Driven by Innovation.

INFOMAGAZINE

Issue 2

sVOLT

in the context of sustainability

MOBILITY AS A FUNDAMENTAL RIGHT

Affordable mobility for all levels of society is a crucial tool for ensuring equal opportunities.

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SUSTAINABLE GOALS ARE NEEDED TO PROTECT THE ENVIRONMENT

The need for mobility meets the need to protect the environment and minimise CO_2.

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WHEN MOBILITY AND SUSTAINABILITY GO HAND IN HAND

Thanks to electric vehicles, mobility and environmental protection are no longer in conflict.

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Dear Reader,

Sustainability needs electromobility – electromobility needs SVOLT: Advanced energy storage systems are one of the most important success factors for meeting climate protection targets and form the basis for affordable and sustainable mobility for everyone. That's why we at SVOLT have made it our mission to manufacture lithium-ion batteries as sustainably and cost-efficiently as possible for the general public.

The affordability and mass suitability of electromobility, and thus the transformation of transport, stands, falls, and is driven by the heart of green mobility: modern, high-performance energy storage systems.
There are still many myths surrounding electromobility. That is why we have compiled the most important information and topics on sustainability and electromobility for you:

- Why mobility is a fundamental right and crucial for a thriving economy and society?
- What are the most important climate targets
  and what are their backgrounds?
- What are the international climate protection goals and the concrete measures for business and politics?
- What are the most promising sustainable drive technologies?
- How can innovations in mobility boost the economy?

And last but not least: Find out what moves us at SVOLT and how we live our claim "driven by innovation" in practice in this 2nd issue of our SVOLT Magazine.

I hope you enjoy this issue!
Kai-Uwe Wollenhaupt
President SVOLT Europe & Vice President of SVOLT Energy Technology Company Ltd.

INTRODUCTION

Dear Reader,

Dr Dietmar Woidke
Prime Minister of the State of Brandenburg
Photo: Uwe Klössing

Prof. Dr.-Ing. Jörg Steinbach
Minister for Economic Affairs, Labour and Energy of the State of Brandenburg
Photo: Kristin Baumert

Brandenburg is developing well. Promoters of economic development are recording an increase in investment inquiries. We are SVOLT are happy about new business settlements like our own. New and modern value chains are emerging. Lusatia is at the forefront of this positive development.
The structural change associated with coal being phased out by 2038 makes the region very exciting and innovative. Cottbus, Guben, Lauchhammer, Schwarzheide and Schwarze Pumpe are attractive locations for international investors. Lusatia is becoming a model region for structural change, modern mobility and environmentally friendly energy generation.

The generation of energy from renewable sources and the storage of energy is crucial for supply independence, climate protection, economic growth and, last but not least, for maintaining social harmony. In this respect, we have so far succeeded in making a good start toward phasing out coal! With SVOLT, Lusatia has gained a new strong partner.
The focus of Lusatia's structural transformation is on securing the region's competitiveness and preserving and creating modern jobs. Our goal is to create a stable foundation that will make it possible for Brandenburg and Lusatia to become one of the most successful regions in Germany and Europe in the current decade, one of the winning regions of the 20s.

The goal of the State Government of Brandenburg is to harmonise environmental and climate protection with innovative economic development in order to lead Brandenburg into an economically, ecologically, and socially sustainable future. SVOLT's settlement and our economic and environmental policy are in line with this. As a future-oriented company, SVOLT fits very well in Brandenburg. In Lauchhammer, a traditional industrial and energy location, SVOLT makes an important contribution to the continued success of structural change and to the transformation of transport.
Thanks to SVOLT, the transition from combustion engines to e-mobility is now becoming a little more real, and the gap between the two is closing. The excellent infrastructure, the well-trained specialists based here and, last but not least, potential partner companies from the automotive and supplier industry guarantee the best possible conditions for the production of battery cells for electric vehicles.
SVOLT is seamlessly woven into other "green" communities. Modern industrial workplaces are being created everywhere. Together with the expansion and use of renewable energies, this is our path to a bright future.

"Thanks to SVOLT, the transition from the combustion engine to e-mobility is becoming a reality and the gap between the two is closing."

MOBILITY AS A FUNDAMENTAL RIGHT

Mobility as a fundamental right

Mobility is a basic human need and the guarantee for the success of a modern and highly complex society. However, both global economic growth and individual fulfilment require an intact and healthy environment in order to be truly sustainable. Environmentally friendly e-mobility solutions reconcile these two needs.

The coach, the train, the passenger car, the e-scooter, the robo-taxi – the evolution of vehicles goes hand in hand with the evolution of the economy and society. All these innovations have one thing in common: the human need for mobility. Since time immemorial, people have been looking for new ways to access their surrounding environment more quickly and effectively. While the entire life of the rural population in the 19th century was lived within a radius of a few kilometres of home, today, according to the Federal Statistical Office, daily commutes of around 39 kilometres are the norm – not to mention business and holiday trips. According to the results of the 2017 study "Mobility in Germany" commissioned by the Federal Ministry of Transport and Digital Infrastructure, Germans travel a total of 3.2 billion kilometres on an average day.

This pursuit of greater freedom of movement has not only many positive effects for the individual, but also for the community. With a larger travel radius, horizons are broadened through new contacts, impressions and information. Throughout history, it is no coincidence that every breakthrough in means of transport has been followed by countless innovations in other areas. Efficient mobility stimulates the transfer of knowledge within a society. And in today's globalized world, both economic growth and cultural exchange across regional borders are inconceivable without mobility. Mobility has long been much more than just a basic need. It has become the framework for a functioning economy and society.

Freedom of movement = freedom of expression

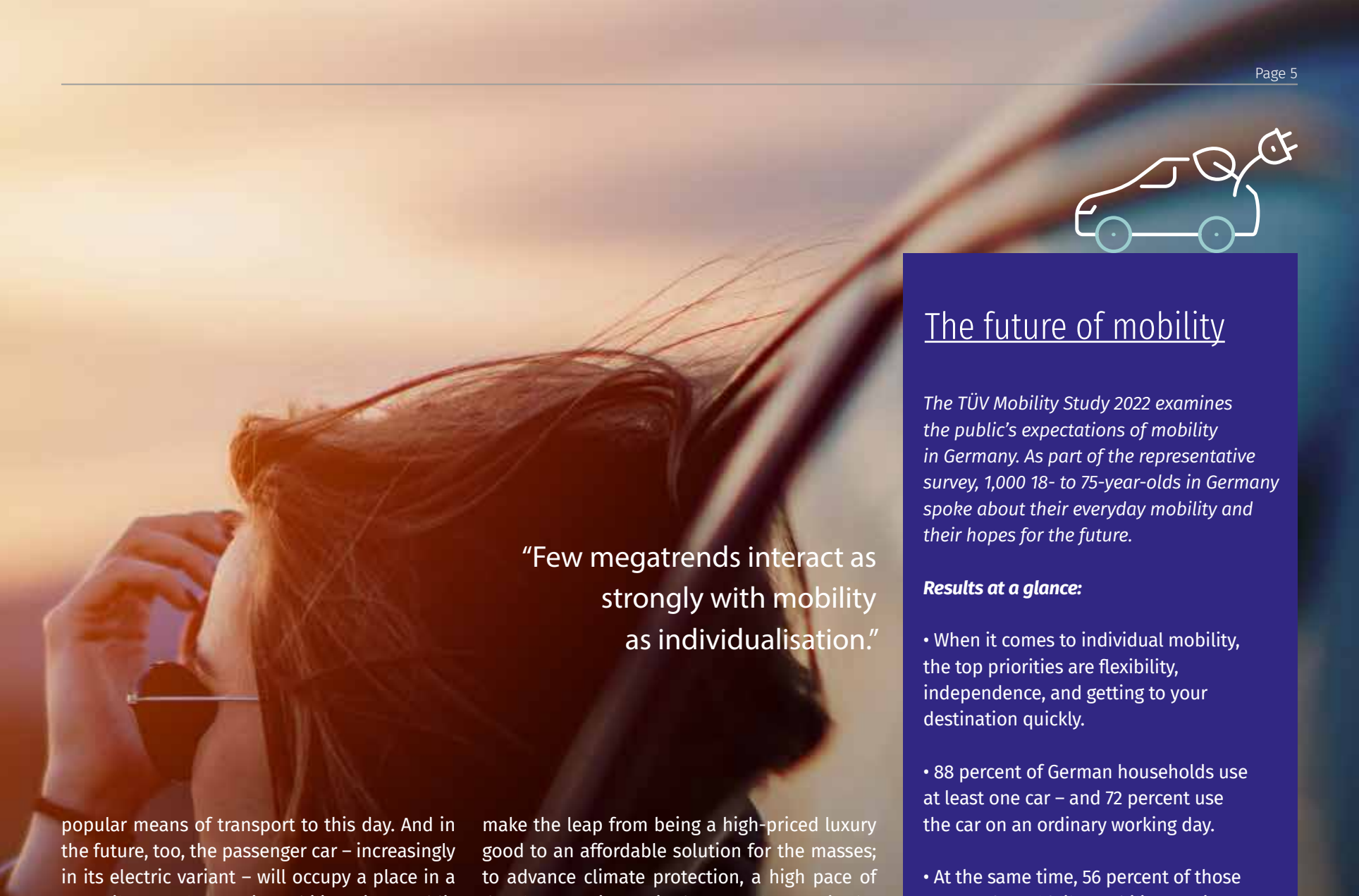
Few megatrends interact with mobility as strongly as individualisation. The 2017 study "Evolution of Mobility" by the Zukunftsinstitut (Future Institute) on behalf of ADAC also came to this conclusion. Accordingly, it has become a matter of course for people in industrialised countries to design their careers, private lives and everyday life flexibly according to their own ideas, strengths and needs. There is less and less time between a wish or need and its implementation in reality. This "anytime, anywhere" basic attitude is currently manifesting itself, for example, in the e-commerce boom, in the triumph of mobile work, and in the network economy as a whole, where individuality and high availability are combined. The Covid-19 pandemic has catalysed this fundamental change. No longer are people limited in their practical living patterns by the offers in their immediate vicinity. Instead, they also want to take advantage of offers that are outside their usual environment. Mobility creates the practical framework for this. It provides freedom and ensures access to education, jobs, cultural sites, care facilities, and basic services. In this context, mobility, as the key to social inclusion, is an essential prerequisite for an independent lifestyle. Those who can move without restriction can also achieve their goals independently – indeed, they can better exercise their fundamental right to free expression.

From a luxury good to products for the masses, and on the double!

Uncomplicated and affordable access to mobility for all sections of society is therefore an important instrument for promoting equal opportunities. History shows that the democratisation of a society is closely linked to the democratisation of mobility. In the course of the industrial revolution, more and more means of transport have transitioned from a luxury good to a commodity. One thinks, for example, of the so-called Grand Tour – a journey through Europe as a rite of passage into adulthood that was reserved for young aristocrats between the 17th and 19th centuries.

Today, around 43 per cent of German high school graduates plan their own Grand Tour – although it is now called "Work and Travel" or "Gap Year" and, with top travel destinations like New Zealand, they sometimes go far beyond the borders of the European continent. Its aim is to foster free and individual development. The increasing desire for such individual and flexible lifestyles, especially in a highly interconnected, fast-moving world like ours, also leads to growing complexity in mobility patterns.

In order for growth to continue, a mobility concept is needed that is accessible to all. Hardly any other vehicle fulfills the need for flexible, self-determined and efficient individual mobility as well as your own car at your doorstep. This is why it continues to hold its traditional leading position in various rankings as being the most



"Few megatrends interact as strongly with mobility as individualisation."

popular means of transport to this day. And in the future, too, the passenger car – increasingly in its electric variant – will occupy a place in a versatile, people-centric mobility mix. In addition, innovative mobility concepts such as car and ridesharing or public transport are becoming increasingly popular. This is also confirmed by studies by the Future Institute on the megatrend of mobility, which state that buzzwords such as "networked," "digital," "postfossil," and "shared" will help shape the mobility landscape of tomorrow.

Sustainable mobility for all

The changing climate urgently requires a reduction of the emission of CO_2, one of the most harmful greenhouse gases. Against this background, the primal human striving for mobility must be reconciled with another basic need: the need for a healthy environment that makes a good life possible. The resulting phasing out of fossil fuels and the strengthening of sustainability in general is not only urgently needed, but also adds complexity to the question of how we move from A to B in the most environmentally friendly way today and in the future. However, thanks to innovative solutions for e-mobility based on renewable energy sources, these two goals no longer compete but complement each other. E-mobility can provide a real remedy here: It not only reduces the emission of CO_2 but also lowers the impact of other pollutants and noise – thus offering a better quality of life, especially in urban areas. For theory to become practice and for electric mobility to realise its full potential, the electric car must make the leap from being a high-priced luxury good to an affordable solution for the masses; to advance climate protection, a high pace of development is required. Currently, gaps in the charging infrastructure and high acquisition costs for an electric vehicle are still the biggest obstacles to the widespread use of e-mobility. Sustainable mobility for everyone demands above all one thing: Innovation in the sector and especially in batteries – because the batteries are the most expensive component of an e-vehicle – and because they still need to be developed to provide the necessary range.

Business and politics are required to create a framework for truly future-proof mobility: through technological solutions at the cutting edge, but also through regulatory incentives. At SVOLT, we do not just dream of comprehensive, sustainable e-mobility for everyone – we work every day to make it a reality. Because we are convinced: Mobility is a human right.

The future of mobility

The TÜV Mobility Study 2022 examines the public's expectations of mobility in Germany. As part of the representative survey, 1,000 18- to 75-year-olds in Germany spoke about their everyday mobility and their hopes for the future.

Results at a glance:

• When it comes to individual mobility, the top priorities are flexibility, independence, and getting to your destination quickly.

• 88 percent of German households use at least one car – and 72 percent use the car on an ordinary working day.

• At the same time, 56 percent of those surveyed would like mobility requirements to be completely covered by local public transport in the future.

• At 36 percent, the second biggest wish for the future of mobility is free e-charging stations.

• Air pollution (50 percent) and environmental pollution (47 percent) are considered to be two of the most serious problems caused by road traffic.

• For 56 percent of all respondents, environmental and climate protection plays either a large role or a very large role in their mobility decisions.

• 52 percent believe that e-mobility can reduce the impact on the climate.

Despite the trend towards "Road Diet", the car remains the first choice of Germans in terms of means of transport. In the future, it will play a corresponding role in the context of multifaceted, dynamic and sustainable mobility.

Sustainability needs electromobility – electromobility needs SVOLT.

SUSTAINABILITY IN THE AUTOMOTIVE INDUSTRY

Joining forces to halt climate change

The national and international climate protection initiatives of recent years have an important goal: to limit global warming to a maximum of 1.5 degrees Celsius. This can only be achieved through solidarity across society, politics, and business and through a strong, joint commitment that flows into specific regulations and practical measures. The transport sector, as one of the sectors with the highest emissions, has a decisive role to play. We explain how future technologies, such as electromobility, can contribute to protecting the environment.

"Numerous research studies have come to the conclusion that every degree of unrestrained global warming increases the risk of a climate chain reaction with devastating consequences for the planet. This must be prevented at all costs."

Creating a world in which every individual acts in an ecologically compatible, socially just, and economically efficient manner – the UN-member states set themselves no small goal in September 2015 with the Agenda 2030. Through the historic signing of the "World Future Treaty", a total of 193 UN countries committed to 17 joint Sustainable Development Goals (SDGs).

The 17 goals can be summarised in five missions, the so-called 5 Ps:
1. Focus on human dignity. (People)
2. Protect the planet. (Planet)
3. Promoting prosperity for all. (Prosperity)
4. Ensure peace. (Peace)
5. Build global partnerships. (Partnership)

Many SDGs, if not all, go hand in hand with mobility. This overarching "roadmap" should then be prioritised and concretised at national level through detailed targets, guidelines, and further measures.

Of the 17 Agenda 2030 goals, none attracted as much media attention as SDG 13: "Take immediate action to combat climate change and its impacts". This is hardly surprising, as climate change is a pressing and highly emotional issue that is keeping more and more people on our planet busy. Rightly so: It is advancing threateningly quickly, becoming increasingly noticeable, and affecting all of us. In many regions, the fatal effects are already a bitter reality. As with all 17 Agenda 2030 goals, SDG 13 relies on a solidarity-based partnership between developing and developed countries.

This is also reflected in the sub-objectives formulated below:
- **Anchor climate protection measures** in the policies, legislation, and planning processes of the individual countries.
- **Strengthen resilience** to climate-related hazards and natural disasters in all countries.
- **Climate protection capacities** of developing countries to be improved through appropriate funding (USD 100 billion annually by 2020).
- **Conduct awareness-raising** and education on the topic of climate protection.

Paris: "It all comes down to 2 degrees."

SDG 13 and its sub-objectives served as a starting point for the more detailed climate protection measures agreed upon by the participating countries at the climate summit in Paris (COP21) in the same year.

The most well-known measure was the limitation of global warming caused by humans to 2 degrees Celsius.

Countless research studies conclude that every degree of global warming that goes unchecked increases the risk of a chain reaction of climate change that will have devastating consequences for the planet. This must be prevented at all costs.

SDG 13 and the Paris Agreement are far from the first climate initiatives; the issue of climate protection is gaining renewed importance due to its global political dimension – and the increasingly urgent imperative to actively address climate change. The significant increase in extreme weather phenomena such as droughts, storms, and in particular floods makes the urgent need for action tangible in people's everyday lives. Between 2013 and 2021 alone, sea levels rose by 4.4 millimetres annually.

The World Meteorological Organisation (WMO) reports that the planet's air temperature has also risen by an average of 1.1 degrees Celsius since the end of the 19th century. Particularly alarming is the fact that CO_2 concentrations again peaked at 413.2 particles per million in 2020, and this despite the fact that CO_2 emissions had fallen by 5.6 percent worldwide that year as a result of the Covid-19 pandemic. All this highlights the urgent need to set sustainability goals.

On the following pages, you can read about the contribution that the automotive industry can make to climate protection in the future >>

Sustainability goals are necessary

Which measures are urgently needed to mitigate devastating consequences for the environment, economy, and society.

Fossil fuels such as oil, natural gas, and coal are burned to generate electricity and heat, or to power internal combustion vehicles, ships, and aircraft. This creates large quantities of greenhouse gases such as CO_2. These reinforce the natural greenhouse effect. The earth's surface, which is heated by the sun, reflects the heat back into outer space. However, greenhouse gases in the atmosphere absorb this reflected heat, thus preventing the release of heat into outer space. The more greenhouse gases that accumulate in the atmosphere, the poorer the Earth's ability to release its heat. As a result, the earth is continually heating up. This global warming is leading to significant impact on climatic conditions, such as rising sea levels and shifts in climatic and vegetation zones and habitats, which in turn will lead to increasingly severe and frequent weather extremes. In an attempt to combat this, in recent years climate policy has increasingly taken centre stage in global politics.

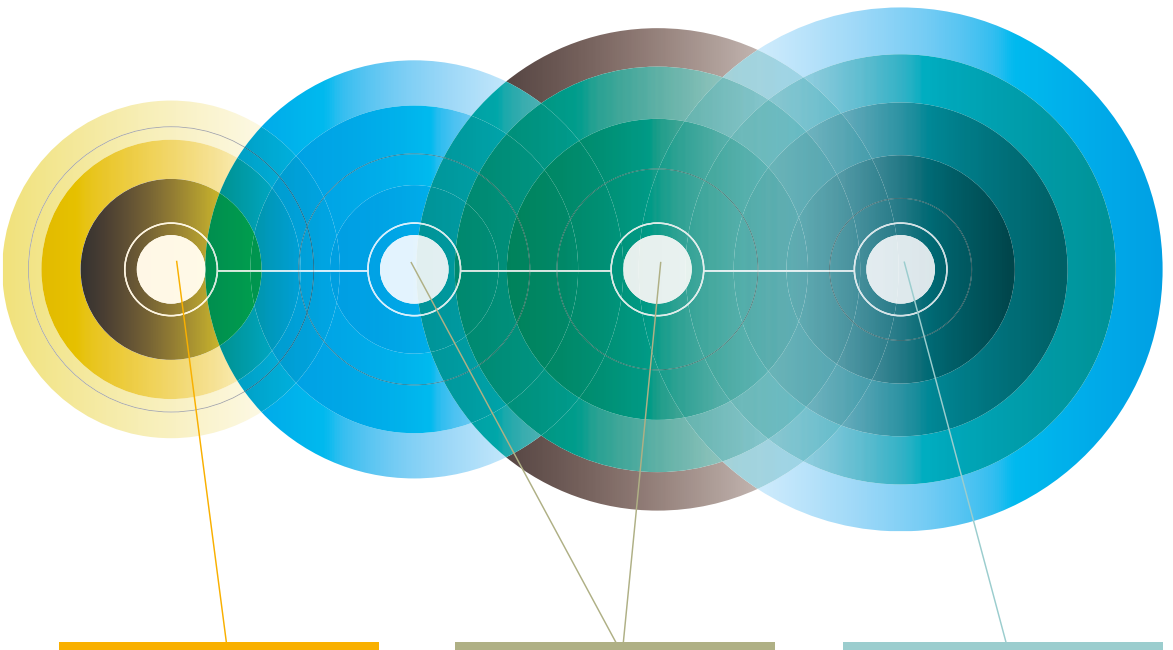
For the first time in the history of the EU, the European Green Deal 2019 provides a concrete framework for the sustainability policies of the 27 member states – with ambitious targets. According to this, by 2050 Europe should no longer emit greenhouse gases and will become the world's first climate-neutral continent. Thus, the countries want to make it possible to keep the global temperature increase caused by humans below the critical mark of 1.5 degrees Celsius. In contrast to the limit of 2 degrees Celsius set in the Paris Agreement (see page 7), global warming of only 1.5 degrees Celsius would have a markedly lower impact on the environment, economy, and society, e.g. through extreme heat and heavy rainfall.

Joining forces to achieve the 1.5-degree goal

The Intergovernmental Panel on Climate Change concluded that the 1.5-degree target is achievable – albeit with much higher investment costs than the 2-degree target and under much stricter conditions. Specific sub-targets are however required: By 2030, global CO_2 emissions are to be reduced by 45 percent to their 2010 level, and by 2050 they are to be as low as net zero. By then, renewable energies must account for at least 70 to 85 percent of the global electricity mix, while coal must account for only 0.2 and natural gas for only 0.8 percent. As a crucial interim goal of the European Green Deal, net greenhouse gas emissions must be reduced by at least 55 percent by 2030 compared to 1990 levels. A major step that requires concrete action: Concrete climate and energy policy measures to achieve the goals of the Green Deal can be found in the EU "Fit for 55" programme (see page 10).

> "A glance at the distribution of greenhouse gas emissions clearly explains why so many national and international climate protection measures focus on sustainable mobility."

Compared to the European targets, the German government has further tightened its climate protection targets in its new Federal Climate Protection Act 2021. Compared to 1990 levels, CO_2 emissions in Germany are to be reduced by 65 percent by 2030 instead of 55 percent, and by 88 percent by 2040. Climate neutrality is expected to be achieved as early as 2045 – five years earlier than in the EU. But why so quickly? If we look at the reports by the German Weather Service on the development of the climate in Germany, the urgent need for these stricter measures becomes apparent. Compared to the global increase of one degree Celsius, the air temperature in this country is increasing more markedly and at a faster rate. The average air temperature in Germany has risen by 1.6 degrees Celsius since 1881, and the five warmest years in Germany all occurred after the year 2000. In order to achieve the German climate protection goals, the requirements for CO_2 reduction in the individual industry segments of



According to the EU Commission's "Fit for 55" plan, by the year 2030, CO_2 emissions from passenger vehicles must be reduced to 55 percent and those from light commercial vehicles to 50 percent.

55

A total of 3.5 million charging stations for electric and hydrogen vehicles are to be built by 2030. 16.3 million across the EU by 2050.

3.5

Overall, the reform of emissions trading aims to reduce greenhouse gas emissions in the sectors concerned by 61 percent by 2030 compared to 2005 levels.

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energy, industry, buildings, transport, agriculture, and waste have therefore also been tightened, supported by a total funding volume of around 6.5 billion euros.
Specifically for the transport sector, which is one of the largest emitters of greenhouse gases, the Federal Ministry of Economics and Climate Protection launched the funding programme "Future Investments in the Vehicle Industry" on 19 February 2021. With a funding volume of at least 1.5 billion euros over the period from 2021 to 2024, this programme is intended to stimulate the transformation of mobility towards greater sustainability and future viability – through innovative concepts, manufacturing processes, products, and modern facilities.

Specifically, the programme focuses on three fields of action:

• **New, innovative products** as essential basis for vehicles and future mobility

• **Modernisation** of manufacturing as a boost for productivity and resilience

• **Finding solutions together**. Establish regional innovation clusters.

This funding programme is just one of many climate protection measures that primarily affect the transport sector.

The EU Commission's "Fit for 55" plan also devotes a comprehensive collection of guidelines to mobility:

• **By 2025**, a total of one million charging stations for electric and hydrogen vehicles are to be built. By 2030, the number of charging stations is expected to increase to 3.5 million, by 2040 to 11.4 and by 2050 to 16.3 million in the EU area.

• **From 2026**, a CO_2 price will be levied on energy-intensive products imported into the EU.

• **From 2027**, fuels for road transport and buildings will be transferred to a separate emissions trading system (Emissions Trading II).

• The **reform of emissions trading** aims to reduce greenhouse gas emissions in the sectors concerned by 61 percent by 2030 compared to 2005 levels. The free certificates from the CO_2 Carbon Border Adjustment Mechanism (CBAM) will be phased out.

• **The revenues** from reformed emissions trading **will flow into a climate social fund**. With a total volume of 59 billion euros over a period between 2027 and 2032, this fund supports investments in more energy-efficient buildings and low-emission mobility.

• **By 2030**, CO_2 emissions from passenger vehicles must be reduced to 55 percent and those from light commercial vehicles to 50 percent.

• **From 2035** all vehicles registered must be emission-free.

In 2026, the EU Commission plans to review progress toward achieving these goals. At this point, a decision will also be made as to which measures need to be readjusted if necessary. The EU Commission takes into account new technological developments for low-emission mobility as well as the need to make the transition to a climate-neutral Europe sustainable and socially just.

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SUSTAINABILITY IN THE AUTOMOTIVE INDUSTRY

The role of the transport sector

A look at the distribution of greenhouse gas emissions clearly shows why so many national and international climate protection measures focus on sustainable mobility.

According to the European Environment Agency, instead of the urgently needed reduction in greenhouse gas emissions by 2018, they have actually increased. The transport sector is not uninvolved in this, following the energy sector and industry, it is responsible for the third largest share of greenhouse gas emissions in Germany and Europe. The Federal Statistical Office reports, for example, that road transport alone accounted for 26 percent of total CO_2 emissions in the EU in 2019 – which corresponds to around 784 million metric tons of CO_2 equivalents. The lion's share of these emissions is attributable to cars and motorbikes at 62 percent, followed by a share of 27 percent for trucks and buses.

According to the Federal Environment Agency, the transport sector's share of total greenhouse gas emissions in Germany is low in 2019 at 20 percent or 164 million metric tons of CO_2 equivalents; but this is an increase of a full seven percent over 1990. This is almost twice the limit set by the German Climate Protection Act. A negative trend in the transport sector is particularly worrying. According to this, greenhouse gas emissions from the transport sector must be reduced to 85 million metric tons of CO_2 equivalents by 2030. However, according to the German government's 2021 projection report, the transport sector has reached the end of the road with a reduction to 126 million metric tons of CO_2 equivalents – and this has already been achieved with great efforts and taking into account numerous measures, such as the CO_2-

"Fit for 55" sustainability programme

A climate-neutral Europe by 2050 and 55 percent less net CO_2 emissions compared to 1990: These are central goals of the "Fit for 55" package of measures presented in 2021, through which the European Commission intends to implement the Green Deal. It is a collection of regulatory measures:

- Revision of the EU Emissions Trading System (EU ETS)
- Effort Sharing Regulation (ESR) update
- Revision of the Energy Taxation Directive
- Adaptation of the Regulation on land use, forestry and agriculture
- Ordinance governing a CO_2 Carbon Border Adjustment Mechanism (CBAM)
- Regulation establishing a Climate Social Fund
- Revision of the Renewable Energy Directive (RED)
- Update of the Energy Efficiency Directive
- Regulation on the development of alternative fuels infrastructure

targets for fleets. This is a cause for concern. According to PwC, the Federal Government's target of 15 million new registrations of battery electric vehicles by 2030 cannot be met; current projections assume only 10.5 million.

This illustrates: The current regulatory measures are not sufficient for the transport sector to achieve its sustainability goals. Given the transport sector's share of total emissions, this finding is alarming.

And that's not all: The Federal Ministry for Economic Cooperation and Development formulated a gloomy forecast for SDG 13 on its topic page: Countries' current national climate commitments are not sufficient to meet the 1.5-degree target – this could lead to an expected increase in greenhouse gas emissions of almost 14 percent over the next ten years.

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"The current regulatory measures are not sufficient for the transport sector to achieve its sustainability goals. Given the transport sector's share of total emissions, this finding is alarming."

Companies on the road to net zero

When goals alone are not enough: Sustainability has long since ceased to be a diffuse ideal, but has played a decisive role in decision-making processes in politics and business. Climate policy provides a regulatory framework that automotive manufacturers and other key players can translate into corporate strategic goals.

If you look at the gap between the European sustainability goals and the status quo, it quickly becomes clear: Ambitious regulations alone cannot halt climate change. For this scale to succeed, it is essential that politicians, business, independent organisations and consumers work together. Accordingly, the goals and requirements set out by policymakers must be translated into concrete recommendations for action and best practices for companies.

An important bridge between the political goals formulated in the Agenda 2030 and their concrete implementation at the corporate level is provided by the United Nations Global Compact. Based on the SDGs, the Science Based Targets initiative and the specially developed 10 principles for companies, the UN-initiative forms the framework for an inclusive and sustainable economy.

Principles 7, 8 and 9 relate in particular to climate protection and sustainability:

- **7:** Companies should follow the principle of prudence in dealing with environmental issues.
- **8:** Companies should take initiatives to promote greater environmental awareness.
- **9:** Companies should accelerate the development and deployment of environmentally friendly technologies.

As part of the Science Based Targets initiative, the UN Global Compact, together with WRI, CDP and the WWF is creating a science-based framework for short- and long-term corporate targets, which lead to the 1.5-degree target and full decarbonisation by 2050 in the form of the Net Zero Standard. Most companies still need to reduce their CO_2 emissions by 90 to 95 percent. The Net Zero standard looks at a company's emissions across the entire value chain:

Scope 1 – direct emissions

Scope 2 – indirect emissions from purchased energy

Scope 3 – indirect emissions within the value chain

The Net Zero standard places more emphasis on facts than on letters of intent, and that is a good thing. A company is not considered a Net-Zero company until it actually achieves its emission reduction targets. Therefore, investments in CO_2 reduction outside the value chain, for example through climate protection projects, are a welcome addition but do not replace decarbonisation in the company itself.
Especially pleasing: An impressive 19,000 companies and organisations from over 170 countries are now committed to the UN Global Compact's sustainability goals and Science Based Targets. This includes well-known vehicle manufacturers and suppliers to the automotive industry: BMW Group, Continental, Ferrari, Ford USA, General Motors, Hyundai, Renault, Volkswagen, and Volvo.

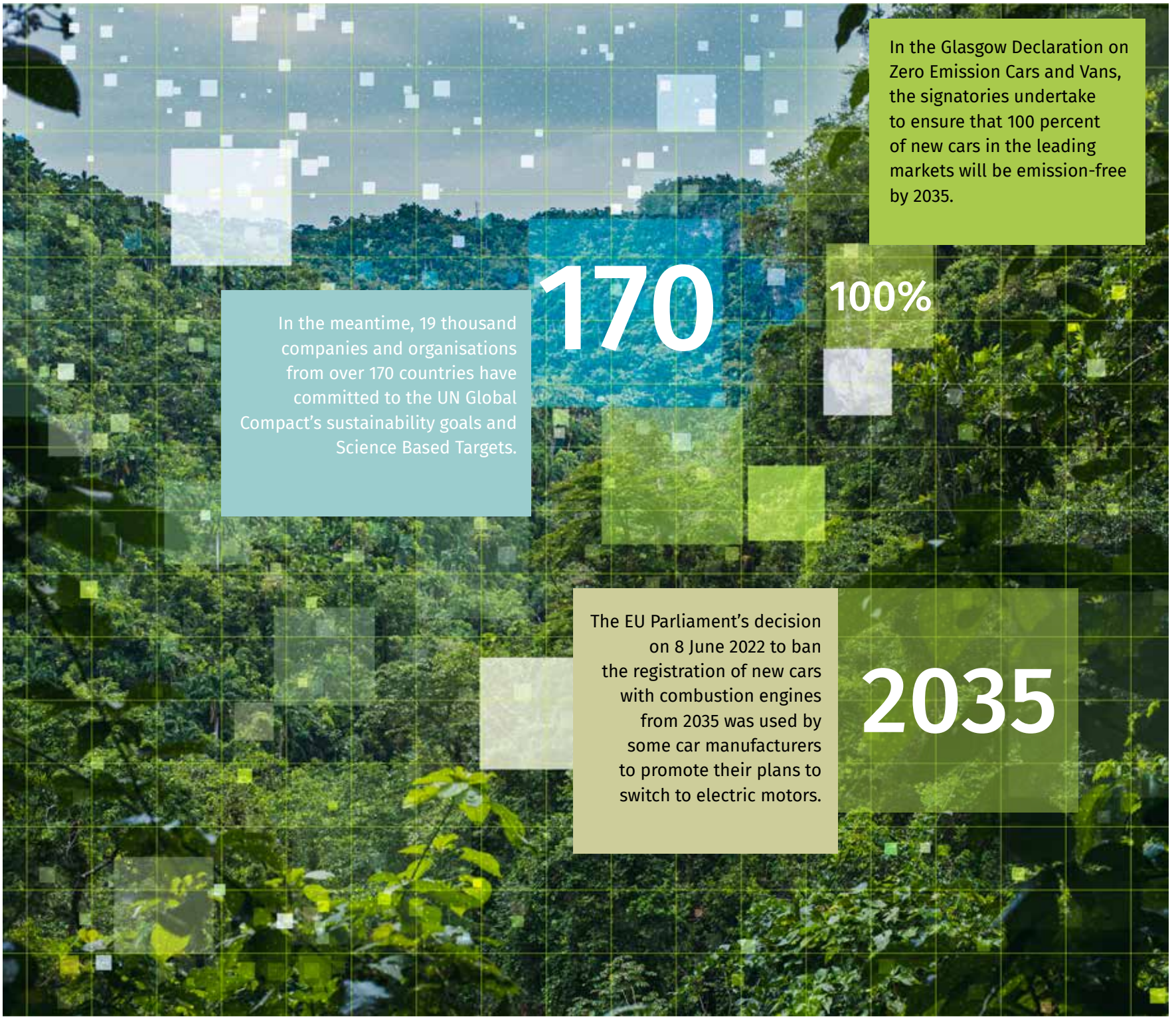
Commitment on the part of companies is required!

The commitment of many stakeholders in the transport sector to the Science Based Targets is an indicator that the automotive industry is not only aware of its role, but also takes its responsibility for a sustainable, CO_2-neutral future seriously. This is also supported by the fact that 31 countries and eleven automotive companies have sent another strong signal for the green mobility of tomorrow by signing the "Glasgow Declaration on Zero Emission Cars and Vans" at the climate summit in Glasgow in autumn 2021 (COP26). The signatories commit to ensuring that 100 percent of new passenger cars and light commercial vehicles are zero-emission by 2035, in leading markets.

"Ambitious regulations alone will not halt climate change!"

A full 100 percent!

In addition, some car manufacturers have used the EU Parliament's decision of 8 June 2022 as an opportunity to announce their plans to switch to electromobility by 2035 and thus discontinue the production of new cars with combustion engines. For example, Audi has announced that it will no longer develop vehicles with combustion engines from 2026. BMW also wants to generate at least half of its turnover with electric cars by 2030. Opel is planning to exit the combustion engine by 2028; VW between 2033 and 2035 (in Europe). However: Current sustainability studies in the mobility industry show a discrepancy between goodwill and the implementation of the green transformation. As part of its summer 2021 sustainability survey, Deloitte asked a total of 192 executives in the automotive industry (car manufacturers and suppliers) how strongly is sustainability rooted in their cor-



porate strategy. 93 percent of those surveyed felt that sustainability had become increasingly important in their companies; for 74 percent, sustainability was even an issue for the Executive Board. At the same time, however, only 9 percent of the study participants were able to confirm that their companies already pursue a holistic approach to sustainability. And 55 percent complain about the discrepancy between communication and the concrete implementation of sustainability-related issues. Financial aspects were mentioned as the main obstacle to greater sustainability in production. Sustainable manufacturing processes, for example, could make vehicles more expensive. The decision-makers who were interviewed feared that the resulting price increase would be difficult to implement. These results make clear: We are far from where we want to be! However, even if the companies and countries have not yet reached where they want and need to be in the various climate protection initiatives, as of 2022 there is some initial good news: Sustainability has long since ceased to be a diffuse ideal and is already significantly shaping decision-making processes in politics and business, and in the automobile industry. Climate policy provides a regulatory framework that automotive manufacturers and other key players can translate into corporate strategic goals. Hand in hand, the shared, politically, socially, and economically defined goals, that make environmental protection possible are not only formulated but also pursued and implemented. Research is also making concrete progress towards making sustainable production processes and mobility concepts suitable for mass production in the near future – you can find out more about this on the following pages.

"Current sustainability studies in the mobility industry show a certain discrepancy between goodwill and implementation of the green transformation."

MOBILITY TRANSITION: EMISSION-FREE AND SUSTAINABLE – BUT HOW?

What are we doing to achieve climate neutrality?

The combustion engine, e-fuels, fuel cells, or even battery electric drives – which type of drive is most promising in terms of climate targets? And what about other factors that are relevant for consumers, such as costs?

A longer, complicated chain of argumentation stretches from the global, abstract goals of international climate policy to those of the EU to the reality of German road traffic. Those who follow this chain find that the rapid phasing out of the classic internal combustion engine is one of the most effective climate protection measures in the transport sector – and one of the most controversial. But why should that be? Is the combustion engine really the engine of the past or do e-fuels perhaps fulfil the dream of a climate-neutral combustion engine instead? Or are fuel cell or battery electric drives the more sustainable choice? In the following, we will take a closer look at the advantages and disadvantages of the various drive systems – not only in terms of their climate footprint but also from a consumer perspective.

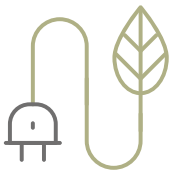
The internal combustion engine – an engine belonging to the past? But why should that be?

Passenger vehicles cause two-thirds of CO_2 emissions attributable to transport, while the remaining third is emitted by trucks, trains, ships and domestic flights. A modern small car with a petrol engine emits alone an average of 17 kilogrammes of CO_2 equivalents per 100 kilometres on the motorway, while its diesel counterpart emits 13 kilogrammes of CO_2equivalents over the same route. These emissions add up quickly when you consider that there are 48 million cars on Germany's roads. This means that, on average, every second person owns more than one car, and even in the low-traffic Corona year 2020, a German motorist travelled an average of around 11,387 kilometres. In addition to the CO_2 emissions during operation, the emissions in the remaining life cycle (manufacturing, maintenance, disposal) must also be taken into account. Looking at the entire life cycle, a petrol vehicle produced in 2020 will emit around 230 grams of CO_2 equivalent per kilometre driven. According to Statista's projections, a petrol-powered small car emits 1.35 metric tons of CO_2 equivalent per year. And that's not all: The classic internal combustion engine emits particulate matter and is noisy, which makes its use all the more problematic.

The sustainability potential associated with combustion engines is completely exhausted

Almost all cars burn diesel or petrol, and so contribute to the climate crisis with their exhaust gases. Fuel consumption and the associated greenhouse gas emissions from internal combustion engines can be reduced primarily through detailed improvements to the individual components: using more compact engines with optimised geometry, more effective exhaust gas treatment or better cylinder and engine management. With careful driving – correct gearshifting behaviour, economical use of air conditioning – CO_2 emissions can also be reduced by a further single-digit percentage. But despite all the "austerity measures", between 2000 and 2018 average fuel consumption per 100 kilometres fell by only 0.9 litres (from 8.3 to 7.4 litres).

Even though climate protection is a significant motivation for reducing the consumption of fossil fuels – it is not the only one: In addition to global warming, limited oil reserves also call for a timely transition to alternative drive systems that use energy from renewable sources. In the "Statistical Review of World Energy" study from 2020, the mineral oil group BP estimates the world's oil reserves to be around 1,734 billion barrels. In order to satisfy the global hunger for energy, 35 billion barrels are produced each year. According to BP's forecast, if the same amount is produced in the future, global crude oil reserves will be exhausted in 2070. In addition, the availability of fossil fuels is heavily dependent on the political situation.



"According to projections, the price of petrol will rise 46 cents by 2030, while the price of diesel will rise 53 cents."

In 2022, car drivers felt this more strongly than ever due to significantly higher fuel prices. The German Federation for the Environment and Nature Conservation (BUND) assumes that fossil fuel will continue to become more expensive in the future. According to projections, the price of petrol will rise by 46 cents by 2030, and the price of diesel will rise by 53 cents. From a cost perspective, fossil fuels are therefore not a long-term option for most consumers.

Towards climate neutrality with e-fuels?

Against this backdrop, the question arises as to whether synthetic fuels (e-fuels) as an alternative to petrol and diesel can also achieve net-zero greenhouse gas emissions in modern combustion engines. However, if we look at the CO_2 balance, the supposedly promising e-fuel turns out to be less climate-friendly than battery electric vehicles. This is one of the conclusions reached by Transport & Environment (T&E) life cycle analysis. The admixture of e-fuel could reduce CO_2 emissions by just 5 percent over the entire life cycle of a petrol vehicle. In other words, not nearly as much as urgently needed. A battery-powered electric vehicle manufactured and operated with the electricity mix expected in 2030 is 53 percent better in terms of greenhouse gas emissions than a pure e-fuel combustion engine – even if the e-fuel is produced exclusively with electricity from renewable sources. The scarce availability of e-fuel also reduces its future viability in the context of sustainable mass mobility. According to projections by the fuel industry, the e-fuel supply would be able to cover just 3 percent of global fuel demand in 2035.

Whether petrol, diesel or e-fuel, the statistics speak for themselves: The combustion engine has reached the peak of its technological evolution. The mobility of tomorrow is dependent on truly sustainable drive technologies – sustainable in terms of climate footprint, cost structure, and also availability.

2070

Global crude oil reserves are forecast to be exhausted in 2070.

17

A modern small passenger car with a petrol engine emits an average of 17 kilograms of CO_2 equivalent per 100 kilometres on the motorway.

2035

According to fuel industry projections, e-fuel supplies would cover just 3 percent of global fuel demand in 2035.

Sustainable throughout the entire life cycle – thanks to electromobility

The mobility of tomorrow demands truly sustainable drive technologies in terms of climate footprint, cost structure, and availability. Can electromobility also compete with the combustion engine in these respects?

With regard to the carbon footprint, current statistics confirm that electric vehicles have a considerably lighter "CO_2 carbon backpack" than their combustion engine counterparts – and this not only during direct operation but also over their entire life cycle. From production to recycling, a modern electric vehicle produces an impressive 30 percent less greenhouse gas emissions than a petrol vehicle and 23 percent less than a diesel vehicle (German Federal Statistical Office) – and this is already the case today with the current electricity mix. If the share of renewable energies in the electricity mix increases, this will also have a direct positive impact on the carbon footprint of electric vehicles. The answer to the question formulated above is therefore unambiguous; at least from this point of view it clearly speaks in favour of e-mobility.

> "In 2021, 83.3 percent more electric vehicles were registered compared to the previous year; the market share of electric cars rose to 13.6 percent this year. This trend is encouraging."

But electromobility is also attractive in terms of its cost structure. The falling purchase price of electric vehicles and other financial incentives also ensure that electric vehicles can already compete in economic terms with combustion engines. A study commissioned by BEUC and the Federation of German Consumer Organisations (vzbv) has shown that the first-time buyer of a mid-range electric car saves 11,000 euros over four years compared to the cost of a comparable petrol car. And even a higher purchase price is amortised over the entire life cycle of an electric vehicle. The LeasePlan Car Cost Index 2021, for example, has calculated monthly operating costs of 960 euros for a mid-range petrol vehicle, while a comparable electric vehicle is considerably cheaper with operating costs of 760 euros.

The lower life cycle costs are also due to the mechanical design of the electric motor. A combustion engine is highly complex with a total of around 1,400 components, while an electric motor only consists of around 200 components (excluding the battery). This results in lower material expenditure, which saves resources. As electric motors have significantly fewer moving parts, the risk of wear and tear is also lower overall. This reduces the maintenance effort and therefore the costs for consumers in the long term. In concrete terms, electric vehicle owners no longer need to carry out many maintenance steps, such as regularly changing the oil, spark plugs, air filters, or timing belts, to name just a few components. The driving experience also offers advantages. In contrast to the combustion engine, an electric motor does not require a gearbox and reaches its maximum torque shortly after starting. Accordingly, an electric car also accelerates significantly faster from a standstill or from low speeds. Moreover, with an electric motor, 80 percent of the electrical energy can be converted into propulsion, which means that only 20 percent is lost as heat. With an internal combustion engine, only 25 percent of the energy generated is used for propulsion. In addition, the braking energy of an e-vehicle is fed back to the electric motor, which also mitigates wear and tear on tyres and brakes.

Last but not least, the advantages of an electric vehicle in terms of particulate matter and noise emissions compared with combustion engines must be highlighted. And thanks to innovations in battery technology, the range of e-vehicles is also improving with each vehicle and battery generation. The average range of electric cars is currently around 450 kilometres. This is not only enough for carefree everyday mobility (40-90 kilometres a day) or even for a short holiday. The average range is predicted to reach 780 kilometres by 2025, which would make longer holiday trips easier. E-mobility already scores excellently in 2 of the 3 points. The last point, availability for all, calls for sustainable innovations – especially in the battery sector.

Electricity or hydrogen?

Alternative fuels are the future, but what that future should look like is still being debated. Is this discussion even justified? The hydrogen car is often mentioned as the e-car's strongest competitor. The question is whether hydrogen-based vehicles can actually represent a sustainable alternative to battery-electric vehicles.

First of all, it should be mentioned that fuel cell vehicles are basically also electric cars – but with the difference that they generate their electricity from an integrated hydrogen fuel cell and then also store this electricity temporarily in a battery. Generating hydrogen by electrolysis requires a large amount of electricity. If one were to assume the ideal case where hydrogen is produced by water electrolysis using 100 percent renewable electricity, fuel cell vehicles would at first glance appear to be the most sustainable alternative – at least as long as electricity used for the process really comes from 100 percent renewable resources. However, given the current electricity mix, this does not correspond to reality. Instead, around 95 percent of hydrogen is currently obtained from natural gas in industry. Since the process of steam reforming uses fossil fuel, it is not only energy-intensive and thus emission-intensive itself, but also releases CO_2 bound in the natural gas – which in turn pollutes the environment. Unlike their electric counterparts, hydrogen cars are not charged, but refuelled within a few minutes. However, this time saving is put into perspective when one considers the ever-shorter charging times of e-vehicles. In addition, storing the hydrogen requires either a very high pressure of 700 bar or a very low temperature of -253 degrees Celsius. Both require a great deal of energy, which further worsens the ecological footprint. The range of 700 kilometres is an advantage – but in view of the poorly developed refuelling infrastructure for hydrogen vehicles, it is also absolutely necessary. In July 2021 there were just 92 hydrogen filling stations in Germany, compared to 49,025 public charging points for electric vehicles.

There are also interesting results in terms of costs: Consumers will pay about 9.50 euros for driving 100 kilometres in a fuel cell car, which is about double the price of driving an electric vehicle. Energy loss during hydrogen generation, storage and subsequent conversion to electricity in the hydrogen car is also very high. With an efficiency of 23 percent, hydrogen cars are about as efficient as petrol cars – modern electric vehicles, on the other hand, achieve an efficiency of up to 73 percent. Based on the above key data, it seems unlikely that hydrogen cars will leave their niche to enter sustainable mass mobility in the near future. In contrast, battery-powered electric vehicles are already more technically mature, more economical over their entire life cycle and already recognised as an emission-free technology of the future.

The current discussion about the mobility transition therefore shows one thing above all else: Although the pure carbon footprint is the most important decision criterion, it is not the only one. Sustainable means that transport must be economically viable for the consumer over the entire life cycle. In addition, it must be possible to scale the required infrastructure with realistic effort. Considering these parameters, battery-powered vehicles emerge as the "winners" of the mobility transition. The expansion of the charging infrastructure and technical progress in energy storage systems (ethical materials, improved energy density, wider range) consolidate the position of the electric car as a sustainable and sustainable means of transport. Equipped with next-generation high-performance energy storage systems and fed by 100 percent electricity from renewable sources, electric vehicles can unleash their full potential as climate protection vehicles.

"In July 2021, there were just 92 hydrogen filling stations in Germany."

The (electric) motor of the economy

The mobility transition is one of the drivers of transformation in the world of work. Job profiles in the automotive industry are particularly subject to this transformation. With prudent planning, investments in regional locations, and targeted training measures, the companies not only secure and create jobs, but even strengthen Germany's positioning in the mobility market.

As explained on pages 6–7, well-developed mobility for all levels of society is one of the cornerstones of a thriving economy and society. However, the exploding fuel prices harbour the danger that individual mobility will not be accessible to everyone in the future, as hoped and expected, but will instead become a function of an individual's income. This is not only a massive threat to equal opportunities but also a threat to the democratisation of our society. At the same time, public transport, unfortunately, cannot compete with the private car when it comes to flexibility and availability, especially in rural areas. The electric car can already shine in terms of costs. Even if electricity prices have risen sharply, the comparison portal Verivox has determined: **The electric car is now a cheaper alternative than ever before.** Here is an example: With an internal combustion engine, consumers currently pay up to 17 euros per 100 kilometres, consuming 7.7 litres. Even on the basis of an electricity price of 37 cents per kWh, the same journey with an electric car costs less than half, namely around 7 euros. In view of this price trend, electromobility is becoming increasingly important. Thanks to this, people will also be able to afford to travel to work or to their place of education by car in the future. Consumerism remains stable if people do not have to invest the lion's share of their purchasing power to get from A to B.

Mobility – labour market

A lot has changed since Carl Benz invented the automobile in 1886. The internal combustion engine was long considered the heart of the automotive powertrain and was powered by fossil fuels. Now everything points to the fact that the automotive industry is on the brink of the biggest upheaval in its history, a veritable revolution: the mobility revolution. The question arises as to how this transition will affect the economy. Or how will it impact jobs in the automotive industry if the market share of electric vehicles actually develops in line with climate targets. Headline like "Job losses due to electromobility" and similar give cause to be pessimistic, especially as a total of 447,000 jobs were still directly linked to the internal combustion engine in 2021. However, headlines that make use of isolated figures represent only a section of a complex transformation process and present this process in a considerably shorter form. Within this context, the study by the Ifo Institute "Impact of the increased production of electrically operated cars on employment in Germany" in May 2021 caused a sensation: The forecast that around 215,000 jobs in the German automotive industry will be lost by 2030 as a result of the change in mobility was particularly effective in the media. However, it was barely taken into account that this figure already included 147,000 employees who will retire by 2030 (age-related fluctuation). The ELAB 2.0 study conducted by the Fraunhofer Institute for Industrial Engineering puts this bad news in the context of change in the industry. The following conclusion was reached: Out of around 75,000 jobs that could be eliminated in the automotive industry by 2030, only 20,000 would be directly related to the electrification of the powertrain. Irrespective of the transformation in mobility, increased productivity through the digitalisation and automation of processes would lead to a reduction in the number of jobs to be filled.

A more positive conclusion, however, is drawn by the joint study "Automobile Arbeitswelt im Wandel: Jobeffekte in Deutschland bis 2030" by the Boston Consulting Group (BCG) and Agora Verkehrswende. According to the study, the number of jobs in the automotive industry would remain roughly constant through 2030, but would shift toward employers beyond the traditional powertrain. The shift would create a need for further training for 500,000 jobs, for example in assembly. Manufacturers of electric vehicles and their suppliers, as well as energy companies and mechanical and plant engineering companies, would create a total of 205,000 new jobs. In the fourth edition of the "MoveOn" study, the Institute for Labour Market and Vocational Research (IAB), the Federal Institute for Vocational Education and Training (BIBB) and the Society for Economic Structural Research (GWS) also examined how mobility change affects the labour market. In addition to the shift to electromobility, the researchers also assumed that the rail infrastructure would be expanded, that transport would become more digital and that innovative mobility concepts such as carsharing would be used more extensively.

The model calculations show that 220,000 jobs will be lost by 2040 – but 280,000 new jobs will be created at the same time, across all skill levels. The influence of electromobility on the labour market goes far beyond pure vehicle production.

New jobs and job profiles related to mobility are also emerging in the areas of charging infrastructure, IT and software development, electrical engineering, and digital services. Specialists who focus on battery technology, thermal management, testing and validation will be in high demand in the future. The Bundesverband eMobilität e. V. (BEM) assumes that 255,000 specialists will be needed within the next ten years to set up the charging infrastructure for electric cars. Research and development will also intensify in order to optimise drive technologies, battery management and the safety of electric cars. Many new career opportunities are also expected to emerge outside the technical domain, for example in the areas of data management, sales and e-commerce.

"Porsche Consulting predicts that a production capacity of 1,000 GWh will be required in Europe by 2030."

Battery production: Great opportunity for Germany as a business location

Various studies predict a loss of jobs in the automotive industry based, among other things, on the assumption that many jobs will be relocated abroad in the course of electrification and that battery cell production will be concentrated in countries outside the EU. Instead, however, a trend to the contrary is already emerging today: Battery cell production is significantly picking up speed in Europe and Germany. Porsche Consulting assumes that a production capacity of 1,000 GWh will be required in Europe by 2030. Around 20 new gigafactories will have to be built to meet this demand. The climate protection association Transport & Environment estimates that around 100,000 new jobs will be created in these gigafactories by 2030. The meta-study "Batteries for electric cars: fact check and the need for action" by the Fraunhofer ISI on behalf of the VDMA also sees great economic opportunities for Germany as a business location for battery cell production. According to the study, more than 170 GWh of production capacity is expected to be created in Germany by 2025, with each GWh of battery capacity creating a total of 240 jobs. The researchers assume that a total of 155,000 new jobs related to battery manufacturing will be created by 2023. In addition, new jobs and job profiles will be created related to the processing of raw materials as well as battery recycling.

Since around 75 percent of the passenger cars manufactured in Germany are exported, an early transformation of the automotive industry towards e-mobility is essential to secure Germany's competitive position in the global automotive market of the future. When German companies focus on future technologies such as e-mobility and battery cell production, they are not only making an enormous contribution to climate protection but are also investing in job security. All this shows that: With a forward-looking build-up of competencies and capacities in electric vehicles, energy storage, and renewable energies, the mobility transition will not only be a complete success ecologically but also in economic and social terms.

SVOLT IN THE CONTEXT OF SUSTAINABILITY

Sustainability through innovation

Sustainability needs electromobility – electromobility needs SVOLT: Advanced energy storage systems are one of the most important success factors for meeting climate protection targets and form the basis for affordable and sustainable mobility for everyone. That’s why we at SVOLT have made it our mission to manufacture lithium-ion batteries as sustainably and cost-effectively as possible for the general public.

For electric mobility to live up to its perceived role as one of the most effective measures to combat global climate change, it must quickly evolve from an expensive luxury good to an affordable solution for the masses.

However, since no vehicle can start its journey without an appropriate drive system, this project calls for prudent innovations in the respective technologies. The affordability and mass suitability of electromobility, and thus the transformation of transport, stands, falls, and is driven by the heart of green mobility: modern, high-performance energy storage systems. In order to supply the entire vehicle with the energy it needs, energy storage systems must have a high energy density, a high capacity, and a long service life. Factors such as range and charging time allow people unrestricted access to independent mobility and thus also make it possible for them to express themselves freely. Furthermore, energy storage systems must be climate-friendly, ethically sound, and cost-effective in manufacturing. This ensures sustainable, equal-opportunity and unrestricted mobility in our highly dynamic everyday lives.

However,it is not only the transport sector that is dependent on sustainable energy storage. The expansion of renewable energies, so-called green electricity, also requires high-performance storage technologies that can reliably compensate for fluctuations in the electricity grid. An independent energy supply that is available at all times also requires powerful energy storage systems. Lithium-ion batteries are considered a state-of-the-art solution because of their high energy density, i.e., not only because they can store more energy per kilogram in a smaller space than other battery types, but also because of their efficiency and wide range of applications. This makes them particularly popular in the mobility and energy sector.

The demand is immense and continues to grow at an enormous pace: For e-mobility alone, Statista estimates that the global demand for battery capacity will rise to over 3,000 GWh by 2030. Conclusion:
Climate protection requires e-mobility and this powerful energy storage system. But who is capable of meeting this demand and supplying the future technology on which so much depends?

Expertise in greater sustainability and performance

Reduce CO_2 emissions and costs in line with climate targets through innovative battery technology, not only as a player but also as a partner in the mobility transition: That is our mission, and what we stand for at SVOLT. As a high-tech company, we don't just want to hope that things will change for the better, but actively contribute to climate protection. That's why, as one of the top 10 EV-battery companies in the world, we have set ourselves the goal of addressing the needs of the transport and energy industry with holistic battery solutions: efficient, affordable, safe, and sustainable. In doing so, we dedicate our know-how to the common goal of climate protection and benefit from our many years of experience as a partner to the automotive industry. Our know-how – in the development of batteries and the associated software as well as in the integration of energy storage systems – enables us to tailor solutions from battery cells to high-voltage storage systems to meet the requirements of the respective application.

"With our optimised battery chemistry, we exploit the full potential of the raw materials used and do not use problematic materials such as cobalt."

Driven by our goals, we never stand still, but reach for progress, driven by innovation. That is why we are continuously developing our technology to quickly, efficiently and sustainably meet the needs of our customers, not only today but also in the future. We design the production processes in our battery factories to be as sustainable as possible: 100 percent electricity from renewable resources with feed-back into the grid, energy storage, waste heat recovery, and combined heat and power generation. We are constantly perfecting our production processes and our cell and electrode design to reduce the consumption of resources and energy while as far as possible reducing costs. This also includes optimising the utilisation of our production lines with smart factory approaches. For example, we are currently working on an AI strategy for sustainable, intelligent production. We are supported by strong partners, including Rockwell, Siemens Industrial Software, Huawei and PwC. A reliable network grows through these partnerships – for a stable and sustainable supply chain.

Thus closing the sustainability cycle

The climate protection goals of the Agenda 2030 and the Science Based Targets form a framework for all our actions. Sustainability in accordance with the cradle-to-grave approach can be found throughout the entire life cycle of our battery systems: from resources to recycling. For example, we rely on proven partners such as Pilbara Minerals (Australia) and Tianyuan New Energy Material (China) to extract lithium for our battery cells. Like all our suppliers, they undergo regular audits in accordance with international standards. With our optimised battery chemistry, we exploit the full potential of the raw materials used and dispense with problematic materials such as cobalt. Thanks to our patented NMX technology, we have succeeded in bringing the world's first cobalt-free battery cells to readiness for series production. These are significantly more sustainable and cost-effective than classic nickel-cobalt-manganese cells (NCM cells).

We also take a sustainable approach to the procurement and transport of materials: Local-for-Local! To keep our CO_2 footprint as small as possible, we build our supply chain as close as possible to our production sites as part of a professional supplier management system. We empower our local partners and invest in the region by creating numerous jobs. In line with the sustainability goals of Agenda 2030, in addition to sustainability aspects, we also pay particular attention to fair working conditions and business relationships within our entire value chain. The recycling economy also needs a sustainable recycling concept.
That's why we already pay attention to using the highest possible proportion of recycled

>>

materials in the manufacturing of our batteries and try to reduce waste to a minimum by applying innovative methods.
With the development of innovative processes such as powder coating, we will be able to dispense with energy-intensive drying lines and environmentally harmful solvents in the future. In addition, a separate business unit at SVOLT is working with its concentrated expertise to give a second life to discarded e-car batteries and rejected goods.

Modern battery systems in electric vehicles achieve a range of up to one million kilometres before they need to be replaced. And even if they are no longer powerful enough for use in e-vehicles, they can often still be used in their "second life" in energy storage systems for wind and solar energy for several years without any problems. On average, the life cycle of a battery spans up to 15 years.

The multi-stage use of these valuable components generates additional added value, while at the same time supporting the expansion of renewable energies and thus boosting sustainability. The recycling economy thrives on know-how transfer and strong partnerships. That is why we are particularly pleased to be pooling our expertise with BASF across the entire battery lifecycle: from the development of cathode materials to battery recycling.

Sustainable battery production – for Europe, within Europe

The demand for battery capacity in Europe will grow rapidly over the next few years. In line with our local-for-local approach, we would like to meet this demand from Europe. We are therefore expanding capacity in Brandenburg and Saarland, where we are concentrating on the production of highly efficient battery cells, modules, and battery packs as well as the associated control systems. In the final stage of expansion in Saarland alone, our planned cell production facility with its capacity of 24 GWh will be able to supply 300,000 to 500,000 electric cars with high-quality batteries every year. In addition, in September 2022 we announced that we would be building a further battery cell production facility in Lauchhammer (Brandenburg) in order to meet demand from there as well. This will enable us to serve ongoing customer projects in a timely manner and to reach our capacity expansion targets in Europe more quickly.

In Heusweiler, we are also setting up a high-voltage storage production facility where the battery cells are assembled into modules and high-voltage storage units. In line with our sustainability mission, we are modernising an existing building complex in the former "Laminate Park" in Heusweiler.

Working together for Mission Zero

We as a company accept our responsibility and take this responsibility seriously. True to the motto "Driven by Innovation", in addition to pure production, we are also planning to establish clusters of expertise on the topics of software, AI, process automation and process engineering in Saarland. In total, we are creating up to 2,000 new jobs in Saarland: for IT specialists, chemists, process engineers, in project management and in logistics, to name just a few key areas. Of course, in accordance with our guidelines on fair employment, we also pay attention to a balanced mix of age groups, genders, and nationalities.

We are also investing in a comprehensive training and qualification programme to develop the experts of tomorrow. Because we are aware that: Change can only be achieved together. Just as every component of a battery contributes to a powerful and durable product, every talent, every partner and every decision contributes to our vision: climate-neutral mobility for everyone. That's why we are looking forward to making this vision a reality together with talents and partners not only in Saarland but also in Brandenburg. Because we have seen: Sustainability only succeeds if we walk the talk – and this in turn only works in teamwork.

About SVOLT

- SVOLT was founded in 2012 as a business unit of Great Wall Motors. SVOLT has been an independent battery manufacturer and supplier of energy storage systems since 2018.
- SVOLT's one-stop product portfolio for electric vehicles and energy storage systems includes cell chemistry, battery cells, modules, and high-voltage storage as well as battery management systems (BMS) and software solutions.
- The European subsidiary SVOLT Energy Technology (Europe) GmbH was founded in 2019.
- SVOLT filed 550 new patents in 2019 – also including the first production-ready, cobalt-free high-nickel cell.
- SVOLT employs 12,000 people worldwide, including 3,000 in research and development.

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Publisher:
SVOLT Energy Technology (Europe) GmbH
Amelia-Mary-Earhart-Strasse 17
60549 Frankfurt am Main, Germany

www.svolt-eu.com

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