Meeting between Article 4(1)(b) **of VERBUND AG and Commissioner OETTINGER**

at Alpbach. Austria on September the first at 10:45 - 11:15

I. Scene setter

At your request you will participate at Bilateral meeting with Article 4(1)(b) *of VERBUND AG*

VERBUND AG is Austria's largest electricity provider, 80 percent of this energy is generated from hydropower, their activities to include other additional renewable energy sources, especially wind power generation.

VERBUND AG is concerned about an idea circulating within the German "Bundesnetzagentur" to split of Austria from the German electric single market by 2018. This follows a legal but non-binding opinion of the Agency for the cooperation of energy regulators (ACER) adopted on September 23rd last year.

VERBUND AG, as member of EURELECTRIC, welcomed the Commission's proposal to revise the EU Emission Trading System (ETS) Directive. In November 2015 position paper, EURELECTRIC expressed support for EU ETS as the main policy instrument to provide incentives to reduce green-house gas emissions, improve energy efficiency on the supply side and invest in low-carbon technologies.

For DG CONNECT: none requested

For the Cabinet:

Estimated duration: 30 min (from 10:45 to 11:15)

Agenda:

1. Gemeinsame Strompreiszone Deutschland/Österreich
2. CO2-Mindestpreis / Preisbildung am Strommarkt – aktuelle Entwicklungen
3. E-Mobilität (DE, AT, Konnex zur Digitalisierung)

Objective(s): Set out the main challenges on digital energy society, CO2 gas reduction and the main relevant actions by the Commission; respond to the concerns expressed by VERBUND.

Their Position

- VERBUND is supports the current **reality of a common price zone** between Austria and Germany. It is a central element of the internal market for electricity in Europe; It contributes to safeguard the security of supply; it finally is also economically efficient, allowing greater competition and unrestricted exchange of energy across national borders

- The current EU Emission Trading System **price for CO^2 is however too low** to provide investment incentives.

- The Austrian transport sector is responsible for a third of CO2 emissions s. **E-mobility** from 100% renewable energy sources is therefore a possible solution. VERBUND is however of the opinion that to enable a breakthrough in e-mobility a **supporting legal framework** is needed,

- **Storage and pumped storage power plants** represent the most efficient possibilities for storing electricity. Within the electricity system they make a significant contribution towards integrating the volatile production of electricity from wind and the solar power. Again, the current situation on the **market and the legal requirements** make the economical operation of the facilities more difficult.

Our Position

- The European Commission's **Energy Union Framework** has created a new momentum in the transition to a low-carbon, secure and competitive economy. 2016 is an important "year of delivery", in which the strategic vision set out in the Energy Union Strategy will be translated into several EU-level legislative initiatives.

- The Commission is supporting the Digitisation of European Industry as part of the Digital Single Market strategy, and the **digital energy sector** will be one of **the first sectors to gain from the DSM**

- An **enhanced market design** – where short term markets are fully developed and integrated and flexibility plays a key role in enhancing the market value of renewables and flexible solutions - together with a strengthened EU ETS need to be at the **core of the decarbonisation of the power system**.

- The Commission continues to **support the current status of a common price zone** shared Austria and Germany; we have confidence and the hope that alternative solutions will be found to avoid splitting this electric single market between Austria and Germany.

- We consider **electric mobility as an important element of European climate and energy policy**. Here our activities are focused on the integration of electric vehicles into the energy system (smart charging / demand response), and interoperability of charging stations in Europe (both technical compatibility between the vehicle and charging point and interoperability of the various payment and information systems).

- As a digital contribution the Commission is supporting **generic cross-sector solutions achieving thus innovation**. The development and **use of the Internet of Things, the Cloud, standardisation on the digital energy sector,** usability and access to data and others under the DSM are key in this context.

Line to Take

- The energy system as a whole is in transition to a more dynamic and sustainable energy model, and **consumers should become more protagonists as well as companies** (such as VERBUND AG) **focalised on renewable energies.** This contributes significantly to achieving the sustainability objectives of the EU by 2030 (**greenhouse gas emissions** reduction by 40%; increased energy consumed from renewable energy sources (RES) by 27 %; and reduction of energy consumption by 27%).

- In the context of the Energy Union, the Commission is going to push ahead with the energy efficiency agenda. The review of the **Energy Efficiency Directive** will set out the right path and create the right framework to meet an ambitious target by 2030. We will propose an update to the **Energy Performance of Buildings Directive** and alongside this the **Smart Financing for Smart Buildings** will help boost renovation rates. And by the end of the year we will present a review of the **Renewable Energy Directive and a new Electricity Market Design**.

- **Digital energy will be one of the first sectors to gain from the Digital Single Market**, and CNECT is ready to support cross-sector **cooperation between European Power Generators and other energy operators, and digital** service industry. The aim is to create a win-win situation for these sectors.

- Supporting more **intensive use of ICT including "Internet of Things**" and the role of consumers; we need collaborative transparency to achieve our commitments on decarbonisation for 2020 – 30 and 50, using energy from renewable sources and being more efficient on energy use; therefore **consumers and companies who bet renewable power generation as VERBUND are our best allies.**

- The Commission adopted in July 2016 its **communication on "a strategy for low emission mobility"** in which the importance of electro mobility for the decarbonisation of transport was highlighted. However, no concrete new EU initiatives on electro mobility have been announced in this document. Instead it mostly refers to the implementation of existing legislation (AFID) and planned legislative proposals (MDI) and EPBD (where it is considered to introduce an obligation for all new buildings to foresee a dedicated electricity connection to 10% of all parking spaces that can be used for charging).
- The integration of electric vehicles is challenge to the distribution networks; however electric **vehicles can become a significant factor to introduce flexibility to the system**: the shifting of charging to times of low demand and/or high supply ("smart charging"). **Under the Market Design Initiative (MDI) the Commission will address this issue**. We consider electric vehicles (ev) as an additional load in the electricity system and vehicles' batteries not differently from any other battery installed in private premises. This **will facilitate a demand-response mechanism**, reducing peak demand and enhance flexibility in the electricity market as a whole, providing consequently substantial benefits to all stakeholders.
- Full deployment of electric vehicles is only possible if there are enough accessible **charging infrastructures**. To mitigate this problem, the COM proposed a package of binding targets on Member States for a minimum level of infrastructure for clean fuels such as electricity, hydrogen and natural gas, as well as common EU-wide standards for the equipment needed. In this respect, the COM welcome the coordinating role of VERBUND in the EU funded projects Cross-Border and the CEGC (Central European

Green Corridor) project aiming at constructing a dense, speedy-charging cross-border network in Austria, Slovakia and Slovenia, with the involvement of Munich and Zagreb.

- **Smart meters** are starting to provide significant data which allow to energy actors to optimize their operational assets, deferring the installation of new capacities and distribution facilities. But it also promotes changes, in electric usage by end-use customers, from their normal consumption patterns, in response to changes in the price of electricity over time.
- The **legislative proposal** for the revision of the EU **ETS** reflects the agreement reached among European leaders in the context of the 2030 climate and energy framework. As such, it presents a carefully crafted balance reflecting key concerns of all Member States. At the same time, it ensures that the EU ETS can deliver the emission reductions to meet the 40% reduction target in 2030. This should also **solve the price issue** that you raise.
- With respect to the common Austian/German price zone it is obvious that the Commission supports such market integration across borders. We therefore believe that further discussions between the involved countries would be beneficial to come to a solution that is acceptable for all. I would encourage you to continue the talks with Austria and Germany on possible compromise solutions.

II. Speaking points

Separate speaking points not requested

Defensives

What is your opinion regarding the possibility of splitting this electric single market between Austria and Germany?

- I understand that the Bundesnetzagentur considers splitting of Austria from the German electric single market by 2018 following a legal but non-binding opinion of the Agency for the cooperation of energy regulators (ACER) adopted on September 23rd last year. The reason is that there is a massive flow of electrical energy between Germany and Austria and due to the congestion at certain times of the internal electricity distribution network in Germany this exchange occurs through neighbouring networks in Poland and the Czech Republic. This in turn causes major distortions in the power distribution networks in those Member States.
- I have confidence and the hope that alternative solutions will be found and that it won't be necessary to split this electric single market between Austria and Germany; for very different reasons, the first one is that the European Institutions and the Commission are working precisely on the opposite way: we are working on implementing cross-border cooperation across the different Member States, being this the best measure to ensure the electricity supply throughout the whole Union and improve the flexibility mechanisms of the electricity demand, producing multiple benefits for all actors involved in this market and for the citizens.

Does the Commission support a carbon price floor mechanism?

- No. The Commission shares the same concerns as many Member States on this. This idea is not new and also did not find broad support when it was advocated in the past.
- The EU ETS is a EU-wide market-based mechanism. It is for this market to determine the price, not for political decisions to impose a price on the market.
- The carbon market and the price signal have been substantially weakened, mainly due to the heavy economic recession. European institutions and stakeholders have thoroughly debated how to respond to this. The result of this long and difficult debate was the decision last year to create an ETS Market Stability Reserve as of 2019.

- We need to let the Market Stability Reserve unfold its full impact in the coming years. It was consciously designed as a gradual measure to address the surplus of allowances in steps.

The carbon price is too low and doesn't provide sufficient incentives to the power sector to decarbonise. Shouldn't this be addressed?

- Regulatory certainty is crucial for a favourable investment climate. I am positive that the Market Stability Reserve is already making a difference for investment decisions, as they are based on longer-term future price expectations, not on the current daily market prices.
- Now is not the time to rethink or revisit this Market Stability Reserve, but to let it unfold its full impacts in the coming years.
- The Commission is open to reflect on further reinforcing the EU ETS as a decarbonisation engine in the power sector, and ensuring effective use of its revenues to support the low-carbon transition.
- Substantial funding will be available to foster innovation in the energy sector and manufacturing industry through the future Innovation Fund. We need to make sure that meaningful projects receive support.
- Similar considerations apply to the debate on the governance structure of the Modernisation Fund.

Why didn’t the Commission propose harmonised compensation for indirect costs?

- After a thorough analysis, the Commission proposed to continue with existing state aid approach, while actively encouraging Member States to provide compensation from their auction revenues. As Member States have to report the use of these revenues, the increased transparency could incentivise more Member States to make use of them in this way.
- More harmonised arrangements at the EU level may seem attractive, but they pose considerable technical and political challenges. A harmonized system would need to capture a wide variety of carbon intensities of electricity production across Member States, varying integration of national/regional electricity markets and a range of exemptions for industry.
- Therefore, we propose to continue with the existing state aid approach. State aid rules are designed in such a way to minimise competition distortions in the single market and are equally applicable to all Member States.

EU ETS and impact on industry

- The Commission proposal is in line with strategic guidance of the European Council, deciding that "free allocation will not expire; existing measures will continue after 2020 to prevent the risk of carbon leakage due to climate policy, as long as no comparable efforts are undertaken in other major economies."
- In the last decade, there is no evidence of any damage to the competitiveness of European businesses or economic growth as a result of the EU ETS.
- The ETS Directive already provides good protection to industry, in the form of free allocation and the right to receive state aid as compensation for indirect costs. We build on the past successes and continue with free allocation also after 2020, with an appropriate level of protection to those industrial sectors that need it.
- Discussions on carbon leakage are a key issue in the ongoing legislative process. The European Council decision to preserve the free allocation beyond 2020, and the Commission's proposal for continuation of carbon leakage measures in the EU ETS strike the right balance at this point of time, but should be kept under review in the coming decade.

Will best installations be guaranteed not to face any carbon costs – as requested by the European Council?

- The European Council gave the steer that the most efficient installations should not face undue carbon costs. The Commission proposal reflects this principle within the overall architecture. Best performers will receive the highest share of free allowances within their sector, giving them competitive advantage vis-a-vis less efficient installations.
- Full protection from any carbon costs is neither possible nor desirable. It is essential to retain the carbon price signal and a continued incentive for industry to become increasingly carbon efficient. Being more efficient also means being competitive.
- Our industry also needs to remain competitive by being a leader in innovation, and low-carbon and sustainable technology development. This is what EU industry has always been best at.

Why didn’t the Commission propose a tiered approach for carbon leakage?

- The Commission has proposed continuation of the current approach: 2 carbon leakage groups.
- A tiered approach is understood as a system with more than two carbon leakage groups. As analysed in the Commissions' impact assessment accompanying the ETS revision proposal, such a system could lead to even more targeted free allocation, differentiating further the risk of carbon leakage, but it could also increase complexity and administrative burden.

- Designing a tiered approach would require further discussions on methods and criteria to differentiate among the different categories and sectors. We are open to discuss concrete ideas put forward in the debate.

Defensives (on electromobility):

- Consumers will only reach the electric vehicles market if they can buy their vehicle at a reasonable price and if there is enough accessible infrastructures for the vehicles to run. Without it, this market will not succeed despite the huge investments made so far. What is the Commission doing at this respect?

  ✓ To mitigate this problem, we proposed a package of binding targets on Member States for a minimum level of infrastructure for clean fuels such as electricity, hydrogen and natural gas, as well as common EU-wide standards for the equipment needed. As a result of this initiative, the total number of charging points increased in Europe by 75% in one year (40,000 in 2014 to 70,000 in 2015). We will get Member States' reports on how they plan further deployment in November 2016.

  ✓ In this respect, the COM welcome the coordinating role of VERBUND in the CEGC project as well as in the CROSSING BORDERS project, aiming at constructing a dense, speedy-charging cross-border network in Austria, Slovakia and Slovenia, with the involvement of Munich and Zagreb.

- Why should we invest on ICT for electric vehicle?
  ✓ ICT can significantly facilitate the deployment and market take-up of electric vehicles. A few examples: Grid integration (V2G); Optimising charging systems; quick wireless re-charging; efficient battery management enabled by ICT; Range extender integration; Drive by wire; Smart battery control; Driver interfaces; Active load management, etc.

Authors: Article 4(1)(b) , CNECT H2 ( ) Article 4(1)(b) CNECT H2). DG ENER.A, ( ). , DG.ENER.B2, ( ). DG.ENER.C1( ). ,DG.ENER.B3( ). , CLIMA B. ( )

IV. Background

1. Company Profile:

Verbund AG is Austria's largest electricity provider. Total annual electricity production: 27,369,197 [Mega Watt -hour] Verbund **provides around 40 percent of electricity demands in Austria and 80 percent of it is generated from hydro power**. Verbund operates 123 production facilities and deploys its activities mainly in Austria and Germany, as well as Spain, France, Romania and Albania. **In 2007 they expanded their activities to include other additional renewable energy sources, especially wind power generation.**

In 2009, Verbund acquired a power plant chain on the Bavarian river Inn from the energy company E.ON and the company became the fourth largest hydropower producer in Europe. **Its activities cover Electricity generation, electricity trade, power transmission & electricity sales.**

Turnover: 2.835 billion EUR (2014)

Location: **Headquarters in Vienna.** Employees: about 3.000

The main shareholder is the **Republic of Austria with 51 percent**; other shareholders are Syndicate of EVN and Wiener Stadtwerke with 25 percent, Regional Energy Supplier of the State of Tyrol 5 percent, and small shareholders 19 percent.

VERBUND group companies are represented in different organisations, among others:

- Austrian Mobile Power (AMP)
- Bundesverband der Energie- und Wasserwirtschaft e.V (BDEW)
- Deutsche Handelskammer in Österreich
- European Federation of Energy Traders (EFET)
- Industriellenvereinigung Österreichs (IV)
- Oesterreichs Energie (OE)
- Österreichischer Wasser- und Abfallwirtschaftsverband (ÖWAV)
- Österreichisches Nationalkomitee des Weltenergierates (World Energy Council)

In addition, thanks to a nomination by Oesterreichs Energie (OE), VERBUND employees are also active on the boards of EURELECTRIC and other European special interest groups.

VERBUND AG activities related to electromobility

- "**E-Mobility Provider Austria**" is a joint venture between VERBUND and SIEMENS Austria.
- **SMATRICS** is the first provider to establish a pan-Austrian infrastructure for charging electrically powered vehicles with electricity from 100% hydropower. In this way a nationwide utilisation of electric vehicles is being made possible and charging in future turned into a matter of utmost normality for users of electric or plug-in hybrid vehicles. Over the course of the next few years, SMATRICS is going to attain a pan-

Austrian supply with a charging infrastructure that will then be concentrated in metropolitan areas and arterial routes. SMATRICS will operate the Austrian part of the speedy-charging network for the **CEGC** project (Central European Green Corridors) as well as the **CROSSING BORDERS** project, under the coordination of VERBUND AD.

- VERBUND is currently launching the **Tesla Energy Powerwall** domestic photovoltaic energy generation and storage product in cooperation with Tesla.
- *Participation of VERBUND AG in EU funded projects (a few examples):*
  - ✓ **CEGC**: "Central European Green Corridors" project is a dense, speedy-charging cross-border network to be constructed in Austria, Slovakia and Slovenia, with the involvement of Munich and Zagreb.
  - ✓ **Crossing Borders:** Network planning and infrastructure deployment aiming at providing convenient services for customers.
  - ✓ **Green eMotion:** is setting a framework for pan-European interoperable electromobility which is commonly accepted, user-friendly and scalable. It aims at integrating smart grid developments, innovative ICT solutions and different types of EUs various urban mobility concepts.
  - ✓ **SUSPLAN:** Development of regional and Pan-European guidelines for more efficient integration of renewable energy into future infrastructures
  - ✓ **GRIDTECH:** Impact Assessment of New Technologies to Foster RES-Electricity Integration into the European Transmission System

2. ACER: (Agency for the Cooperation of Energy Regulators)

The Agency for the Cooperation of Energy Regulators (ACER), a European Union Agency, was created by the Third Energy Package to further progress the completion of the internal energy market both for electricity and natural gas. It was officially launched in March 2011, and has its seat in Ljubljana, Slovenia.

3. Key points of the Commission policy on digital energy

- Commission Communication COM(2011) 202 on Smart Grids: from innovation to deployment
- Commission Communication on Digitising European Industry Reaping the full benefits of a Digital Single Market {SWD (2016) 110}
- A report from the Commission about smart metering deployment in the EU-27 with a focus on electricity COM (2014) 356 on achieving EU commitments on decarbonisation for 2020 – 30 and 50, using energy from renewable sources and being more efficient on energy use see COM (2014) 520

4. Excerpts from the Energy Union Communications:

"A Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy / COM/2015/080 final"*

The Energy Union strategy has five mutually-reinforcing and closely interrelated dimensions designed to bring greater energy security, sustainability and

competitiveness:
- Energy security, solidarity and trust;
- A fully integrated European energy market;
- Energy efficiency contributing to moderation of demand;
- Decarbonising the economy, and
- Research, Innovation and Competitiveness

5. German-Austrian bidding zone

The German-Austrian bidding zone is, so far, the only cross-border bidding zone in the EU. However, the steep increase of RES production in Germany without proper grid capacities has led to significant congestion inside Germany. This has led to significantly reduce interconnector capacities at the DE/DK and DE/PL border (DE prefers limiting cross-border flows to costly redispatch measures). It affected also the DE/AT border, as maintaining one single price between Germany and Austria would require increased costs for redispatch measures in Germany (or a split of Germany into two price zones).

While the root cause for the congestion problem is clearly inside Germany (insufficient transmission capacities between North and South), a split between Germany and Austria would at least slightly alleviate the loop flow problem and reduce the German need for reserve capacities. ACER, fearing not being able to impose an inner-German split, issued an opinion in September 2015, according to which the DE/AT-zone should indeed be split. Austria appealed this opinion in Court. However, the appeal has no suspensive effect. It is likely that ACER will confirm its view in an upcoming decision on so-called "capacity calculation regions" in the framework of the implementation of the Market Coupling Regulation ("CACM") in October 2016. A bidding zone study is also underway (also under the CACM-implementation framework), the results of which are expected for 2017.

DG ENER (Dir. Dieter Borchardt) tried to moderate a compromise solution between Austria and Germany ("MoU"), according to which Austria would accept the *preparation* of a possible split, subject to confirmation by the bidding zone study in 2017. In exchange, Germany would guarantee certain minimum flow volumes at the DE/AT border.

While an MoU had already been drafted, Austria ultimately refused to sign it, as it does not want to accept the necessity of a DE/AT split. There are no signals that Austria would change its opinion on short notice.
DG Ristori met the Austrian DG Schönbauer in the margins of the informal Energy Council in July in Bratislava.

6. CO2 Mindestpreis/Preisbildung am Strommarkt – aktuelle Entwicklungen

Aktueller ETS-Preis (23.8.2016): 4,7 €/t CO2
Aktueller Strompreis (23.8.2016): 30,6 €/ MWh (DE Day Ahead Baseload)
Anteil Erneuerbare Energien in Gesamtenergieproduktion (EU-weit):
2015: 28% (davon 43% variabel - Wind und Sonne)
2030: 43% (davon 62% variabel - Wind und Sonne)

Geplante Kommissionsvorschläge: Revision der Erneuerbaren-Richtlinie, neues Marktdesign und Energieunions-Governance: Ende November 2016

7. Proposal for the revision of the EU ETS – state of play

In July 2015, the Commission presented a legislative proposal to revise the EU Emissions Trading System (ETS) in line with the 2030 Climate and Energy Policy Framework agreed by the European Council in October 2014. The proposal is an integral part of the work on achieving a resilient Energy Union with a forward-looking climate policy.

European Parliament. Discussions on the substance of the ETS Directive revision proposal have intensified this year. The lead committee is ENVI, with shadow rapporteur Ian Duncan[1] (UK, ECR). ITRE is the associated committee with no exclusive competences, shadow rapporteur Frederick Federley (SE, ALDE). The majority of the proposal is under shared ENVI / ITRE competencies.

Both committee rapporteurs have presented their draft reports. The ITRE Committee's draft report was discussed on June 13, followed by the discussion on amendments on July 12. ENVI draft report was discussed on June 21. A plenary vote is tentatively scheduled for February 2017.

Council. An Environment Council debate on the ETS took place on June 20, following the discussions under the former Dutch presidency.

The ETS revision is one of the priority files for the current Slovak Presidency. The Presidency has scheduled 8 full-day Working Party meetings on the proposal during their term, aiming to agree a "general approach" by the end of the year (Council meeting on December 19). Even though Member State positions are evolving, this is an ambitious timeframe, also implying that the Council would position itself before the Parliament (scheduled for February 2017).

Key features of the EU ETS proposal

Environmental - increasing the pace of emissions cuts. To achieve the at least 40% EU target, the sectors covered by the ETS have to reduce their emissions by 43% compared to 2005. To this end, the overall number of emission allowances will decline at an annual rate of 2.2% from 2021 onwards, compared to 1.74% currently.

Economic - more targeted carbon leakage rules. The proposal further develops predictable, robust and fair rules to address the risk of carbon leakage which may occur if production is transferred to countries with less ambitious climate policies.

Financial - funding for low-carbon innovation and modernisation of energy sector. Several support mechanisms will be established to help the power sector and industry to meet the innovation and investment challenges of the transition to a low-carbon economy:

• **Innovation Fund** – 450 million allowances are proposed to be allocated to support large-scale demonstration projects in carbon capture and storage, renewable energy and energy-intensive industry. Whereas details on the operation of the Fund will be laid down in implementing rules (i.e. after adoption of the Directive), a **high-level conference on the Innovation Fund** took place on June 9, with participation of power generation and manufacturing industry, discussing the needs and potentials of this funding for innovation, development and deployment of low-carbon technologies.

• **Modernisation Fund** – facilitating investments in modernising the power sector and wider energy systems and boosting energy efficiency in 10 lower-income Member States.
Free allowances will also continue to be available to modernise the power sector in these lower-income Member States.

8. Electromobility in Austria

- The automotive industry and the automotive suppliers industry generate, with approximately 175,000 employees, an annually sold product volume of approximately 22 billion euro. The direct additional potentials of electromobility in the vehicle sector are estimated to be at least 14,800 full-time equivalents as well as a gross added value of at least 1.2 billion euro in the year 2030.
- Austria is predestined for electric mobility, due to its high percentage of electricity, around two thirds, generated from renewable sources.
- Austria's comprehensive transport plan sets quantitative objectives to 2025 which include reducing transport emissions of CO2, PM2,5 and NOX, increasing the share of freight transported by rail and increasing the use of public transport and electric cars.
- However, Austria does not have a comprehensive sustainable fuel outlook. In 2012 the federal government adopted a national implementation plan "Electromobility in and from Austria" which specifies 65 measures for promoting clean vehicles and sustainable transport. Austria's understanding of electromobility is deliberately broad, covering various propulsion technologies, and ranging from already well-electrified public transport over duty vehicles and cars to bikes.
- 2015 in Austria saw a very dynamic e-bicycle market with Austrian manufacturer KTM Fahrrad GmbH stating that e-bicycles already contribute half of their annual revenues. New registrations of BEVs in 2015 increased by 30.9% in 2014. The PHEV market experienced two-and-a-half-times as many new registrations of PHEV (+ 153%) compared to the previous year. The beginning of 2016 was marked by a reform in company car taxation with significant benefits for zero-emission vehicles so that the BEV and FCEV numbers are expected to pick up over 2016.
- The introduction of sustainable fuels is promoted by various ministries at national level as well as supporting programmes at the regional and incentives at the local levels. Supporting activities range from research and development promotion over tax incentives and focused purchase incentives to broader mobility management measures as well as dedicated support for start-ups.
- SB LiMotive builds and sells Li-Ion batteries for vehicles like Fiat 500e, BMW i3 and BMW i8. In Europe, a production plant is located in Austria and all other plants are located in Asia.

9. Electro-mobility in Germany

- The transport sector accounted for about 28 percent of Germany's total final energy consumption in 2014, and 164 million tonnes of CO2 emissions - 20.5 percent of the country's total.
- Germany currently looks incapable of fulfilling its official target of putting a million electric vehicles (EVs) on the road by 2020, which experts say is crucial to reaching

the country's 2020 target of reducing CO2 emissions by 40 percent compared to 1990 levels.

- A November 2015 report by the International Renewable Energy Agency (IRENA) chastised Germany for not doing more with renewable transportation technologies. Yet in 2015, there were just 12,363 e-cars among the 3.2 million new cars registered in Germany that year – a share of 0.4 percent.
- German carmakers invest billions of euros a year in R&D, much of which goes toward green technology, such as alternative mobility and advances in fuel efficiency. In 2014 alone, Germany's automotive industry R&D expenditure topped 17.6 billion euros, one third of Germany's total R&D expenditure, and R&D personnel within industry tallied just over 93,000 in 2014, according to Germany Trade & Invest, Germany's economic development agency. The German government added 1.5 billion euros to the carmakers' research endeavours. There were 29 German-made EVs on the market at the start of 2016
- Chancellor Angela Merkel recognized in December 2014 that the government has to provide more incentives to meet the goal of having 1 million electric cars on the country's roads by 2020. Among others, the federal government is considering based on the recommendations of the report to offer a tax break for zero-emission company cars, more subsidies to expand charging infrastructure, particularly to deploy more public fast chargers, and more public funding for research and development of the next generation of rechargeable batteries.

10. Electric vehicles in Europe

- In 2015, the European market of electric vehicles has increased by 48% as compared as 2014, with 97 687 vehicles sold last year. Half of this market is led by two member states: Norway and France, thanks to incentives and tax exemptions.
- The European market is the first market worldwide, followed by China with 88 000 electric vehicles, and the USA with 73 301 electric vehicles sold last year.
- The electric car the most sold in Europe in 2015 was the Renault ZOE (18 000 vehicles, for a price starting at 21 500 € plus battery rental of 49-69 €/month depending on annual mileage in Belgium), followed by the Tesla Model S (15 515 vehicles, starting at 82 600 € in Belgium) and the Nissan LEAF (15 455 vehicles, starting at 24 740 € in Belgium).
- According to the EPSC Strategic Notes Issue 17, a Goldman Sachs projection foresees massive advances in battery technology within the next years. In comparison to 2015, by 2020 the battery costs will fall to around one third, their weight to about half, while their capacity increases by about 50%. As currently about half the cost of an EV, as well as most of their performance limits are owing to the batteries, these advances will fundamentally transform the capabilities and commercial viability EVs by 2020.
- The Magna Steyr manufacturing plant in Graz is rumoured likely to produce the pilot line of Apple's autonomous car in Europe (currently in development, and as customary, unconfirmed by Apple).

11. Co-funded European research on Green Vehicles:

- The European Commission has funded research and development on electric vehicles and their subsystems and components since 2010 in the framework of the European Green Cars Initiative PPP (EGCI) and its successor in Horizon 2020, the European Green Vehicles Initiative (EGVI) which is focused on energy efficiency and alternative power trains.
- In the **7th Framework Programme** for Research and Development there has been a trend to concentrate road transport research around the electrification of passenger cars. Almost 350 million € were spent on the deployment of the technology. (e.g. Green eMotion for electric vehicles mass deployment; or ZeUS on electric urban bus systems; or Frevue on electrification of the "last mile" freight movements in urban centres).
- In **Horizon 2020**, the European Green Vehicles Initiative contributes with 700 million € to research and innovation around electric vehicles and their interactions with the electric grid. (e.g. the project OPTEMUS works toward improving the range limitation due to reduced storage capacity of electric batteries; or the Silver Stream project which is developing and demonstrating a new light and affordable vehicle concept (L-category) that addresses sustainable and affordable personal mobility challenges for growing and ageing population in European cities)

Article 4(1)(b) **VERBUND AG**

Short CV:

Article 4(1)(b)