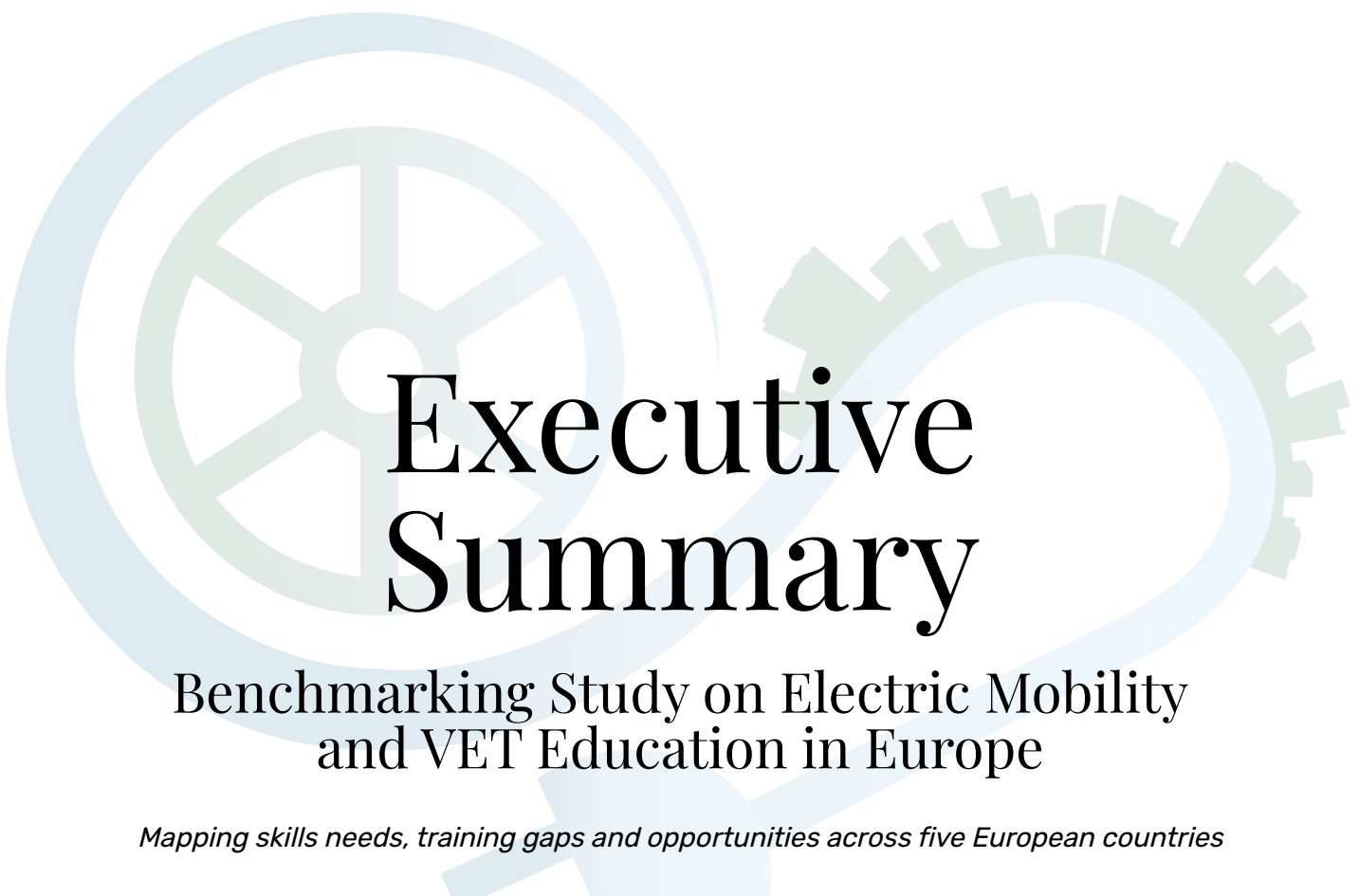




Executive Summary

Benchmarking Study on Electric Mobility and VET Education in Europe

Mapping skills needs, training gaps and opportunities across five European countries



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



ElectriCars VET Hub

Why Electric Mobility Matters

Key message: "Electric mobility is transforming vocational education and creating new skills needs across Europe."

The Green & Digital Transition

Europe's automotive sector is undergoing a historic transformation. The rapid shift from internal combustion engines to electric vehicles (EVs) is reshaping labour markets, industrial processes and – critically – the skills required from the workforce of tomorrow.

Vocational Education and Training (VET) sits at the heart of this transition. Yet across Europe, VET systems are struggling to keep pace with the speed of change in the electric mobility sector.



Green Transition

The EU's climate targets demand a full phase-out of new petrol and diesel cars by 2035, accelerating demand for EV-trained technicians across all Member States.



Digital Transformation

Modern EVs integrate advanced digital systems – from battery management to over-the-air diagnostics – requiring new hybrid technical and digital competences.



VET at the Centre

VET providers are uniquely positioned to deliver the practical, work-based training the sector urgently needs – but must first modernise their own curricula and capacity.

About This Study

The **ElectriCars VET Hub Benchmarking Study** was conducted under the Erasmus+ Cooperation Partnership (KA220-VET) to map the current state of electric mobility training across five European countries.



Map the Landscape

Analyse existing VET offer, teaching methodologies and curricula related to electric mobility in all five partner countries.



Identify Gaps & Needs

Identify skills shortages, training gaps and structural barriers preventing VET systems from meeting industry demands.



Explore New Professions

Map emerging occupations and future trends in EV companies, and analyse required curriculum changes.



Produce Recommendations

Develop evidence-based recommendations for VET centres, policymakers and industry stakeholders.



Countries analysed: Finland • Estonia • Italy • Romania • Spain – representing a diverse range of EV adoption levels, VET system structures and industrial contexts across Northern, Eastern, Western and Southern Europe.

Electric Mobility in Europe: Key Findings

Growth of Electric Mobility

The European EV market is expanding rapidly, driven by EU climate policy, industry investment and shifting consumer demand. This growth creates an urgent need for a skilled EV workforce that VET systems are not yet fully equipped to provide.

2035

ICE Phase-Out

EU deadline for ending new petrol & diesel car sales

5

Countries Studied

Finland, Estonia, Italy, Romania & Spain benchmarked

 **Key Finding:** All five countries show significant growth in EV registrations and related industry activity, but VET systems are lagging behind in adapting curricula and equipping teachers.

Country Comparison Snapshot

Finland

Advanced VET reform; competence-based flexible system; strongest digital integration in training

Estonia

Digitally advanced; Tartu VET College leading EV training; growing EV market with small but agile VET system

Italy

Strong automotive heritage; growing EV transition; VET linked to industry through Fondazione structures

Romania

Emerging EV market; energy-focused VET (Liceul Energetic); significant need for curriculum modernisation

Spain

Rapidly expanding EV sector; Barcelona VET ecosystem; strong industry-education collaboration models

Labour Market Trends & Emerging Occupations



EV Technician

High-voltage systems maintenance, battery inspection and electric drivetrain repair – the fastest-growing VET-linked occupation in the sector.



Charging Infra Specialist

Installation, maintenance and management of public and private charging networks – a new and rapidly expanding occupational profile.



Battery System Specialist

Diagnosis, calibration and safe handling of high-voltage battery packs – requiring specialised training not yet widespread in VET.



EV Digital Diagnostics Tech

Use of digital tools, software platforms and remote diagnostics systems for modern electric and connected vehicles.

 **Cross-country gap:** Across all five countries, the study found that industry demand for EV-qualified technicians is significantly outpacing the current capacity of VET programmes to produce them.

Skills Demands & Systemic Gaps

Most In-Demand Skills

The study identifies a clear set of technical and transversal competences that EV companies and industry stakeholders require from VET graduates – and that current programmes do not fully address.



Battery Technologies

Understanding of lithium-ion and solid-state battery systems, energy storage, thermal management and cell diagnostics.



High-Voltage Safety

Safe working practices around HV systems – a non-negotiable competence for any EV technician and a major current gap in many VET programmes.



EV Diagnostics

Use of specialised diagnostic tools and OBD systems for fault-finding in electric and hybrid vehicles.



Charging Infrastructure

Installation, commissioning and maintenance of AC/DC charging systems for residential, commercial and public use.



Digital Maintenance Systems

Application of digital platforms, IoT sensors and over-the-air update processes in modern EV maintenance workflows.



Sustainability Competences

Understanding of the environmental impact of EVs, circular economy principles, and responsible disposal of batteries and components.

Main Gaps Identified

The benchmarking study reveals four systemic barriers preventing VET systems from effectively preparing learners for the electric mobility sector.



Outdated Curricula

VET qualifications and training content across all five countries remain heavily focused on internal combustion engine (ICE) mechanics. Electric vehicle modules are often optional, fragmented or entirely absent.



Lack of Specialised Teacher Training

VET trainers and teachers lack access to dedicated professional development in EV technologies. Most have been trained on traditional automotive systems and have limited practical experience with EVs.



Limited Access to Equipment

High-voltage training rigs, EV platforms and diagnostic tools are expensive and largely absent from VET workshop environments – severely limiting hands-on learning.



Insufficient Industry Collaboration

Formal partnerships between VET centres and EV companies remain underdeveloped. Industry input into curriculum design, work placements and joint training is inconsistent across all partner countries.



Critical finding: The combination of outdated content, undertrained teachers and lack of equipment creates a compounding skills gap that risks widening as EV adoption accelerates.

Recommendations & Future Outlook

Recommendations for VET Centres

Based on the benchmarking findings, the ElectriCars VET Hub project identifies five priority actions for VET providers across Europe:



1. Update Curricula

Integrate structured EV modules into automotive qualifications. Align content with ESCO competence frameworks and real industry job profiles. Prioritise high-voltage safety as a mandatory competence.



2. Train Teachers

Invest in continuous professional development for VET trainers in EV technologies. Use European mobility programmes and industry placements to upskill teaching staff.



3. Invest in EV Equipment

Prioritise procurement of HV training vehicles, battery simulators and diagnostic platforms. Explore shared equipment models between VET centres to reduce costs.



4. Strengthen Industry Partnerships

Formalise collaboration with local EV companies, dealerships and charging operators for work-based learning, guest trainers and co-designed curricula.



5. Develop Microcredentials

Create short, stackable EV training modules with recognised certificates to upskill existing automotive professionals rapidly and flexibly.

Future Outlook

VET has a decisive role to play in Europe's sustainable mobility transition. The scale and pace of EV adoption means the sector cannot wait for long reform cycles –

action is needed now.



Key Takeaways



EV transition is irreversible

EU policy and market forces make EV adoption certain – VET must adapt now



A skills gap is widening

Outdated curricula, under-trained teachers and missing equipment are the core barriers



Collaboration is the key

VET-industry partnerships and transnational cooperation unlock sustainable solutions



Actionable solutions exist

The ElectriCars VET Hub model offers a tested, replicable framework for change

ElectriCars VET Hub is an Erasmus+ Cooperation Partnership in Vocational Education and Training (KA220-VET), coordinated by **Xarxa FP Secretariat General**, with partners from Finland, Estonia, Spain, Italy and Romania.



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