

12/03/2020

# ILCWG: APC UPDATE

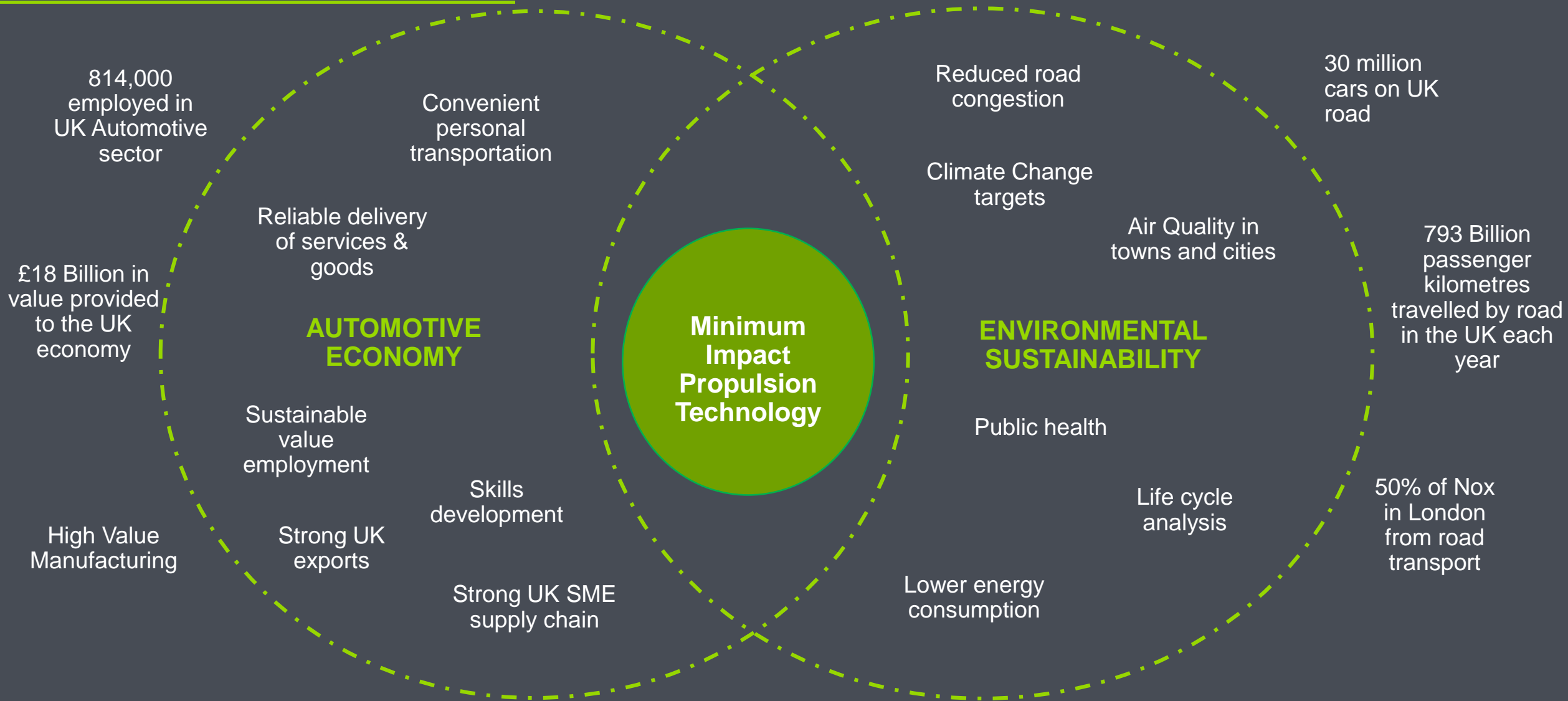


ADVANCED  
PROPULSION  
CENTRE UK

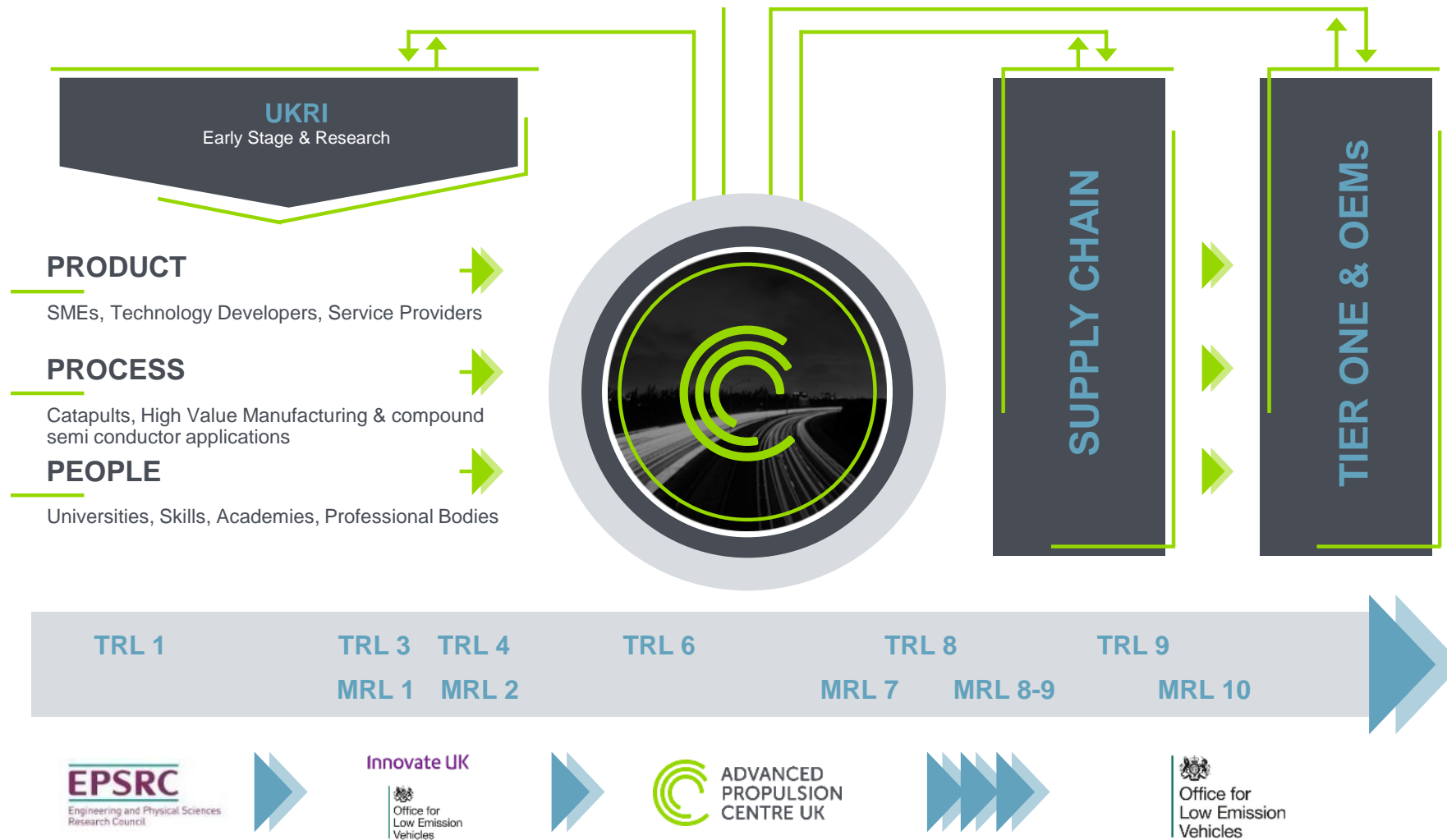
Jon Regnart



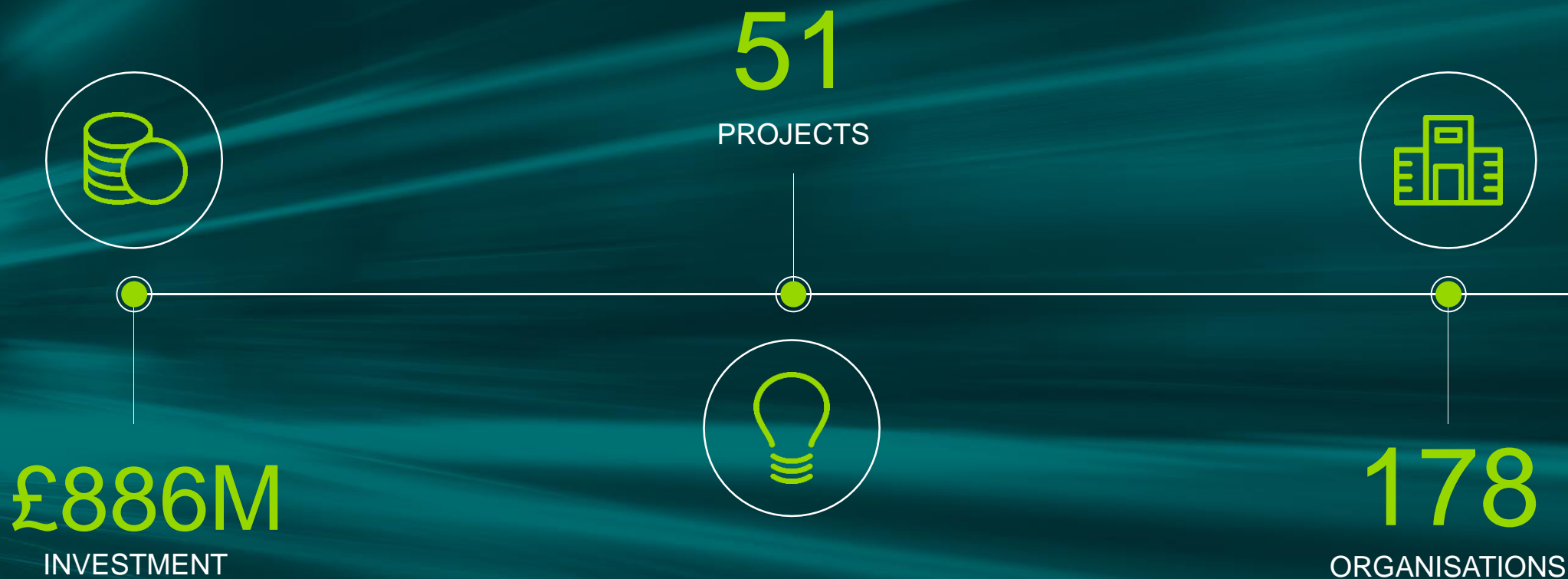
# THE NEED FOR CHANGE



# WHERE THE APC FITS IN



# ADVANCED PROPULSION CENTRE THE JOURNEY SO FAR...





# ADVANCED PROPULSION CENTRE THE JOURNEY SO FAR...

35,932

JOBS



157m

TONNES OF CO<sub>2</sub> SAVED

8.8m

CARS OFF THE ROAD



# FUNDING ACCELERATED DEVELOPMENT OF LOW CARBON TECHNOLOGIES – CORE COMPETITIONS



APC grant funding is for technology-driven collaborative R&D projects



Aims to take demonstrated, new technologies to production ready products



Targeting CO2 reductions through volume automotive impact



£5 to £40 million



Projects must develop capability in the UK supply chain

# APC – HOFER : UK CASE STUDY

## hofer UK Technical Centre (Warwick)



New R&D centre opened in Warwick supporting high value jobs in electrified powertrains

APC investment led to the production facility being located in Shirley

## hofer UK Manufacturing Facility (Shirley)



“This project is very exciting for hofer powertrain, as it allows us to bring our significant experience of electrical, mechanical and software system design and production to the UK market place; working with leading companies to create a unique hofer product portfolio for manufacture in the UK. The success of this project and the interest we are receiving from the automotive OEMs, confirms that we took the correct decision when deciding to be part of this project”.

**Johann Hofer**

Innovative electrified vehicle transmission capability anchored in the UK. This has acted as a springboard for hofer to conduct more UK based R&D into electrification



## 2020 Funding Calendar

To allow you to plan ahead and develop your project application, we have outlined the three core competition deadlines for 2020. Sign up to our mailing list for updates on when these competitions open.

The application deadlines are:

(ie. Application Closing Dates)





# SUPPORTING & DEVELOPING SME'S AND SUPPLY CHAIN

TDAP Programme runs over 4 years and is structured in three waves – a total of £4.76m of funding:



**WAVE 4 ACTIVE**

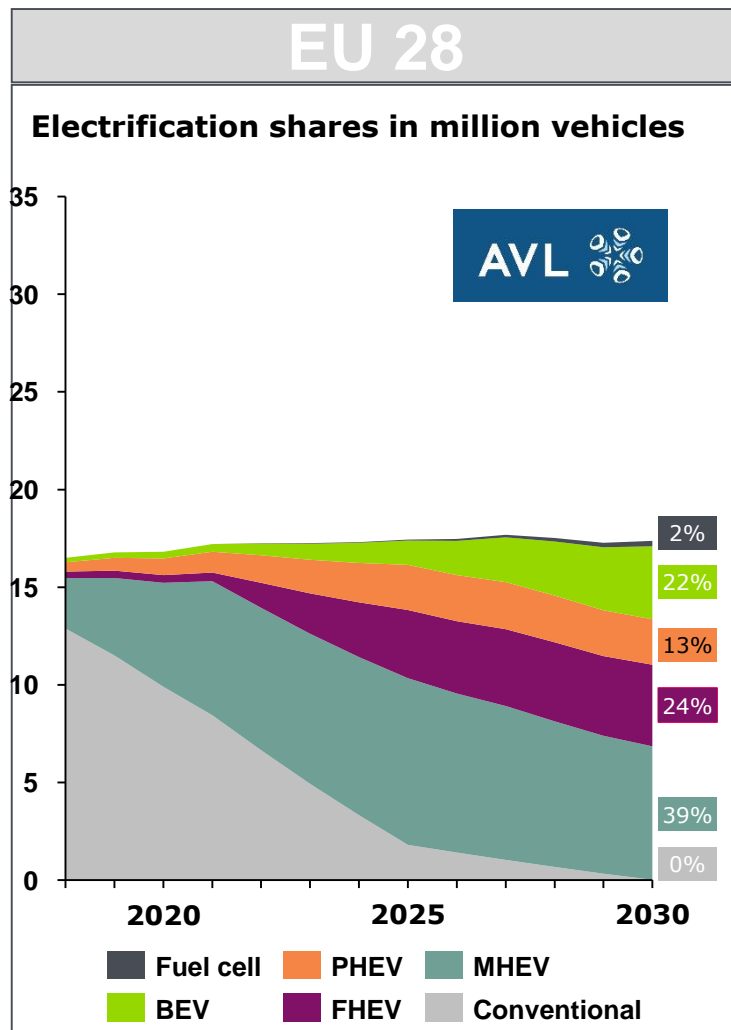






*UK OPPORTUNITIES IN THE  
ELECTRIFIED SUPPLY CHAIN*

# THE NUMBER OF ELECTRIFIED VEHICLES IS EXPECTED TO INCREASE RAPIDLY WHICH WILL PRECIPITATE A RAMP UP IN THE SUPPLY CHAIN



**105GWh** of battery cells

**17 million** electric motors & inverters

**3.5 million** on-board chargers

Jaguar Land Rover to invest £1bn to build electric cars in Britain

BMW Group investing €400M in Plant Dingolfing for production of BMW iNEXT EV

03 December 2019

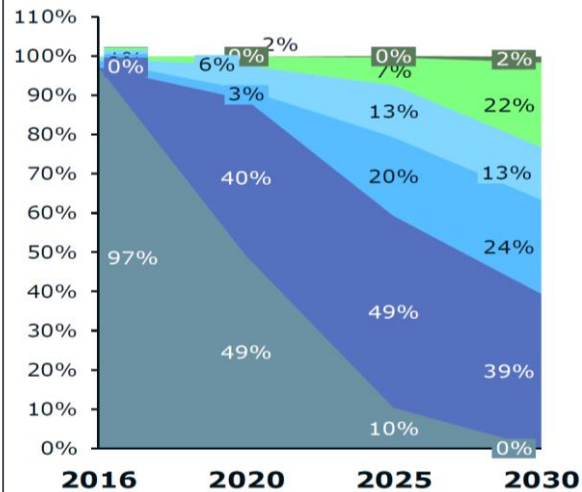
VW invests €900 million for 20% stake in Northvolt  
13 June 2019

Tesla factory outside Berlin to cost €4 billion

# THE CAPABILITY STUDY ASSESSED THE DEMAND FOR BATTERIES, E-MACHINES & POWER ELECTRONICS GENERATED FROM XEVs THROUGHOUT THE VALUE CHAIN

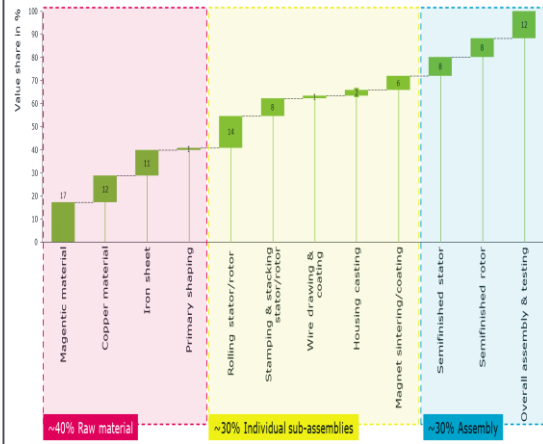
## Step 1: Market Scenarios

- How many passenger cars will be produced in 2025 across different regions
- How will shares of electrification technologies develop?



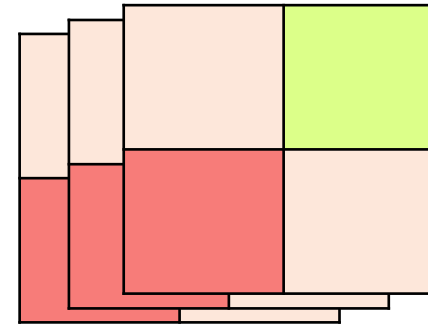
## Step 2: Value Chains

- What are the main value creation steps for batteries motors and power electronics?
- How will the size of the motors / batteries change across vehicles / segments?



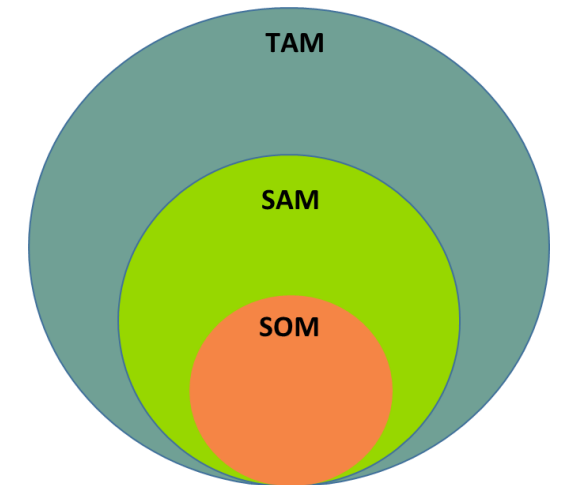
## Step 3: Portfolio Analysis

- Which value creation steps present the biggest opportunities for UK supply chain players?



## Step 4: Opportunity Sizing

- How big are the UK supply chain opportunities?





# EXAMPLE OPPORTUNITY – ATTRACTING A GIGAFACTORY TO THE UK

Incentivising a large cell manufacturer to invest in the UK is the highest strategic priority. Attracting cell manufacturing stimulates investment further up the supply chain whilst simultaneously anchoring battery pack and vehicle assembly in the UK.



SAM<sup>1</sup> for cell assembly opportunity

**~ €1.9-2bn  
EU-wide  
in 2025**

SAM in 2025 for cell assembly across regions	
	€200-300m
	€1.9-2bn
	€3.7bn
	€1.2-2.5bn

Automotive's influence on demand	
<b>A</b>	<b>The main driver of future demand</b>
B	Future demand will increase but not the main sector
C	Very little influence on overall future demand

Potential of opportunity	
A	Possible worldwide reach
<b>B</b>	<b>Regional reach - EU</b>
C	Supporting local UK companies

# COULD THE WEST MIDLANDS ATTRACT A GIGAFACTORY?

## STRENGTHS

Gigafactories tend to set up near customers, the West Midlands has a high density of automotive OEMs

Coventry is home to UKBIC which is a unique facility designed to attract cell manufacturers into the UK

A strong skill base in battery chemistry that's been created by university's such as WMG and the University of Birmingham

## CHALLENGES

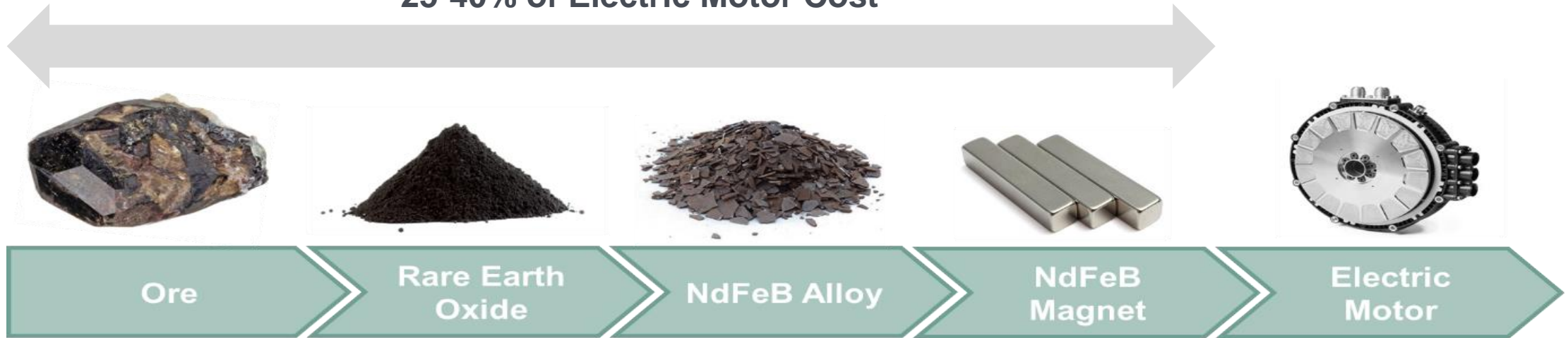
Cell manufacturers like to locate next to their suppliers, the UK chemical industry is prevalent in North East, South Wales and North West

Cell manufacturing is energy intensive and will require low cost, low carbon energy. Other places in the UK are better placed in this respect

Capital investment requirement is in the order of billions and large amounts of land needs to be made available quickly.

# EXAMPLE OPPORTUNITY – SECURING A MAGNET SUPPLY CHAIN

25-40% of Electric Motor Cost



China dominate this supply chain

€3.4bn\*

€0.8bn\*

\*Assuming all xEV passenger cars produced in the EU27 and UK in 2025 have NdFeB magnets



# COULD THE WEST MIDLANDS ATTRACT ELEMENTS OF THE MAGNET SUPPLY CHAIN

## STRENGTHS

HyProMag is looking to establish a rare earth recycling plant using hydrogen produced in the Tyseley business park

World renowned Magnetic Materials Group at the University of Birmingham

JLR's i54 and BMW's Hams Hall facility have committed to making electric motors in the West Midlands

## CHALLENGES

Other competing centres of excellence especially in the North West and Teesside

Needs central government co-ordination due to Chinese monopoly in this area. Different local authorities need to work together as isolated investments in the supply chain will not reap the rewards