



From Oil Dependence to Electric Security

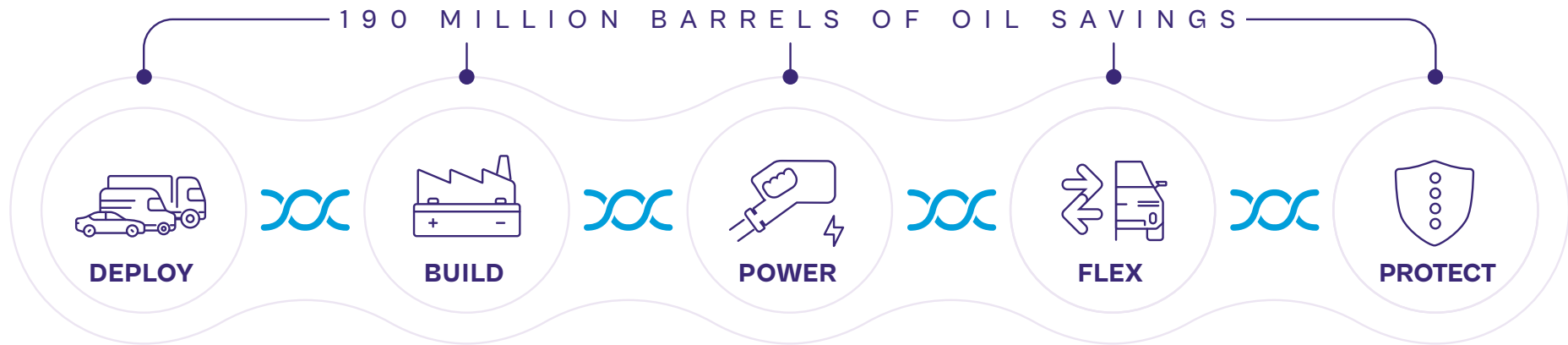
A resilience roadmap for EU Road Transport



in partnership with



Executive Summary



Europe is once again paying the price for oil dependence.

As oil prices rise, households face higher fuel costs, businesses face higher transport bills, and governments have less control over their economic future. Despite years of progress in clean energy, Europe still relies on imported oil to move most people and goods around the continent.

This is not a marginal vulnerability. Cars, vans and trucks account for around two-thirds of EU oil demand. Every oil shock ripples through the economy.

Electric vehicles offer the fastest and most effective way to change that. Every electric car, van and truck put on the road permanently reduces future oil demand, replacing imported fuel with electricity that is increasingly produced in Europe from domestic renewable sources.

The opportunity is substantial. Delivering on the EU's original goals for 2030 could avoid approximately 190 million barrels of oil extra per year by 2030, costing approximately €12 billion. Conversely, a stagnated transition would leave Europe more exposed to imported fuels and geopolitical volatility.

Achieving this requires strategic conviction. The EU and Member States must deliver transport electrification as a cornerstone of Europe's energy security and oil dependence reduction strategy. But deployment alone is not enough.

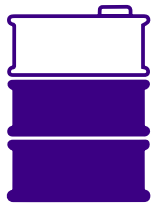
Europe must also build resilient, competitive and secure electric mobility value chains, avoiding new strategic dependencies while integrating electric vehicles into a smarter, more flexible energy system.

This paper sets out five priorities for delivering a full EU electric mobility security strategy:

- 1. DEPLOY – Put more electric cars, vans and trucks on Europe's roads.**
- 2. BUILD – Strengthen Europe's EV industrial base.**
- 3. POWER – Make electricity the affordable fuel of transport.**
- 4. FLEX – Turn EVs into energy assets.**
- 5. PROTECT – Secure the digital backbone of mobility.**

Together, these pillars provide a roadmap for reducing oil dependence while strengthening Europe's resilience, competitiveness and strategic autonomy. Electric vehicles are Europe's most powerful lever for reducing oil dependence and strengthening energy security. It is time for a focused EU and Member State strategy that matches that importance.

Europe's Largest Remaining Energy Vulnerability



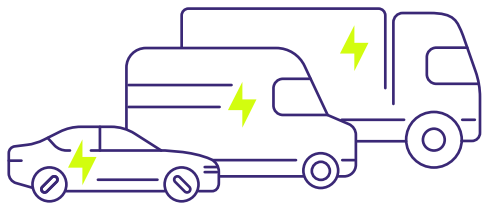
Cars, vans and trucks account for around two-thirds of EU oil demand, making road transport

one of Europe's largest remaining sources of imported fossil fuel dependence.

This dependency carries economic and strategic costs. The first 100 days of the latest conflict in the Middle East cost the EU an extra €37 billion in fossil fuel imports, of which €23 billion was due to increased oil prices. Despite growing electrification, mobility remains one of the largest channels through which global energy instability reaches the European economy.

Progress is already underway. Electric vehicles now account for more than one in four new car sales in Europe, with strong growth across many Member States throughout the first half of 2026. This is already leading to oil displacement. In 2025, EVs in the EU displaced 67 million barrels of oil, saving more than €4 billion in avoided imports. And more than 1 million new EVs placed on Europe's market in the first half of 2026 displaced another 4 million barrels of oil.

Policymakers are no longer answering the question about whether transport electrification will happen, but whether Europe will maximise the energy security benefits it can deliver.



All the EVs on EU Roads in 2025



67
MILLION

Barrells of Displaced Oil



€4
BILLION

In avoided imports

Two Pathways for Europe's Energy Security

Europe faces a simple choice: reduce oil dependence at speed, or remain exposed to global shocks for longer.

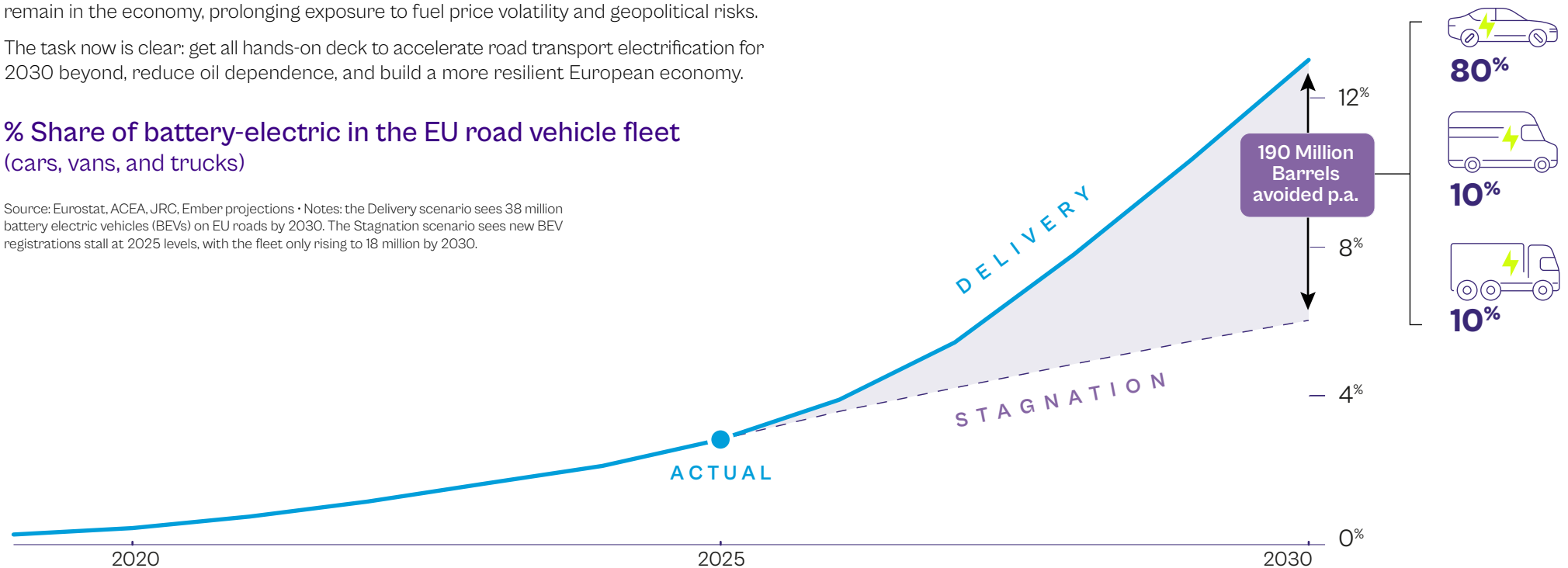
Our analysis compares two pathways for Europe's road transport transition. In a pathway where demand matches original EU goals, Europe's fleet grows to 35 million electric cars, 3 million electric vans, and 200,000 electric trucks by 2030. By contrast, in a stagnation scenario, market shares remain at current levels and the fleet size increases at a slower rate.

The difference is equivalent to around 10% of the road vehicle fleet's consumption today – or 190 million barrels of oil – amounting to an extra €12 billion in avoided costs annually (at 2025 oil prices). Under the slower pathway, substantially more imported oil would remain in the economy, prolonging exposure to fuel price volatility and geopolitical risks.

The task now is clear: get all hands on deck to accelerate road transport electrification for 2030 beyond, reduce oil dependence, and build a more resilient European economy.

% Share of battery-electric in the EU road vehicle fleet (cars, vans, and trucks)

Source: Eurostat, ACEA, JRC, Ember projections • Notes: the Delivery scenario sees 38 million battery electric vehicles (BEVs) on EU roads by 2030. The Stagnation scenario sees new BEV registrations stall at 2025 levels, with the fleet only rising to 18 million by 2030.



Delivering the EU's shift to electric vehicles could **cut oil consumption by 190 million barrels a year** by 2030.

DEPLOY



Put More Electric Cars, Vans and Trucks on Europe's Roads

Europe's fastest route to reducing oil consumption is increasing the number of electric vehicles replacing combustion vehicles. Every additional EV deployed permanently reduces future oil demand.

Reaching 35 million electric cars, 3 million electric vans, and 200,000 electric trucks on Europe's roads by 2030 would deliver the maximum oil savings forecast in this report. This requires action at EU and Member State levels to deliver the fundamental enabling conditions, including stable demand measures and continued infrastructure deployment.

Corporate fleets deserve particular attention. They account for over 60% of new vehicle registrations in Europe and represent one of the most powerful levers available to policy-makers. A balanced acceleration of fleet electrification reduces oil consumption immediately while increasing the supply of affordable second-hand EVs.

Member States also have a critical role to play. Experience across Europe shows that stable, long-term fiscal frameworks are effective and sustainable in stimulating demand. Taxation and incentives should consistently favour electric vehicles over fossil fuel alternatives, while well-designed social leasing programmes can help ensure lower-income households benefit from the transition. Infrastructure roll-out should be prioritized and derisked.

For trucks, the challenge is primarily economic. Deployment will depend on achieving a competitive total cost of ownership through measures such as toll differentiation, lower electricity costs and targeted national incentives during the market ramp-up phase.

POLICY PRIORITIES

- Strive to maintain stable long-term CO₂ standards and ensure they are accompanied by the fundamental enabling conditions, keeping an investment signal for electric vehicles
- Deliver Europe's corporate fleets legislation, combining binding targets with supporting national measures.
- Shift taxation and incentives towards rewarding zero-emission vehicles
- Expand social leasing programmes and accelerate the development of a strong second-hand EV market.
- Implement toll differentiation and other measures that strengthen the business case for electric trucks.



**GOAL:
ON EUROPE'S
ROADS IN 2030**



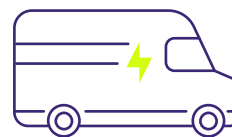
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MILLION - passenger BEVs



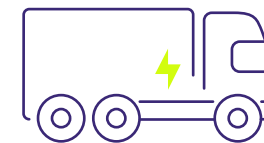
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MILLION - commercial BEVs



2

HUNDRED THOUSAND - electric trucks



BUILD



Strengthen Europe's EV Industrial Base

The technologies underpinning electrification must also be supported by resilient and diversified supply chains.

Europe has already committed nearly €200 billion across the electric mobility value chain, from vehicle manufacturing and batteries to charging infrastructure, critical materials processing and recycling. This has created early strengths, including global leadership in high powered charging infrastructure.

But strategic vulnerabilities remain. China holds a dominant position across much of the battery value chain, particularly in mineral processing, battery components and cell manufacturing. Europe cannot and should not seek to replicate China's position in every segment. The goal is resilience: reducing critical dependencies, diversifying supply and building competitive European capabilities in the areas that matter most.

This means doing more to ensure the industries underpinning electrification are built and scaled in Europe. Accelerating investment in homegrown battery cell production, midstream and critical materials processing, and recycling will be essential to reducing new strategic vulnerabilities.

POLICY PRIORITIES

- Introduce targeted production-based support to help European battery manufacturers scale up and compete with heavily supported international competitors.
- Implement balanced and targeted "Made in Europe" provisions under the Industrial Action Plan, incentivizing local production without blocking global markets
- Diversify supply chains for critical raw materials, battery components and processing capacity through strategic partnerships with trusted partners.
- Increase support for next-generation battery technologies, recycling and circular value chains to strengthen Europe's long-term competitiveness and resource security.



GOAL:
BY 2030

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>
200Billion
in committed investment across
Europe's EV ecosystem needs securing.

POWER



Make Electricity the Affordable Fuel of Transport

Transport electrification will succeed fastest when electricity becomes the clearly superior economic choice.

Electric vehicles already offer significantly lower running costs than conventional vehicles because they are more energy efficient, require less maintenance and are less exposed to oil price volatility. The challenge for policymakers is ensuring these advantages are fully reflected in the market.

Europe should treat electricity affordability as a strategic component of energy security. The EU already generates nearly half of its electricity from local renewable sources¹, which are rapidly expanding. By contrast, over 90% of oil consumed in the EU is imported.

That means renewable energy deployment must continue to accelerate, electricity networks must be strengthened, and consumers must be able to access the benefits of smart charging and flexible tariffs.

At the same time, fiscal frameworks should avoid distortions that unnecessarily favour fossil fuels over electricity. Member State taxes, levies and regulatory charges should all support the transition towards domestically produced and smartly consumed electricity, rather than prolonging dependence on imported fuels. The timely implementation of ETS2 will further strengthen the economic case for electrification by increasing the relative cost of fossil fuel use, particularly in high-mileage segments such as road freight.

¹ <https://ember-energy.org/latest-insights/european-electricity-review-2026/>

POLICY PRIORITIES

- Reduce taxes, levies and regulatory charges that unnecessarily increase the cost of electricity relative to fossil fuels.
- Accelerate renewable deployment, grid investment and system flexibility to increase the availability of affordable domestic electricity.
- Expand access to smart charging tariffs and dynamic electricity pricing.
- Deliver ETS2 as planned to reinforce the competitiveness of electricity over imported oil, particularly in road freight



All Member States to reduce excise taxes on electricity to legal minimums, backed by targeted cuts to VAT rates and widespread availability of time-of-use tariffs

FLEX



Turn EVs into Energy Assets

Electric vehicles represent a vast source of untapped flexibility for Europe's energy system. As EV adoption grows, millions of connected batteries will have the ability to shift electricity demand away from peak periods, absorb low-cost renewable generation and reduce pressure on electricity networks.

Smart charging can lower system costs by aligning charging with periods of abundant renewable generation. Over time, bidirectional charging and vehicle-to-grid services will allow EVs to provide electricity back to homes, businesses and the grid when needed. In our Delivery scenario, by 2030, smart charging of EVs alone would have the potential to absorb around 7% of peak wind and (utility-scale) solar generation¹. Fully unlocking EV flexibility could reduce EU energy system costs by €22 billion annually by 2040, according to the Fraunhofer Institute.

Bidirectional charging from passenger cars is now moving from pilot projects to commercial deployment. The next challenge is avoiding a fragmented landscape of proprietary solutions and ensuring interoperability across vehicles, chargers, aggregators and electricity markets. Europe has an opportunity to establish global leadership in smart and bidirectional charging if it accelerates implementation over the remainder of this decade.

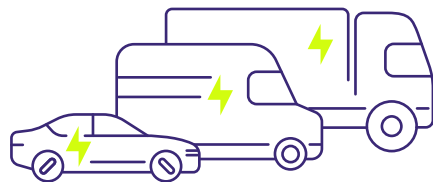
¹ <https://ember-energy.org/latest-insights/batteries-and-demand-flexibility-are-ready-to-scale-across-the-eu/>

POLICY PRIORITIES

- Ensure all new charging infrastructure is smart charging capable and interoperable.
- Accelerate the deployment of bidirectional charging through common technical standards, grid codes, and interoperable market frameworks.
- Enable EV participation in flexibility, balancing and capacity markets across Europe.
- Remove double taxation and other regulatory barriers affecting vehicle-to-grid and flexibility services.
- Support Member State action plans that accelerate consumer and fleet participation in flexibility services



GOAL:
BY 2030

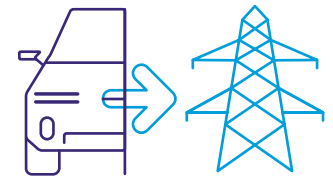


50%
OF ALL EU
BEVS



PARTICIPATE
IN SMART
CHARGING

OF WHICH
30% V2G
ENABLED



PROTECT

Make the Digital Backbone of Mobility Cybersecure

Electric mobility is becoming part of Europe's critical energy infrastructure. In the coming years, millions of EVs will become connected devices, while smart charging and bidirectional charging create new links between transport, electricity markets and the grid.

The risk is no longer theoretical. A Dutch national assessment found that a severe cyber incident affecting charging infrastructure and the electricity system could create economic impacts of up to €4 billion per day. At European level, NIS2 already recognises operators of charging points as part of a sector of high criticality.

Europe must therefore treat EV cybersecurity as an energy security priority. A successful attack on charging infrastructure, vehicle software, or flexibility platforms could disrupt mobility, affect essential services, manipulate electricity demand and undermine consumer confidence.

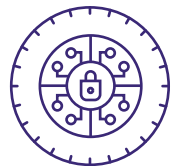
Europe is building on strong foundations. Industry is already investing heavily in cybersecurity and resilience, supported by new European legislation. The objective is clear: secure the EV ecosystem as it scales, while maintaining interoperability and a seamless user experience.

POLICY PRIORITIES

- Implement NIS2 and the Cyber Resilience Act across vehicles, charging infrastructure and digital energy services.
- Promote robust cybersecurity requirements for publicly funded charging, energy and digital infrastructure projects
- Improve information sharing, incident response and crisis preparedness across the electric mobility ecosystem.
- Ensure cybersecurity is embedded into interoperability standards and digital product requirements from the outset.
- Recognise the role and value of EV and charging data for keeping in Europe



**GOAL:
BY 2030**



A fully cybersecure
European electric mobility
ecosystem by 2030

The Cost of Losing Focus

Every pathway for Europe's transport transition should be judged against the question: **how much imported oil does it remove from the economy?**

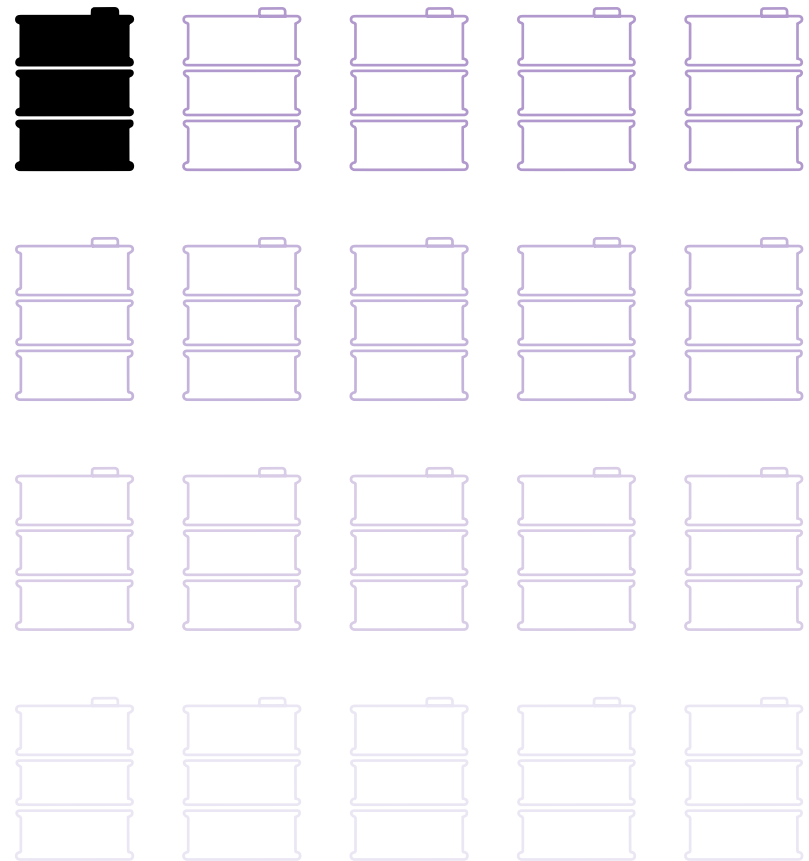
Europe is currently debating whether to stay the course on electrification or pursue a slower and less focused pathway through additional flexibilities, hybridisation and alternative fuels. This is also a debate about energy security.

Europe must remain open to multiple technologies for decarbonisation. Renewable fuels will play an important role in sectors where direct electrification remains difficult, particularly aviation and shipping. Hybrid technologies can reduce fuel consumption compared with conventional combustion engines and support the transition in specific use cases.

For road transport, however, direct electrification offers the fastest, most efficient and most scalable route to reducing oil demand. It enables Europe to maximise the energy security value of every unit of domestic renewable electricity, while other technologies are less energy efficient, more costly to scale, or better prioritised for harder-to-abate sectors.

Policy decisions that significantly reduce future EV deployment will also reduce Europe's energy security gains. Every electric vehicle not deployed leaves future oil demand locked into the transport system.

If Europe is serious about reducing strategic dependence on imported oil, it must collectively refocus on delivering car, van, and truck electrification at speed.



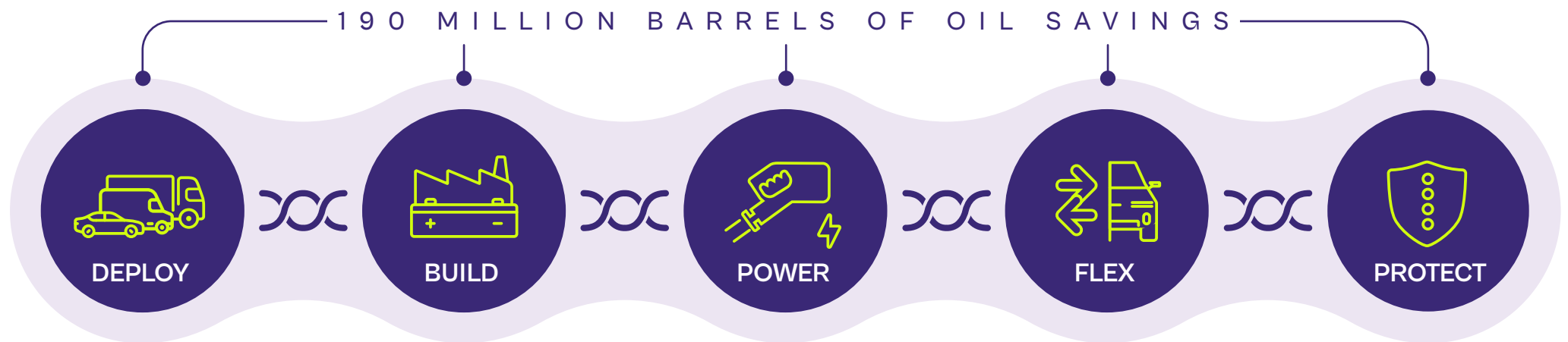
Conclusion

Europe's road transport system remains one of its **largest energy vulnerabilities**. Yet it is also one of its **greatest opportunities**.

Electric mobility offers a credible pathway to reduce oil dependence, strengthen industrial competitiveness, improve energy resilience and support a more flexible electricity system.

But achieving this roadmap requires strategic conviction. Europe can choose to broaden and slow the transition, accept lower energy security gains, and relinquish electric resilience to other regions. Or it can accelerate electrification in partnership with its industries, putting its political resources into delivering deeper resilience and capturing the full benefits of electric security.

Electric vehicles are Europe's most powerful lever for reducing oil dependence and strengthening energy security. It is now time for a focused and comprehensive strategy to unlock that potential.



Get in Touch



Chris HERON

c.heron@emobilityeurope.org

Secretary General - E-Mobility Europe

emobilityeurope.org



**E-Mobility
Europe**



Dr Chris ROSSLowe

chris@ember-energy.org

Senior Analyst - EMBER

ember-energy.org

EMBER