opportunistic in expanding sort of what you do in that value chain as other people retrench.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Good question, Laurence, and obviously, we're trying to have the financial flexibility to keep moving on those projects because I don't think long term any of those trends are going to change. We see the consumer demand throughout the year in spite of what's going on in the global macro economy. Consumers come back to us consistently wanting more, more, more of both mechanical recycled, advanced recycled products and products made with bio-based ingredients, more renewable products. And that's what we're investing in. Some of it is our capital, some of it is joint capital together with partners, like I mentioned, with Mura Technologies. We have about 20 projects in plastics today. We had a 1 million metric ton target and we have good line of sight to be able to deliver the 1 million, and we just increased it to 3 million metric tons of circular and renewable solutions by 2030, mainly because of those brand owners who are telling us the demand is there for those products. And so we we'll keep those projects moving forward. We will keep our decarbonization and Path2Zero projects moving forward. Obviously, we're going to be disciplined about it. Most of the money that we spend on Path2Zero right now are engineering dollars. And we will not pull the trigger and start those projects until we see the bulk contracts for steel and fabricated products and long lead time items in the right range. And when we see that, we'll be ready to go. And I think in this next wave, we'll have first mover advantage with the Canadian project, just like we did with the U.S. Gulf project that started up in 2017.

Operator

We will now take the next question from Jaideep Pandya from On Field Research.

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Jaideep Mukesh Pandya ***On Field Investment Research LLP - Analyst***

The question is on the siloxane value chain. Could you just tell us what is the current cost differential between Europe versus the U.S. and China on a landed cost basis if you include the energy cost? And given that significant supplies coming in China in the next 12 to 18 months, especially in Xinjiang and Yunnan, what do you expect for siloxane utilization outside of China? That's my first question. And the second question really is around the ethylene oxide MEG chain. This chain has done extremely well for not just yourselves but a lot of your peers as well. And again, we are starting to see as freight rates normalize, product come out of China. So what do you expect for the EO chain in 2023 and 2024? Do you expect a normalization, or do you think that demand is going to continue to be good?

James R. Fitterling ***Dow Inc. - Chairman & CEO***

Siloxane prices that are available there in China have become available in all the regions around the world already. So I think it's already at that spot. Silicone metals market prices are down a bit, mainly just because demand in some higher volume applications are down, higher volume applications related to building and construction. But that, I think, is going to steadily improve. I would expect it to be in these levels in 2023. And then as we see, inflation come down, which I do believe it will I think you'll see the demand start to pick back up again and things will tighten back up. Let's put more pressure on Europe, I would say, than North America. That's why we took some slower rates in our U.K. facility. On EO demand, was that the second half of the question?

Howard I. Ungerleider ***Dow Inc. - President & CFO***

And MEG.

James R. Fitterling ***Dow Inc. - Chairman & CEO***

EO, MEG. MEG is the weak spot in EO. If you look at our Industrial Solutions strategy, it is to keep investing in high-value EO applications. And so all the alkoxylate investments that you see investments in our oil and gas franchise remains. Those are continuing to do very, very well. And we're going to continue investing there to try to increase the amount of business that goes to those higher-value applications for purified EO and away from MEG. MEG prices were actually at a low spot in the third quarter and have improved a little bit since because of falling inventories. I think a big part is going to be dependent on higher China activity after they stopped the 0 COVID lockdowns.

Pankaj Gupta ***Dow Inc. - VP of IR***

Yes. Thanks, everyone, for joining our call. I think that's all the time we have for today. We appreciate your interest in Dow. For your reference, a copy of our transcript will be posted on Dow's website within approximately 24 hours.

This concludes our call. Thanks once again.

Operator

Thank you. That will conclude today's conference call. Thank you for your participation, ladies and gentlemen. You may now disconnect.

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