

THE ROAD AHEAD

for Italian
automotive suppliers –
2030 and beyond

Presentation



A

The Automotive industry is experiencing massive disruption



B

Electrification, autonomous driving and "digital soul" are key



C

Italian automotive suppliers must embrace change



This study aims to identify future opportunities for Italian automotive suppliers, through a strong involvement of the Auto community

Focus and methodology of the study

Methodology

Perimeter: light vehicles

Output of the study

- Overview of ongoing trends in global automotive industry
- Presentation of technology trends associated with xEV, AD & connectivity
- Mapping of Italian components market AS-IS & analysis of readiness on emerging modules
- Identification of future opportunities for Italian suppliers
- Suggest industrial policy to support the Italian suppliers

30+



interviews to top decision makers

15 OEMs and suppliers

Aggregated sales: > EUR 100 Bn

Full coverage of car component domains

3 Foreign associations



2 Universities

POLITECNICO MILANO 1863
POLITECNICO DI TORINO

5 Senior Executives



10 Senior Experts



Benchmark analyses



Top 100

National automotive suppliers



Last 10y

Automotive industrial policies



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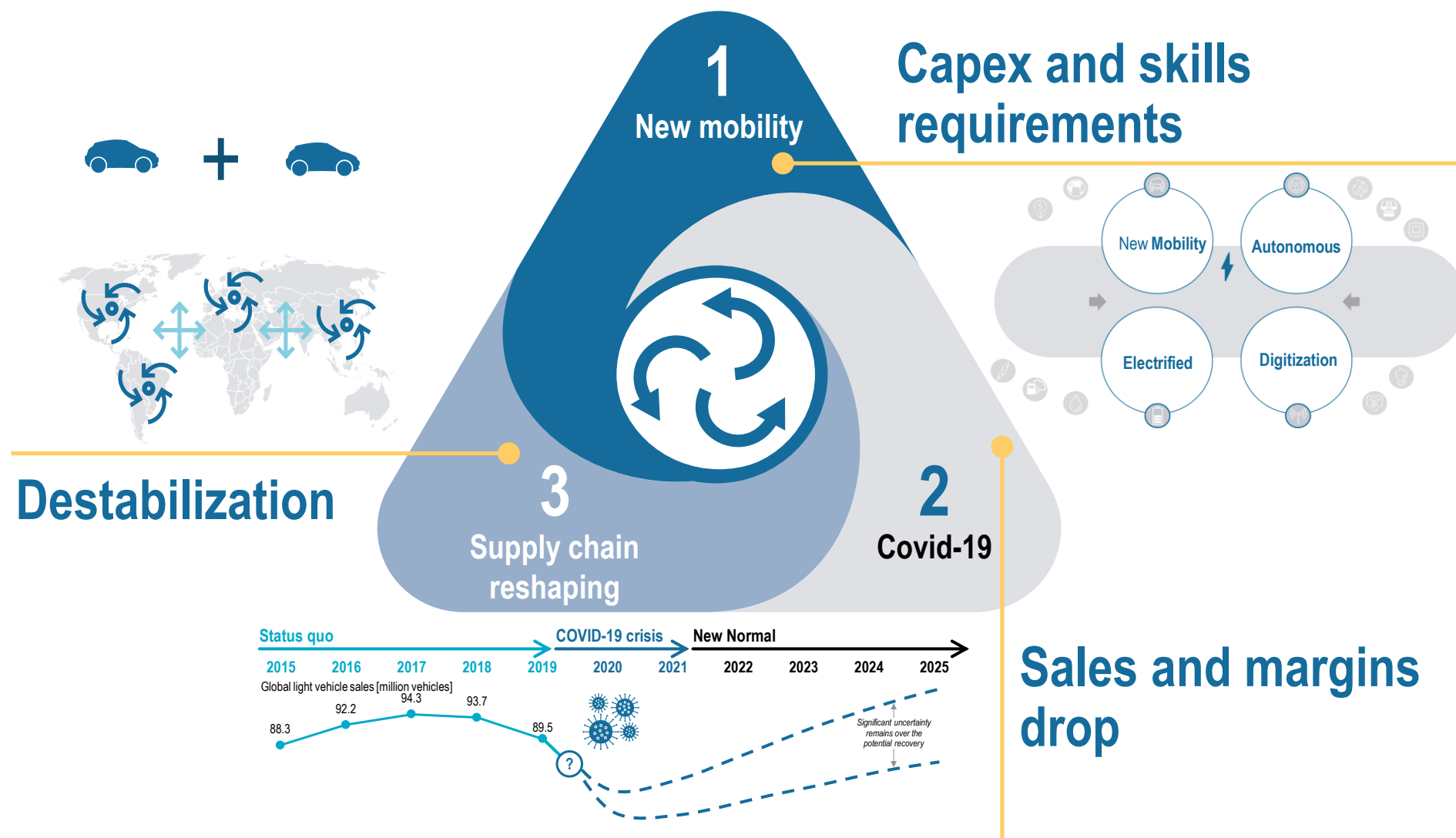


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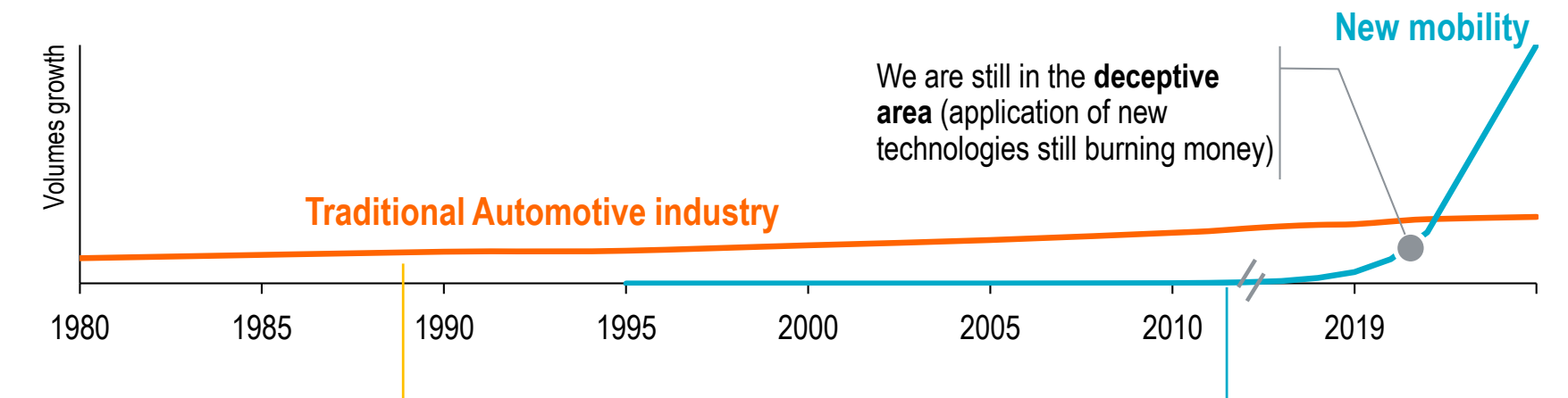
The Automotive is tackling a perfect storm resulting in additional pressure on suppliers



1 - New mobility

For decades, the Automotive industry followed a "linear paradigm":
Exponential acceleration? We are still in the deceptive area

Traditional Automotive industry growth compared to new mobility development Illustrative



Linear paradigm

- > **Time to reinvest Enterprise Value: ≈ 4.1 years for Auto Industry vs ≈ 20 years for other Industries**
- > **Capex development for auto industry: $\approx 10-12\%$ CAGR ('10-'14)**
- > **Up to 50% development costs indiscernible to customers**
- > **Platform convergence** (e.g. MQB architecture)
- > **Industry consolidation**

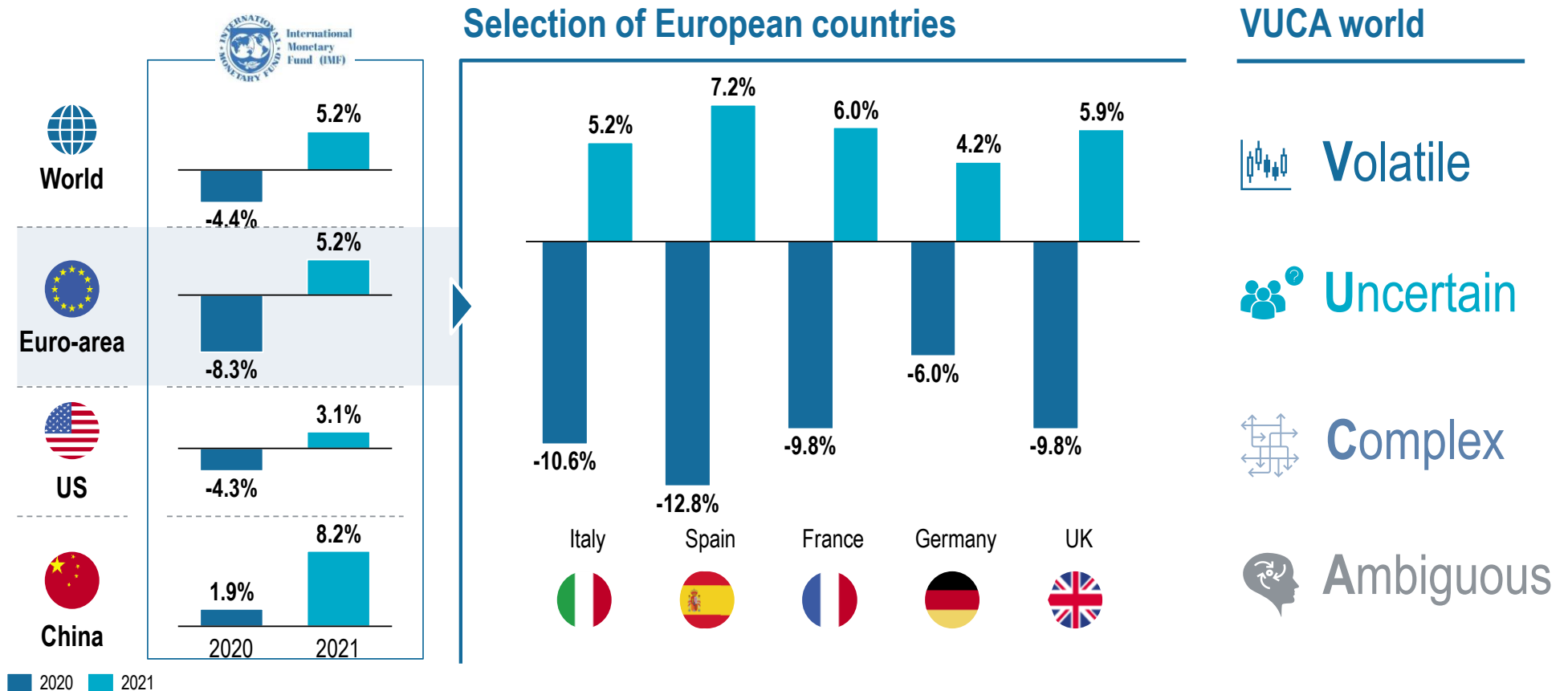
Exponential paradigm

- > **New tech challengers**
- > **Towards a frictions free state** (technology, regulations, habits)
- > **Make-or-break** attitude
- > **Designing the future through massive investments**
- > **Preventive competition:**
 - Compared to rival technologies (e.g.: BEV vs. FC)
 - **Among OEMs**

2 – Covid-19

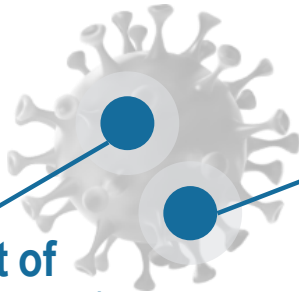
Global economy heavily affected by Covid-19 in 2020 with expected partial recovery in 2021 – Italian GDP plunging by -11% this year

Covid-19 impact in world economies – Expected GDP growth [2020-2021; %]



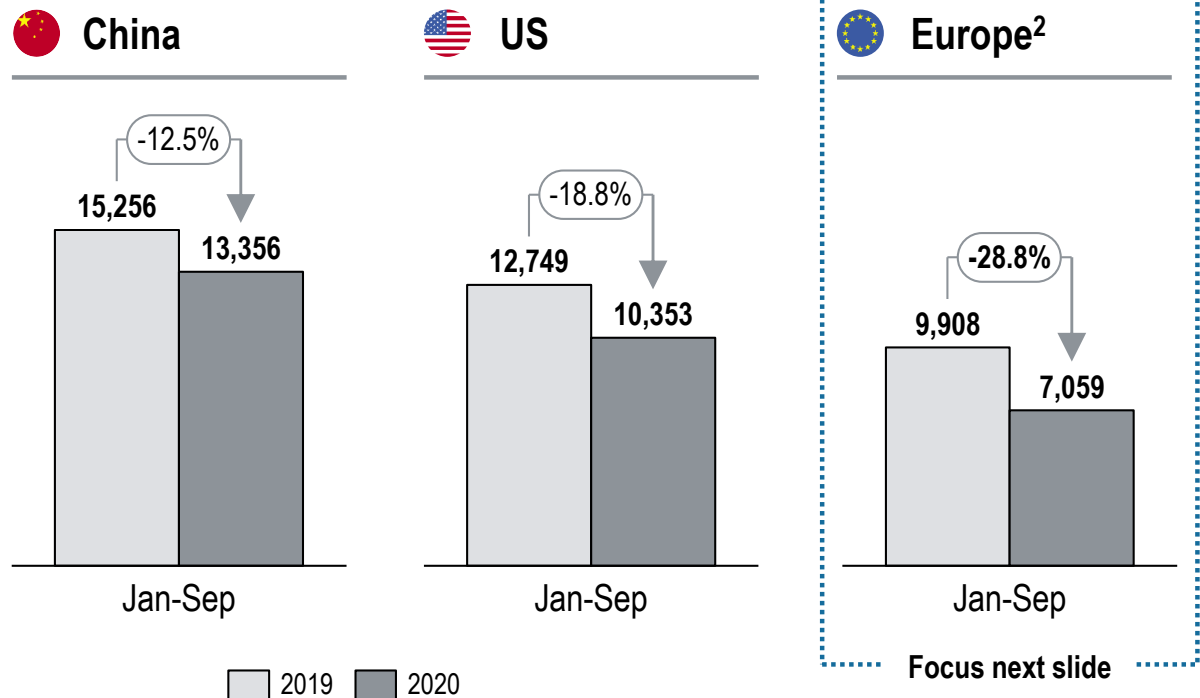
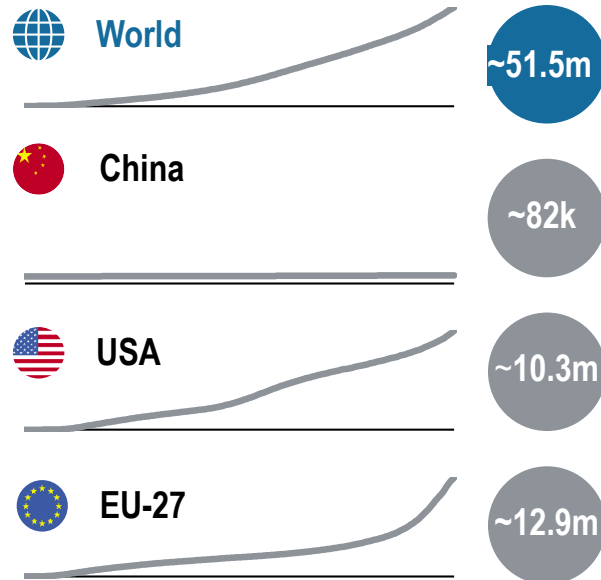
Europe shows the strongest negative impact for Covid-19 in the period Jan-Sep vs. 2019: -29%

Passenger car registrations [2020; units '000]



Breakdown of registrations by area

Development of Covid-19 infected¹

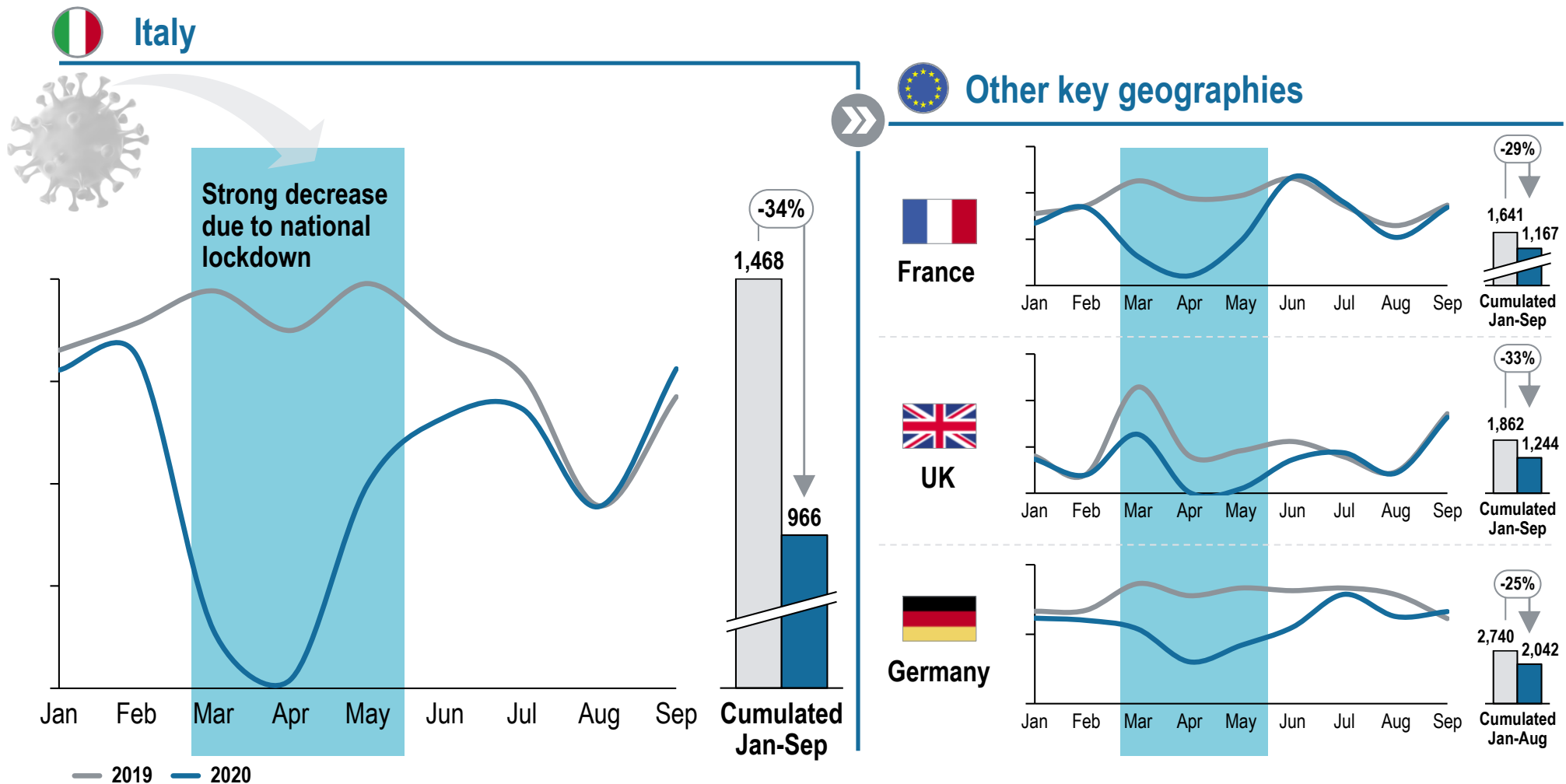


1) As of November 11th from 2nd of March 2020; 2) European Union

2 – Covid-19

Italy has suffered from the lockdown on March and April with -85% and -97% vs. '19 respectively – Slight rebound in September 2020

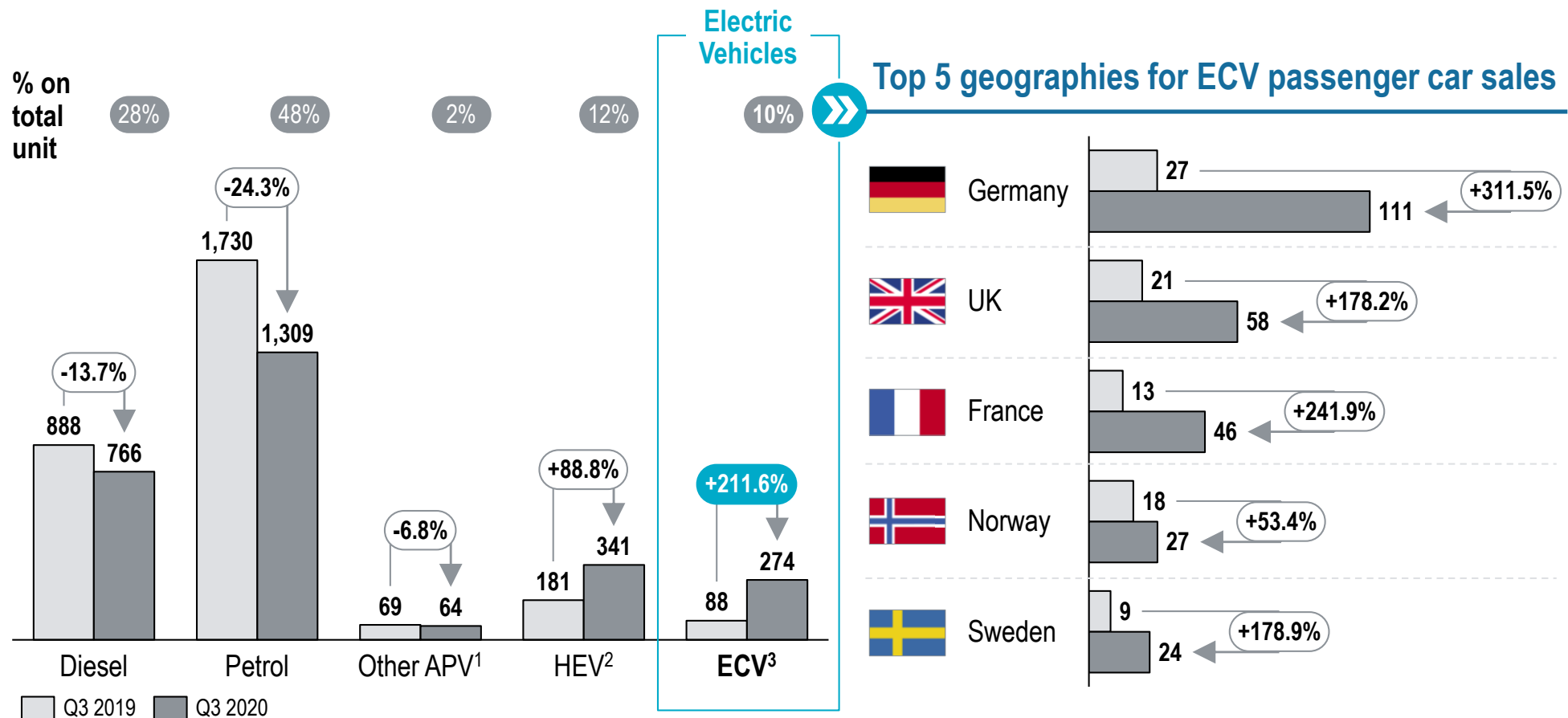
Passenger car registrations – European countries [2020; units '000]



2 – Covid-19

Despite a 10% weight in Q3 2020, ECV showed an inverse and positive trend displaying +212% in sales vs. Q3 2019

Passenger car registrations by type of fuel – Europe [Q3 2020; units '000]



1) Alternative Power Vehicles other than electric: includes Natural Gas Vehicles, LPG-fueled vehicles and ethanol (E85) vehicles; 2) Hybrid Electric Vehicles: includes full and mild hybrid
3) Electric Chargeable Vehicles: includes Battery Electric Vehicles (BEV), Fuel Cell Electric Vehicles (FCEV), Plug-In Hybrid Electric Vehicles (PHEV), Extended Range Electric (EREV) –
Figures in chart related to the European Union (not including Iceland, Norway, Switzerland, UK)

3 – Supply chain reshaping

Suppliers under pressure given OEMs' business combinations and the emerging production/logistics paradigm in the new normal

Technology-focused OEM alliances

Global merger

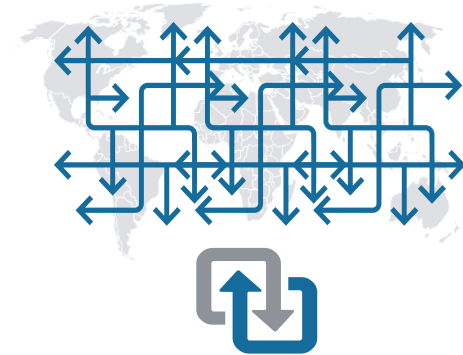


xEV and Autonomous driving alliances

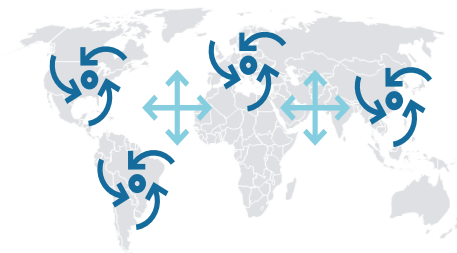


Rethinking production and supply chains

Pre Covid-19 era – GLOBALization



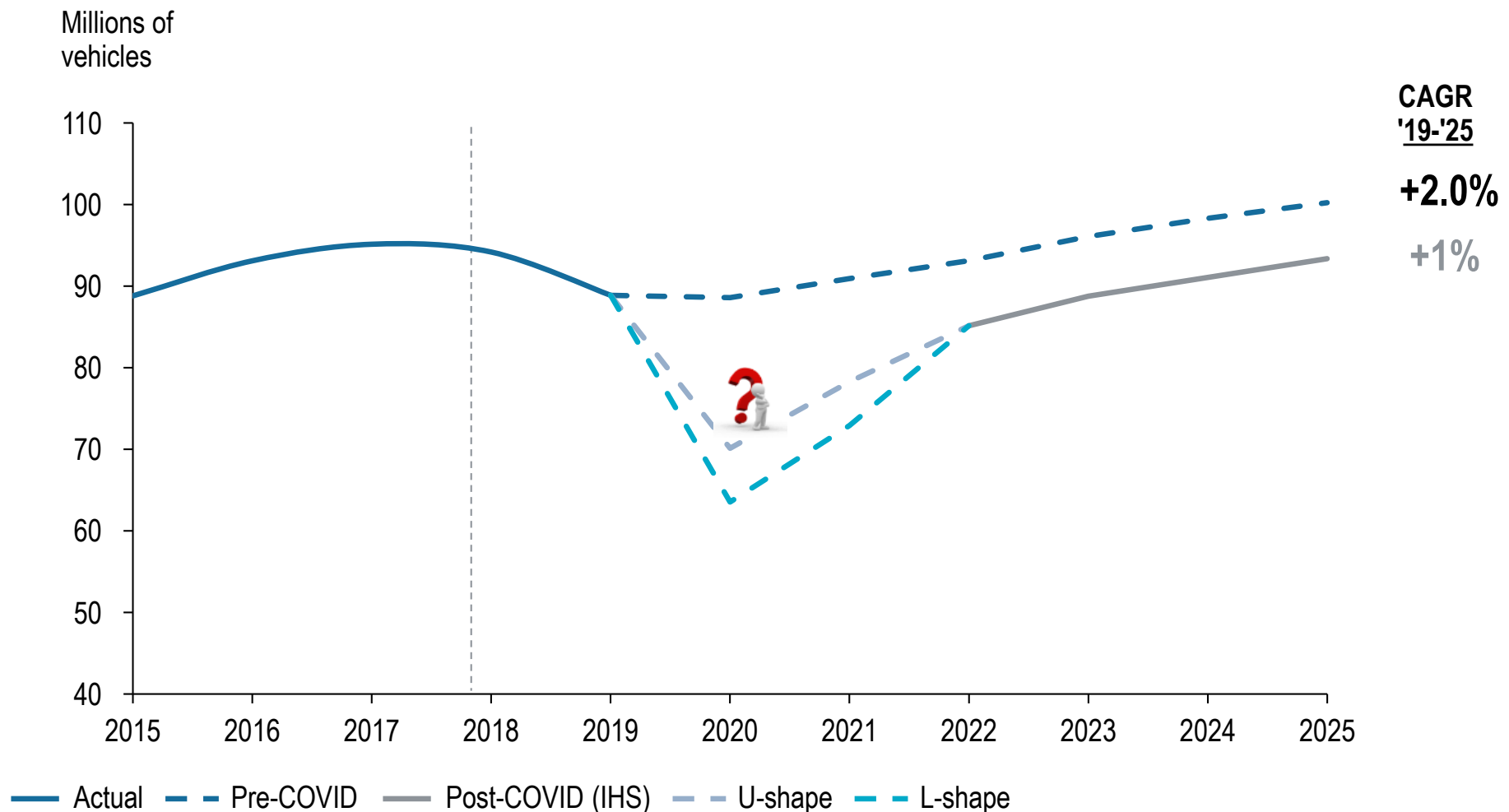
Post Covid-19 era – GLOCALization



➤ Further suppliers' destabilization

In the medium term the industry is expected to grow at 1% p.a. (2% p.a. before Covid-19)

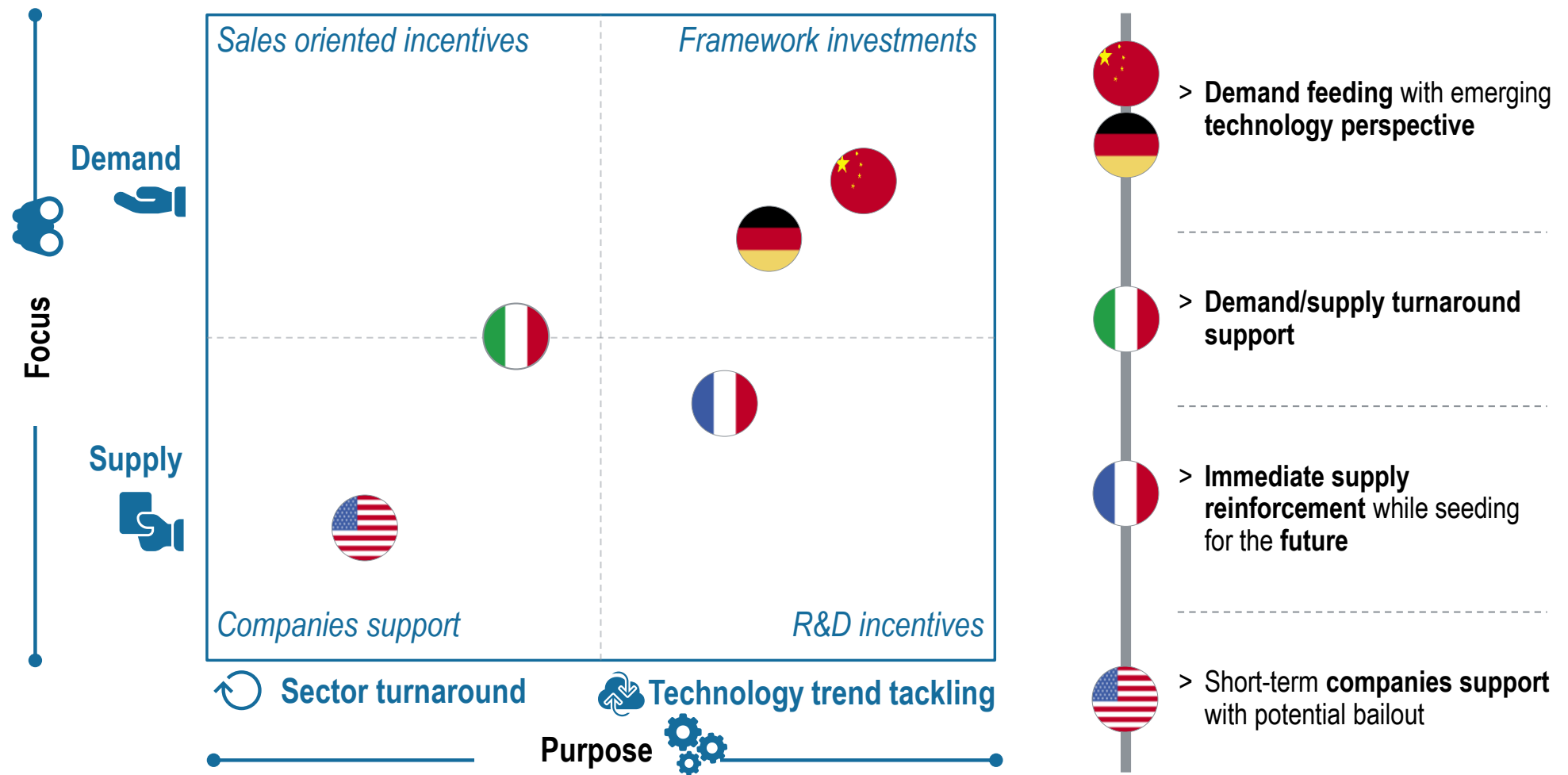
Global LV production [2015-2025; m units]



While GER, FRA, CHI have modelled their post Covid-19 measures on technology advance, ITA and US more focused on turnaround

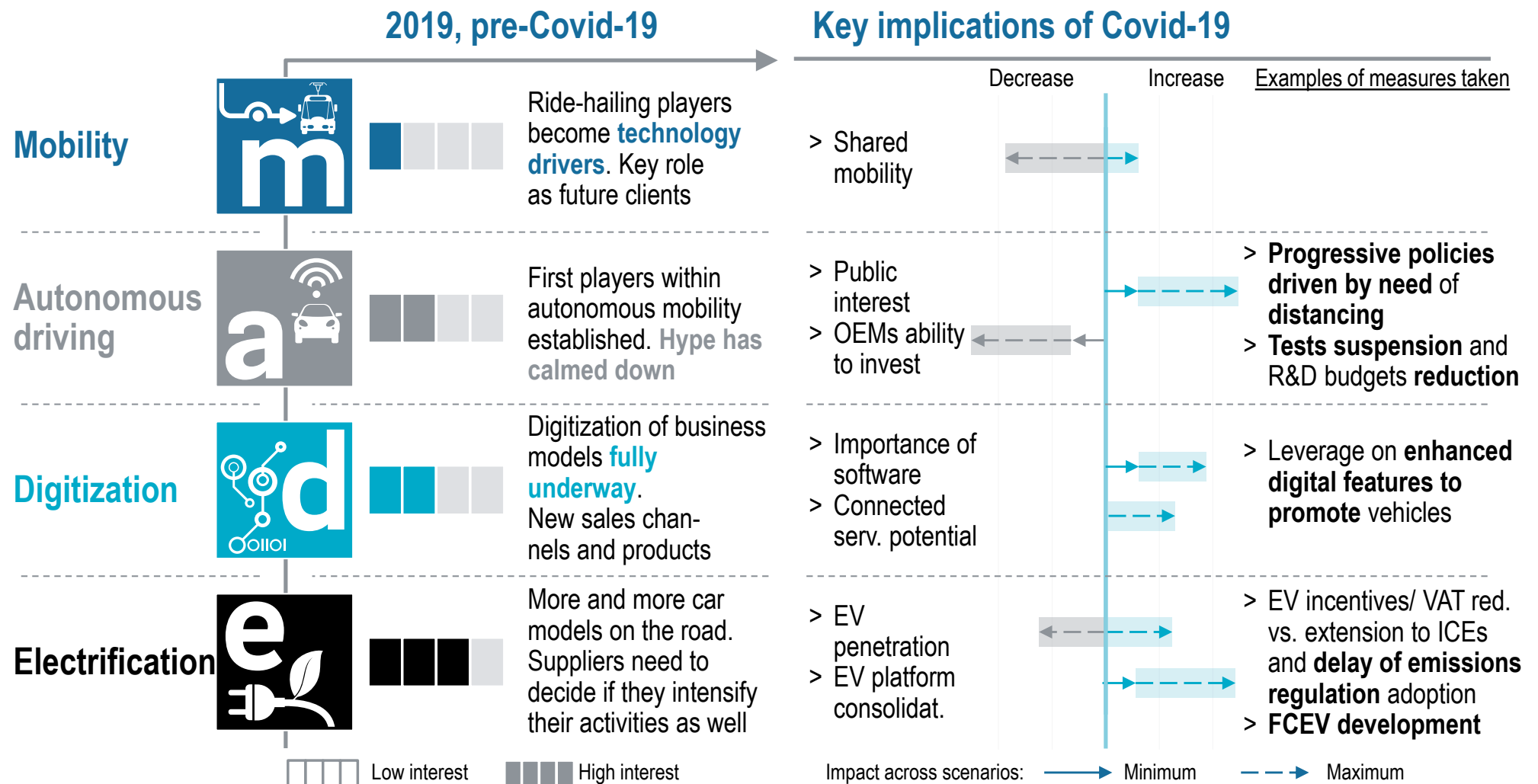
Post Covid-19 recovery measures: main focus by country

Illustrative



Looking forward, Covid-19 accelerates/decelerates the impact of mega trends in the Automotive sector

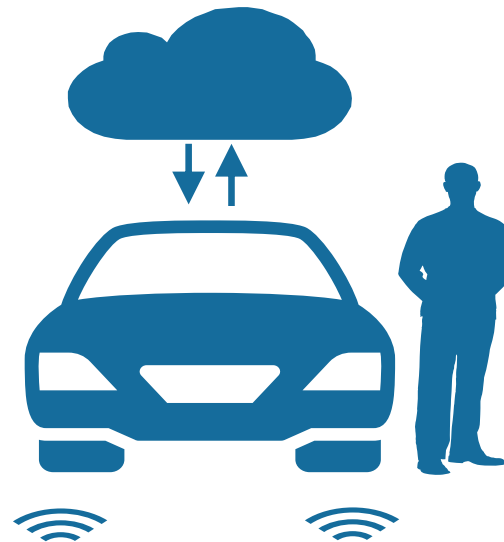
MADE temperature check Covid-19 implications



Vehicles are becoming increasingly connected unlocking the possibility of using the data collected for many purposes

Pervasive connectivity: type of data that can be collected and their potential application

Static technical data	Use cases
Fuel consumption	> Predictive maintenance
Mileage	> Remote diagnostics
Engine power	> etc.
Tire pressure Tire wear Tire temperature	
etc.	



Personal data	Use cases
Motion profile	> Cloud-streaming audio/video
Driving behavior	> Usage-based insurance
Entertainment habits	> etc.
Parking positions	
etc.	

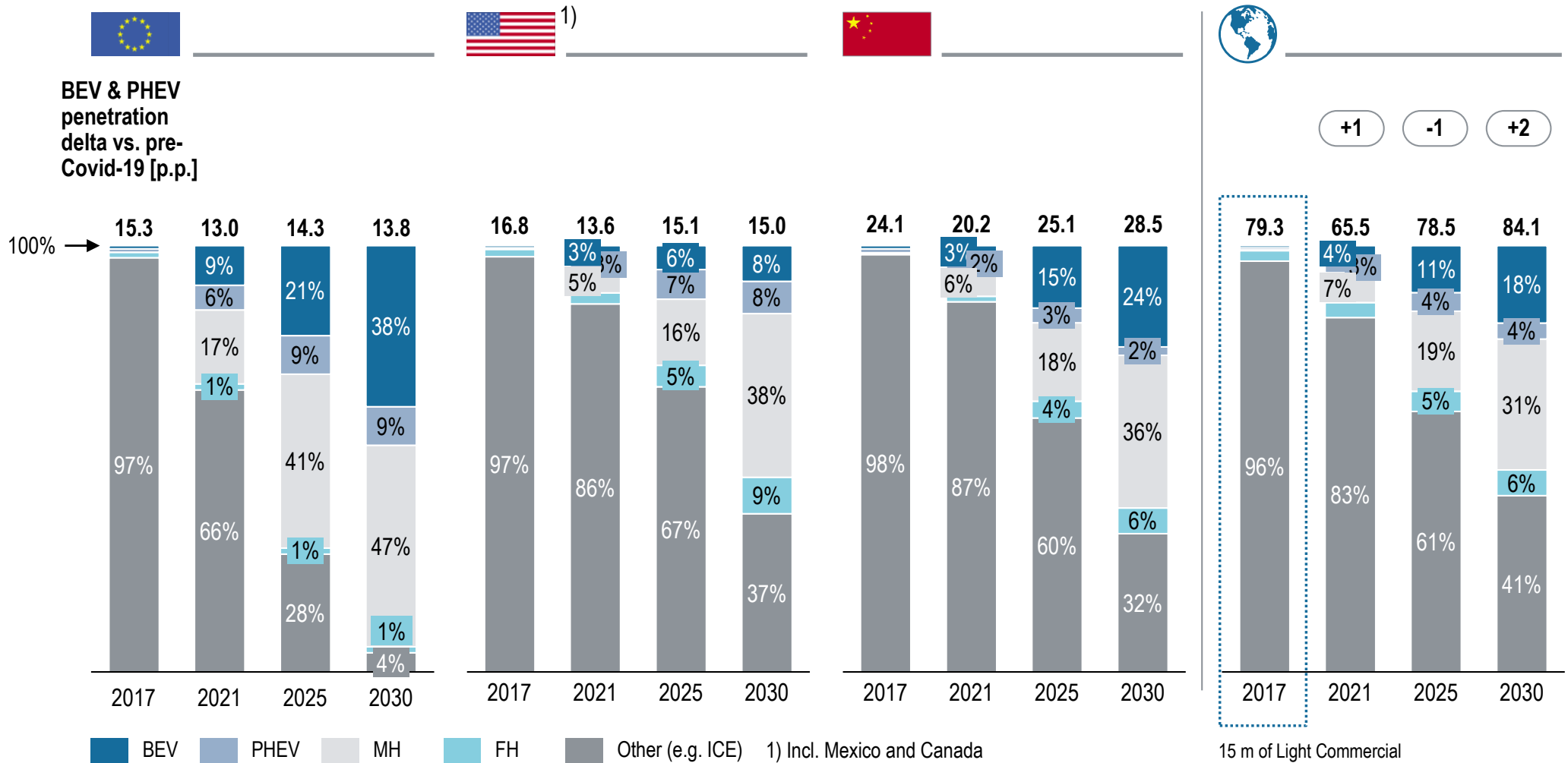
Dynamic technical data	Use cases
Navigation	> Car-sharing
Location	> Park assist
Parking	> etc.
Road tolls	
etc.	

Safety systems/ADAS	
Area map	Seatbelt tightening
Traffic assistant	GPS position
etc.	



PC sales to significantly shift towards xEV by 2030 with BEV and PHEV penetration to increase by 2 p.p.

PC sales forecast by region and powertrain type [2017-2030; m units]

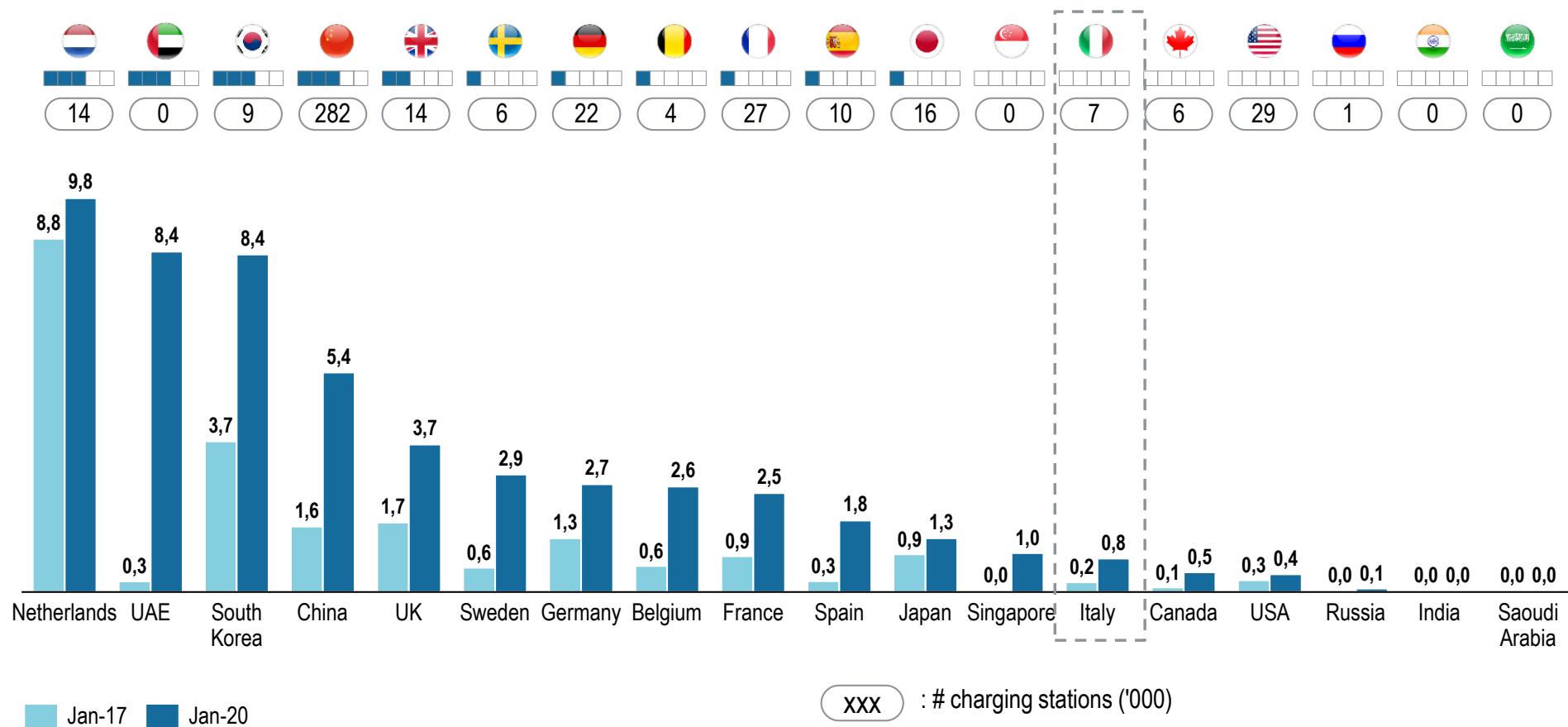


15 m of Light Commercial Vehicles (LCV) on top of PC



Netherlands has still by far the highest relative amount of charging stations, China leading in absolute figures

Charging infrastructure [charging location per 100 km roadways]



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The electrification creates discontinuity vs ICE, with traditional parts that need to be adapted and new opportunities (parts & services)

Overview of technological trends driven by vehicle electrification

1  Simplification of the vehicle architecture

2  Transformation of traditional components

3  Introduction of new components

4  New service offering

Vehicle digitization lays the foundations for the development of new mobility concepts, Autonomous Driving and new services

Overview of technological trends driven by digitization

1



Connectivity as the enabler

2



Consolidation of ECUs

3



Boom in ADAS sensors

4



Growing importance of software

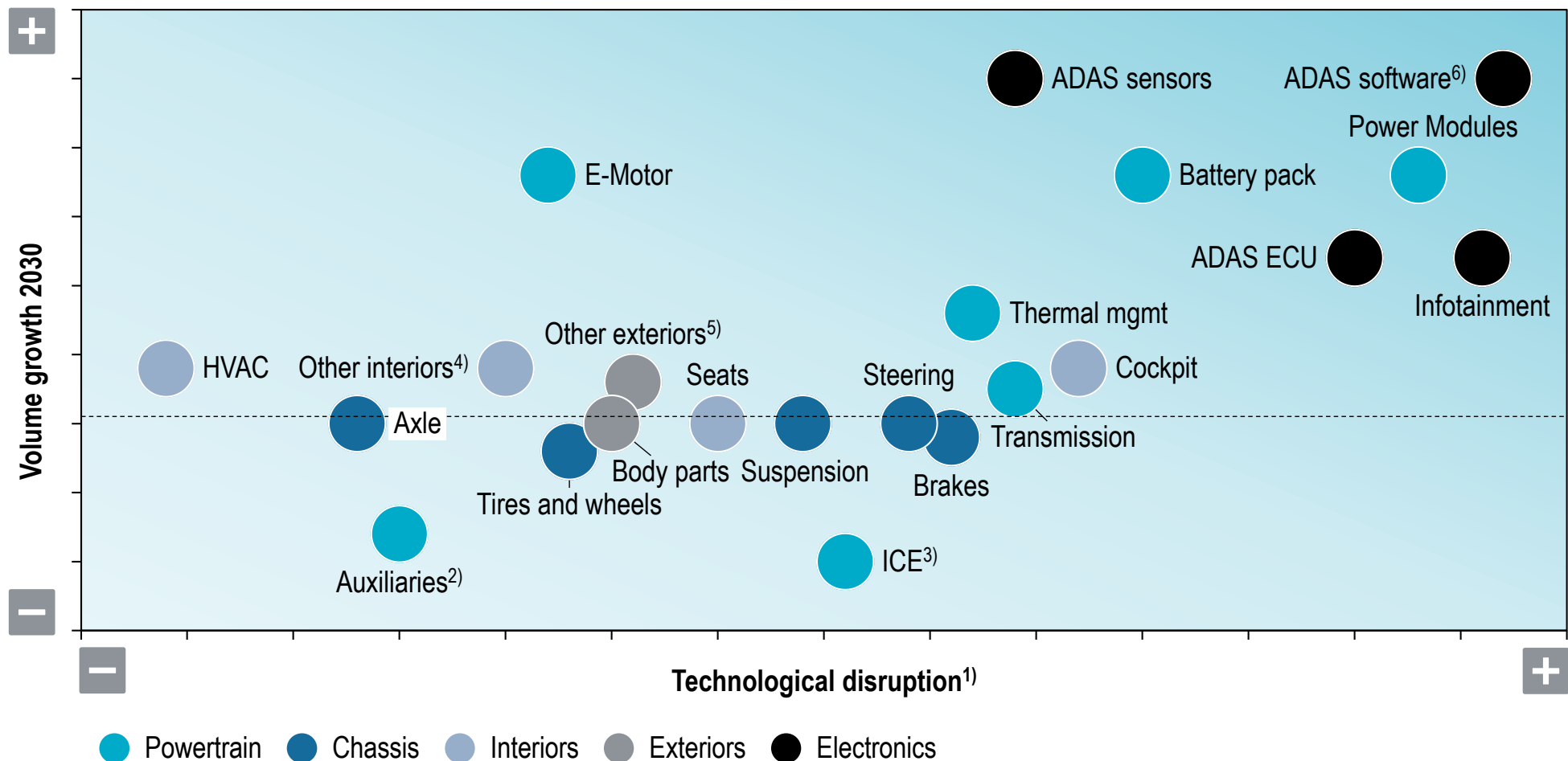
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Redesign of the onboard experience

Modules impacted by technological change represent an opportunity – EV & Digitization trends affect both traditional and new modules

Market opportunities – Classification by growth & level of technology disruption



1) Opportunities generated by the technological innovation; 2) Incl. air intake, auxiliary drive, fan, fuel delivery, oil filter, oil pump, other, piping, radiator; 3) Incl. Engine, Exhaust, Injection, Ignition/Glow system and Valve train; 4) Incl. vehicles security, carpets, trim, trunk mgmt., window lifter and wiring; 5) Incl. BiW, lighting, lock system and windows; 6) Includes cybersecurity
 Source: Expert interviews, Roland Berger

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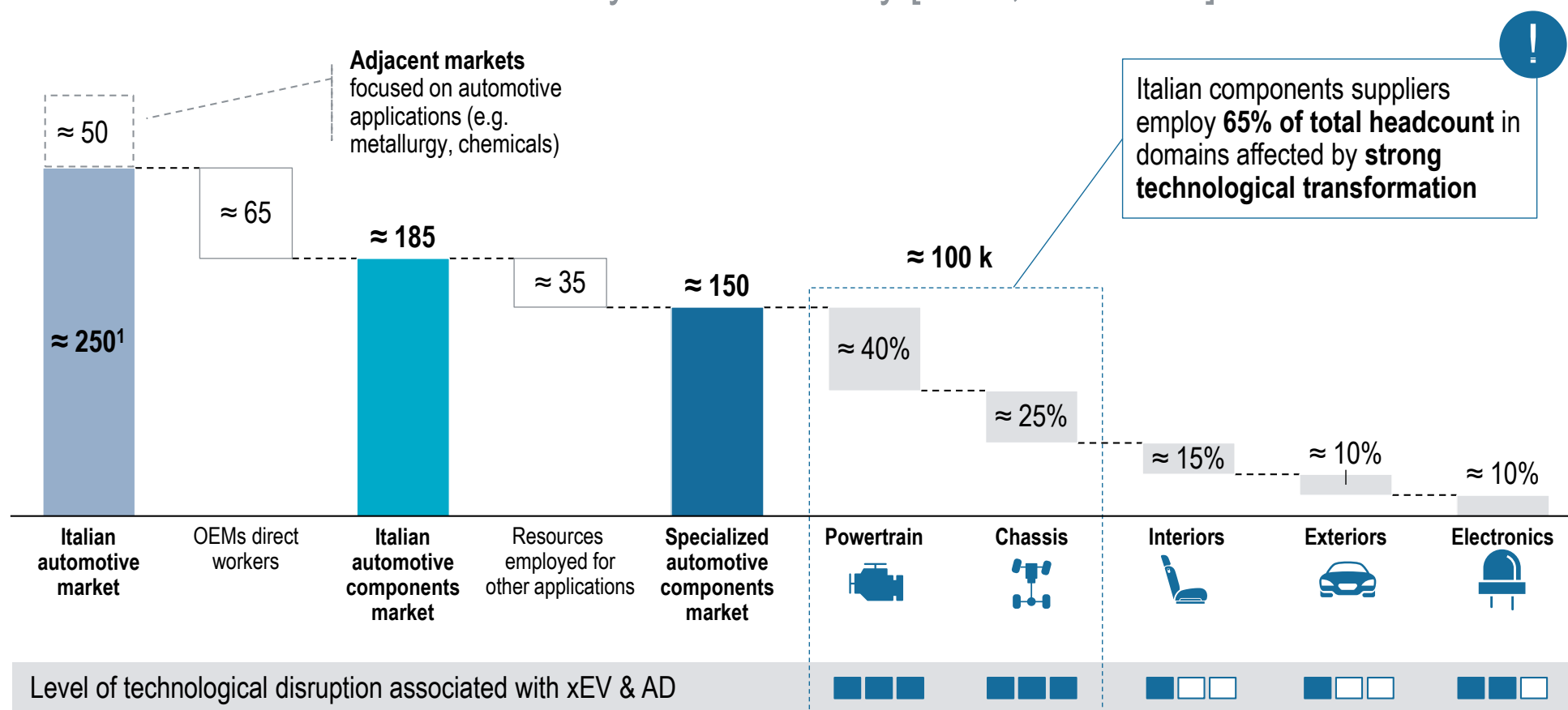
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Most impacted domains by electrification and autonomous driving account for ≈65% of employees (≈ 100k)

Automotive workers breakdown by domain in Italy [2018; k workers]

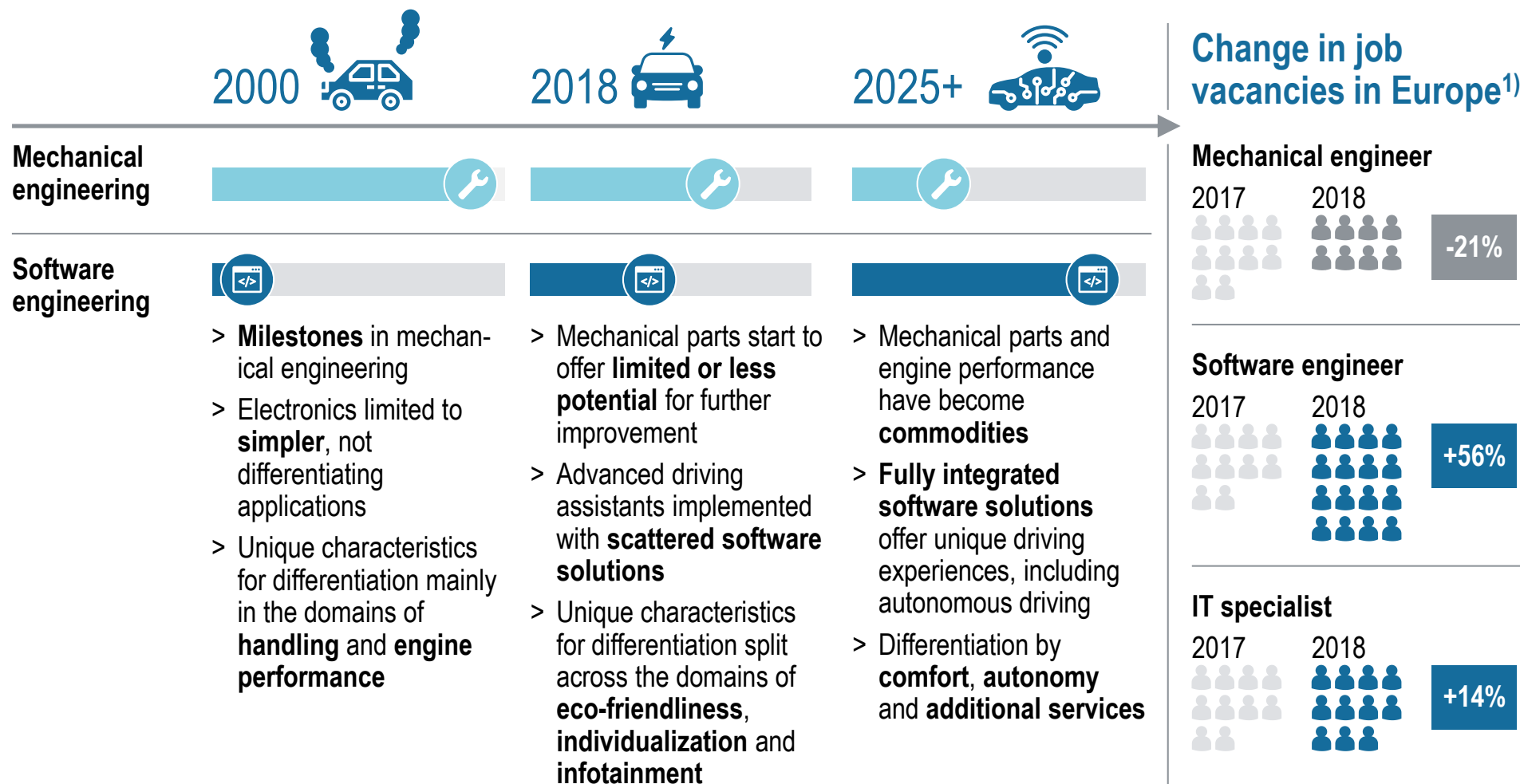


Indirect automotive market

1) Osservatorio Componentistica ANFIA

In order to avoid job losses, Italy needs to update skill sets – Increasing demand for IT & software engineering skills

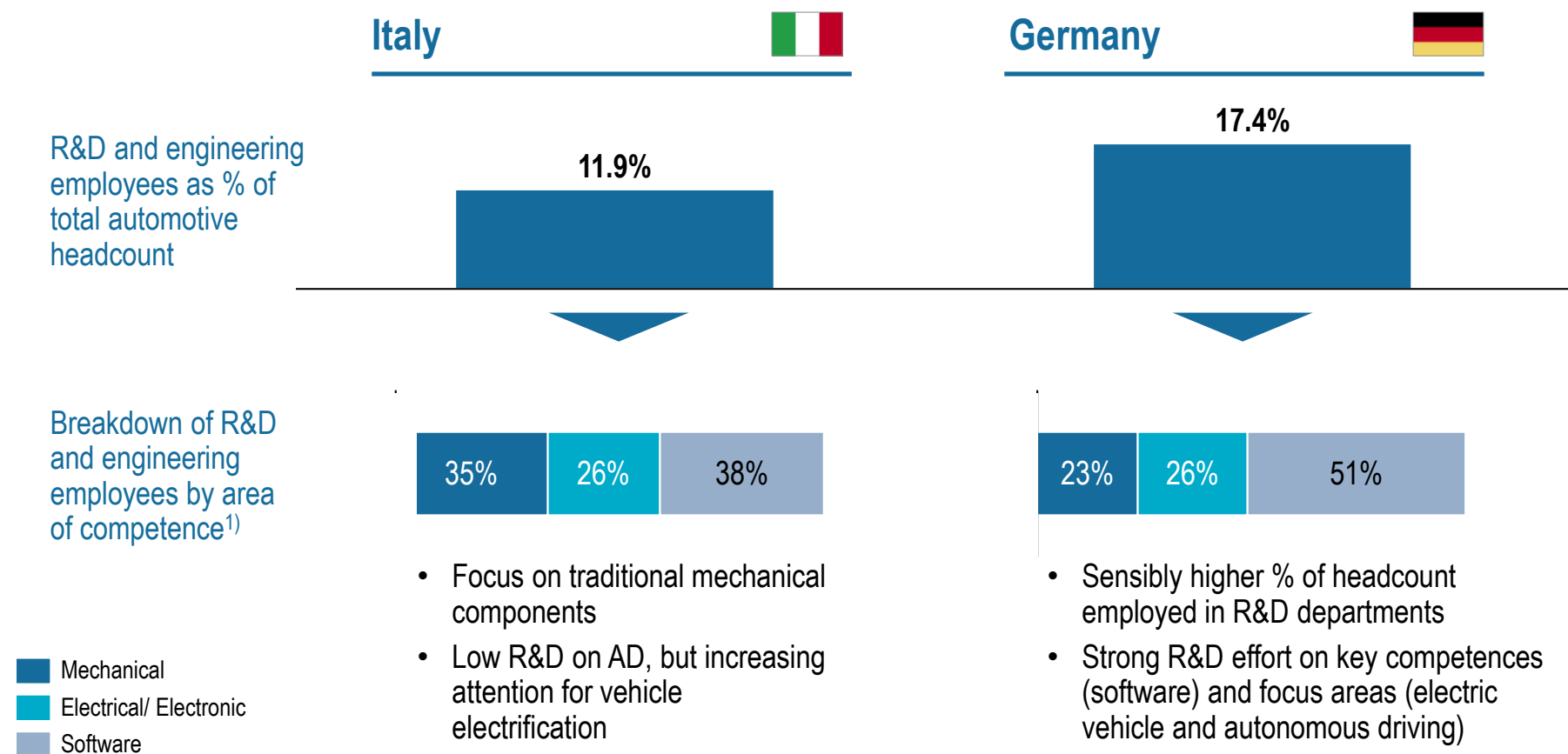
Importance of necessary skill-sets and change in job vacancies



1) Based on engineering jobs on LinkedIn

Italian suppliers employs sensibly less R&D people compared to Germany – R&D in Italy still very focused on mechanical parts

R&D headcount benchmark



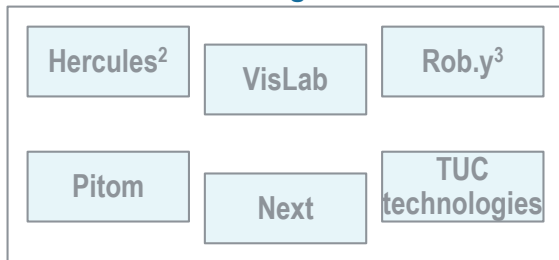
1) Other areas/ focus not included in the analysis

There is an Italian competence pool in innovative modules even if still very fragmented – Need for collaboration & aggregation

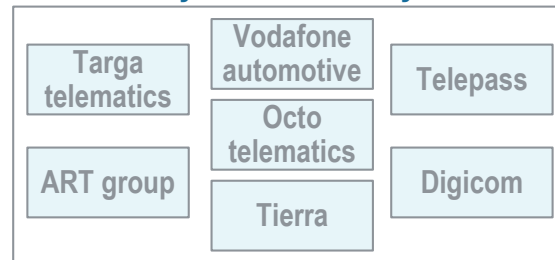
Innovative modules – Competence pool in Italy

Exemplary

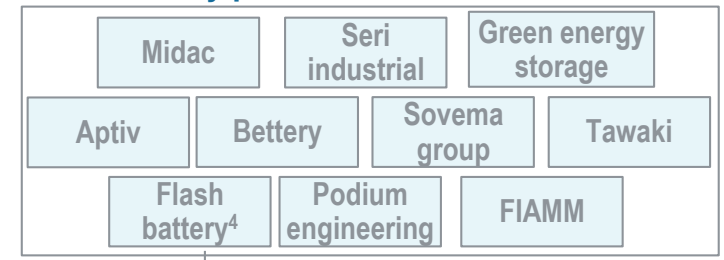
Autonomous driving¹



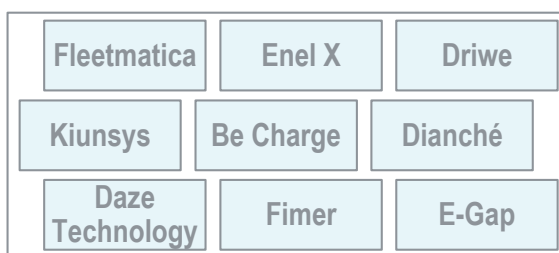
Connectivity and data analytics



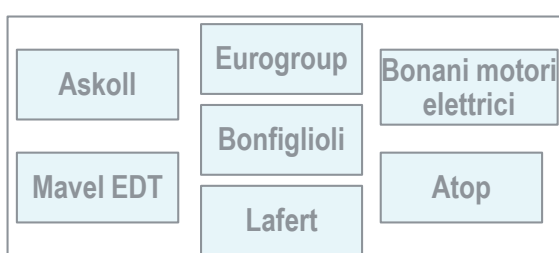
Battery packs



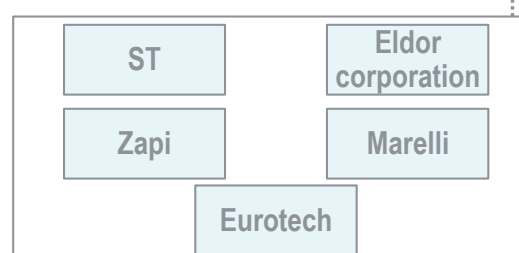
Services



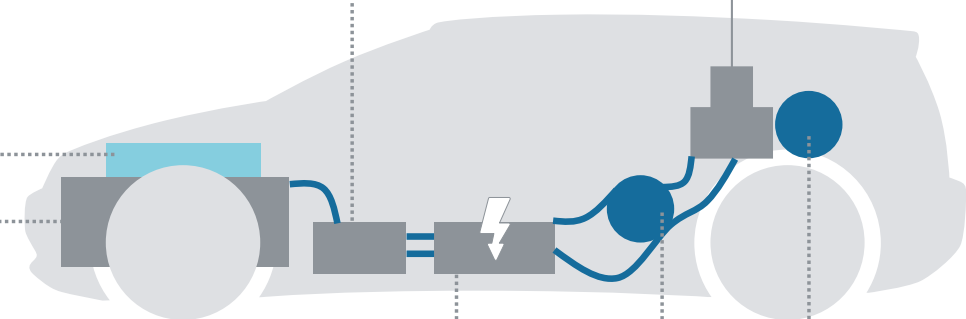
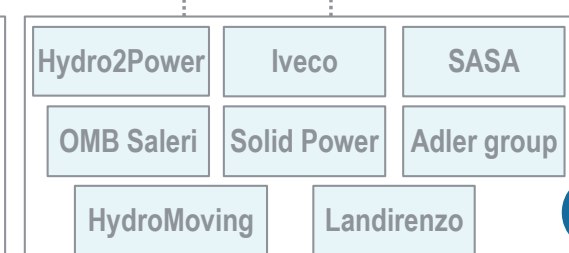
Electric motors



Electronics



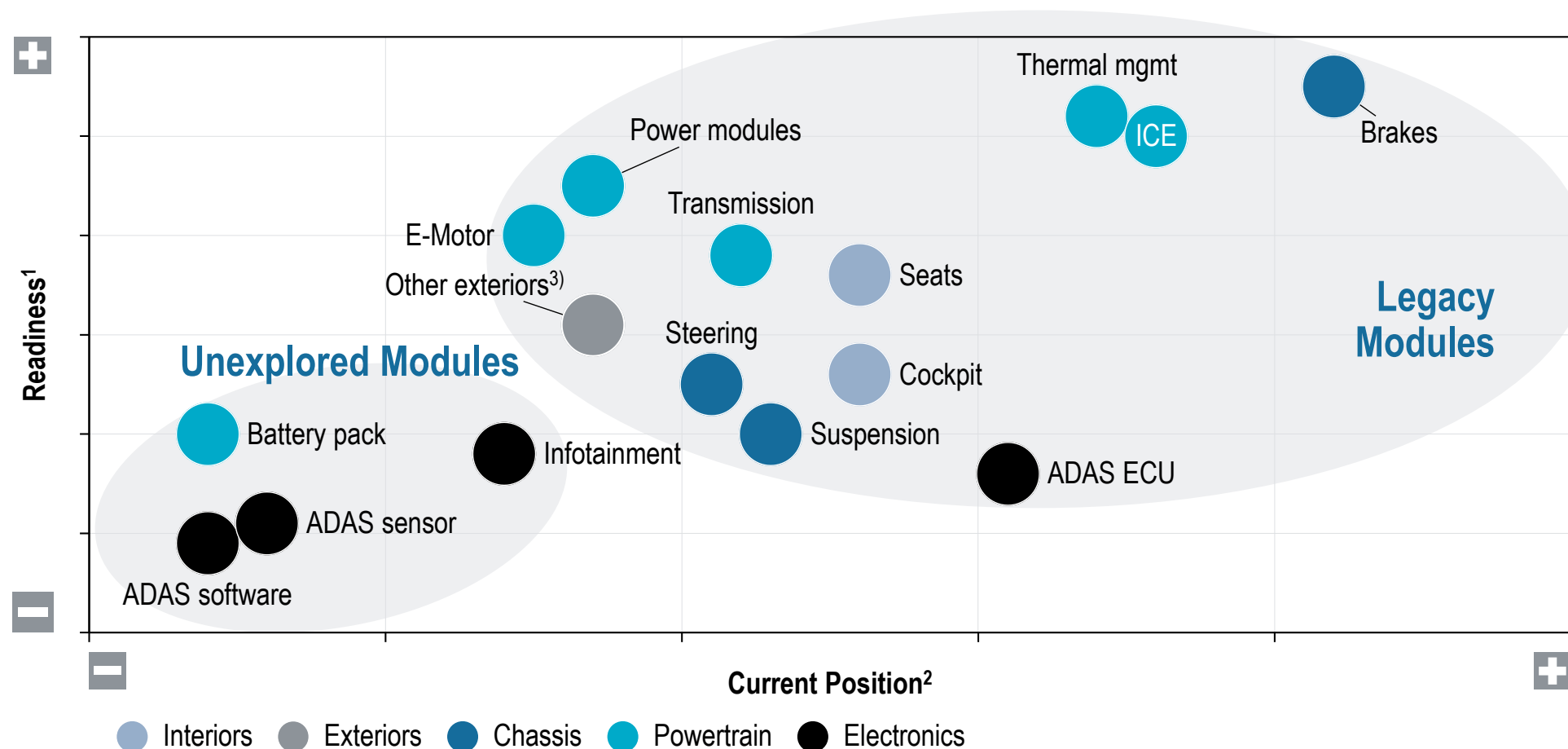
Fuel cells



1) Includes modules with mostly AD purposes (e.g. modular vehicle platforms like the ones from Next, Rob.y or TUC technology); 2) Project carried on by European Union; 3) Technology developed by e-shock which is part of e-novia; 4) Product developed by Kaitek

Italy is well equipped to take advantage of opportunities in modules with established presence, but not ready to enter the emerging ones

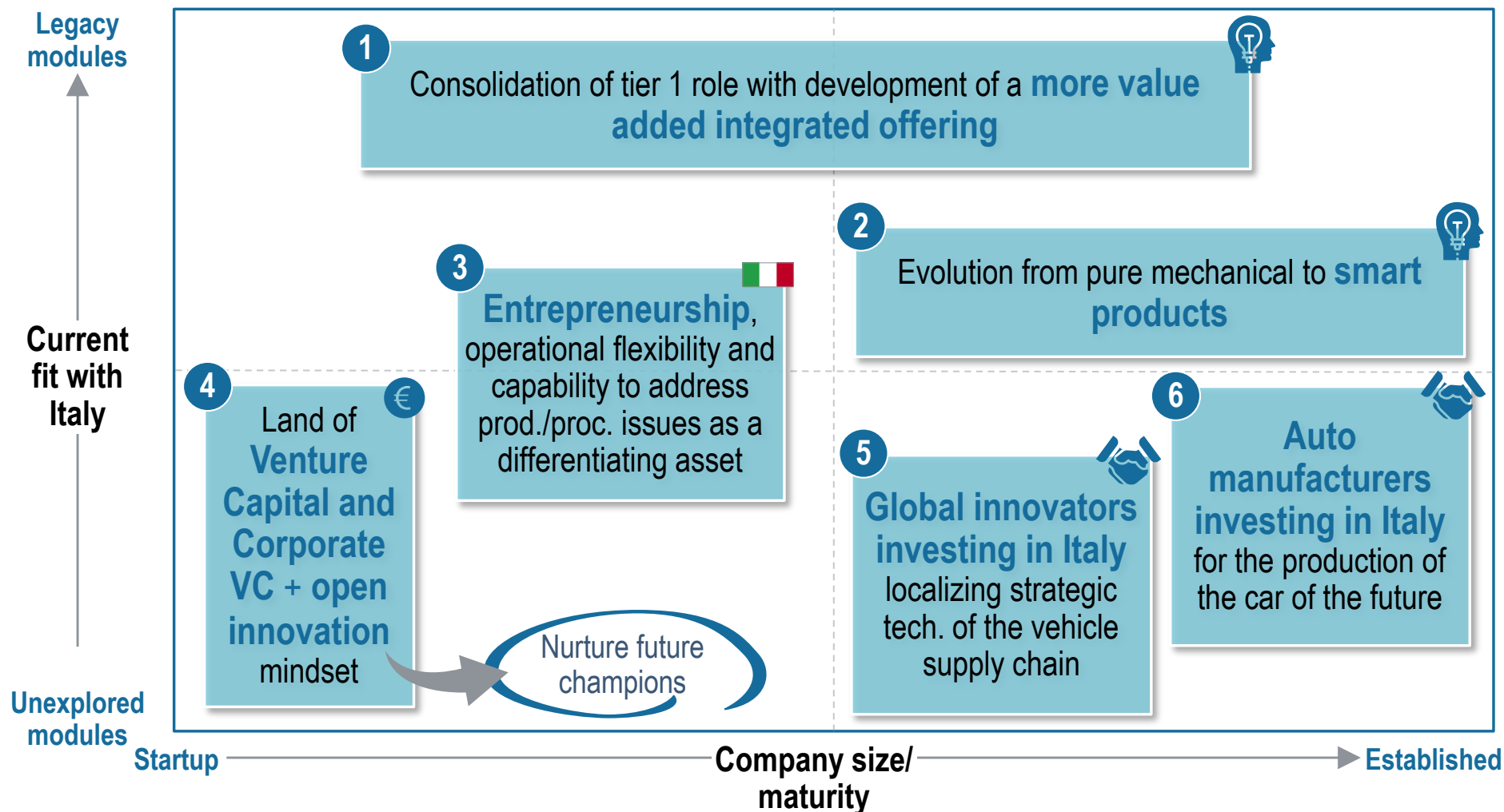
High potential modules – Current fit for the Italian industry



1) Based on investments in the module (e.g. R&D) and availability of skills; 2) Based on current production and Italian market share in Europe; 3) Incl. BiW, lighting, lock system and windows

Companies in legacy modules should enrich their offering, evolve their business model and embrace radical innovation

Playfield: opportunities for Italy by company maturity and type of module



Global battery manufacturers have opened European plants outside Italy – opportunities for Italy to capture FDI

Global producers of innovative modules













Battery

Country Company Plants in Europe

	A123 Systems	
	AESC	
	BYD	
	CATL	
	GS Yuasa	 
	Inzi Controls	
	LG Chem	
	Northvolt	 
	Panasonic	
	Samsung SDI	 
	SK Innovation	
	Tesla	














Lidar

Country Company Plants in Europe

	Aeye	
	Baraja	
	Blackmore	
	Cepton	
	Hesai	
	Innoviz	
	Luminar	
	Omron	
	Ouster	
	Pioneer	
	Robosense	
	Velodyne	

xEV

Country Company Plants in Europe

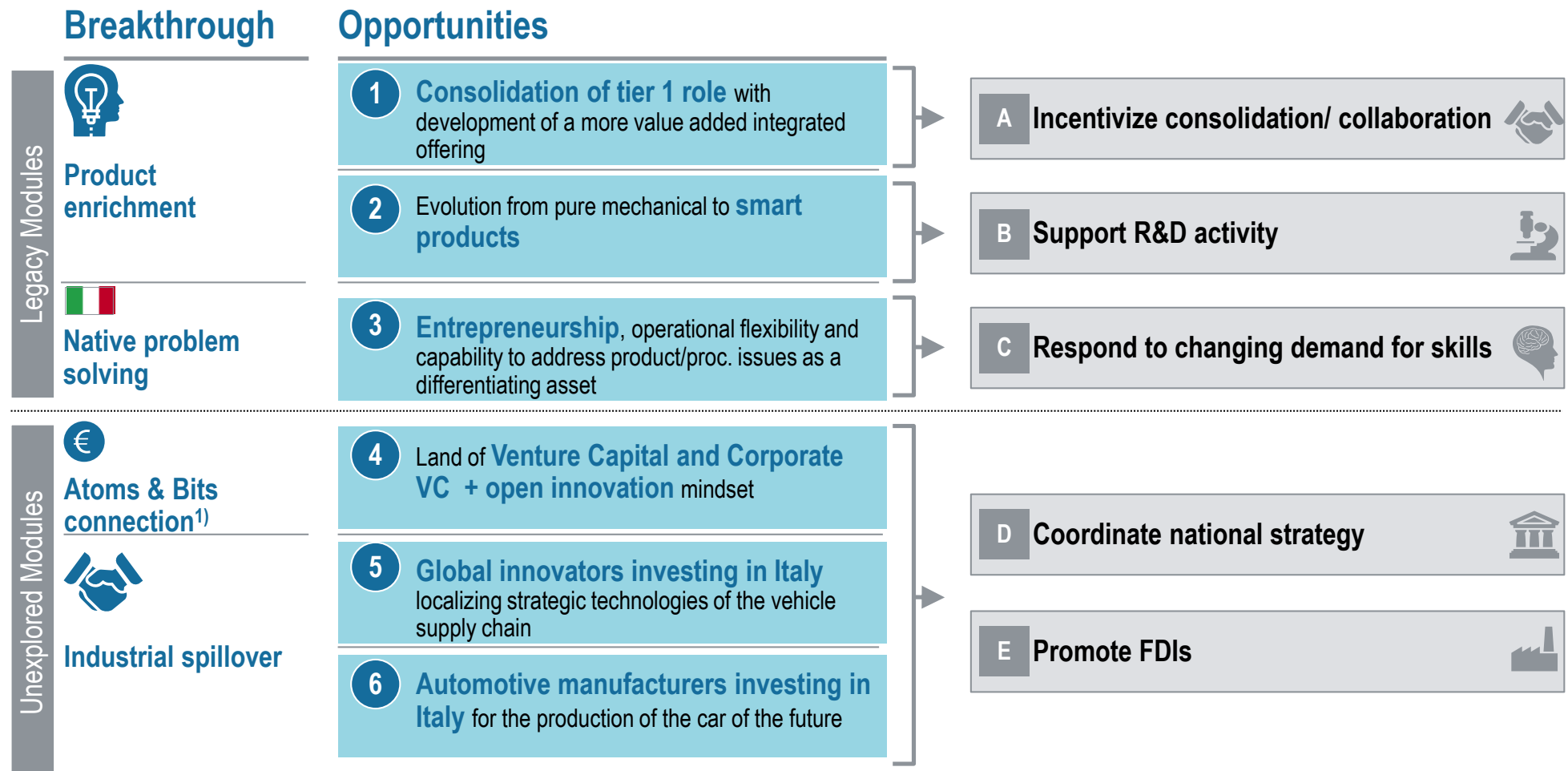
	BAIC ¹	
	BYD	 
	Canoo	
	Chery	
	FAW ²	
	Geely	 
	JAC ³	
	Leap Motor	
	Lucid Motor	
	NIO	
	Rivian	
	Tesla	 

1) Present in Italy with R&D center; 2) MoU for production in Motor Valley;
3) Present in Italy with Design center

 No presence in Europe  Planning to open European plant

Industrial policies are essential to succeed: government should play an active role in order to take full advantage of industrial opportunities

Guidelines for Industrial policies



1) Atoms stand for well-established companies, Bits stand for start-ups

