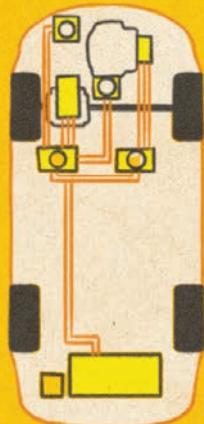
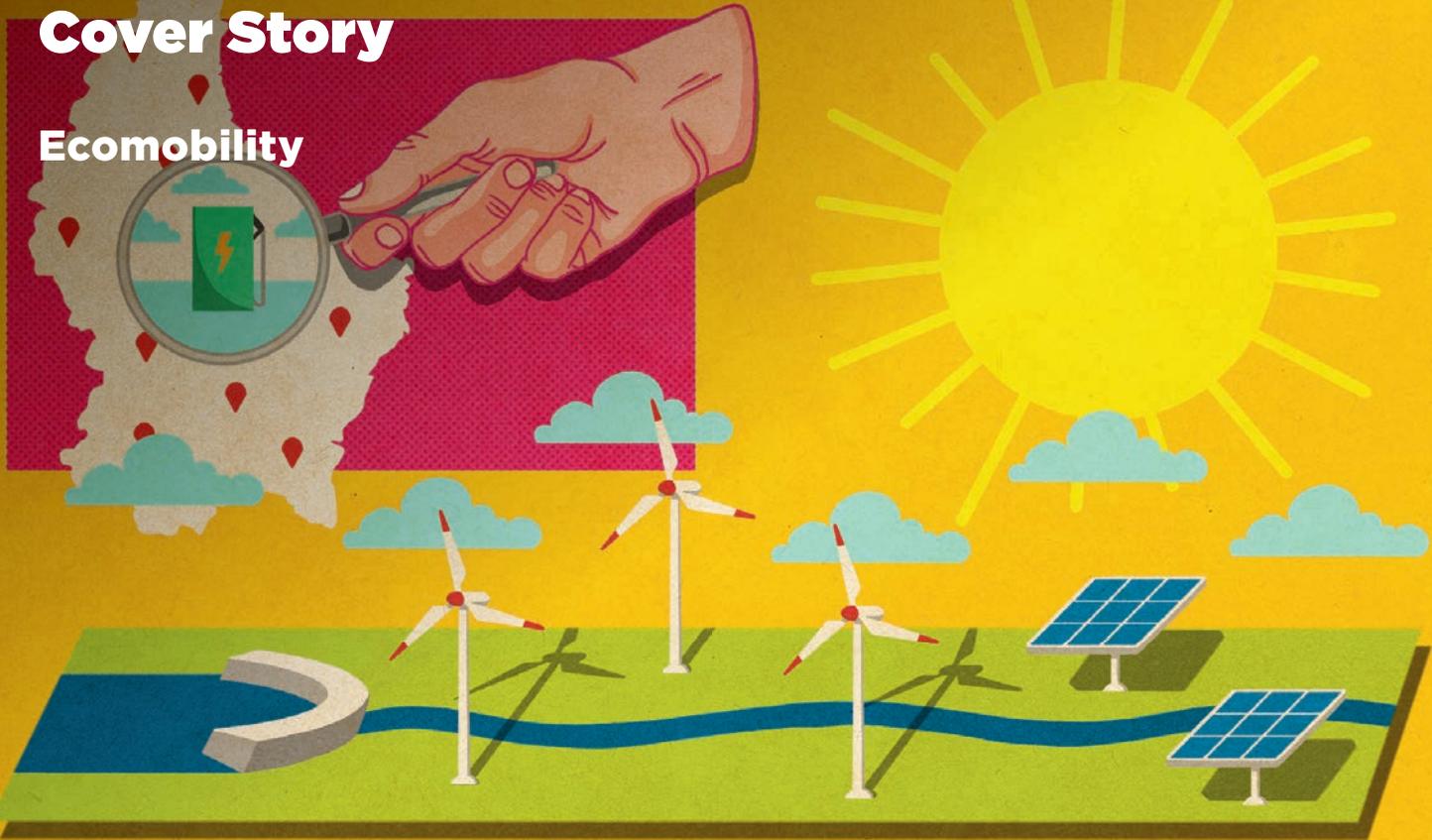


Cover Story

Ecomobility



Will the future be electric?

TEXTE C. Briault

TRANSLATION FROM FRENCH Martin Davies

In terms of the issues surrounding our transition in energy usage, the transport sector, whether private or professional, is the source of almost a quarter of global greenhouse gas emissions. The acceleration of global warming has become a visible everyday reality. Increasingly alarming studies from the Intergovernmental Panel on Climate Change (IPCC) show an increase in global average temperatures of 1.1°C compared to those recorded in the second half of the 19th century, with increasingly visible consequences on our planet. Almost all countries now include in their plans for the years to come the development of public policies aimed at bringing about cleaner mobility. Among these is the deployment of more environmentally friendly vehicles. Electromobility has therefore become a major part of the need to respond to these environmental issues. What are the major challenges of this transition to electromobility? How will Luxembourg tackle these questions? This month's article offers a non-exhaustive overview of the subject. It also lays the foundations for a future publication from the Chamber of Commerce which will address in detail several themes linked to electromobility.

With the objective of limiting global warming to no more than 2°C above the pre-industrial levels of 1900 – agreed by 194 countries who signed the Paris agreement resulting from COP21 in 2015 – the IPCC has determined that net CO₂ emissions must fall by half by 2030, and carbon neutrality must be achieved by 2050. Faced with this target, electric vehicles seem to be one of the main solutions to reducing greenhouse gas emissions from the road transport sector.

At a European level, the High Council for the Climate has pointed an accusing finger at a lack of ambition in public mobility policies to achieve the 2030 objectives. The European Commission's new regulatory framework wishes to ban the sale of greenhouse gas emitting vehicles by 2035, leaving room only for zero-emission cars: to this end a series of laws and regulations have been developed such as the European Green Deal strategy, the European climate law adopted in June 2021, the Fit for 55 package adopted in July 2021, and the RePowerEU plan in 2022.

Luxembourg wants to be ambitious in terms of climate policy: the climate law was adopted in 2020, ratifying the objective of climate neutrality by 2050 at the national

level, as well as the intermediate objective for 2030 of a reduction in emissions of 55% compared to 2005 for non-ETS sectors (high-emitting installations not covered by the community emissions trading system: housing, transport, services, agriculture, etc.). This law is accompanied by an Integrated National Energy and Climate Plan (PNEC) for the period 2021–2030, the updated draft of which was sent to the European Commission in July 2023. It contains the major objectives in terms of renewable energies, energy efficiency and reduction of greenhouse gas (GHG) emissions by 2030, as well as sectoral policies and measures to achieve these climate objectives.

Are e-vehicles a panacea?

Many avenues are currently being studied to decarbonise the transport sector. The deployment of electric vehicles is not the only proposed solution to the problem, but it is currently more advanced than other technologies.

Electric vehicles have many advantages. They eliminate exhaust gas emissions which have harmful effects on public health (respiratory and heart problems) and they consume less energy. On average, they are

estimated to consume only about a third of the energy required by a traditional car. The electric motor emits virtually no noise, a real gain in quality of life for cities and residents of congested or busy roads. Electric cars require very little maintenance. Some brands no longer require an automatic service that depend on the kilometres driven and batteries have also been greatly improved and now offer a range of 400 to 600 kilometres. Are there any disadvantages? Yes, because although the growth in the sale of electric vehicles is intensifying, there are still obstacles to their acquisition. Indeed, for the moment, electric models remain more expensive than gasoline or diesel cars. Despite increasing autonomy, e-cars have not yet reached the level of thermal vehicles which can travel up to 1,000 kilometres on a full tank of fuel. Then there is the problem that recharging e-cars takes more time at the pump than a "classic" fill-up.

Not just cars

The electric vehicle market is also increasingly attracting two-wheel enthusiasts, who are increasingly switching to electric motors. Many historic manufacturers are turning to this sector which has many advantages for them, ranging from the



The IMS Luxembourg Ecomobility Guide

In its Electromobility Guide, IMS Luxembourg wishes to give its members the keys and tools to help them plan journeys (home-work) and implement sustainable mobility solutions. It presents the issues and challenges of eco-mobility in Luxembourg, particularly due to the large daily travel flows into the country with more than 200,000 cross-border workers crossing the borders every day. The guide presents ways to develop alternative mobility strategies, raise awareness among businesses and employees, good practices, benefits, financial incentives and alternative offers in the region. A real mine of information!



Everything that moves

Cars, motorcycles, scooters... And in recent years, new ways of getting around have appeared on the roads... and pavements! We are seeing MEVs of all kinds flourish! MEV? Micro-electric vehicle: that is to say a small electric road vehicle designed to carry a single person at a speed not exceeding 25 km/h: monowheels, electric scooters, Segways, hoverboards, hover skates...so many that several cities have had to introduce new traffic rules and some have decided to ban some of these modes of travel, such as Paris which recently banned self-service electric scooters, Barcelona which banned them in 2018 and other cities that simply never allowed them!



“Luxembourg wants to be ambitious in terms of climate policy.”



possibility of “greening” their image as well as showing their concern for climate issues, to the possibility of riding the wave of an electromobile sector whose growth is expected to be exponential in the years to come. Thus, Harley Davidson has focused on electromobility to return to growth with a first 100% electric motorcycle called LiveWire marketed in 2019. The Italian brand Piaggio has also released an electric version of its famous Vespa – the Vespa Elettrica.

Although some manufacturers of heavy vehicles are starting to electrify some of their truck models, the deployment of these vehicles still remains quite minimal. Operating costs (see *Biogros side interview*) and autonomy still remain major obstacles for professionals. The Swedes at Volvo, through their truck branch, and Renault Trucks have started manufacturing battery-electric trucks and are also working on hydrogen or agrofuels. In the Grand Duchy, transport tests with electric buses have been conducted since 2017 on the RGTR network (*General Road Transport Scheme*) and, in 2022 for example, 22% of the 75.6 million kilometres were travelled in electric vehicles. This figure increased from January to June 2023, to 40.6% of the 40.2 million kilometres

travelled. The country has an ambitious target of at least 50% of bus mileage electrified by 2025 and 100% by 2030.

The problem of recharging!

The deployment of electric cars also means increased demand for charging stations. Efforts have therefore had to be made quickly: today, company car parks, shopping centres and underground car parks without a charging station are becoming increasingly rare. The number of charging points in the European Union increased from just 3,800 in 2011 to more than 150,000 at the end of 2019.

The massive introduction of electric vehicles also constitutes an enormous challenge for the energy sector which must pay particular attention to the security of electricity supply, the environmental impacts and the costs for the community and for the users which are implicit in moving to electric mobility. Many questions still remain to be studied regarding the capacity of the electricity network to ensure the energy supply of millions of electric vehicles. Last September the *Automobile Club du Luxembourg (ACL)* published on its website an audit report issued by the EU in June 2023 in which Annemie Turtelboom,



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member of the Court responsible for the audit, explained that *“batteries must not become Europe's new natural gas. We must prevent it [the EU] from finding itself in the same situation of dependence: its economic sovereignty is at stake. (...) By planning to ban new gasoline or diesel cars by 2035, the EU is betting big on batteries. But it does not hold all the cards: access to raw materials, attractiveness for investors and the costs to bear could make it lose its bet.”* And Frank Maas, who is responsible for promoting mobility solutions at the *Automobile Club du Luxembourg (ACL)* (see side interview) underlines *“This report denounces the weakness of the European strategy in terms of production of electric batteries and seriously doubts the possibility of doing without new thermal-engine vehicles by 2035 due to an insurmountable dependence on raw materials. According to the report, either the ban will have to be pushed back or more vehicles will have to be imported to the detriment of the European automobile industry. However, electromobility remains a solution for reducing greenhouse gas emissions and gases harmful to health such as nitrogen oxides “NOx” as well as fine particles, particularly in urban areas. For motorists who have the possibility of*

01. 02. Studies from the Intergovernmental Panel on Climate Change (IPCC) show an alarming rise in global average temperatures.



Frank Maas
Responsible for promoting mobility solutions, *Automobile Club du Luxembourg, ACL*

“The ACL is therefore in favour of technological diversity.”

The ACL recently conducted a survey on mobility. Can you give us the main points regarding electromobility?

More than 6,700 ACL members took part in the survey, which represents a significant participation across Luxembourg. Our objective was essentially to sound out the concerns of our members and to ensure that the theme of daily mobility was not forgotten in the public debates leading to the election. It appeared that 94% of respondents were of the opinion that policies should give more importance to this theme. Several measures appeared to have majority support: more P&R parking capacity (86%) and more offers for public transport. Regarding electromobility, the results are divided: 41% of respondents are in favour of an increase in infrastructure investments and 47% are in favour of the obligation to generalise the installation of charging stations in all new buildings. On the other hand, 78% of respondents are in favour of promoting eco-responsible alternative fuels other than electromobility. On this point, there is a real gap between the general political discourse promoting only electric cars and the opinion which was expressed in favour of a diversity of choices.

What is the ACL's position on electromobility?

It is important to remember that our role is to be the spokesperson for our members and to contribute to public debate in complete neutrality and independence. The ACL is therefore in favour of technological diversity, be that electromobility or eco-responsible fuels. We consider that it is dangerous to limit ourselves to a single technology and that the infrastructure in Europe is very far from being able to support a 100% electric solution. A report from the European Court of Auditors dated June 19th also highlights the limits of this strategy. (See in the file opposite)

What initiatives are you deploying regarding electromobility?

Our role is to inform and advise our members on all aspects of mobility including electrified vehicles. In this context, the ACL offers interactive conferences in different municipalities in order to inform motorists on the subject. We also advise our members individually to meet their needs. One of our priorities is to develop awareness, information and training for road users, a very strong demand for which was expressed at 78% during our survey. We also plan to set up a platform to allow everyone to report problems and follow up in order to improve everyday mobility. To further support our members in the energy transition, we offer the *Enovos* charging card free of charge, and we offer the go-e charging station in our shop at a preferential rate.



Sandra Delattre
Biogros communications
manager, Oikopolis group

*“The other side of the coin
is clearly the cost.”*

You now have an electric truck for your deliveries. What motivated this choice?

For Biogros - wholesaler of organic food products and member of the Oikopolis group - the motto “good for man and for nature (*Gutt fir Mënsch an Natur*)” is not just an advertising slogan, but a principle for our entrepreneurial action. We constantly scrutinise all our activities throughout the value chain for sustainability. We are actively looking for solutions to reduce our ecological footprint as much as possible. Transport logistics is an important part of the business in terms of management, but it is also the sector that produces the most CO₂ emissions. The objective was to reduce these emissions through numerous measures, including the use of the first electric truck in Luxembourg.

What does electromobility mean for your company?

For Biogros, the priority was to achieve the already mentioned sustainability goals, which certainly had a positive effect on the company's image. Thus, CO₂ emissions from logistical activities, which represented around 98% of the company's emissions at the time, could be reduced by 48% per location/pallet actually transported. In 2020, Biogros was the first company in Luxembourg to receive two stars from the Lean & Green Award: 2 stars are awarded when CO₂ emissions from logistics, supply chain and supply chain activities have been reduced by more than 30%. The other side of the coin is clearly the cost. Thus, using an electric truck results in costs 3.5 times higher than those of a comparable conventional vehicle. The pioneering use unfortunately came too early to benefit from the public aid introduced since then, so that the company received nothing in terms of aid even though it faced inflated costs. Even with the current maximum subsidies, it is not possible to operate a commercial vehicle with alternative propulsion profitably.

Will you expand to other vehicles?

Despite its ambitious sustainability goals, Biogros is above all an economic company. Additional costs incurred by environmentally friendly vehicles are generally not accepted by the customer. This is why, for cost reasons, no additional electric vehicles will be purchased at this time.



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recharging an electrified car at home, this represents real comfort. Unfortunately, this will not be possible for everyone.”

Questions of electricity supply also arise linked to the installation of charging stations, more particularly their locations. The deployment of these charging stations in public spaces remains a challenge. In fact, parked vehicles cannot be systematically connected to a terminal as few parking spaces currently provide one. Another question arises: the vast majority of drivers presently using electric cars live in individual homes, where it is easier to install a charging station, or even to charge your car using a simple mains socket. According to a survey conducted by Enedis in France (such a survey has not been done in Luxembourg but the situation in France is broadly similar to the Grand Duchy), 92% of electric car owners live in individual homes and 88% of them mainly charge their vehicle at home. 56% of electric car owners living in individual homes recharge using a traditional slow charging socket. 30% use a “reinforced” socket for medium charging and 14% use a fast-charging station. Thus, for home charging, slow or medium charging meets a large majority of needs. The spread of electric cars is therefore easier and faster for households living in individual homes to the extent that users have no difficulty recharging their vehicle for daily use. The problem is quite different for drivers living in collective housing (apartments). Home

03. 04. Many avenues are currently being studied to decarbonise the transport sector. A significant portion of vehicles registered in Luxembourg are used by cross-border workers who reside in France, Belgium or Germany. The potential for decarbonisation of the transport sector is still high in Luxembourg.

05. Even if sales of electric vehicles are increasing, there are still obstacles to their acquisition, particularly in terms of autonomy: e-cars have not yet reached the same level of thermal vehicles in terms of the number of kilometres they can travel.

06. Electric vehicles are also increasingly attracting two-wheel enthusiasts, who are also switching to electric motors.



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“The potential for decarbonisation of the transport sector is high in Luxembourg.”



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charging in collective housing involves the installation of charging stations near the co-ownership parking spaces. Their installation often requires the agreement of the co-ownership, or sometimes even its financing by the co-owners. According to the survey conducted by Enedis in France, only 49% of electric vehicle users living in collective housing mainly charge at home. They tend to favour other charging solutions: public terminals (36%) or charging stations at work (13%). Furthermore, co-owners are often reluctant to install such terminals for security reasons, fearing fire problems.

The good student

In Luxembourg, measures are being implemented to facilitate the implementation of charging in buildings: an obligation to install a minimum number of terminals and pre-equipment in new functional buildings and an obligation to pre-equip new residential buildings; and the adaptation of the law on co-ownerships aimed at simplifying the installation of terminals. At the end of September 2023, the aid scheme for the installation of home charging stations has allocated 3,706 cases of aid. An aid scheme for the installation of charging infrastructure by

companies has also been put in place. Operating on the principle of calls for projects, it has already made it possible with the first two calls to subsidise some 900 terminals (private, semi-public and public). A specific call was launched during the month of November 2023 towards infrastructure for heavy goods vehicles.

On 29th September 2023, during a press conference taking stock of the progress of electromobility in Luxembourg, François Bausch, Minister of Mobility and Public Works and Claude Turmes, Minister of Energy, stressed that *“appropriate charging infrastructure had to be developed at all levels, whether slow or fast, accessible to the public or private”*. Powered by 100% renewable electricity, at the time of the conference, there was at least one Chargy charging station installed in each municipality in the country; 90 SuperChargy ultra-fast charging stations, partly financed by the European Union's NextGenerationEU programme, are being deployed at 18 stations and service areas on motorways and on other main roads in Luxembourg. Thus, with around 2,000 charging points accessible to the public in Luxembourg, 98% of residents have at least one 22 kW charging

point within 5 minutes by car and 90% of residents have at least one fast charging station accessible to the public within 10 minutes by car. In addition to these charging stations accessible to the public, there are private terminals, financially supported by the *Klimabonus Mobilité* scheme. This report specifies that at least one Chargy charging station is installed in each municipality in the country, which has 1,377 Chargy and SuperChargy charging points and 162 ChargyOk. And the ministers specified that Luxembourg therefore ranks second in Europe, behind the Netherlands, in terms of the number of terminals installed.

This deployment will, however, require a balance to be adopted between the “mobility” roadmaps and those concerning energy supply. Then, the different players will have to answer questions such as: what to do in the event of major cold waves and tensions in the electricity networks? How can you manage supply if everyone works the same hours and charges their car at the same time? Will tensions be felt if these demands are added to household demands for heating, cooking, etc.? How to manage problems linked to major trips such as summer holidays for example, when everyone leaves on the same dates? How will charging be conducted on the main roads used during the major holiday “crossovers”?

For companies?

Through various calls for projects and financial aid schemes put in place, companies based in Luxembourg are supported in their transition to electromobility. These different aid schemes are partly financed by the European Union's NextGenerationEU programme. The first type of aid, which benefits all companies regardless of their size, is awarded following an open call for projects to develop both publicly accessible and private charging infrastructure, whose charging capacity is at least equal to 175kW. The projects that are selected will be able to benefit from a subsidy of up to 50% of investments linked to the deployment of charging stations.

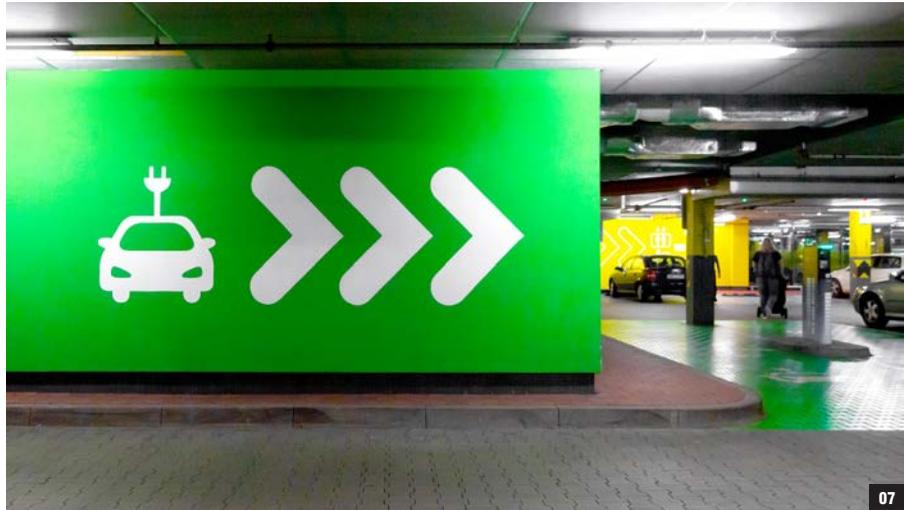
The second aid instrument is reserved for SMEs and aims to facilitate their transition to electromobility as part of their economic activity. On simple request, SMEs can benefit from a subsidy of up to 50% of the costs linked to charging stations and up to 60% of the costs linked to connection to the electricity network. This aid is capped at 60,000 euros for the costs of connection to the electricity network and at 40,000 euros for other costs linked to the company's deployment.

During the September 2023 review press conference, ministers indicated that two calls for projects granting financial aid to companies investing in charging infrastructure projects for electric vehicles had already been organised while a third will be open from 1 December 2023 to February 1, 2024. In addition to financial assistance for companies for the acquisition of zero-emission heavy utility vehicles launched in April 2023, a call for projects is open to companies wishing to invest in charging infrastructure projects dedicated to heavy utility vehicles. This call for projects will allow aid of up to 70% of the investment.

A virtuous ecosystem?

In an interview given to *La Tribune* in 2017, Carlos Tavares, boss of PSA, suggested that “manufacturers as well as public authorities would be very wrong to make electromobility the “be all and end all” of the ecologically virtuous automobile”. He said, “many issues have not been resolved concerning electric cars if we consider the ecosystem and not just the object...” “Who today is concerned with dealing with the question of clean mobility in its entirety? What solutions exist for the manufacture and recycling of batteries; the exploitation but also the supply of rare earth metals; the nature of electricity production?” he asked. Worried, he felt “that the excitement around electromobility risked returning like a boomerang to citizens’ faces”. Indeed, zero gas coming out of the exhaust pipe does not mean zero greenhouse gas emissions.

The construction of electric vehicles is itself a source of emissions. The majority of battery production today takes place in Asia, in countries where electricity production mainly uses coal and therefore emits a lot of greenhouse gases.



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The development of electric vehicles also has impacts on ecosystems. In addition to the question of availability of resources – mainly nickel, lithium, and cobalt – and the consequences of their extractions on the environment, there are ethical concerns. For example, the extraction of metals, notably cobalt, necessary for the manufacture of batteries, is heavily concentrated in the Democratic Republic of Congo, and takes place in conditions where human rights violations have been repeatedly pointed out. Then there is the issue of what to do with batteries at the end of their life? The expected growth in the number of electric vehicles circulating around the world must lead to preparations for the massive reprocessing of the batteries used. How will they be recycled, and how will the elements that constitute them be treated or reused? Finally, another problem, as automobile batteries are becoming more powerful for greater autonomy, they are also becoming increasingly heavier and, in consequence, consumption and prices increase.

Europe to the rescue

Aware of all these issues, Europe is working on a European regulation on the durability of

batteries which should concern all vehicles circulating on European soil, whatever their origin. It would require more transparency on the carbon footprint (labelling) and the establishment of minimum thresholds for life cycle greenhouse gas emissions; an obligation to incorporate materials from recycling into batteries (at least 12% in 2035 for lithium for example); extended producer responsibility (with 100% coverage of collection and reprocessing costs); an incentive for reallocation at the end of their life, for example vehicle batteries are aggregated and transformed into storage for the electricity network. There are also plans to manufacture batteries in Europe.

Are these goals achievable? A report published by the European Court of Auditors available on the ACL website underlines that the “EU industrial policy on batteries has certainly been actively promoted in recent years. But access to raw materials, increasing costs and fierce global competition constitute major obstacles. Therefore, EU efforts to produce more batteries may not be enough to meet growing demand. The ‘zero emissions by 2035’ objective is therefore at risk of not being achieved,” warn the auditors. Nearly one in five new vehicles



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registered in the EU in 2021 was equipped with an electrical socket, and new petrol or diesel cars will be banned by 2035. Batteries have, as a result, become a strategic imperative for the EU. But the European battery industry is lagging behind globally. China, in particular, has a big head start with 76% of global production capacity. To truly launch the EU into the global battery race, the European Commission published a strategic action plan in 2018. It set out, for the most part, the main measures planned to support the sector: it gave the strategic impetus, developed the regulations and ensured financing. As Europe, and indeed Luxembourg, is heavily dependent on imports of raw materials, the issues of supply and mass production of electric vehicles and their components (batteries in particular) are being studied. The country has already reacted by signing - at the opening of Automotive Day on October 5th - a memorandum of understanding with the president and co-founder of the Lyten company which will establish its European headquarters in Luxembourg. Originally from Silicon Valley, Lyten (*see side interview*) specialises in the development of lightweight, high energy density batteries for electric vehicles as well as in the production of composite materials

07. Today, company car parks, shopping centres and underground car parks without a charging station are becoming increasingly rare.

08. A new European regulation, applicable from 2024, provides that an ultra-fast charging station must be installed on motorways at least every 60km in both directions.

09. Luxembourg has conducted transport tests with electric buses on the RGTR network (General Road Transport Scheme) since 2017. In 2022, 22% of the 75.6 million kilometres travelled were in electric vehicles.

10. The spread of electric cars is easier and faster for households living in individual homes because it is easier to recharge the vehicle.

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Lars Herlitz
Chair and co-founder
of Lyten

“Accelerating the transition to sustainable mobility”

Can you introduce us to Lyten?

We were founded in 2015 in Silicon Valley. We are pioneers in the field of 3D graphene supermaterials for decarbonisation, which enable the transition to net zero emissions. We are working in particular on new generation lithium-sulphur batteries, intended for use, for example, in the automotive, aerospace or defence sectors. These batteries have a carbon footprint reduced by 60% compared to conventional electric batteries, because they do not contain nickel, cobalt or manganese. In addition, they are characterised by high energy density, and they considerably reduce the weight of electric vehicles, which helps accelerate the transition to sustainable mobility.

Why did you choose Luxembourg to establish your European business?

Much more than a head office, this location represents, for us, a central hub through which we can reach out and collaborate with all European companies. We were looking for a country where we could benefit from the best support. We could not be any more excited about collaborating with Luxembourg. We see this as a cornerstone of our international expansion.

What are you concretely going to develop in Luxembourg?

The European headquarters based in Luxembourg will oversee general administration, marketing and sales activities, as well as local and technical support in the region. We plan to conduct advanced R&D activities here and then explore the possibility of establishing a pilot industrial plant in the country. We are discussing the possibility of establishing ourselves on the site of the Automobility Campus in Bissen.



The electric car - not before time!

We did not invent anything! In the early days of the automobile, when the first tests were conducted, all sources of energy were good for moving vehicles. In the 1900s, for example, in the United States, 40% of vehicles on the road ran on steam, 38% on electricity and 22% on gasoline. As soon as cars began to be mass-produced, the importance of alternative drives diminished. The oil crisis marked a new stage in the search for alternative fuels and electric mobility has made a comeback in the last ten years, since the American Tesla began the race to produce electric vehicles.



A challenge for firefighters

Electric vehicles have pushed security services to review and adapt the way they work. Although rare, fires in e-cars are more difficult to put out, they seem more persistent and can sometimes reignite a few hours or even days after being extinguished. Firefighters must therefore review their intervention methods and train themselves for fires in electric vehicle batteries which cannot be treated like a fire in a thermal car. Some emergency services are also equipping themselves with new, more efficient vehicles that can access underground car parks, since conventional fire engines are too large!



11. Condominiums are often reluctant to install such terminals for security reasons.

allowing the construction of lighter vehicles.

In addition, the Net-Zero Industry Act must grant batteries the status of "strategic" technologies and the European objective provides for 40% of batteries manufactured in Europe by 2030, including, among other things, an intensification of the geological exploration in Europe for the supply of raw materials (Critical Raw Material Act for lithium, cobalt, copper, etc.).

The case of Luxembourg

Luxembourg has some particular specifics compared to other countries, notably because of its geographical position, at the "heart of Europe", and its economic dependence on a substantial number of cross-border workers crossing the frontier every day. A sizeable portion of vehicles registered in Luxembourg are used by cross-border workers who reside in France, Belgium or Germany. The potential for decarbonisation of the transport sector is still high in Luxembourg. Beyond the development of public transport and soft mobility to reduce the need for transportation in private vehicles in general, Luxembourg has set itself the very ambitious objective of achieving a 49% share of electric cars and plug-in hybrids in its vehicle fleet by 2030 (private, professional or operational lease cars).

According to the latest figures (September 2023), 10,401 new electric cars were registered in Luxembourg, accounting for

more than 30% of new registrations (7,114 100% electric cars and 3,287 plug-in hybrids). Regarding the total automobile 'fleet': 7.52% of cars registered in Luxembourg are electric (4.36% pure electric and 3.16% plug-in hybrid) and this represents, behind Sweden and Denmark, one of the highest electrification rates in the European Union. A significant portion of cars being company and leasing vehicles, we noted that 20.62% of cars registered in the name of companies (legal entity) were electric (end of August 2023), including 11,889 100% electric cars and 9,415 plug-in hybrids; that 31.97% of the cars registered by leasing companies were electric (end of August 2023), of which 8,496 are 100% electric and 6,557 are plug-in hybrids. In the Grand Duchy, since 2017, the benefit in kind for company cars has been calculated based on the engine and the level of CO₂ emissions. The objective being to further favour company cars with low and zero rolling emissions, the criteria will be further strengthened so that from 2025, only company cars with zero rolling emissions can benefit from a favourable rate.

Is the country ready?

The transition to mobility using alternative fuels (electric, hydrogen, etc.) still faces deep-rooted fears of insufficient charging (or refuelling) infrastructure. To mitigate the risk of seeing the deployment of electric mobility delayed, and therefore not achieving GHG emissions reduction objectives,



12. The development of electric vehicles also has impacts on ecosystems due to the need for resources such as nickel, lithium, and cobalt, and the consequences of their extraction.

the EU has decided to set binding objectives in this area.

Thus, on 25th July 2023, the Council of the EU and the European Parliament adopted the new regulation on the deployment of infrastructure for alternative fuels (AFIR regulation), which sets out “*binding minimum objectives for the deployment of charging and refuelling infrastructures open to the public intended for road vehicles.*”

Each Member State will need to set national objectives in terms of terminals to be installed which are based on the number of electric vehicle in the country and which take into account “*technological progress such as increasing the autonomy of electric vehicles or increasing the number of fast charging points... as well as the different methods for charging electric and plug-in hybrid vehicle batteries.*” Indeed, objectives set “*according to the total maximum output power of the charging infrastructure open to the public would offer a certain flexibility in the implementation of different*

charging technologies”. The AFIR regulation also mentions that the installation of public charging stations is particularly important in residential areas.

Thus, for light vehicles, publicly accessible charging infrastructure parks must be installed at least every 60 km along the main roads of the European Union by the end of 2025, with an output power of at least 400kW from this date, and at least 600kW from the end of 2027.

To achieve this objective, the share of electric vehicles will therefore have to increase much faster than has been seen in recent years.

Electromobility does not solve everything

If the electrification of transport – light and heavy – constitutes a powerful lever for reducing our carbon footprint – whatever way, it develops – the issues and challenges remain numerous, and the development of

multimodal transport is also an important avenue to follow. It is in fact necessary to combine all possible levers depending on the routes and places of residence: transport solutions in rural, semi-urban and urban areas are not the same and the problems and alternatives for getting around are not all going to be developed at the same level. As some experts have already explained, it is no longer just modes of transport that will need to be considered differently, but indeed, lifestyles. —

“The share of electric vehicles will therefore have to increase much faster than has been seen in recent years.”