

Batteries regulation

Simon Godwin, European Government Affairs – Borg Warner

22/10/2021

EUROPEAN SUPPLIERS AT A GLANCE



75%

of the vehicle value
comes from suppliers



5 million

Direct and indirect jobs



€30 bn

Invested in R&D each year



30%

of private sector R&D
Investment in the EU



±9.000

Patents filed by the
automotive industry each year



€600 bn

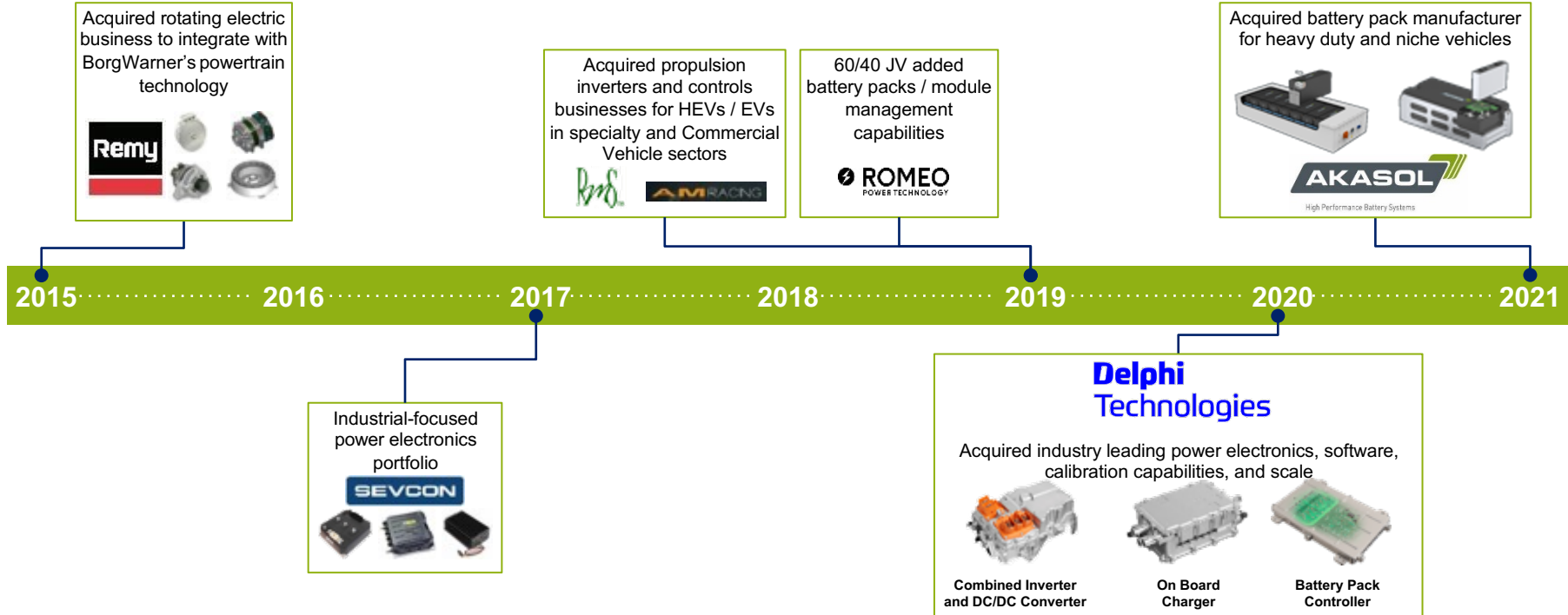
Turn over each year



Annual trade volume: **€65
billion**



BorgWarner: Path to advanced technologies and electrification



Provisions of the Batteries Regulation

- We support the objectives and general orientation of the proposal

- Some provisions require improvement, in particular:
 - Art 1 – Grandfather clause
 - **Art 2 – Definitions (esp. “producer”)**
 - Art 6 / Annex II – hazardous substances
 - Art 7 - Carbon Footprint targets
 - **Art 8 - Minimum share of recycled material from 2030**
 - Art 10 / Annex IV - Regulatory targets for durability and performance

Skills implications

- Industry needs:
 - Electrochemical engineers
 - Electronic engineers
 - Materials scientists & chemical engineers
 - Software engineers
 - Component and vehicle assemblers
- Some skills can be converted (e.g. assembly) – but automation will increase
- Some skills require intensive retraining
- We need a steady flow of new graduates in these fields
 - STEM education has never been more important
 - Graduates must believe they will be rewarded and valued to compete with other professions

Art 2: Definitions

- (1) 'Battery': "...ready for use as a finished product* by the end customer or in an application"
- (37) 'Producer': differentiation between batteries incorporated into appliances and those not incorporated
 - Avoid uncertainty and patchwork outcomes in designation of Extended Producer Responsibility
 - Designate OEMs as Producer to ensure coherent collection and recycling at end-of-life
- (new) 'remanufacturing': definition required to reflect provisions

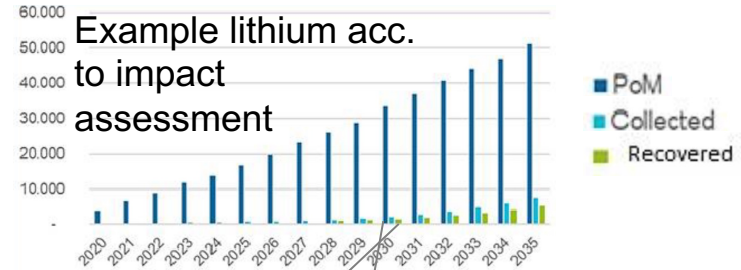
Skills implication: little direct impact, but above provisions increase efficiency and ensure human resources are optimally directed to productive innovation

Art 8: Recycled content

- We support effective measures to optimize the use of recycled material
- Content targets per battery are too restrictive and impossible to monitor/enforce
 - Company averages per year would enable planning and clear reporting responsibilities
- Material recovery targets will require high levels of recycled material to be made available
 - Additional regulation to use the available material is not necessary
 - High purity requirement for materials restrict the availability of suitable recycled material
- Ideally the targets should be made indicative to avoid:
 - Unintended consequences
 - Discouragement of beneficial practices (second life, remanufacturing)
 - Any discrepancy from predicted recycled material available and market conditions will make targets obsolete

Skills implication: recycling technologies will become one of the primary activities of the sector – materials and chemicals scientists and technicians will be in great demand

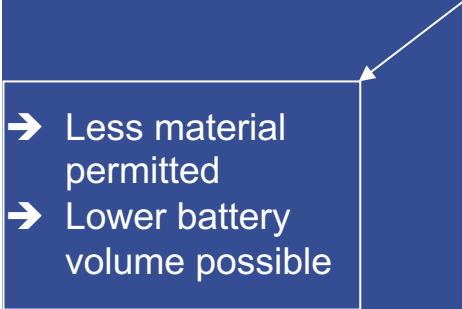

Art 8: Recycled content



$$\text{Recycled share 2030} = \frac{\text{Recycled content of new batteries}}{\text{Material content of new batteries}} = \frac{\text{Recovered}}{\text{PoM}} = 4\% \text{ (target)}$$

Art 8: Recycled content

Recycled share 2030 = $\frac{\text{Recycled content of new batteries}}{\text{Material content of new batteries}}$ = $\frac{\text{Lower availability of recycled material}}{\text{Material content of new batteries}}$ = 4% (target)



- Less material permitted
- Lower battery volume possible

Art 8: Recycled content

$$\text{Recycled share 2030} = \frac{\text{Recycled content of new batteries}}{\text{Material content of new batteries}} = \frac{\text{Predicted availability of recycled material}}{\text{Material content of new batteries}} = 4\% \text{ (target)}$$

→ Constraint on market growth

Art 1: Scope

- A grandfather clause is necessary to avoid retroactive application to replacement batteries and spare parts for existing applications:
 - At least 10 year duration

Skills implications: without this provision, skilled resources will be deployed in designing replacements for low volume legacy products instead of high value new products.

Art 6: Hazardous substances

- Full alignment for all products is essential without duplications:
 - For product content (REACH, ELV)
 - For waste (Waste Framework Directive)
- “One substance, one assessment” should mean no additional processes or restrictions for batteries or any product

Skills implications: EU chemicals and substances regulation will be strengthened considerably in the coming years – skills in these areas will be in great demand.

Art 7: Carbon footprint

- Clarity on how to ensure robust measurement and enforcement for both domestic (EU) and imported batteries is essential
- Data should be required per model per plant, not per batch
- Adapt the timeline: 24 months from entry into force until the initial declaration obligation
- Exclude distribution, end of life and recycling phases from the carbon footprint calculation

Skills implications: emissions modelling and simulation, climate scientists, as well as lawyers and accountants.

Art 10: Durability and performance targets

- Proposed scope of parameters (technical documentation → targets from 2026):
 - 1. Rated capacity (in Ah) and capacity fade (in %).
 - 2. Power (in W) and power fade (in %).
 - 3. Internal resistance (in \square) and internal resistance increase (in %).
 - 4. Energy round trip efficiency and its fade (in %).
 - 5. An indication of their expected life-time under the conditions for which they have been designed.

Art 10: Durability and performance targets

- Avoid duplications:
 - 1. Rated capacity (in Ah) and capacity fade (in %).
 - ~~2. Power (in W) and power fade (in %).~~
 - ~~3. Internal resistance (in Ω) and internal resistance increase (in %).~~
 - ~~4. Energy round trip efficiency and its fade (in %).~~
 - 5. ~~An indication of their~~ expected life-time under the conditions for which they have been designed.
- Align to UNECE standards – well established through expert technical work

Skills implications: engineers and physicists.

Summary

- By making a few key enhancements:
 - Defining end-of-life responsibility coherently
 - Removing recycled content targets to avoid setting a limit on market growth
 - Removing regulatory duplications
 - Relying on expert technical bodies
- ... we can ensure a sustainable and competitive framework for batteries in the EU
- ... and ensure that the talents of skilled individuals are properly valued and directed to the most productive purposes.

Thank you!



Combustion

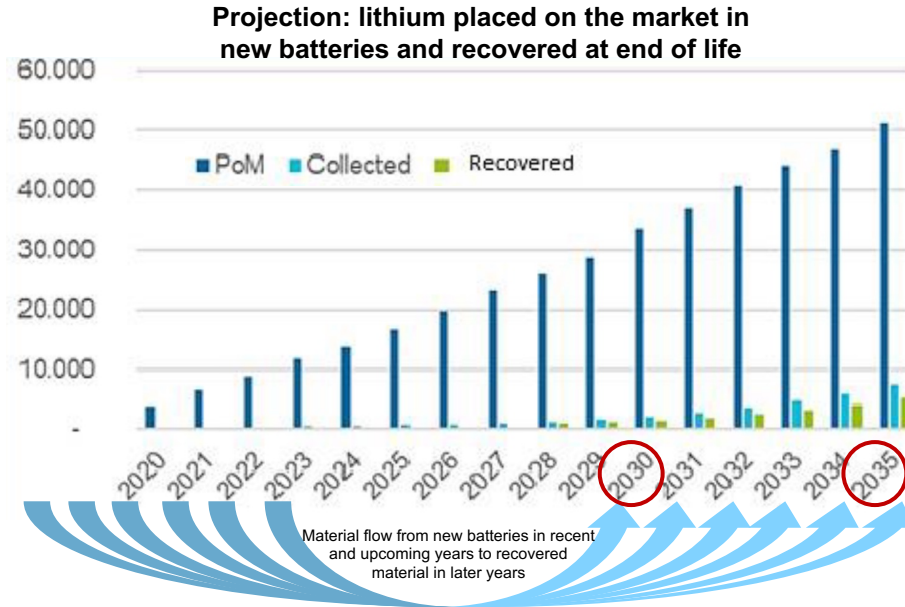


Hybrid



Electric

Data from EC impact assessment





New EU Battery Regulation Proposal: Possible Implications on Job Roles & Skills

22 October 2021

Michelangelo Aveta

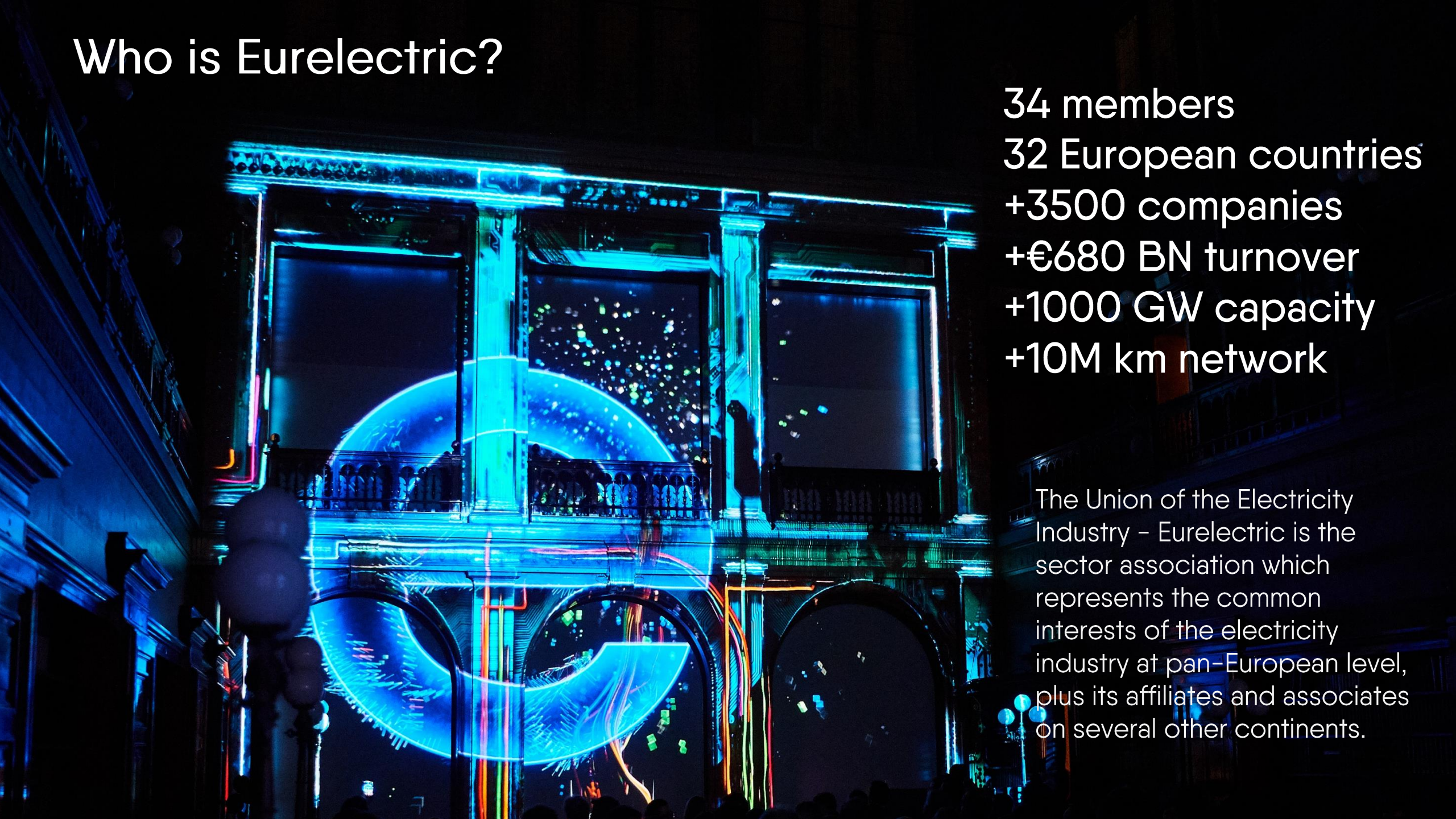
Advisor – Electromobility & Energy Efficiency – Electrification Lead



Who is Eurelectric?

34 members
32 European countries
+3500 companies
+€680 BN turnover
+1000 GW capacity
+10M km network

The Union of the Electricity Industry – Eurelectric is the sector association which represents the common interests of the electricity industry at pan-European level, plus its affiliates and associates on several other continents.



The Platform for Electromobility: An experience of cross-industry cooperation



The size of the challenge: transition to EVs



Battery manufacturing

Labor demand increase
driven by building of new
battery manufacturing
plants

~ 270k man-years

Out of the 2.4M positions with
dedicated training needs:
New job profile

Change to other industry
and / or new job profile

Requalification and
relocation necessary



~225k

*Employee
battery cell
production*



For a successful
transformation,
**industry as well
as politics are
required to
manage these
turbulent times.**

The EU Battery Regulation Proposal – an assessment

1. Carbon footprint declaration and performance classes
2. Due Diligence Requirements
3. Battery Passport
4. Repurposing & Remanufacturing
5. Circular Economy

Carbon footprint declaration and performance classes

- Good proposed requirements for carbon footprint declaration, calculated based on PEFCR2 currently under revision.
- Declaration obligation “for each battery model and batch per manufacturing plant” not appropriate;
 - provisions should apply per battery model, manufacturing plant, raw material extraction processes and supply chain configuration ensuring upstream emissions and variations are reflected
 - requirement for all industrial batteries not practically feasible, as their fields of application are too diversified to establish meaningful PEFCR
- Enforcement provisions seem lax: more clarity on declared data and conformity assessment for audits conducted outside the EU.
- A methodology is needed to ensure declarations are fully representative of the carbon intensity and comparable to each other. The use of representative data and supply-chain configurations will ensure such comparability.

Due Diligence Requirements

- Strong support for introduction of binding corporate responsibility rules for due diligence throughout the battery supply chain.
- Due diligence requirements should be extended to the sectors competing with electric transport to provide consumers and authorities with full transparency on the diverse mobility options available on the market.
- Proposed regulation currently only addresses gross human rights violations, excluding, therefore, many other possible violations of human and labour rights.
 - Need for reference to the UN Guiding Principles on Business and Human Rights and the OECD Guidelines for Multinational Enterprises
 - Due diligence requirements should be further strengthened to include clear provisions on social and environmental protection and responsibility (see Annex 1).

Battery Passport

- Timing: economic operators must have sufficient time to adapt to new data sharing requirements (possibly under one single format). Requirements to be defined through delegated acts, hence need for sufficient lead time
- Streamlining: battery passports should be streamlined with a focus on a single, innovative, and digital approach
 - Proposal foresees the creation of two separate systems, a QR code and a battery passport.
 - The battery passport should be developed coherently with international proposals (battery passport initiative of the Global Battery Alliance, with the QR code providing access to such battery passport). This method should only be required once access rules and conditions are clearly specified and streamlined.
- Confidentiality: Commission must identify which data sets are essential to achieve the objectives of the regulation and boost the data-sharing economy while ensuring confidentiality

Repurposing & Remanufacturing

- Welcome EPR explicit transfer from original producer to repurposer, limiting liability/safety concerns for second-life EV batteries.
- SoH information is needed for assessment of second-life worthiness: legal/operational conditions to grant access to BMS data for authorised independent operators must be clarified. Also, scope should be limited to batteries with BMS technically capable of meeting second life requirements.
- Safety: repurposing and remanufacturing should not come at the expense of safety
- Data ownership: IPRs should be better protected. EVs-generated data ownership should be balanced
- Waste status: classification of batteries potentially suitable for second life in waste-related rules is important. However, collection of waste batteries should allow a second life business model while preventing illegal waste transport.
- Shipment: a clear-cut transfer of EPR between original producer and remanufacturer to address safety and liability issues upon batteries' second life (see Annex 1).

Circular economy

- Targets:
 - Binding targets on recycling efficiencies and material recovery are key
 - Careful approach to avoid potential unintended consequences. Ambitious yet technically and economically feasible binding recycling targets based on a robust methodology considering the BARTs, waste volumes and markets devs.
- Recycled content: push for secondary raw materials market. Establishing ambitious definitions of End-of-Waste and End-of-Recycling to recover secondary raw materials to truly compete with virgin ones.
- Recycling efficiency: welcome the adaption of recycling efficiencies various battery chemistry families, but could do more.

New EU Battery Regulation Proposal: Possible Implications on Job Roles & Skills

Alliance for Batteries Technology, Training and Skills
2019-2023

ALBATTs WORKSHOPS, AUTUMN 2021

**Kari Valkama, MERINOVA, Leader of ALBATTs WP4 Intelligence in Stationary and
Industrial Battery Applications Battery Applications**



What is **ALBATTTS**?



- ⚡ 4-year (2019-2023) Erasmus+ funded project
- ⚡ Blueprint for Sectoral Cooperation on Skills in Battery sector
- ⚡ Contributes to the electrification of transport, green energy and environmental goals in Europe
- ⚡ Gathers demand and supply sides of competences in the battery value chain



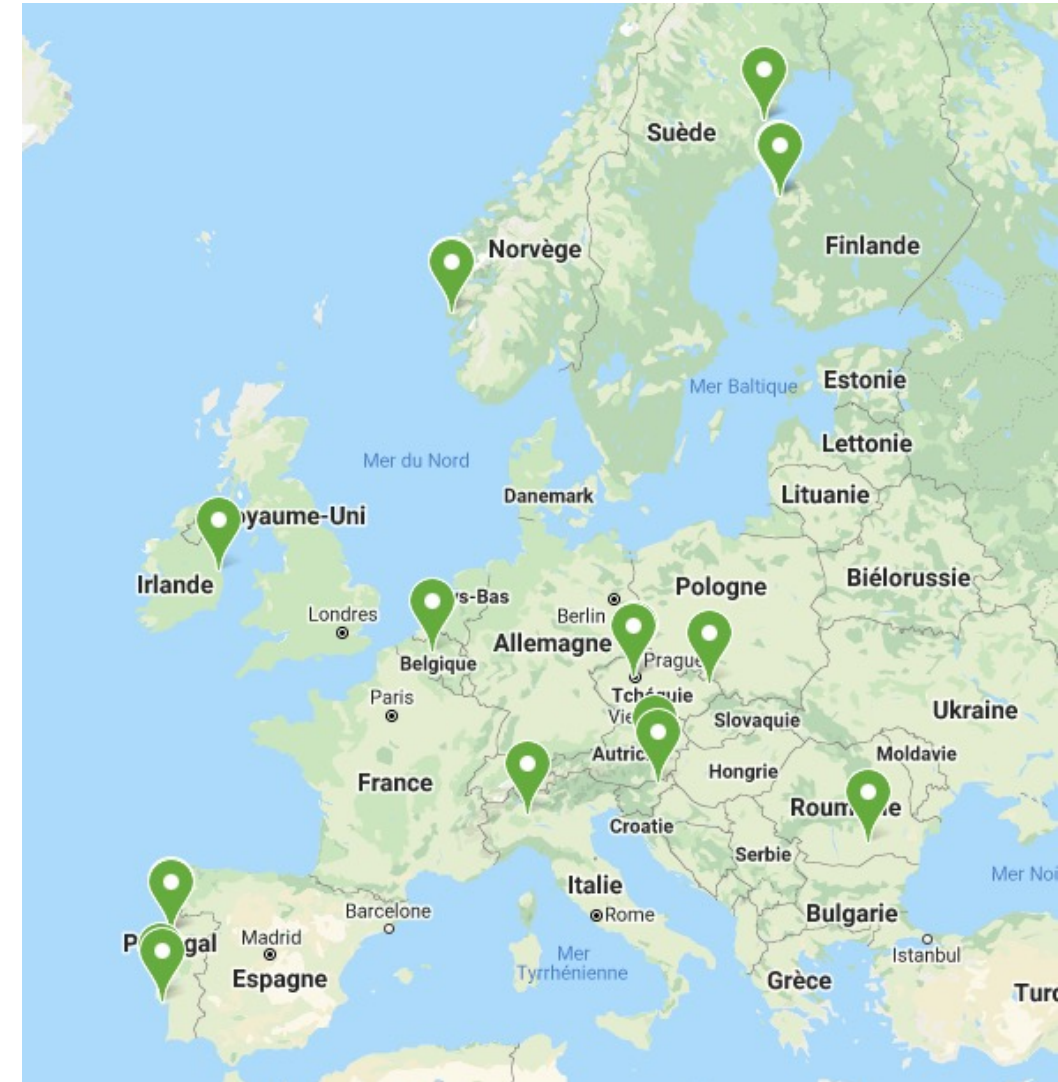
What is **ALBATTIS**?



- ⚡ Identification of skills and job roles needs
- ⚡ Enabling education sector to provide education and training for the future employees and specialists needed by the battery sector
- ⚡ Covers the battery life cycle - batteries developed for and used in both stationary and mobile applications



Partners



Co-funded by the
Erasmus+ Programme
of the European Union

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein

Work package structure



- ⚡ WP1: **Management**
- ⚡ WP2: **Dissemination**
- ⚡ WP3: **Sectoral Intelligence**
- ⚡ WP4: **Intelligence in Stationary Applications**
- ⚡ WP5: **Intelligence in Mobile Applications**
- ⚡ WP6: **Training**
- ⚡ **The Steering Group**



ALBATTIS Results



⚡ WP4: Intelligence in Stationary Applications

⚡ [D4.4 - Desk Research and Data Analysis for sub-sector ISIBA – Release 2](#)

⚡ [D4.5 - Sectoral Intelligence definition for sub-sector ISIB - Release 1](#)

⚡ WP5: Intelligence in Mobile applications:

⚡ [D5.4 Desk research and data analysis for sub-sector IMBA - Release 2](#)

⚡ [D5.5 - Sectoral Intelligence definition for sub-sector IMBA - Release 1](#)

⚡ All deliverables:

⚡ <https://www.project-albatts.eu/en/results>

⚡ Events:

⚡ <https://www.project-albatts.eu/en/listnewsevents>

To get involved with the **albatts** stakeholders group:

Stakeholder registration [here](#)

Follow us on:

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Thank you

Presenter

Contact: kari.valkama@merinova.fi

ALBATTS WORKSHOP

Online

Amélie Sophie Salau

Environmental Policy Director

22 October 2021

acea

PRESS CLIPPINGS

CBS NEWS / May 17, 2021, 6:42 AM

Electric vehicles are becoming more affordable and could cost less than gas-powered vehicles in just a few years

Electric cars 'will be cheaper to produce than fossil fuel vehicles by 2027'

La voiture électrique poursuit sa percée en Europe

Electric vehicles on world's roads expected to increase to 145m by 2030

Festkörperbatterien

Das feste Versprechen

Ventes de voitures électriques et hybrides : 6e mois consécutif à plus de 10 % de parts de marché

KEY BACKGROUND ELEMENT

ELECTRIC VEHICLE BATTERIES

Cars by fuel type, first quarter of 2021

MARKET SHARE (%) ■ Petrol ■ Diesel ■ Battery electric (BEV) ■ Plug-in hybrid (PHEV) ■ Hybrid electric (HEV) ■ Natural gas (NGV) ■ Other

PETROL
42.2%

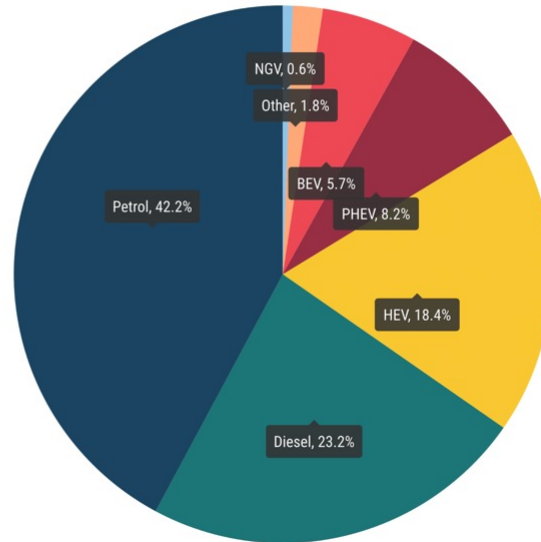
DIESEL
23.2%

HYBRID (HEV)
18.4%

PLUG-IN HYBRID (PHEV)
8.2%

BATTERY ELECTRIC (BEV)
5.7%

NATURAL GAS (NGV)
0.6%



During the first quarter of the year, registrations of battery electric vehicles (BEVs) in the EU increased by 59.1% to reach 146,185 cars, with demand still benefiting from government stimuli for zero-emission vehicles.

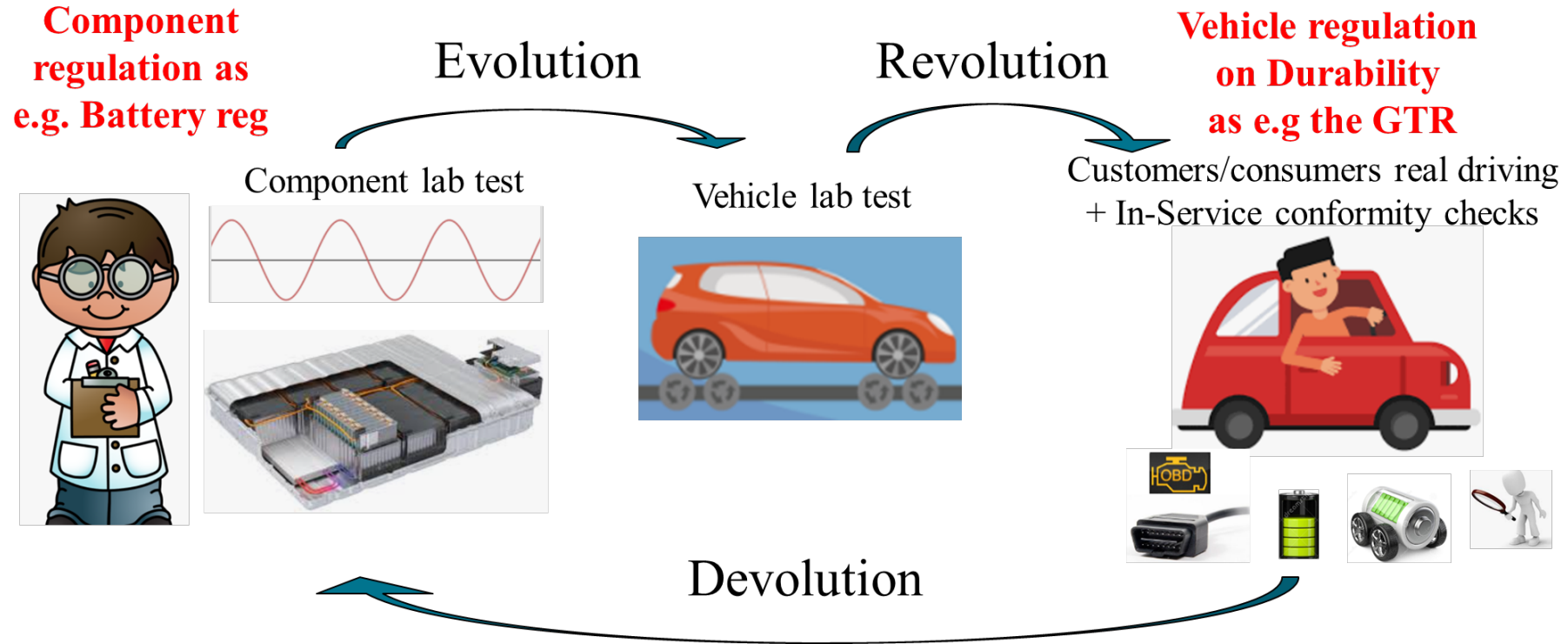
AN ELECTRIC VEHICLE IS ONE PRODUCT



- Electric vehicle batteries should be treated from a vehicle perspective and not as an independent “black box”
- Most OEMs are becoming Battery Producers – with this new Skills and Job Roles in the automotive industry are needed

EV BATTERY PERFORMANCE AND DURABILITY

ELECTRIC VEHICLE (EV) BATTERIES → WHY DEVOLUTION?



Electric vehicle (EV) batteries should be not checked as a standalone component laboratory test

→ Doing that would ignore the vehicle application and customer real driving. EU institutions have been pushing to move to real driving tests + in-service compliance, now that we have that, why this devolution?

EV BATTERY PERFORMANCE AND DURABILITY

ELECTRIC VEHICLE BATTERIES → WHY VEHICLE REGULATION?

Electric vehicle batteries should be treated from a vehicle perspective and not as an independent “black box”:

- It is not meaningful to declare values for electric vehicle batteries – as the Batteries Regulation does – without considering the application they are used in
- Electric vehicle batteries should be regulated by performance and durability requirements on holistic vehicle values (as e.g. Usable Battery Energy, Range, CO₂, Fuel and Energy Consumption) and therefore by a vehicle regulation

EV BATTERY PERFORMANCE AND DURABILITY

USE-PHASE REGULATED BY VEHICLE REGULATIONS

The use-phase of electric vehicle batteries should be regulated by vehicle regulations, such as the new GTR and regulations on criteria emissions, CO2 and fuel consumption:

- Vehicle regulations covering performance and durability such as the new GTR on In-Vehicle-Battery Durability have chosen to consider EV batteries performance and durability characteristics in the context of a vehicle application
- The In-Vehicle Battery Durability GTR tracks the electric vehicle batteries performance and durability with respect to useable battery energy and driving range, in relation to the respective certified values under the lifetime of the vehicle battery; the values are accessible to third parties and directly reflect the current status of the electric vehicle batteries inside the vehicle, which is very important information for the vehicle owner and the used vehicle market
- Regulations on use-phase criteria emissions, CO2 and fuel consumption indirectly track the electric vehicle battery performance since they are directly dependent on the battery performance

RECYCLED CONTENT REQUIREMENTS

The Commission proposes to introduce recycled content targets for new manufactured batteries from 2030 (Article 8)

- The industry fully supports the principle of recycled content targets, but it must be assured that the industry can comply
 - These targets could lead to shortages of recycled content, hindering the development and manufacturing of new batteries
 - Competitiveness, prediction of new technologies and impact on supply and demand of virgin and recycled materials must be taken into account
- An assessment of currently available recycling technologies and a prognosis of end-of-life batteries available for recycling should be done in 2025
- The results shall be used to define the specific targets for the percentage of recycled content in manufactured batteries

REPURPOSING AND REMANUFACTURING

The Commission proposes new requirements on repurposing and remanufacturing of EV batteries

- Notably, that independent operators be given access to BMS data of EV batteries as well as information relevant to handling and testing
- However, operators already have access to all necessary instructions, in accordance with Regulation 2018/858
- remanufacturing' means any process that involves dismantling a product, restoring and replacing components, and testing the individual parts and the whole product to its original design specifications. The performance after remanufacture is expected to be the same or better than the original performance specification

- Authorised operators must perform repair, reuse, remanufacturing and repurposing in authorised workshops
- Remanufactured and repurposed batteries should not be subject to data collection/back tracking requirements that were implemented post original placement on the market

INFORMATION AND REPORTING

The Commission proposes the introduction of an Electronic Exchange System (EES) for battery information by 2026

- Disclosure of required information could breach existing confidentiality and IP regulations (notably battery composition)
- Information and reporting requirements – as well as the battery passport, QR code and labelling requirements – could become a major burden for OEM, suppliers and operators of treatment facilities
- There are already well-established tools, like the International Dismantling Information System (IDIS)

- Perform assessment of real information needs of stakeholders
- Perform cost benefit assessment to make sure the reporting requirements are balanced
- Consider existing information and reporting systems
- Avoid double reporting requirements

DUE DILIGENCE

The Commission proposes stronger supply chain due diligence requirements to ensure responsible sourcing of raw materials

- These requirements overlap with ongoing work on corporate due diligence, which could lead to different requirements and increased administrative burden
 - The consultation requirement in Article 39(3) could lead to **significant administrative burden** as well

- Include specific CAS numbers for targeted substances to ensure that manufacturers can adapt their supply chains
- Provide 18 months of lead time to implement new due diligence requirements
- Show more flexibility in Article 39(3)



REPRESENTING EUROPE'S 15 MAJOR CAR, VAN, TRUCK AND BUS MANUFACTURERS

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Albatts workshop

New EU Battery Regulation

21-10-2021 | Michiel Verbeeck – Consumer Centricity

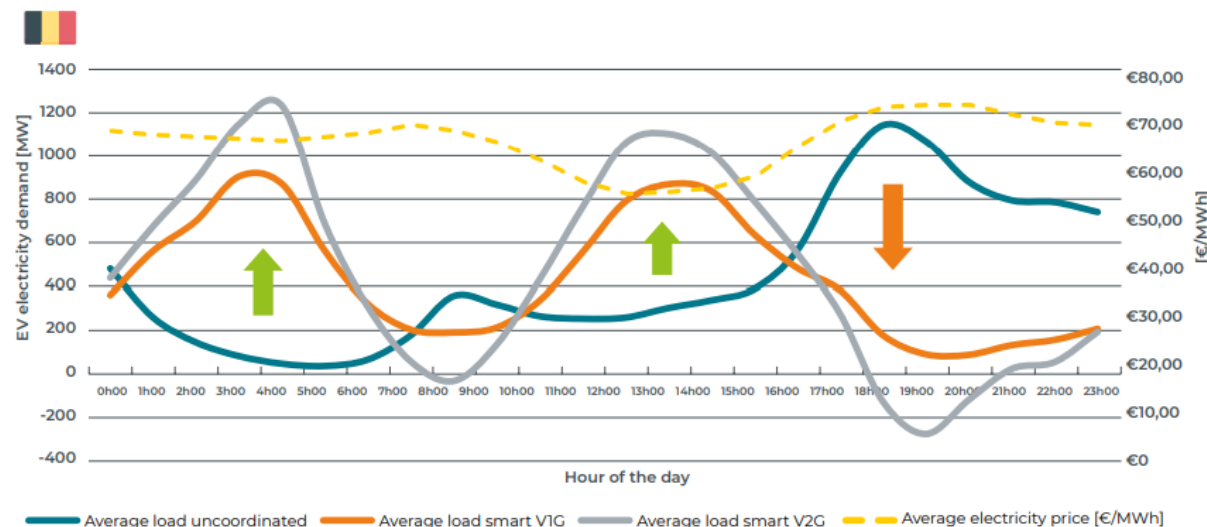


Importance of batteries for the energy sector



Balancing the grid is one of the key responsibilities of Elia. Supply and demand need to be in balance at any moment. While electricity can be only difficultly stored at large scale. A lot of small scale storage can help balance the grid.

Important that TSO have a good visibility on the system through real-time data access



EV Example Belgium

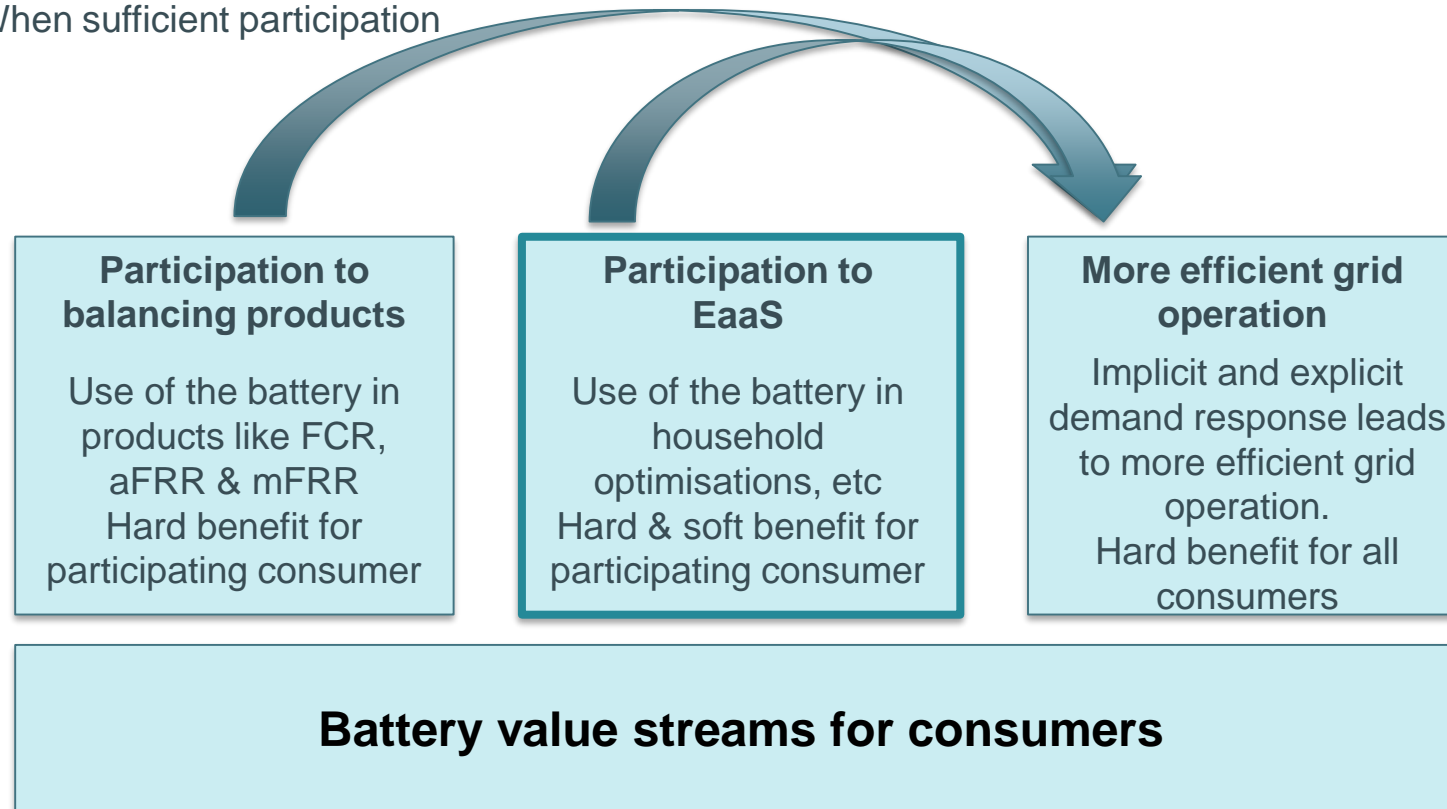
By 2030, we expect up until 1.2 GW of additional EV load (roughly 10% of current average load).

But with smart charging we can achieve 200 MW of “production”

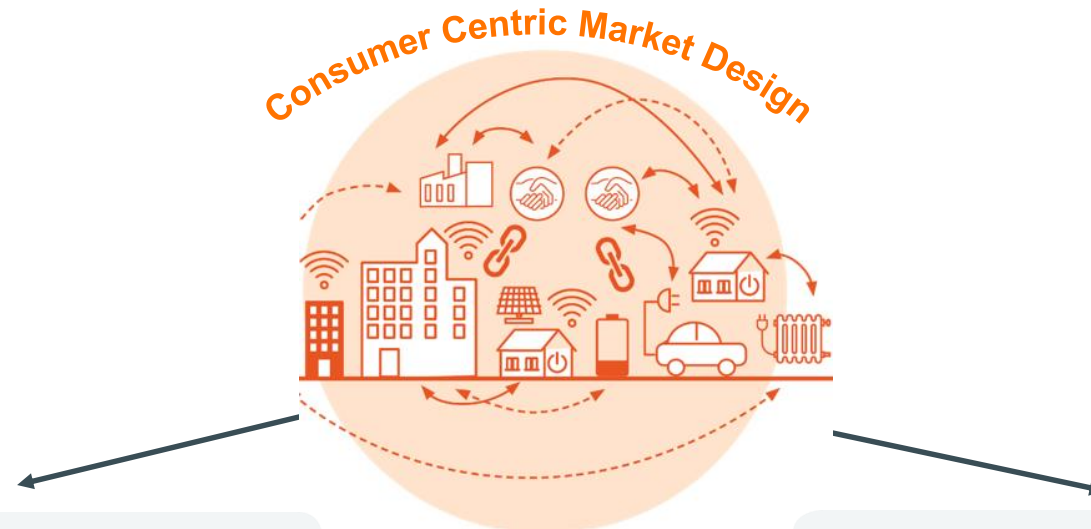


Importance of batteries for the energy sector

When sufficient participation



Batteries in a Consumer Centric Market Design



Unleash flexibility potential

- Connection of single assets at low costs
- Easy marketing of distributed assets by independent service providers (ISPs)
- Integration of non-stationary assets

Enable new services

- Multiple Supplier concepts to provide Energy as a Service
- EV charging everywhere with same supplier (virtual balancing areas)
- Peer-to-peer trading
- Transparency on energy source

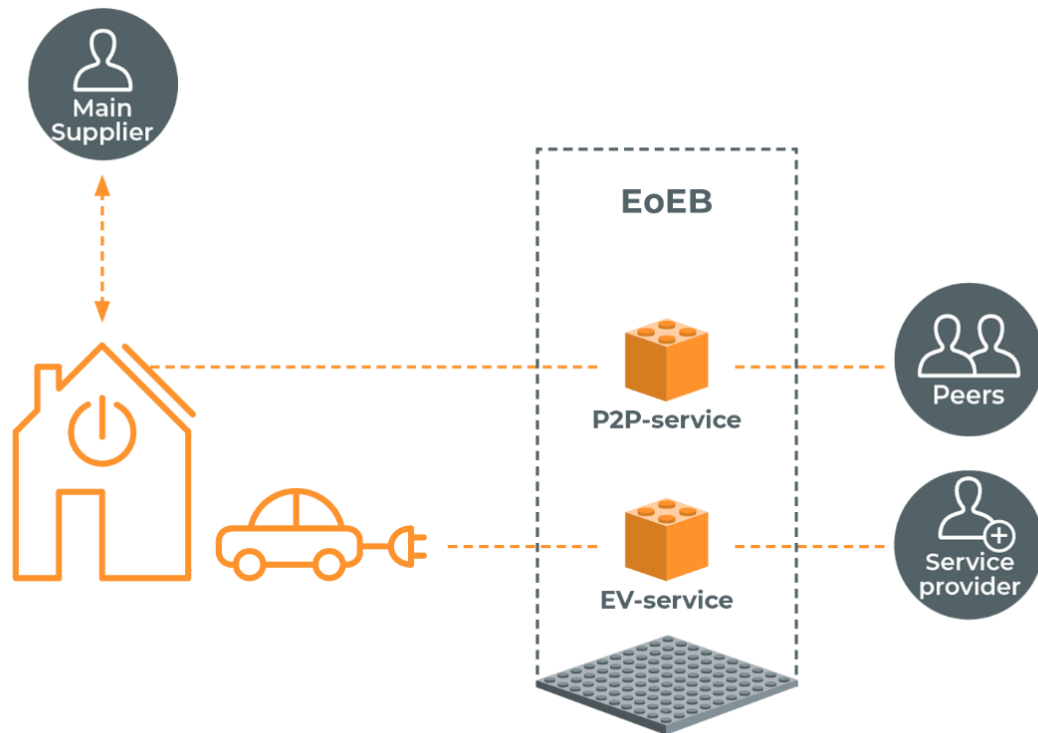


Batteries in a Consumer Centric Market Design

1

Exchange of Energy Blocks (EoEB)

A decentralised exchange of energy blocks between consumers and many other parties, on & behind the meter



2

A real-time market price to reveal the true value of flexibility to consumers



Batteries in a Consumer Centric Market Design

Usage of batteries in a Consumer Centric Market Design

Batteries provide bandwidth for consumers to optimise their household using EaaS

- For greener electricity
- For cheaper electricity
- For Increased self consumption

Access to real-time data for service providers

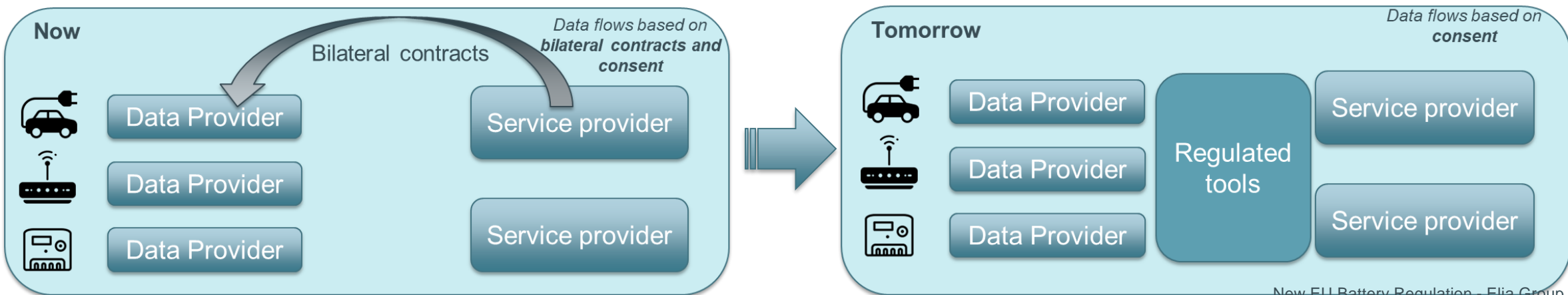
For competitive services behind the meter, access to real-time data will be key.

Regulated tools can help build a bridge between data providers and service providers with respect for security and privacy of the consumer.

Seal-of-Approval for devices

To further protect the grid, it is important that device requirements are kept at a sufficient high level to protect the clients and the grid.

High quality requirements will also help the Energy-as-a-Service market to further develop.



Implications on job roles & skills



Following the general energy trend where IT and OT become more interconnected in the energy system leading to more digital skills



Thank you.

