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Inspiring science, enhancing life

# Capital Markets Day Delivering sustainable growth and value

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19<sup>th</sup> September 2019

## Cautionary statement

This presentation contains forward looking statements that are subject to risk factors associated with, amongst other things, the economic and business circumstances occurring from time to time in the countries and sectors in which Johnson Matthey operates. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a wide range of variables which could cause actual results to differ materially from those currently anticipated and you should therefore not place reliance on any forward-looking statements made. Johnson Matthey will not update forward-looking statements contained in this document or any other forward-looking statement it may make.

# Agenda

Start	Session	Presenters
09:30	Introduction and group strategy	Robert MacLeod
10:00	Financial strategy	Anna Manz
10:20	Q&A	
<b>10:50</b>	<b>Break</b>	
11:10	Clean Air	John Walker
11:30	Battery Materials	Robert MacLeod
11:50	Q&A	
<b>12:10</b>	<b>Lunch</b>	
13:00	Sector breakout sessions	Sector CEOs
<b>14:20</b>	<b>Break</b>	
14:35	Sector breakout sessions	Sector CEOs
16:00	Concluding remarks and Q&A	Robert MacLeod





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## Delivering sustainable growth and value

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Robert MacLeod  
Chief Executive

**A world that's  
cleaner and  
healthier;  
  
today and  
for future  
generations**

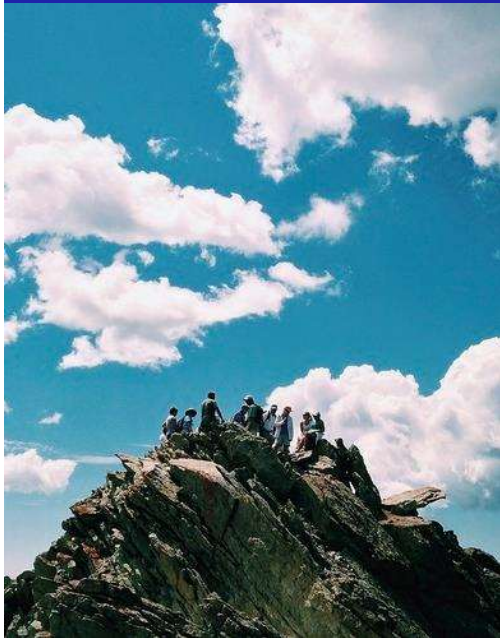
JM



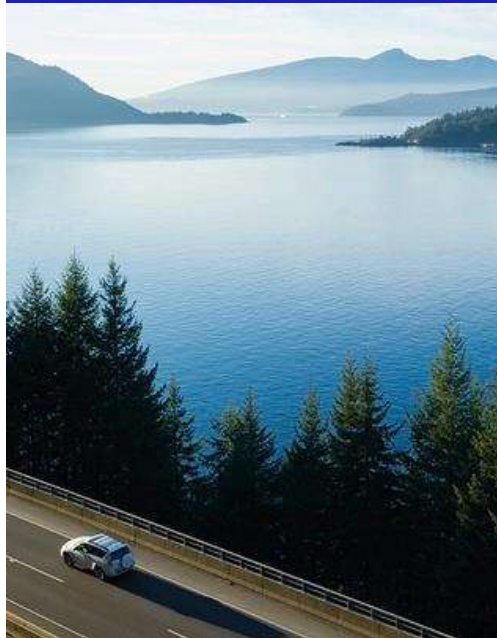


# Sustained growth fuelled by key megatrends

## Climate change



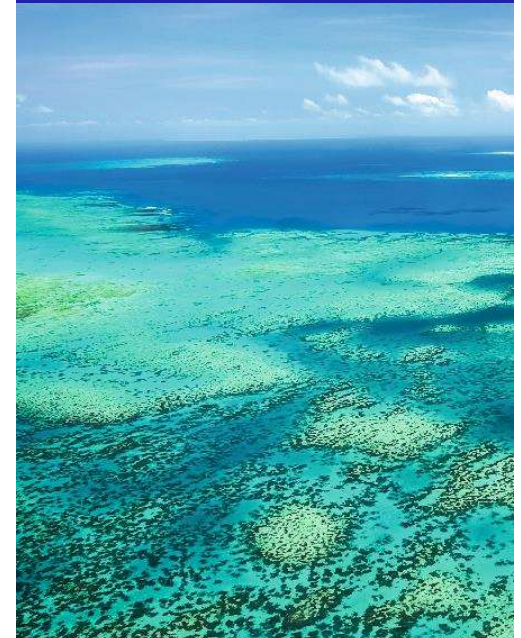
## Energy transition



## Population and longevity



## Resource challenges



# We contribute to the UN sustainable development goals

87% of sales from products contributing to the UN SDGs



A world that's cleaner and healthier; today and for future generations

# Making the world cleaner and healthier



**34,500 tonnes**  
of CO<sub>2</sub> saved per annum by our  
new UK renewable energy contract

**3.4m tonnes**  
of pollutants removed by  
our emission control catalysts

**11 million gallons**  
of renewable jet fuel produced  
per annum using our technology

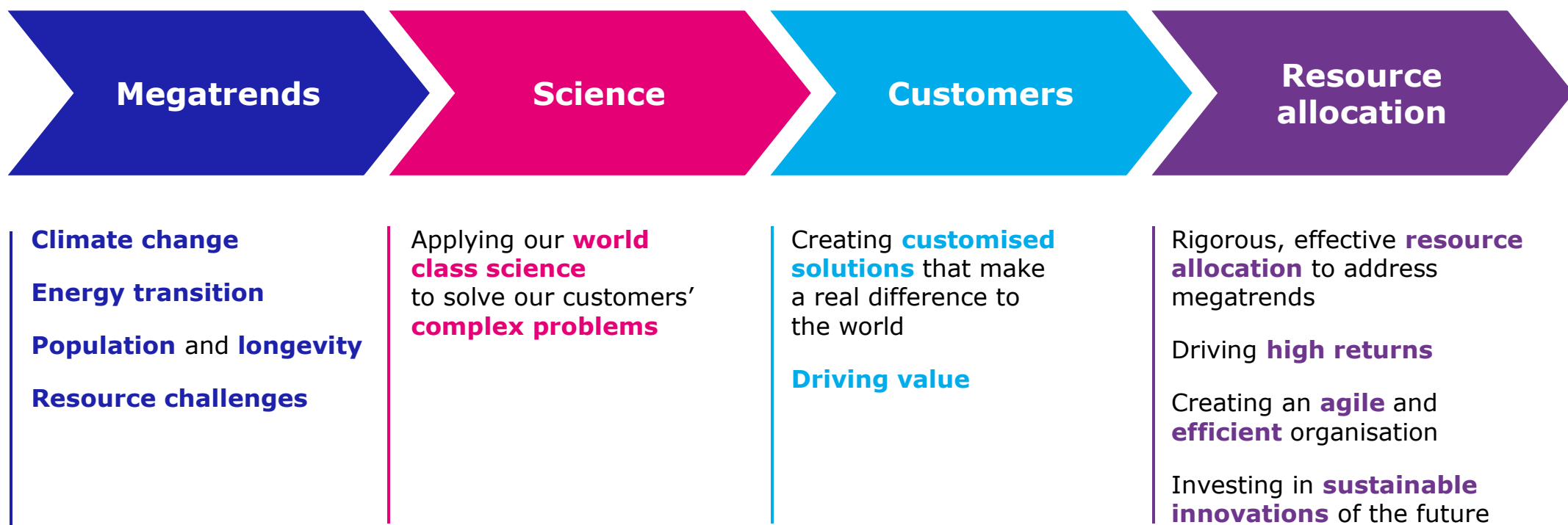
**181,000 lives**  
positively impacted by drugs  
containing our API products

**10.1m tonnes**  
of greenhouse gases removed  
by our technology

**87% of sales contribute to the UN Sustainable Development Goals**



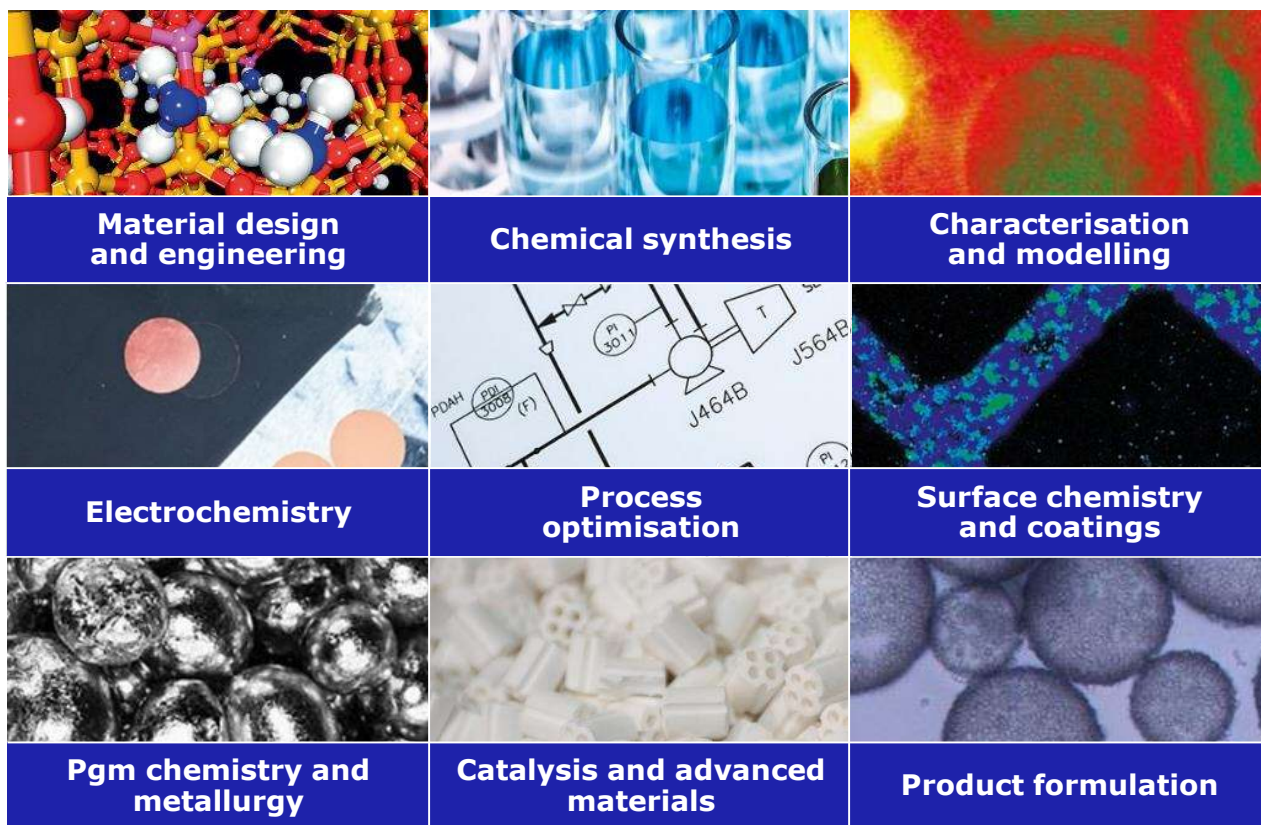
# Addressing megatrends with our science



**Driving sustained growth and value creation**

# The spine of science running through our sectors

## Our core capabilities

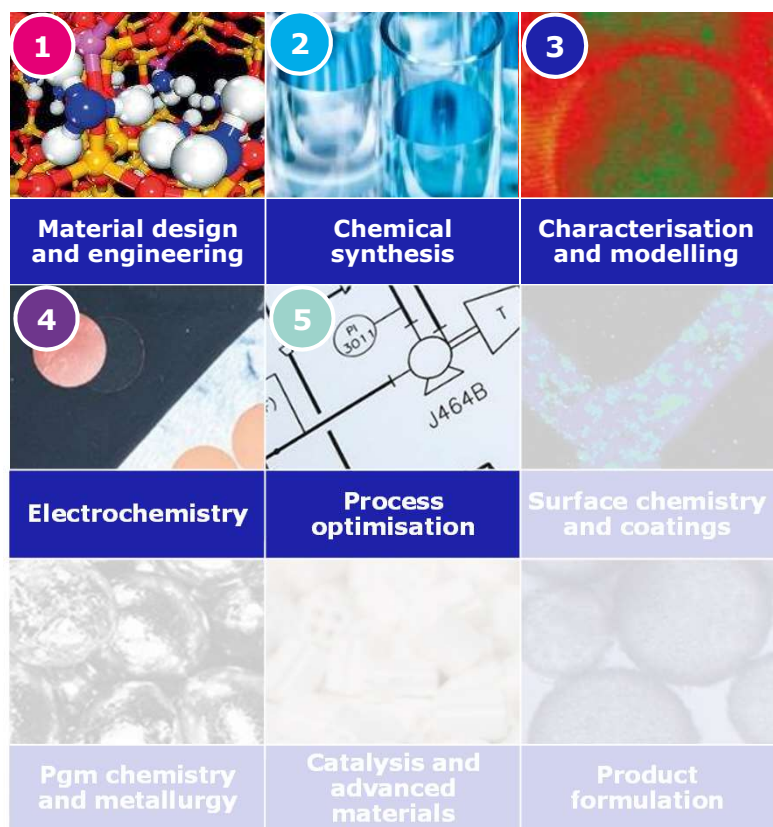


## Clever application



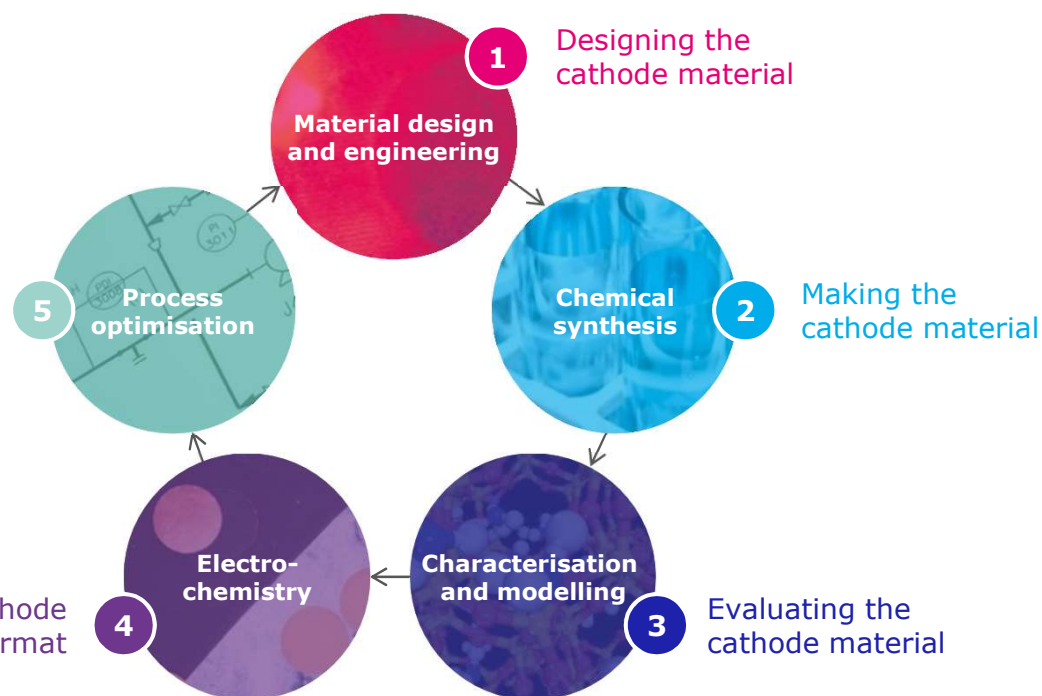
# Solving our customers' complex problems

## For example in Battery Materials



Enhancing the process through optimisation and repetition

Testing the cathode in battery format





Our world class science gives us leading positions in the markets in which we operate

**Science** gives us **leading market positions**

**Clean Air**

One of three global players in Clean Air

#1 Diesel

Strong position in gasoline

**Efficient Natural Resources**

Strong segment shares

#1 Methanol

#1 Pgms

#1 Oxo alcohols

#1 Formaldehyde

#1 SNG / #1 BDO

**Health**

#1 controlled substances in Europe

**Sustained competitive advantage** through **R&D investment** at **5% of sales**

# **Our business strategy**

Sustained growth and value creation from:

**Applying world class science to solve customers' complex problems**

JM





# Creating long term value

## Delivering attractive growth and returns

Mid to high single  
digit EPS CAGR

ROIC to 20%

Progressive  
dividend

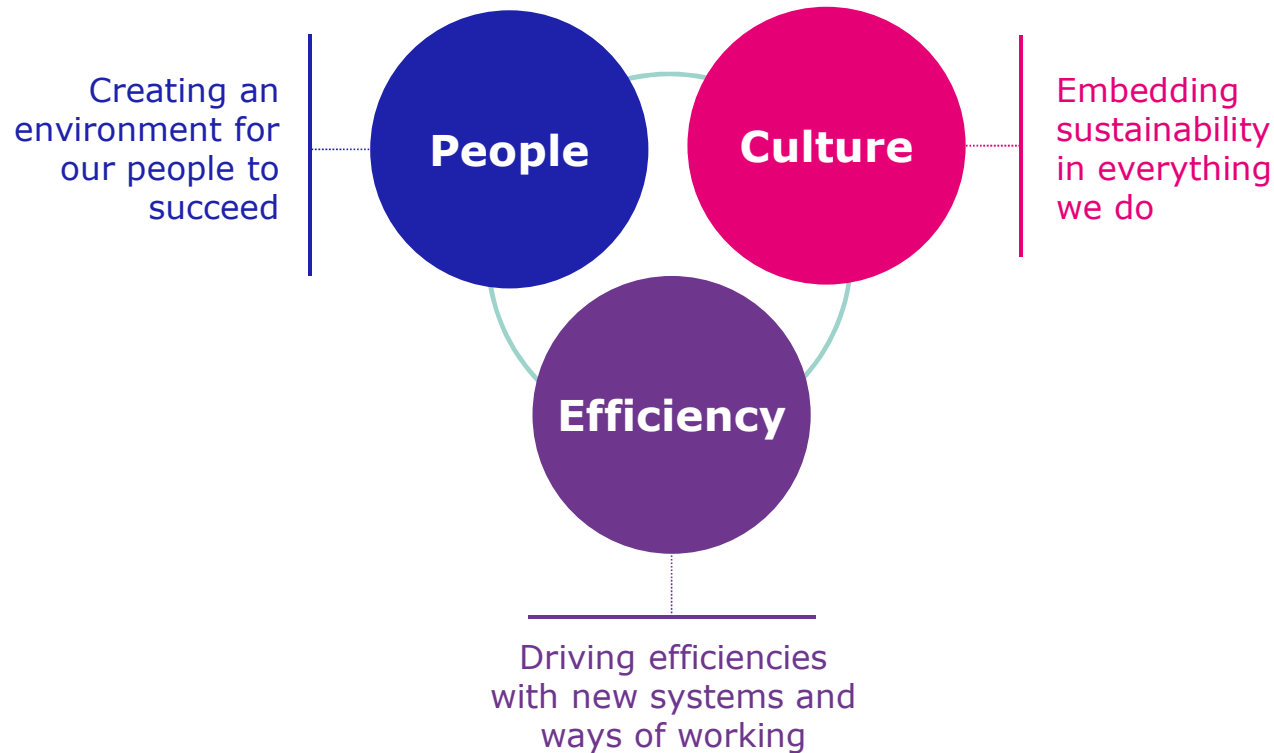
**Delivery of strategy underpinned by fundamental  
changes across all aspects of the group**

JM





## We are transforming JM...



**...to create an agile and efficient business,  
giving us flexibility to consistently deliver**

JM

- Strengthening our platform for growth
- Creating a more sustainable business
- Greater standardisation and efficiency
- Empowering people
- Faster decision making

## We are successfully executing our strategy



**Delivering on expectations in Clean Air**



**Built platform for stronger growth in Efficient Natural Resources**



**Operational improvements and pipeline development in Health**



**Significant progress in Battery Materials**

**Delivered 5% annualised EPS growth since 2017 despite a tougher macro environment**

# Delivering sustained growth and value

Sustained growth in **Clean Air** over the next decade

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Mid to high single digit growth in **Efficient Natural Resources**

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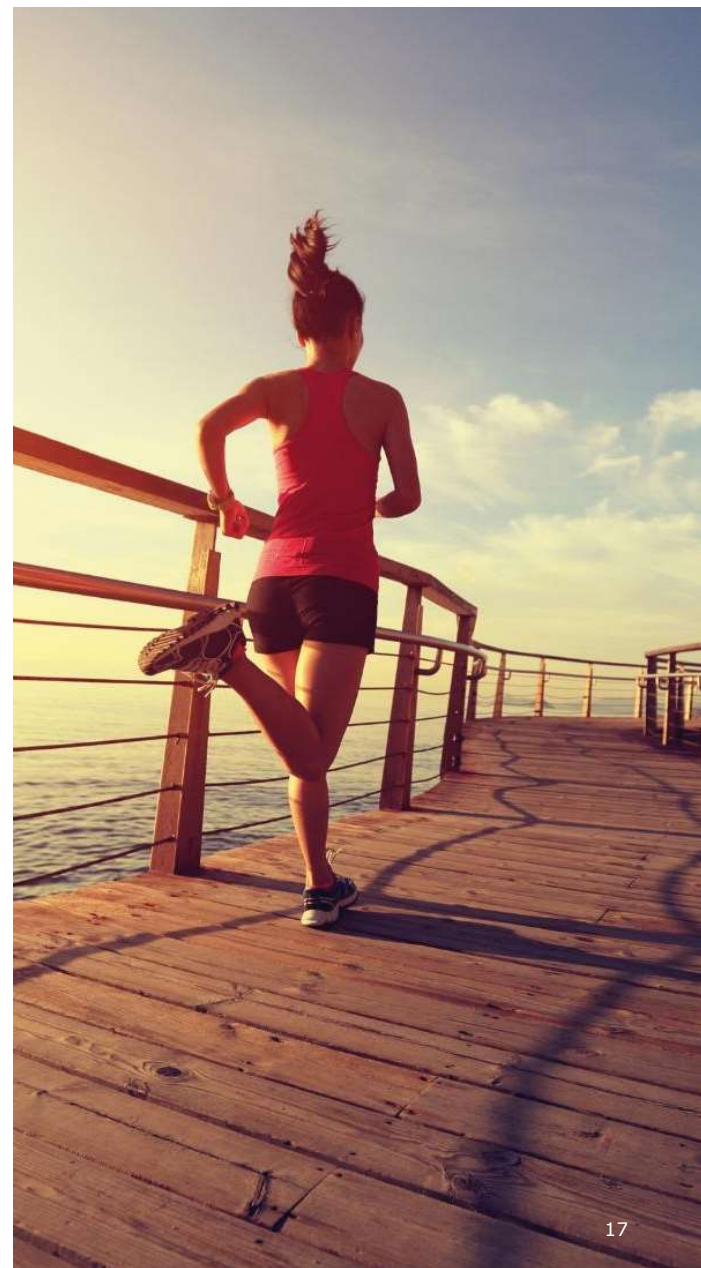
Passed the point of inflection for breakout growth in **Health**

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Strong progress in **Battery Materials** to build a leading position

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**Efficiencies** remain a strong focus





# Clean Air: sustained growth for the next decade

## 2025 outcomes

**Asia more than doubles in size**

**Europe maintains size despite diesel decline**

**Americas driven by GDP growth**

**Margins maintained through focus on efficiency**

**Mid single digit growth in operating performance to 2025**

**JM**



# Efficient Natural Resources: market leading growth

## 2025 outcomes

**Positioned in higher growth segments**

**Continue to evolve our existing strengths**

**New technologies**

**Increased efficiency of operations**

**Mid to high single digit growth in operating performance to 2025**

**JM**



# Health: passed inflection for breakout growth

## 2025 outcomes

**Enhancing the performance of our base business**

**Delivering growth from our new product pipeline**

**Building capabilities to support our customers**

**Delivering c.£100m additional operating profit by 2025**

**JM**





# Battery Materials: breakout growth

## 2025 outcomes

**Maintained our technology leadership**

**Qualified on customer platforms**

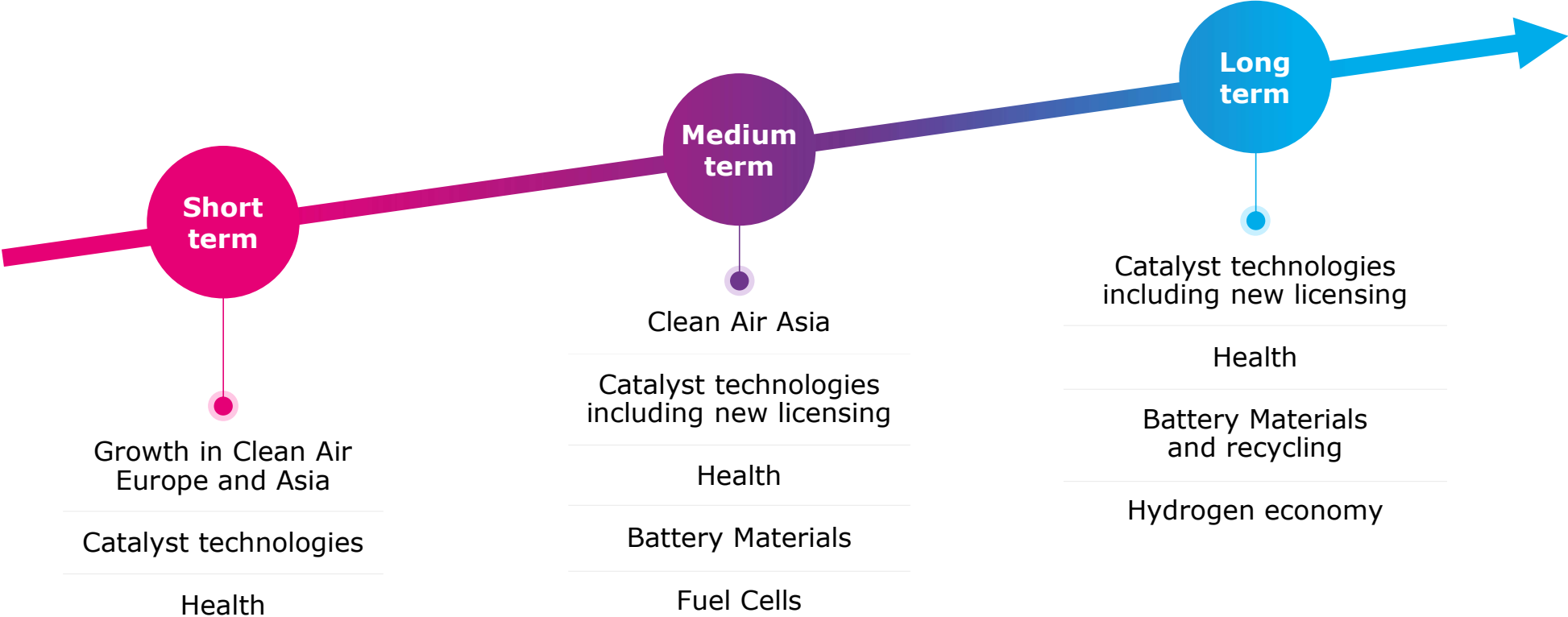
**Commercial scale capacity**

**Well positioned for breakout growth**

**JM**



# Megatrends drive growth opportunities for science-led solutions



## Sustained growth and value

Successfully executing our strategy

Addressing megatrends with our science

Spine of science running through our sectors

A more agile and efficient business

Mid to high single  
digit EPS CAGR

Expanding ROIC  
to 20%

Progressive  
dividend



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## Driving shareholder value

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Anna Manz  
Chief Financial Officer



## 2019/20 guidance unchanged for first half and full year



Operating performance to be slightly below the prior year in **Clean Air**



Better performance and continue to anticipate sales growth with operating performance growth ahead of sales in **Efficient Natural Resources**



Broadly stable sales and double digit operating performance growth in **Health**



Sales and operating performance growth in **New Markets**

**Mid to high single digit growth in operating performance with performance to be more heavily weighted to the second half**

## Delivery of strategy underpinned by my three focus areas

Drive increasing business wide efficiency

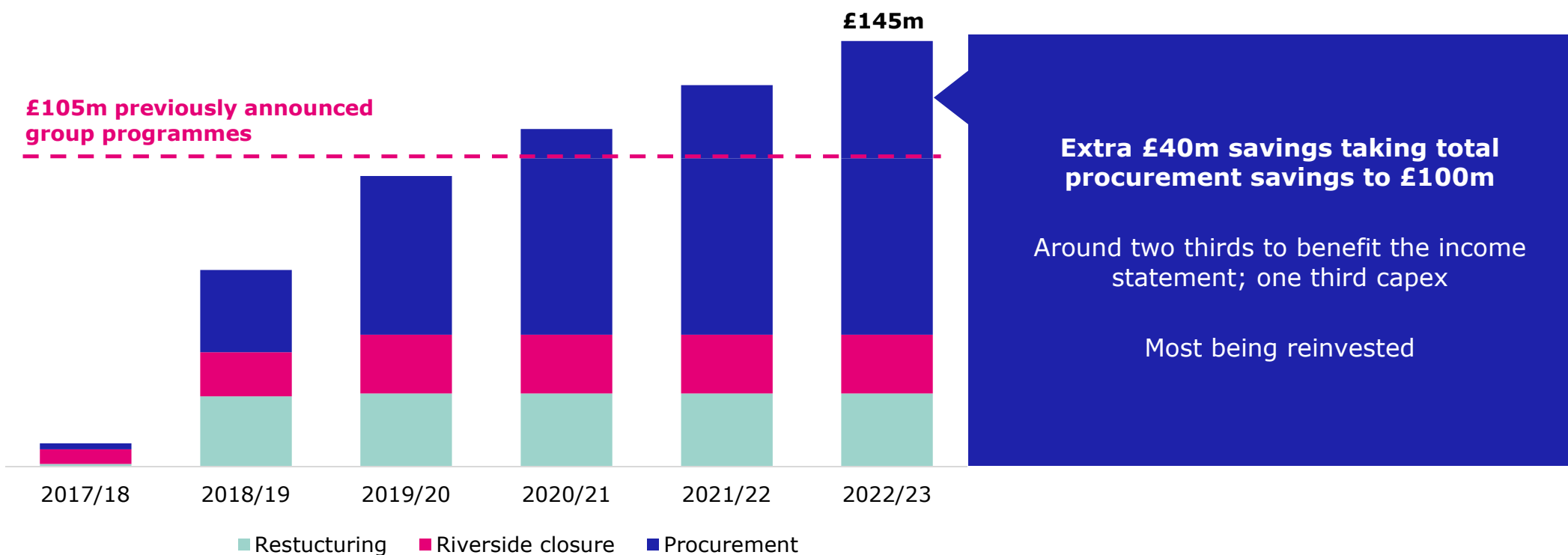
Disciplined management of working capital

Rigorous resource allocation



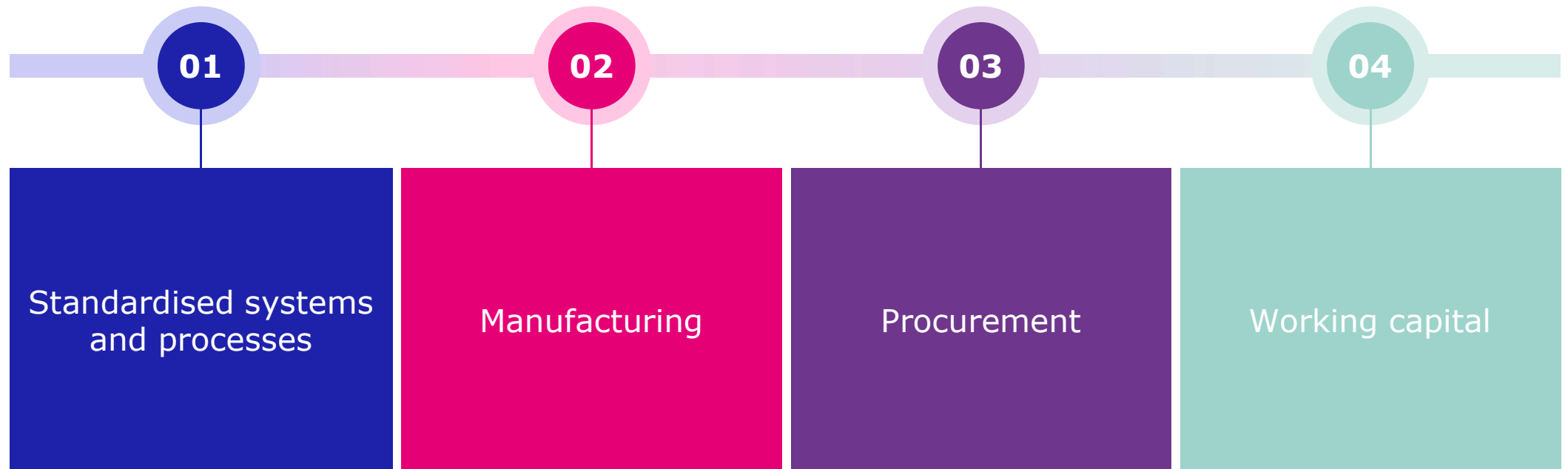
# Building a more efficient business for the long term

## Annualised benefits from group programmes (£m)





## Building a better business for the long term



# Disciplined management of working capital – non precious metal

**High performance culture**

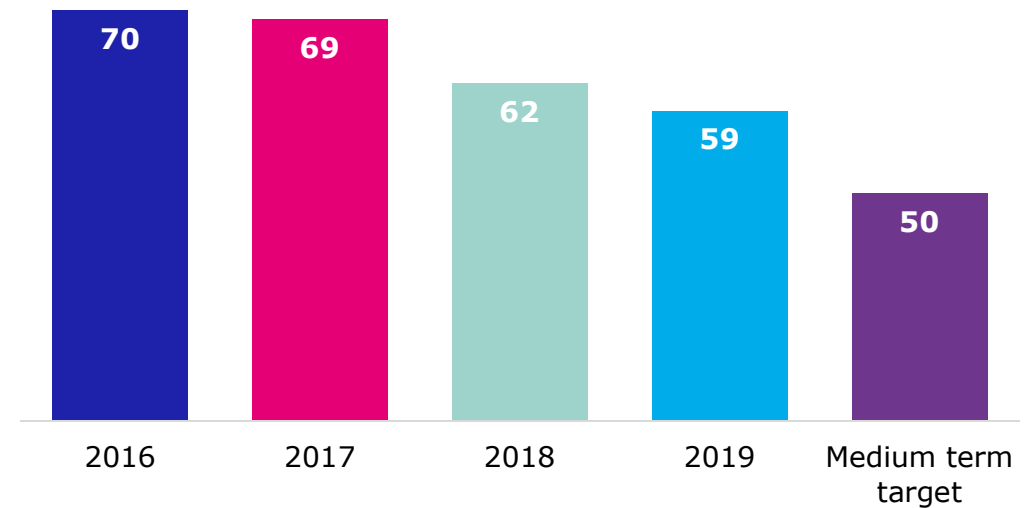
**Procurement excellence**

**Manufacturing excellence**

**Commercial excellence**

**Enabled by single, global ERP system**

**Average working capital days excluding precious metals**



- 11 day improvement in average working capital days since 2016, a total of £120m
- Continue to drive improvement in average working capital days to a medium term target of 50 days

# Precious metal working capital to improve by c.£350m

## Reducing refining backlogs

**Progress on track**

**Complex process**

**Refineries sized to support Clean Air**

Expect reduction in backlogs of  
c.£250m from FY 2018/19

## Investing to improve refineries

**£100m investment over 3 years**

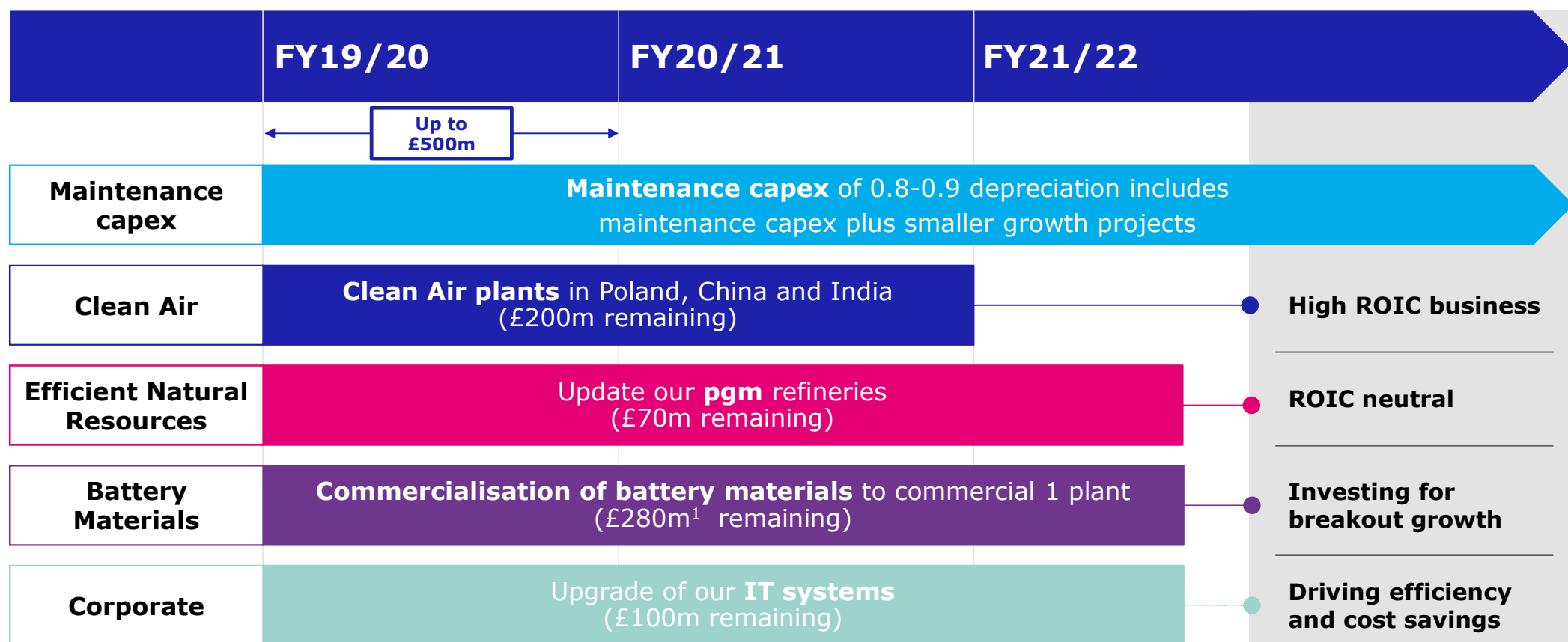
**Improving resilience and efficiency of refineries**

**Neutral impact on ROIC**

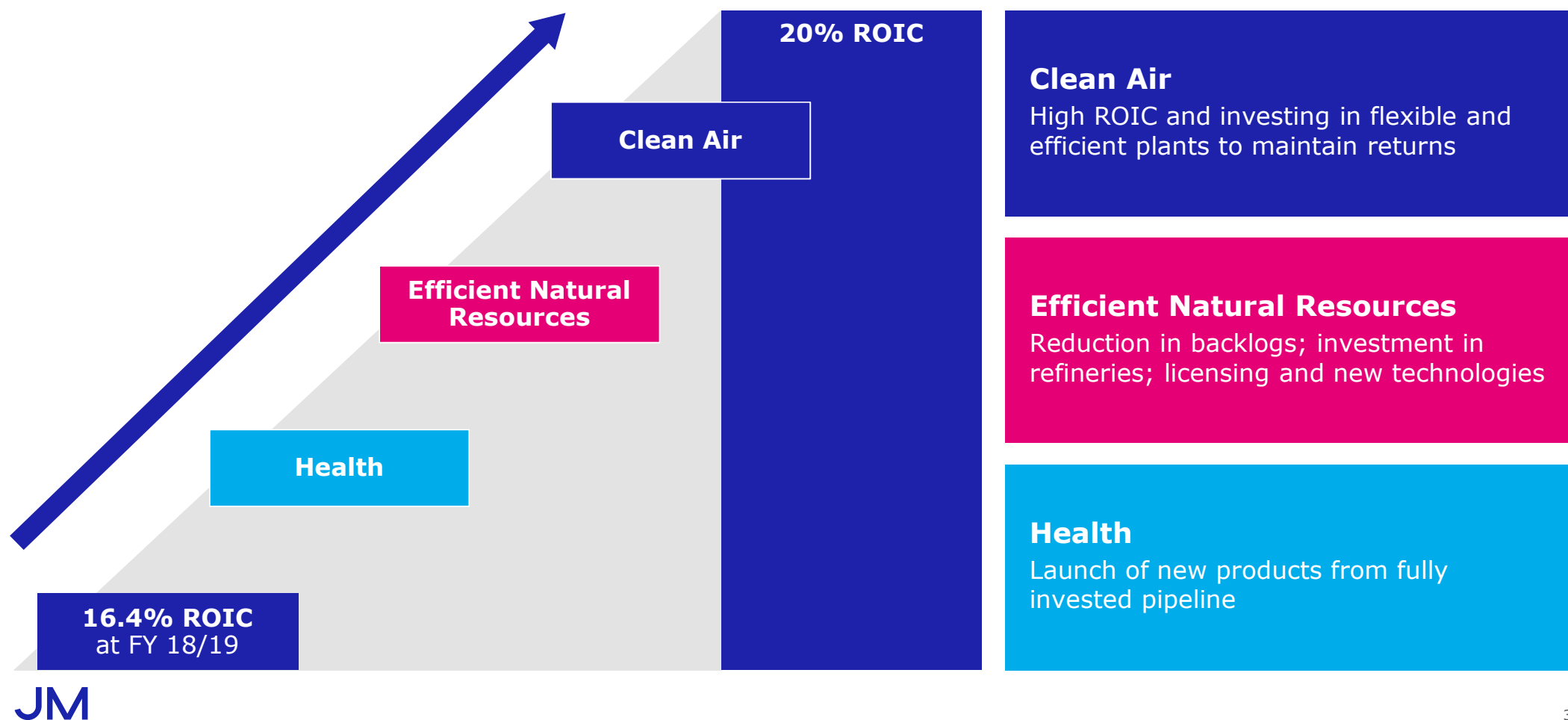
Delivering a further c.£100m improvement  
in working capital from efficiencies



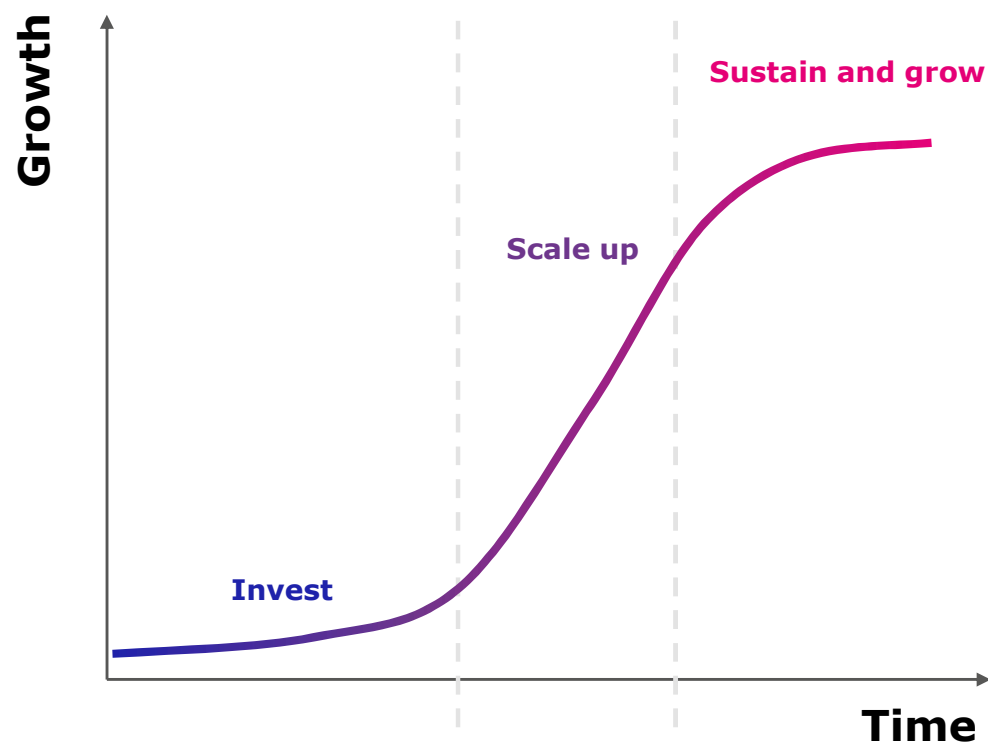
# Investing for growth, efficiency and returns



## Clear path to deliver 20% ROIC target



## How we think about ROIC strategically



**Portfolio of businesses**

**World class science**

**Leading positions in our key markets**

**Managing portfolio through lifecycles**

**Allocate resources appropriately through lifecycles**

**20% ROIC businesses at scale**

**JM is a 20% ROIC business**

**JM**



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## Clean Air: sustained growth for the next decade

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John Walker – Sector Chief Executive, Clean Air





## Clean Air leadership team

● **John Walker**



John joined in 1984 and appointed Executive Director in 2013

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35 years' experience and held a series of positions within the sector in the US, Asia and Europe

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Successfully led the Clean Air Sector through many transitions, influencing the strategic direction and growing it into a significant global business

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To retire and step down from the board on 31<sup>st</sup> March 2020

● **Joan Braca**



Joan joins on 1 October 2019 as Sector Chief Executive, Clean Air

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20 years' experience in speciality chemicals with Dow Chemical and Rohm & Haas Company

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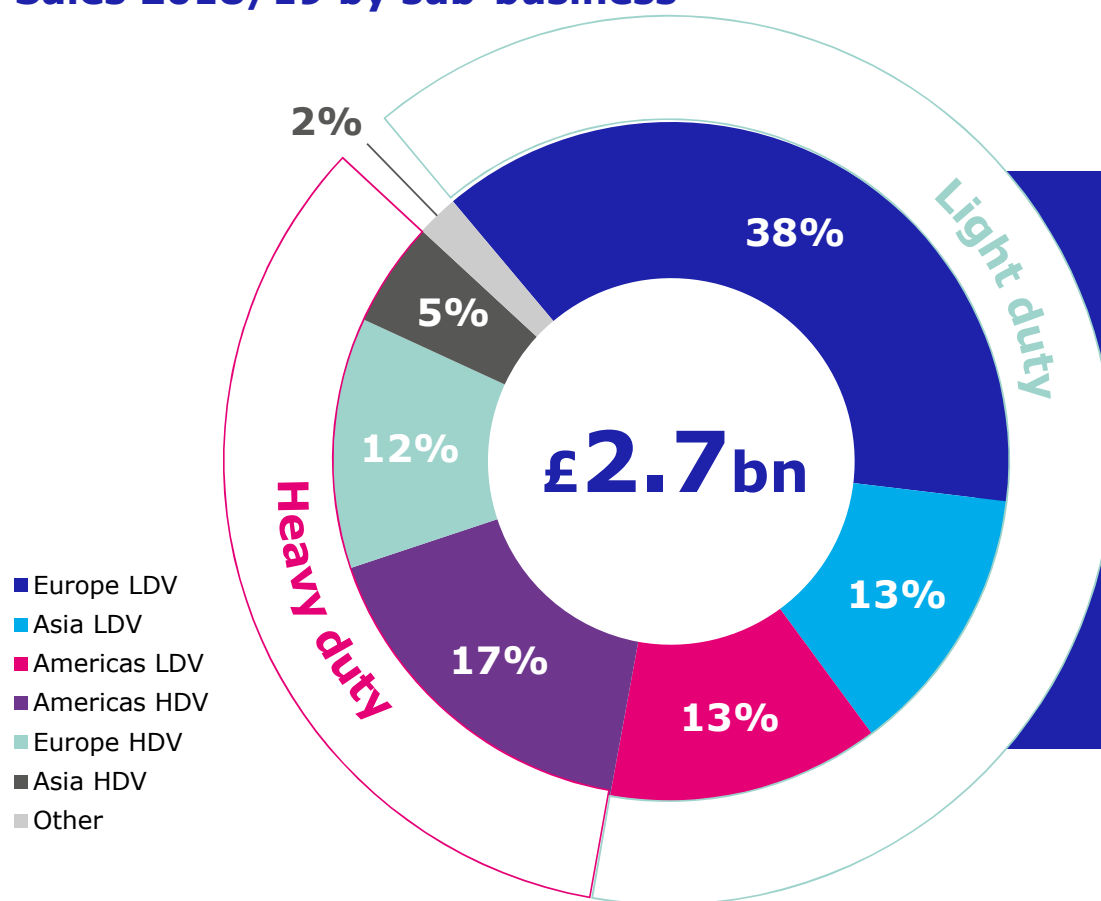
Significant experience in running complex businesses, driving growth in emerging markets and delivering efficiencies in mature markets

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Most recently worked for Tate & Lyle

# Clean Air: strongly positioned for sustained growth

## Sales 2018/19 by sub-business



Leadership in catalysts to reduce emissions from vehicles

Growth driven by consumer desire for cleaner air and legislation

2018/19 ROIC of 30%

# Delivering on our expectations

## Progress since 2017

Strong growth in European light duty achieved, driven by 20ppt share gain in diesel

On track with strategy in Asia and winning our share of China 6 business and in India winning BS 6

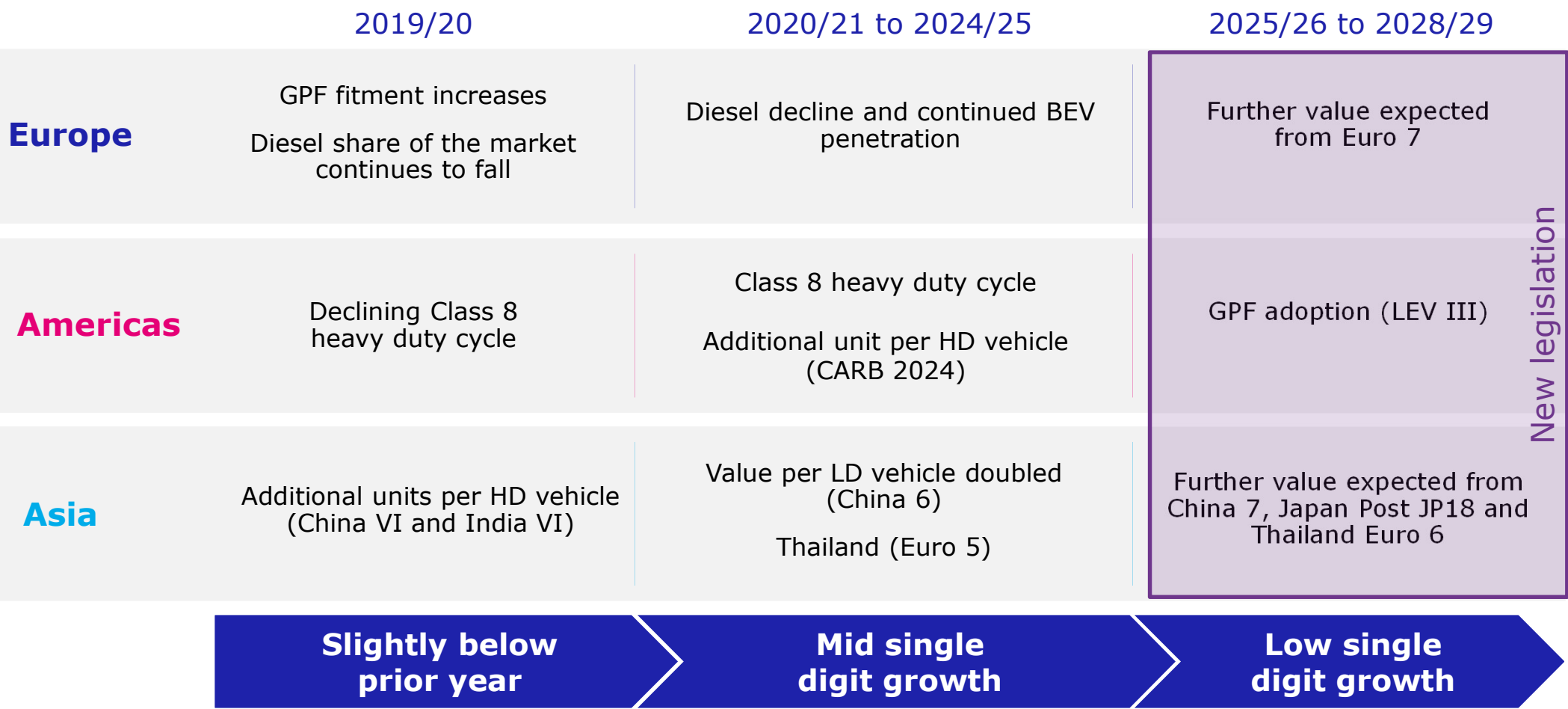
Class 8 up-cycle in North America successfully delivered without adding new manufacturing capacity

New plants in Poland, China and India commissioned in next 12 months

Margin around 14% and strong ROIC maintained

**Executing our  
strategy**

# Growth for the next decade driven mainly by legislation





# Europe maintains size to 2025 despite light duty diesel decline

## Light duty small decline

Share in light duty gasoline and diesel remain stable

Decline in light duty diesel share of the market

Increasing fitment of gasoline particulate filters

## Heavy duty to grow

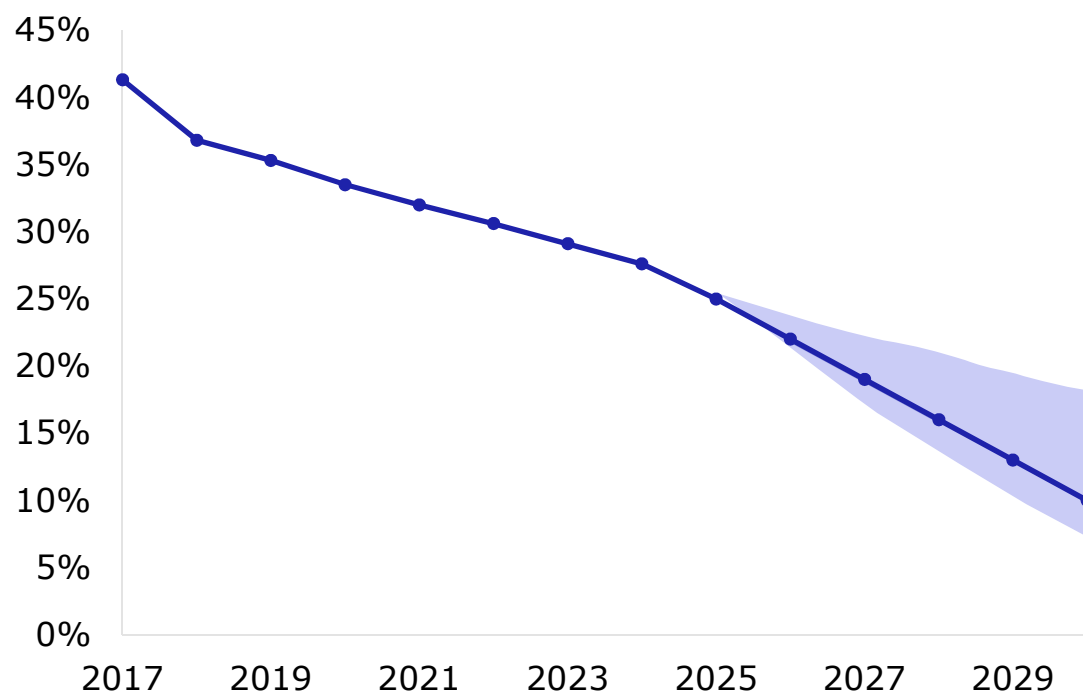
European heavy duty will grow steadily with GDP



# Western Europe light duty diesel share

## Western Europe light duty fuel mix

% Vehicles sold (diesel and diesel hybrid)



**Diesel share of light duty Western Europe assumed to decline to 25% by 2025<sup>1</sup> and 10% by 2030**

**1ppt shift from diesel to gasoline impacts gross profit by c.£4m**

# Europe: key assumptions

## Key assumptions

### Vehicle production

- <1% light duty vehicle production growth

### Diesel share of market

- Diesel share of light duty vehicles in Western Europe declines to c.25% by 2025<sup>1</sup>

### Value uplift

- Up to 2x value per light duty gasoline vehicle
- Up to 1.5x value per light duty diesel vehicle
- Hybrid neutral

### BEV penetration

- 9% by 2025

### JM market share

- Maintain share in light duty diesel and gasoline vehicles to 2025

## Americas: driven by GDP growth in absence of legislation changes

**Overall growth in Americas in line with  
GDP to 2025**

Without major legislation changes, no significant  
movement in key value drivers





# Americas: key assumptions

## Key assumptions

### Vehicle production

- <1% light duty vehicle production growth

### Value uplift

- Up to 1.2x value uplift per heavy duty vehicle (CARB 2024)
- Small value uplift across light duty vehicles from 2025/26 (LEV III)

### BEV penetration

- 3% by 2025

### JM market share

- Stable market share in light duty gasoline, light duty diesel and heavy duty diesel in 2025

# Asia to more than double in size by 2025

## Heavy duty

Tripling of value per vehicle in China and India

- China VIa nationwide from 2021 and China VIb from 2023
- India BSVI from 2020

## Light duty

Doubling of value in China and India

- China VIa nationwide from 2021 and China VIb from 2023
- India BSVI from 2020



# Asia: key assumptions

## Key assumptions

### Vehicle production

- <3% light duty vehicle production growth

### Value uplift

- Up to 2x value per light duty vehicle (China 6)
- Up to 3x value per heavy duty vehicle (China VI and India 6)

### BEV penetration

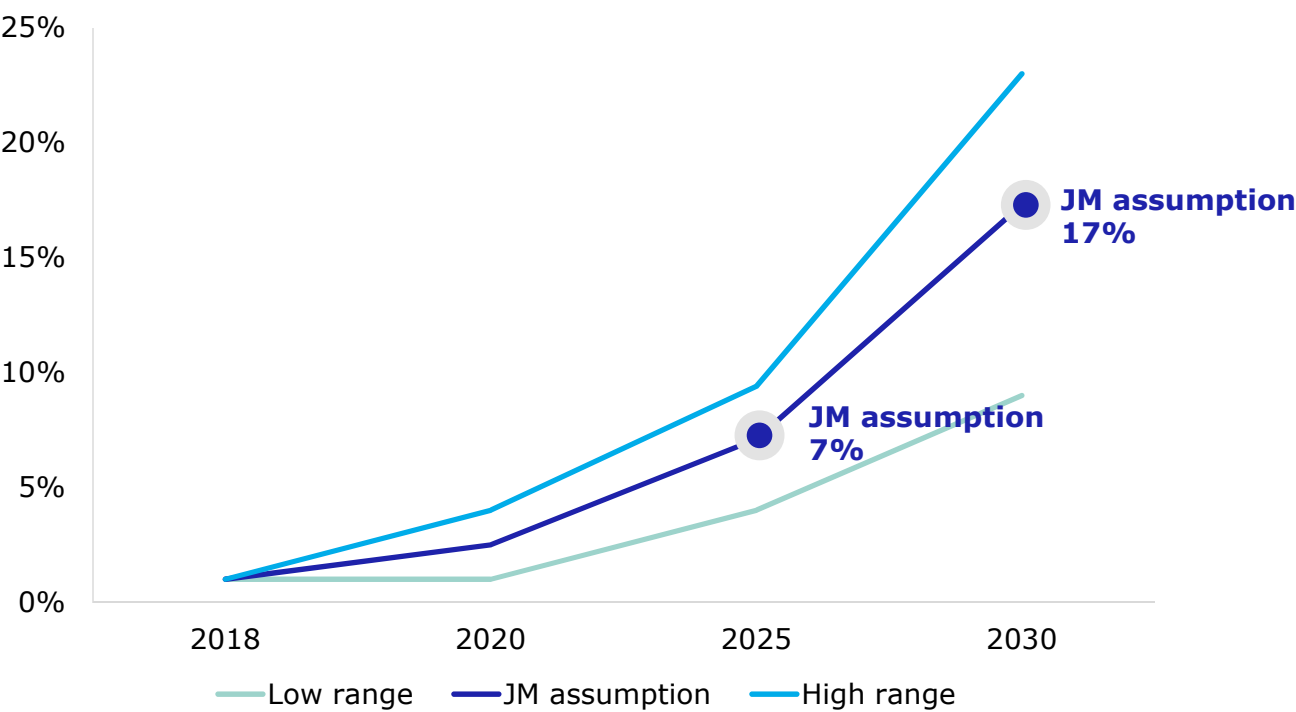
- 13% by 2025

### JM market share

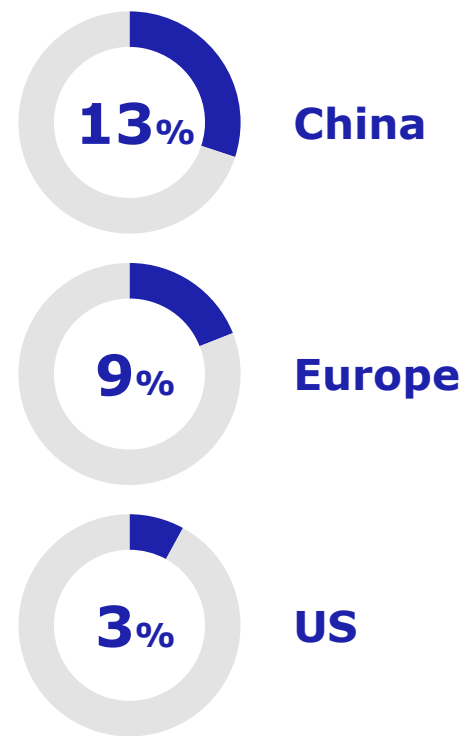
- Slight share gains in both light and heavy duty in China by 2025

# Global BEV penetration is accelerating

Expected global BEV penetration (%)



JM assumes 7% global BEV penetration by 2025:



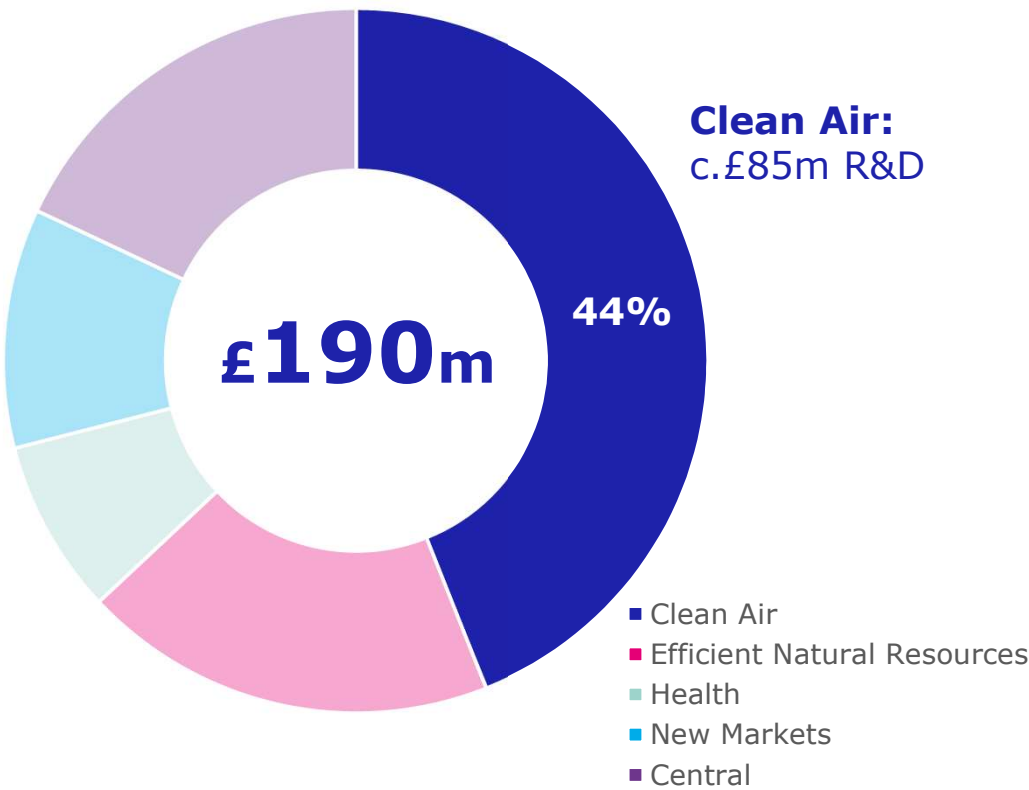


## Customer focused and positioned for success



# Investing in science to drive leadership

## Research and development (£m)



Growth driven by legislation

Technology driven leadership

Leading diesel technology driving share gains

Positioning in gasoline for leadership

# Global, efficient and flexible manufacturing to maximise returns



Global, efficient footprint

3 new world class plants in Poland, China and India



Fully flexible manufacturing

Identical customer experiences

Standard plant operating model



Standardised manufacturing processes

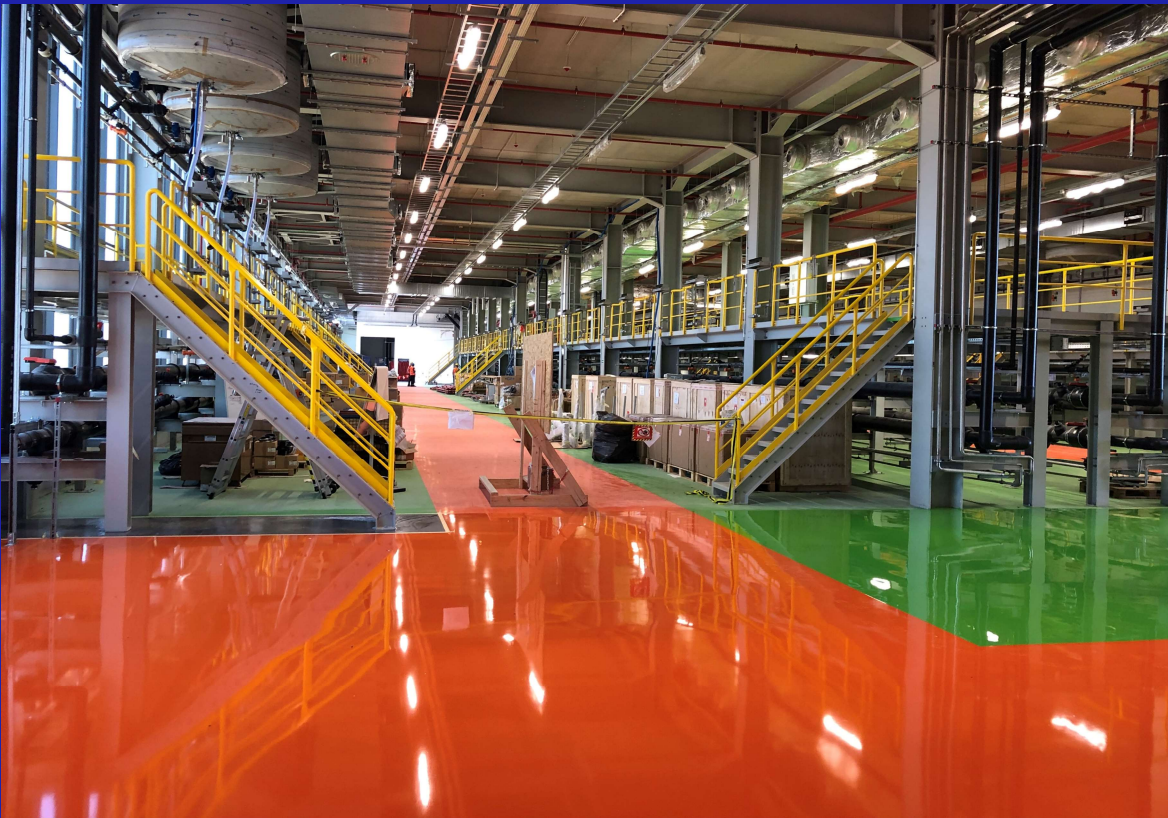
Optimise production between locations

Increasing capacity in existing plants

**Right sized, global and efficient footprint**

# Clean Air Poland: a world class manufacturing facility

**Poland plant**



**Automated end to end process**

**Successful customer audit**

**Flexible, efficient manufacturing**

**Commissioning underway**

# Procurement integral to the strategy



Integral part of strategic decision making

Involved in new product introduction  
Better solutions for the customer



Strategic partnering with vendors

Delivers better service and quality to customers



Creating agility in the organisation

Capacity to invest or improve margin  
Ability to deal with unforeseen events



## Consistent value creation from a global leader

**Asia more than  
doubles in size**

**Europe maintains  
size to 2025  
despite diesel  
decline**

**Americas driven  
by GDP growth**

**Margins  
maintained  
through focus  
on efficiency**

**Flexible and agile business positioned for the future**

**Mid single digit growth in operating performance to 2025**



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## Battery Materials: breakout growth

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Robert MacLeod  
Chief Executive

# Battery Materials leadership

**Christian Günther,**  
Chief Executive, Battery Materials



Christian joins on 4<sup>th</sup> November as Sector Chief Executive, Battery Materials

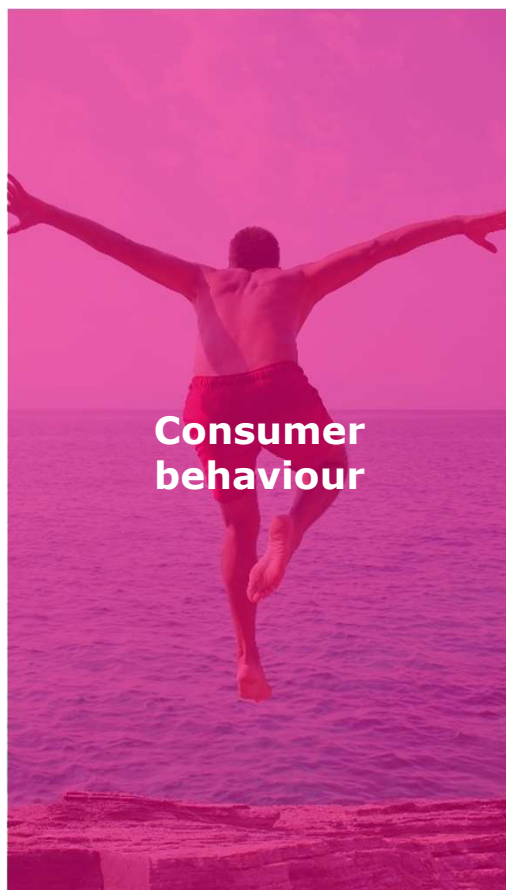
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Strong background in science and successful track record in the development and leadership of large, global technology businesses

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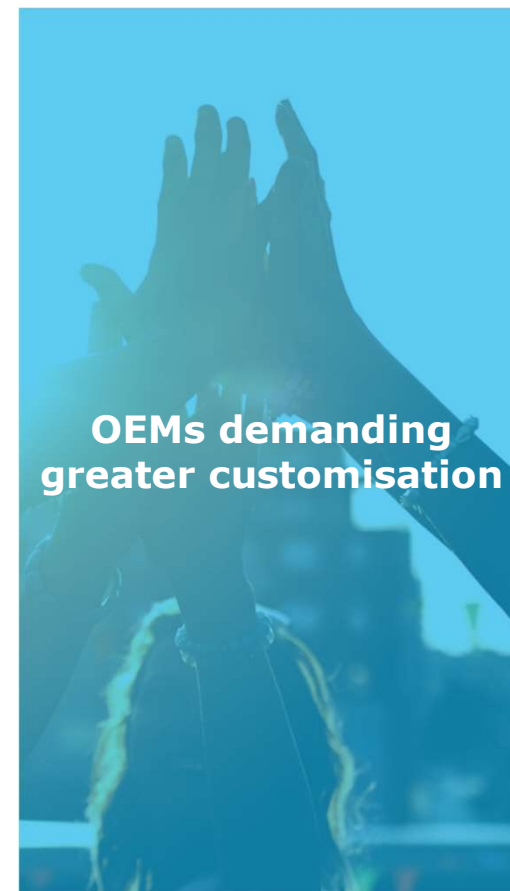
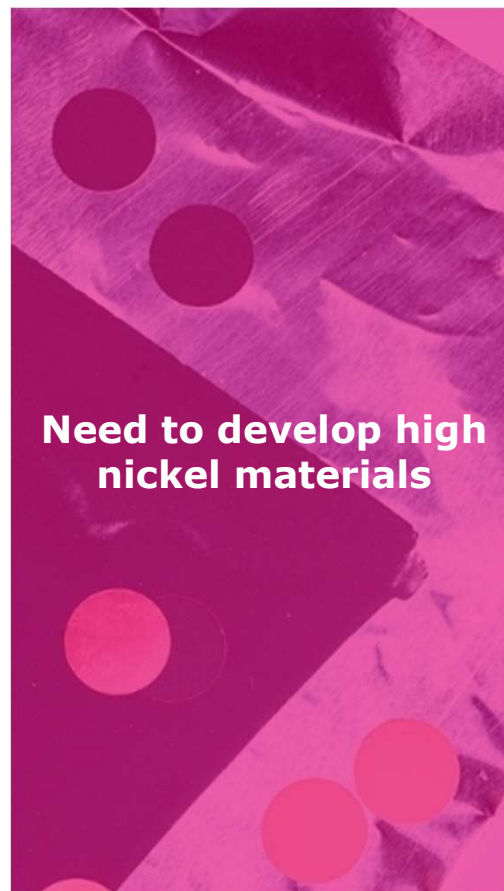
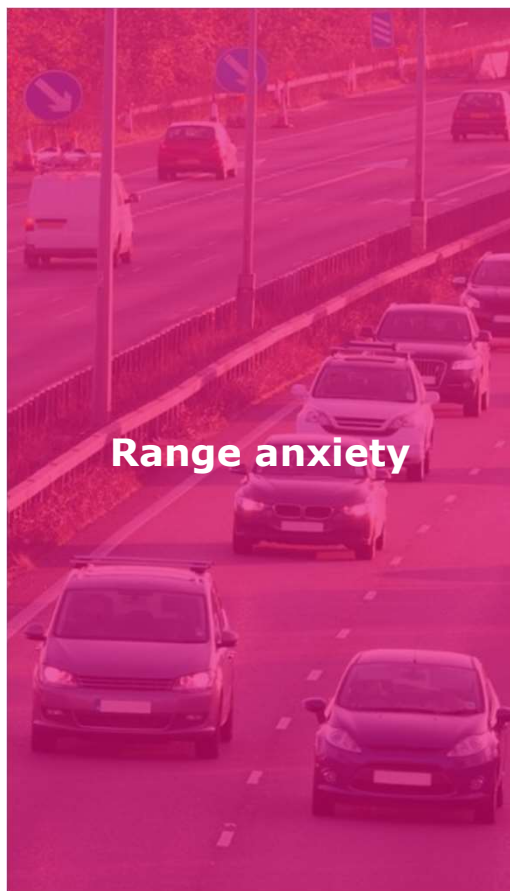
Most recently worked for Tasnee, a Saudi Arabian company with a wide range of activities in chemicals, petrochemicals, plastics, battery manufacturing and environmental technologies

## The external environment continues to drive towards electrification





## Solving our customers' complex problems





Cathode materials: complexity gives opportunity to capture value...

**Technology is a key differentiator**

**Customised solutions**

**Reliability of supply chain**

**Long lead time to qualification**

...which plays to  
our strengths

# eLNO: a next generation material to enable long range, pure BEV

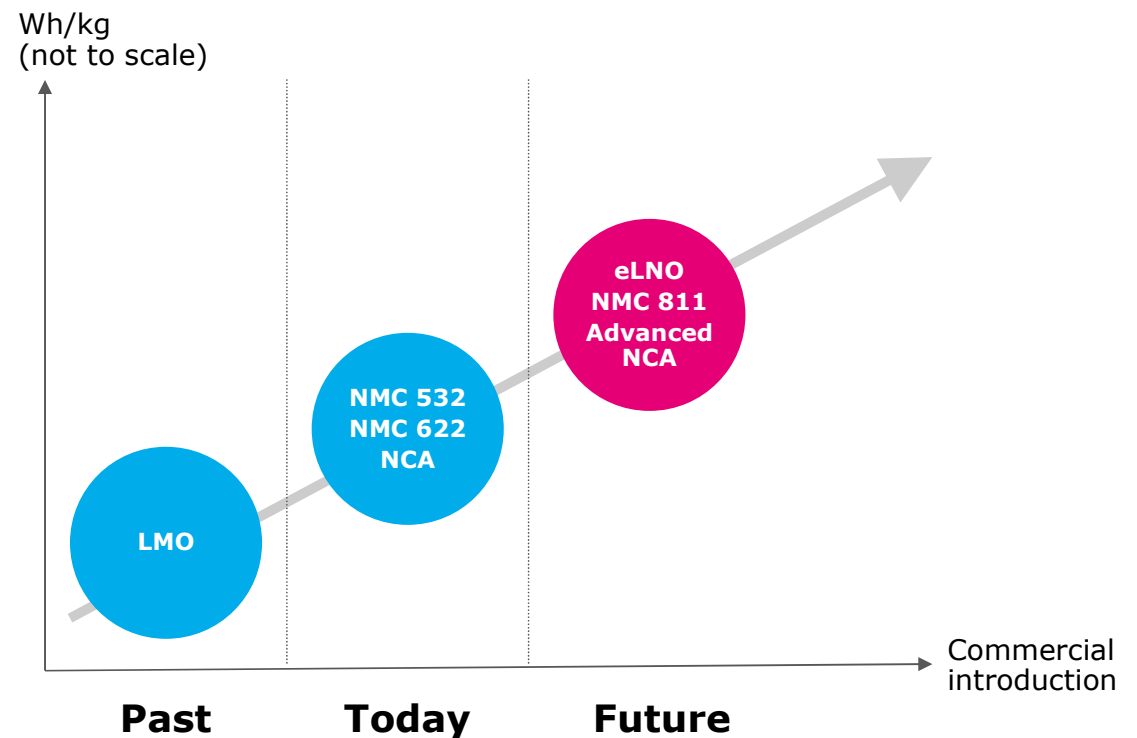
**eLNO, our portfolio of next generation, leading, ultra high energy density cathode material**

**Expected ultra high energy density market by 2030:**

500kt to 1,800kt

(total market of 1,700kt to 2,700kt)

## Energy density and commercial introduction



# eLNO can solve many of the current challenges for BEV penetration

## Properties OEMs optimise on

Energy density

Power

Stability

Cobalt content

eLNO is structurally  
more customisable  
than other materials,  
enabling customers to  
deliver leading  
performance

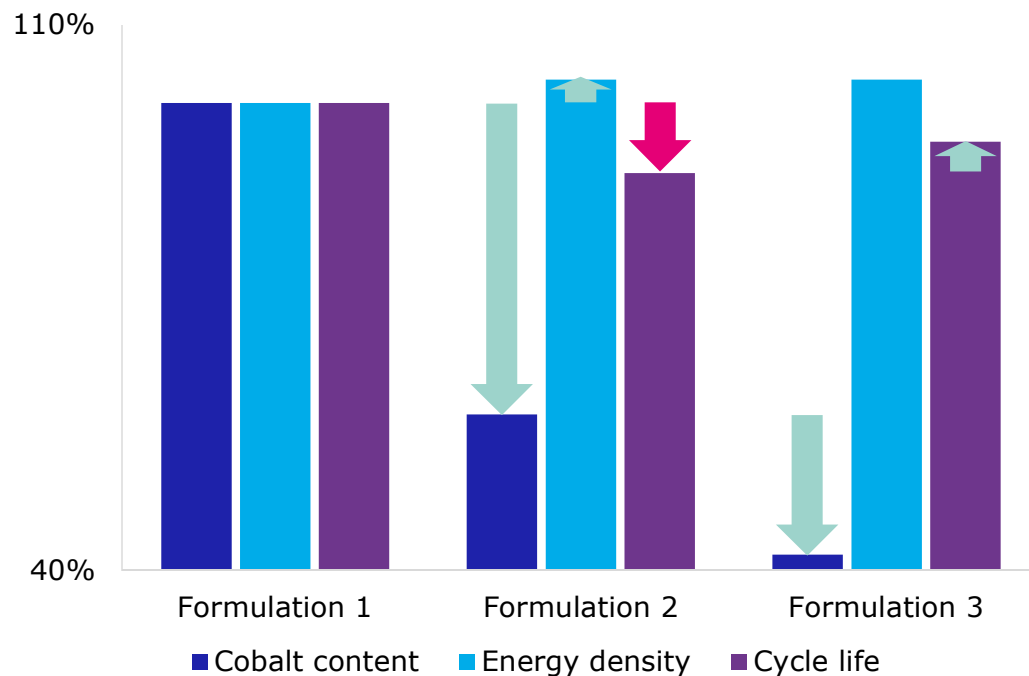
## eLNO enables

Long range,  
pure BEV

A portfolio of eLNO materials

# Customisation is key to capturing value

## Tailoring eLNO to meet customer requirements



**Technology expertise** enables rapid development and customisation

**Committed to customisation** with positive customer feedback:

*"JM is a **preferred** cathode material company to work with due to fast response, **willingness to customise** the product [and] investing in science"*

**No single material meets the needs of all customers**

# World class application and testing facilities

## Enabling customised development

- Building **best in class** application and testing facilities
- Enables development of **tailored solutions**
- Supports **new process** and **material development**
- Capability to fabricate and test **large format cells**

Designed with customers to their specifications

JM





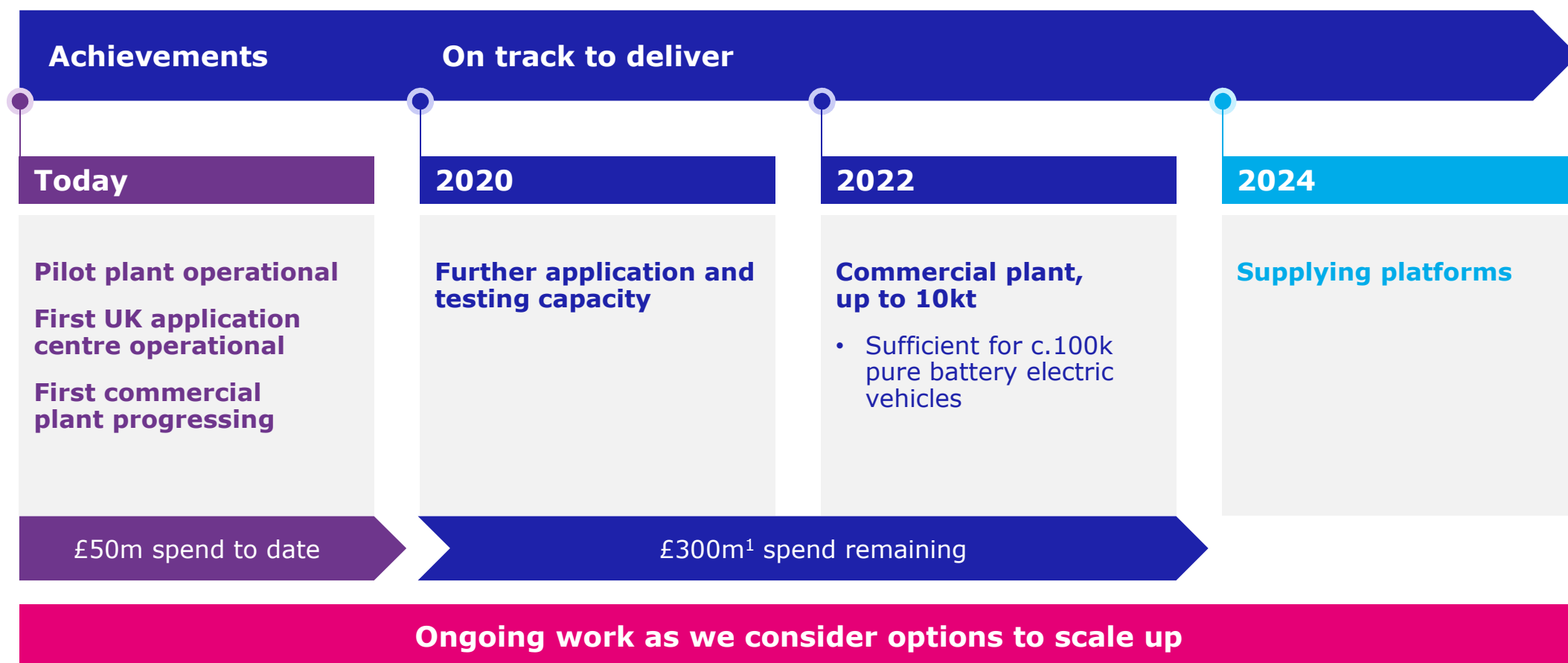
# Breakout growth: making significant progress

## Progress

- Positive customer feedback and progressed to **full cell testing** with two parties
- Investing for **commercialisation**
  - Pilot plant operational
  - FEED work well advanced on first commercial plant
- Progress on sourcing key **raw materials**
- Evaluating best **options for scale up**



# Commercialisation: bringing a viable product to market



# Building a scalable business

Scale up beyond our first commercial plant likely to be **phased**

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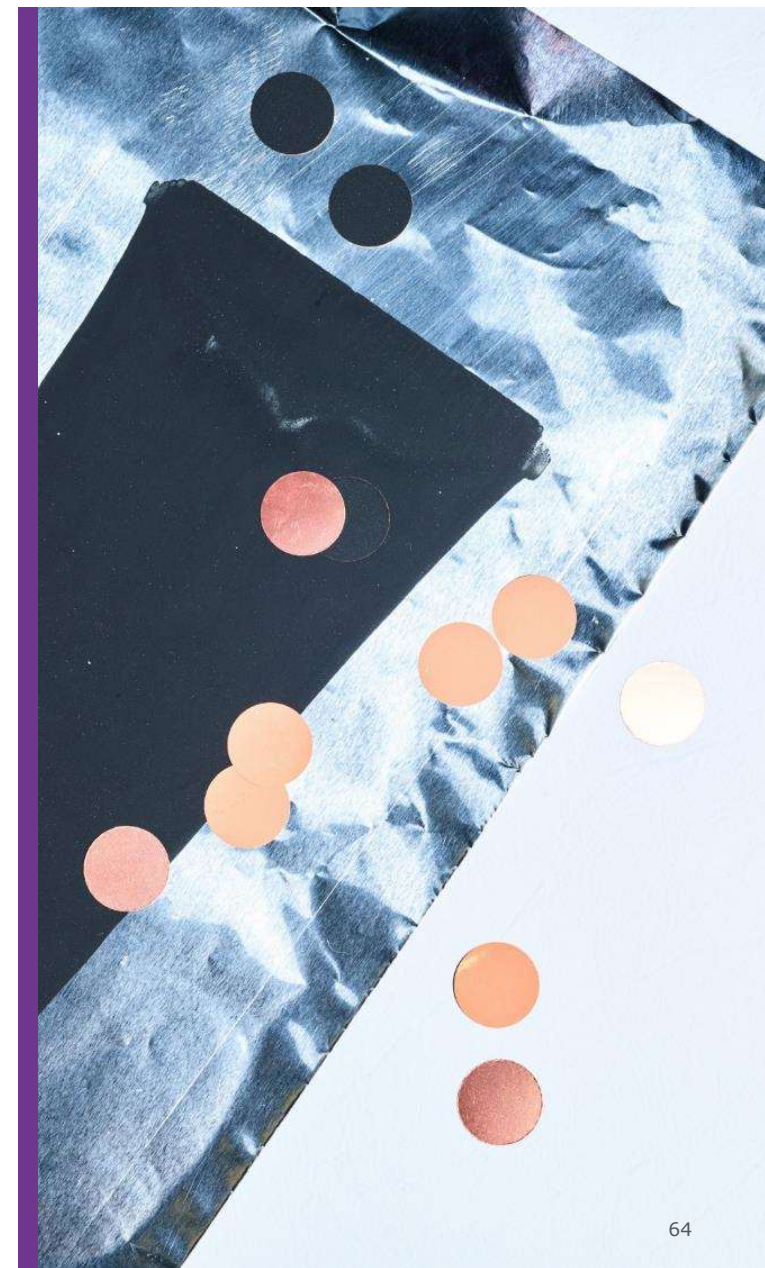
**Matching capacity** to market demand

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Enables the use of the most **modern process technology** to improve returns profile

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Resources to be allocated in a **disciplined manner** and in line with our capital allocation framework



## Conclusion

**Maintained  
technology  
leadership**

**Customer testing  
and customisation  
continues**

**Commercialisation  
progressing as  
planned**

**Progressing scale  
up plans**

**Well positioned for breakout growth**



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## Efficient Natural Resources

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Jane Toogood  
Sector Chief Executive, Efficient Natural Resources



# Efficient Natural Resources leadership

**Jane Toogood,**  
Sector Chief Executive



Joined in February 2016 as Divisional Director, Precious Metal Products

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Sector Chief Executive, Efficient Natural Resources from April 2017

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Efficient Natural Resources formed from Process Technologies and Precious Metal Products businesses combined

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30 years of experience in the chemicals industry, covering multiple industry sectors

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Non-Executive Director of Victrex Plc

## Upgrading our guidance

**Took over a declining business**

**Stabilised and delivering on strategy**

**Our technologies accelerate growth**

**Future growth driven by megatrends**

**Confident in  
mid to high single  
digit growth in  
operating  
performance  
to 2025**

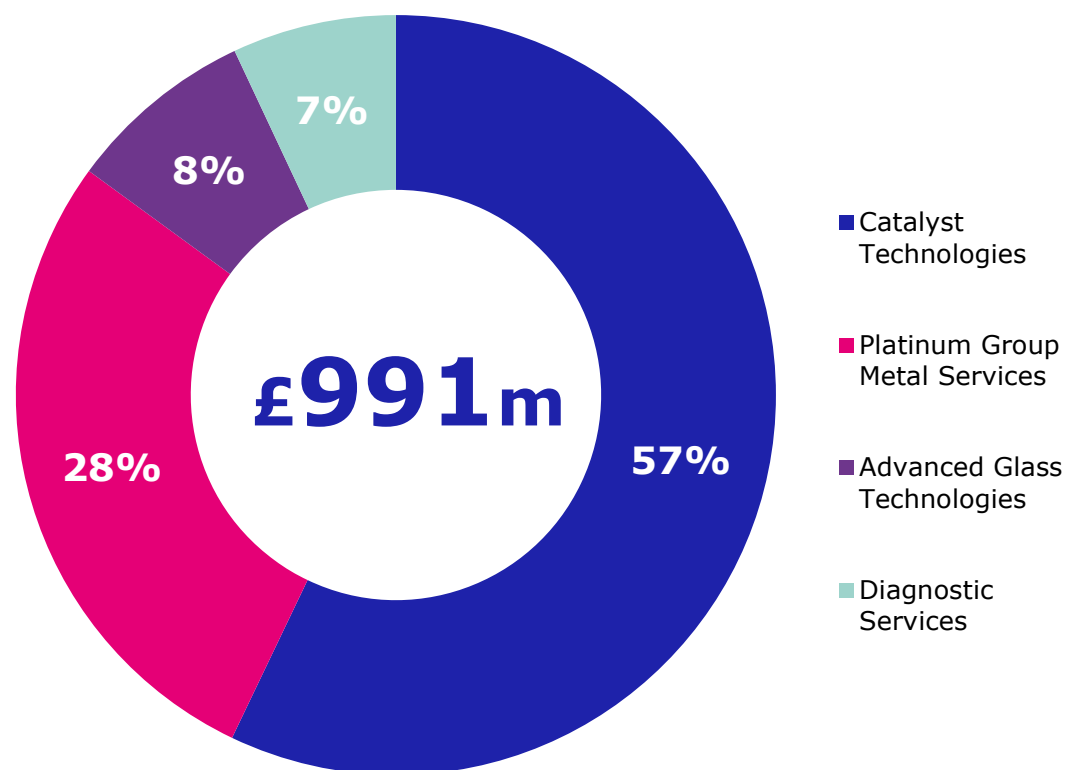
## We create value from the efficient transformation and use of natural resources:

- Demand and consumer concern for the **planet** is increasing
- Efficient Natural Resources allows our customers to use those resources both **efficiently** and **cleanly**
- Using our **core chemistry** and technology expertise to solve **complex** problems through close **collaboration** with customers



# Efficient Natural Resources

## Sales 2018/19 by sub-business



JM

Note: Sales excluding precious metals

### Catalyst Technologies

Chemical and refinery catalysts and process technology

### Platinum Group Metal Services

Strategic service to the group and the world's leading secondary refiner of pgms; precious metal products and business solutions

### Advanced Glass Technologies

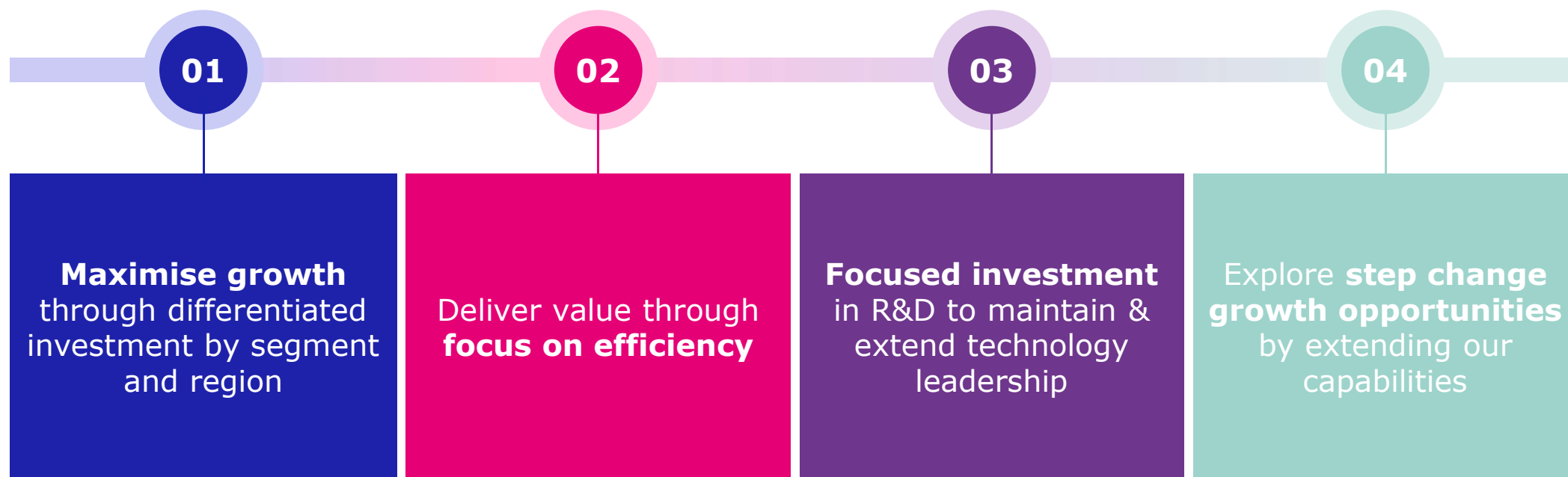
Advanced glass materials and conductive inks for use in auto glass and other industries

### Diagnostic Services

Specialised detection, diagnostic and measurement solutions for use in the petroleum industry

**2018/19 ROIC of 12.6%**

## Our strategy to deliver sustained market outperformance



**Mid to high single digit growth in operating performance to 2025**



## Significant strategic progress

Focus	Delivered
Creating a robust and <b>sustainable</b> business	Stabilised performance with operating profit 2 year <b>CAGR of 5%</b>
Focus on <b>efficiencies</b>	Restructuring programme completed Product portfolio rationalisation Investing into refineries
Using existing technologies and investing in <b>new technologies</b>	Developed and commercialised new license technologies <ul style="list-style-type: none"><li>• Mono ethylene glycol</li><li>• Waste to aviation fuel</li></ul>



**An agile  
and efficient  
business well  
positioned  
for growth**

## Drivers of near term growth – continuing to evolve our existing strengths



**Evolving existing technology in line with customer demand**

### Examples

#### Formaldehyde

Cleaner, more efficient process  
JM has leading technology

#### Additives

Debottlenecking has increased capacity

#### Licensing

will drive steady value as plants are built

### Technology leadership positions

Methanol	#1
Hydrogen	#1
Gas processing	#1
Formaldehyde	#1
FCC additives	#1
PGM Services	#1

We evolve in line with customers needs and create value through efficiencies  
**Driving growth**

## Extending our technologies to accelerate near term growth

### **Mono ethylene glycol (MEG) technology**

#### **MEG is a key industrial chemical**

- Used in production of polyesters and fibre applications
- Our technology allows MEG to be produced from coal, natural gas or biomass
- Customers able to maximise feedstock conversion and reduce utility consumption

### **Fischer Tropsch (FT cans) technology**

#### **Waste to aviation fuel**

- License FT cans technology to Fulcrum BioEnergy Inc
- First commercial scale plant to begin production 2020
- 175,000 tonnes of waste into 11 million gallons of fuel each year

**Extending our technologies into new applications and markets to accelerate growth in the medium term**

# Opportunities for our science in the future

	Driven by megatrends	Building on existing expertise
Hydrogen	Climate change Energy transition	Advanced technology in <b>gas heated reforming</b>
Battery materials recycling	Climate change Energy transition	<b>Pgm recycling</b>

## Conclusion

**Delivering  
our strategy**

**Accelerating  
growth**

**Opportunities for our  
science today and in  
the future**

**Mid to high single digit growth in operating performance to 2025**





**Johnson Matthey**  
Inspiring science, enhancing life

## Health: delivering breakout growth

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Jason Apter  
Chief Executive, Health



## Health leadership



**Jason Apter,**  
Sector Chief Executive

Joined JM in March 2018 as Sector Chief Executive

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Over 20 years' experience working across a variety of industry segments, including 9 years in life sciences

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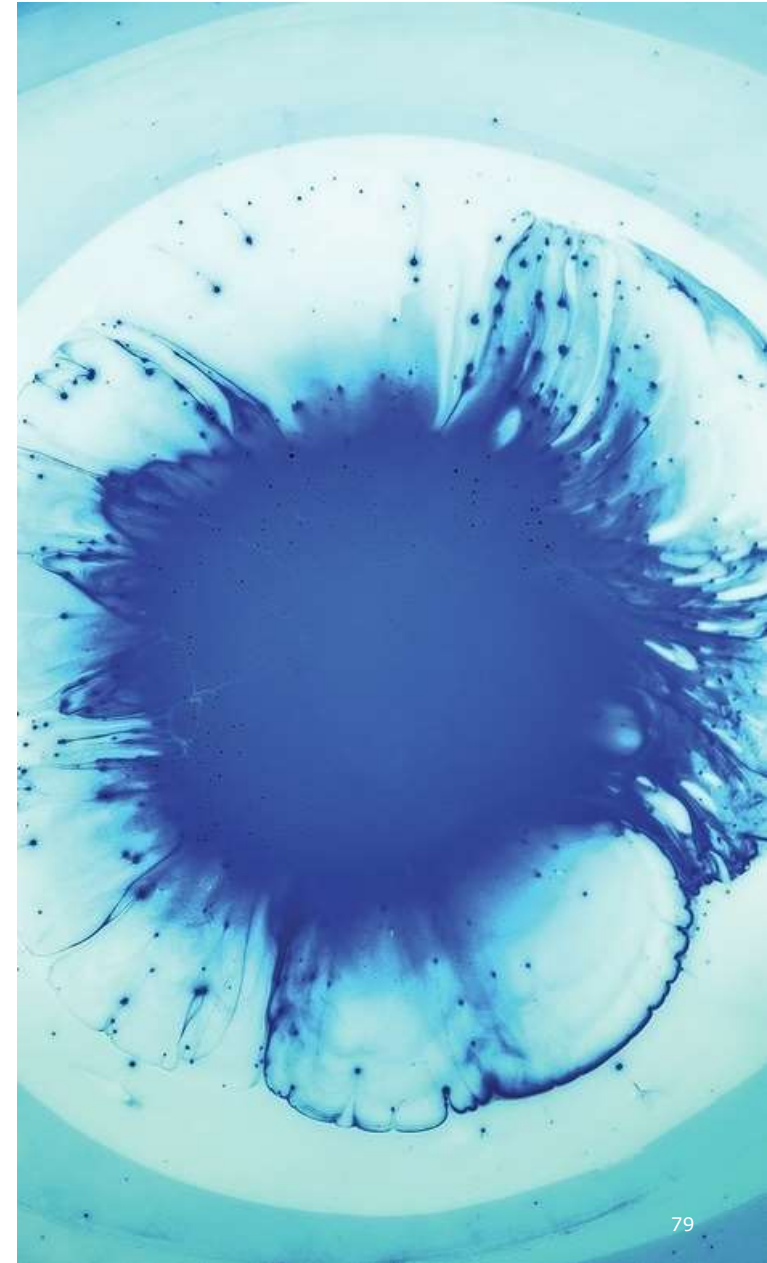
Extensive experience in driving innovation, growth and operational effectiveness

# Applying science and innovation to provide solutions to our customers

● **Population and longevity** driving increased demand for more effective and affordable treatments

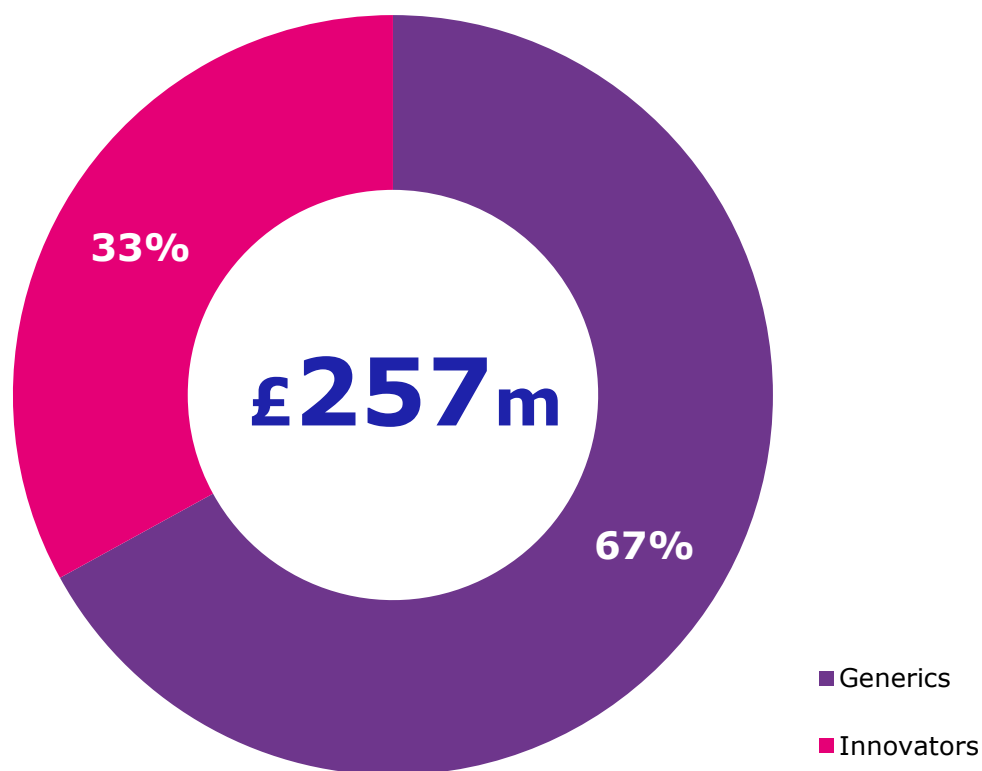
● Advances in novel drugs driving growth in **highly potent** drug substances and **more complex** small molecule solutions

● Continued pressure on more affordable healthcare solutions driving demand for **generic versions** of **existing drugs**



# Our business at a glance

## Sales 2018/19 by sub-business



JM

Note: 2018/19 sales excluding precious metals

### Generic

Controlled substances (84%)

Non controlled substances (16%)

### Innovators

Clinical development (24%)

Commercial API (76%)

**2018/19 ROIC of 9%**

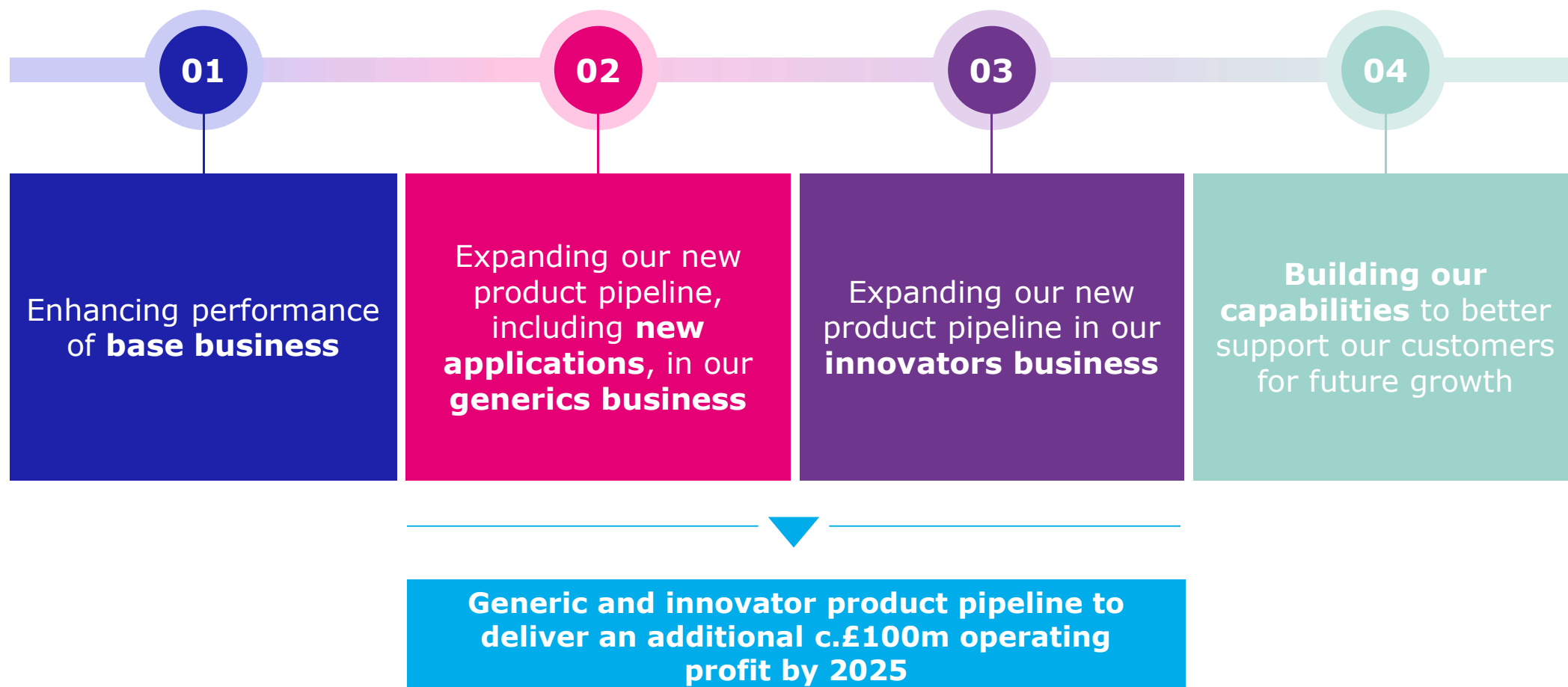
# Strong position in attractive market niches

	Generics	Innovators
Market position	Leader in controlled substances	Complex and high potency small molecules
Barriers to entry	High	High
Growth drivers	New applications New product pipeline	Clinical development services New product pipeline

Served through a common development and manufacturing base



## Our strategy for breakout growth



## Significant progress against our strategy

Focus	Delivered
Optimise <b>base business</b>	Footprint rationalisation Productivity improvements Procurement initiatives
Expand <b>new product pipeline</b>	2 new applications 1 new generic launch 10 generics in regulatory approval 4 late stage innovator programmes
Building <b>capabilities to better support customers</b>	High potent drug manufacturing Particle technology Process chemistry



## Driving operational improvements to optimise our base business

### Footprint

Riverside closure

Annan ramp up

### Productivity

Process simplification

Capacity optimisation

### Procurement

Narcotic raw material

Indirect spending

**New leadership team with relentless focus on execution**

# Delivering on our product pipeline

## New application



**New drug approval** using existing controlled drug substance

New **ADHD** treatment with novel controlled release profile

## New generic launch



Developed non-controlled molecule for **new generic launch**

Complex molecule used in treatment of **acute myeloid leukemia**

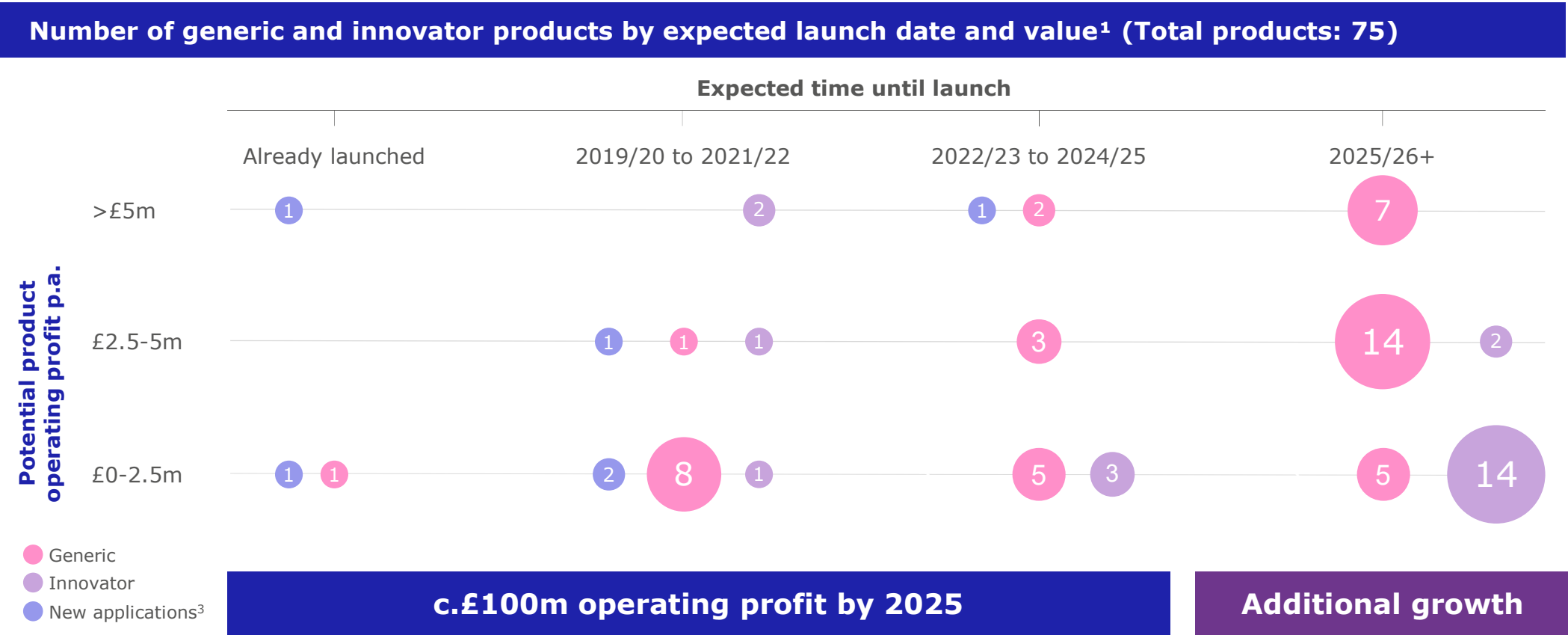
## Late stage innovator



Development and manufacturing partner for submitted **new drug approval**

Novel immunotherapy (**antibody drug conjugate**) in oncology

# Generics and innovators pipeline to deliver an additional c.£100m operating profit per year by 2025



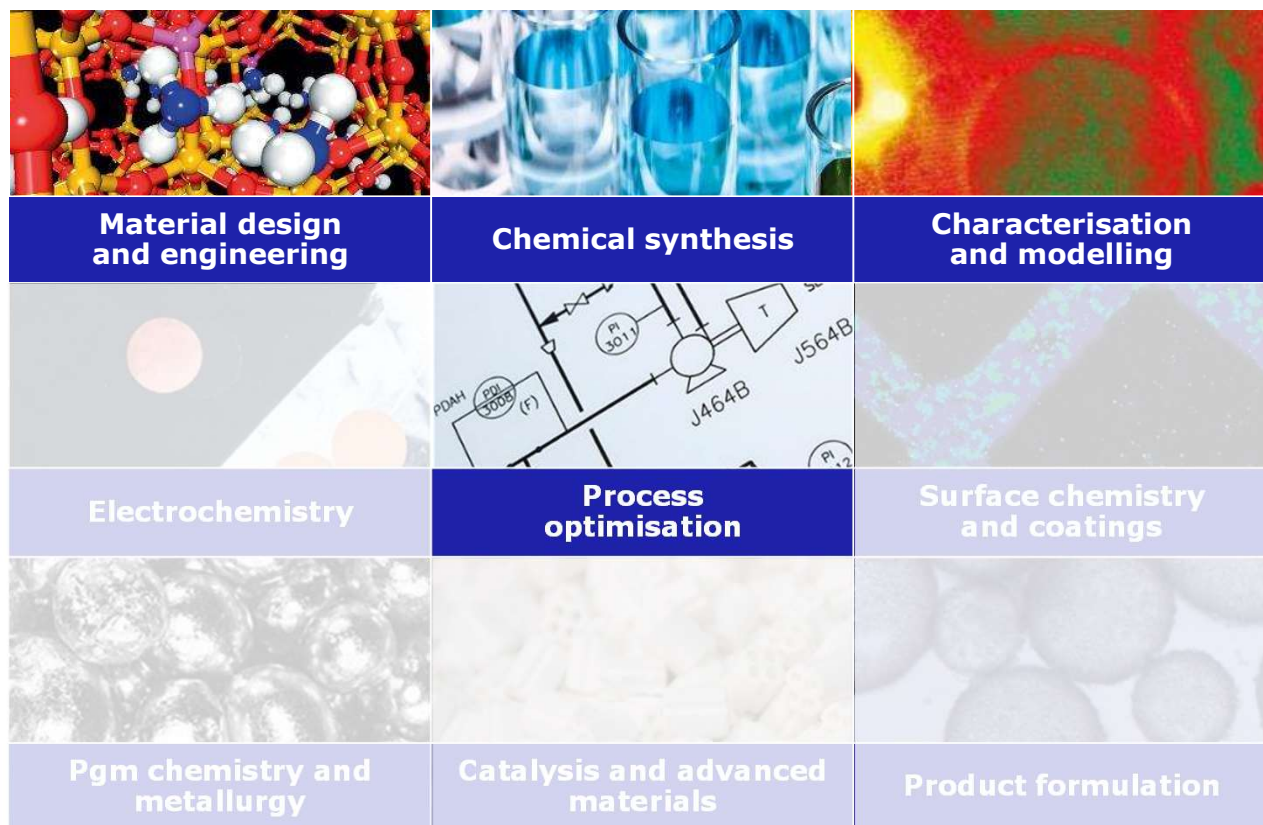
**JM**

1. Size of bubbles proportional to number of products  
2. Current pipeline as at September 2019  
3. New applications already launched are part of base and therefore not included in £100m operating profit by 2025



# Expanding our science capabilities to solve our customers' problems

## Our core capabilities



## Expanding capabilities





## Conclusion

**Population and longevity driving more complex, high potency, targeted APIs**

**World class science to solve our customers' complex problems**

**Opportunity to expand our capabilities**

**Passed inflexion point and now delivering growth**

**Generic and innovator pipeline to deliver c.£100m additional operating profit per year by 2025**



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