

JULY 2022 HEV TCP NEWSLETTER



55th HEV TCP EXCO MEETING

The fifty-fifth meeting of the Executive Committee for the Hybrid and Electric Vehicle Technology Collaboration Programme (HEV-TCP) was conducted in Oslo, Norway on June 10-11, 2022 with in-person and remote participants in a hybrid format.

New country delegates from France (Mr Nicolas Doré) and from the Netherlands (Ms Els Rutten) were welcomed by the Chair.

Task 29 (Electric, Connected, Automated Vehicles), Task 30 (Environment Impact of Electric Vehicles), Task 35 (Fuel Cell EVs), and Task 39 (Interoperability) completed their work and they reported on the results of their Tasks. Written final reports have been submitted, and the Tasks were officially closed by the ExCo. Tasks 34 (Batteries), Task 37 (Extreme Fast Charging), and Task 40 (Critical Raw Materials for Electric Vehicles) have finished their activities, and these Task were closed, pending receipt of their final reports. Task updates were given and discussed for all the other ongoing Tasks.

An idea for a potential new task on “Electric Vehicle Fire Safety” was discussed. Carlo Mol (Belgium) is interested in developing such a task, and he asks that any countries who are potentially interested should contact him for more information. He hopes that the new task could be initiated at the beginning of 2023.

Ekta Bibra (IEA) gave an update on recent IEA activities. She also provided an update on the activities of the Electric Vehicle Initiative (EVI) of the Clean Energy Ministerial (CEM). Ekta reported that her term at IEA is ending soon, and that Dr. Leonardo Paoli will become the new IEA Desk Office for HEV TCP.

Sakeena Moeen (IEA) gave an overview presentation on the rationale and process for updating the legal texts of all the TCPs. Fifteen TCPs have completed their updates, and several others (including HEV TCP) are nearing completion also.

The ExCo 56 meeting (fall 2022) will be hosted by the UK in Dundee, Scotland in October. A final decision on the format (hybrid or in-person only) will be deferred until we know more about the pandemic conditions and travel restrictions in the fall.



TASK 39

MAKING PUBLIC CHARGING INFRASTRUCTURE MORE ACCESSIBLE FOR EV DRIVERS

The Task39 concluded in March 2022. The task started in April 2018, with an extension granted due to COVID-19.

Task 39 focused on user friendly charging infrastructure and more specifically at the interoperability aspects for charging passenger cars in the public and semi-public domain. Smart charging was also within the scope of Task 39.

Task 39 collected and shared experiences, best practices, and lessons learnt on ways to improve the user experience when charging passenger cars in the (semi-) public domain. Different workshops were organized in 2020 and 2021 focusing on important aspects like transparent pricing, EV market protocols, and the importance of open protocols to stimulate interoperability, the role of the public and private stakeholders, data quality of available (semi-) public charging infrastructure, and even on the growing importance of cyber security.

The charging infrastructure market is growing rapidly and is getting more mature worldwide. Of course, there are differences between countries, but in general we can conclude that important

progress has been made to improve the EV charging user experience in the (semi-) public domain.

However, there are still some weak points which need to be improved especially since the profile of the newer EV drivers is changing. The Task 39 workshop on “Transparent Pricing and Invoicing” made clear that improvements need to be made on price transparency. Prices need to be clear to the EV drivers before, during and after the charging sessions.

Additionally, interoperability is an enabler to accelerate the transition towards electric mobility. It is not “rocket science” but more a matter of organization and making agreements between all stakeholders with the ultimate goal of having a user-centric charging experience.

The final report can be viewed [on the IEA HEV webpage](#).

TASK 41

KEY ASPECTS FOR A SUCCESSFUL MARKET-ACCELERATION OF ELECTRIC FREIGHT VEHICLES



The Task Force 41 "Electric Freight Vehicles" concluded in April 2022. The activities, such as stakeholder workshops, fact sheets, cooperation's, which resulted from the international cooperation were summarized in a final report.

In conclusion, the task members summarized the current key aspects for a market acceleration of electric freight vehicles. An abstract of these is given in the following.

1. **Increased focus on vehicle reliability needed**
Higher vehicle ranges are demanded and payload limitations are not accepted.
2. **Longer delivery times constrain vehicle availability**
The number of EFV models will steadily increase in the next years. However, long delivery times have to be taken into account.

3. Align the pace of infrastructure developments with EFV market transition

For long-distance transport, Megawatt Charging Systems near highways need to be developed rapidly. This requires the implementation of standards for MCS charging, the adaptation of international laws and the extension of fiscal incentives to include infrastructure.

4. Battery Technology trends

The current technical trend shows for most EFV applications that Lithium Ion batteries with NMC cathode will be the state of the art. ...

5. Electric Road Systems out at scale

ERS can minimise localised loading on grid, spread energy demand and reduce size of onboard energy storage. Challenges are the multiplicity of options leading to dilution in investment. ...

6. Funding for pilots in city logistics

The limited space in urban area is particularly problematic. New logistics concepts need to be incorporated for this purpose.

7. Technology-open guidance for long-haul transport

For Long haul transport, there is a dichotomy regarding suitable technologies. The challenge is to innovate business models and products concurrently ... Thus, we see that technology

providers and users in the BEV sector are looking for higher ranges and faster charging solutions, which could shift the problem to other system actors.

8. Setting up a target regulatory framework that ensures competitiveness of EFV

Fiscal incentives in some EU country are showing economic advantages for EFV already today. These incentives are essential to reach TCO-parity. But they might come with authorities hurdles, which could slow down the conversion process.

9. Updating CO2 emission standards

CO2 emission standards for light and heavy duty vehicles are strong policies to push EFV into the market. An addition with energy efficiency standards could have a strong leverage for EFV.

10. Integrating new technologies into an overall system

The overall ecosystem in which new technology is to be deployed needs to be adapted accordingly if that new technology is to be successful.

11. Vehicle Automation with EFV

Advancing driver automation will become increasingly prevalent for trucks. Particularly on long-distance (hub-to-hub) transport.

TASK 45

WORKSHOP

SUMMARY

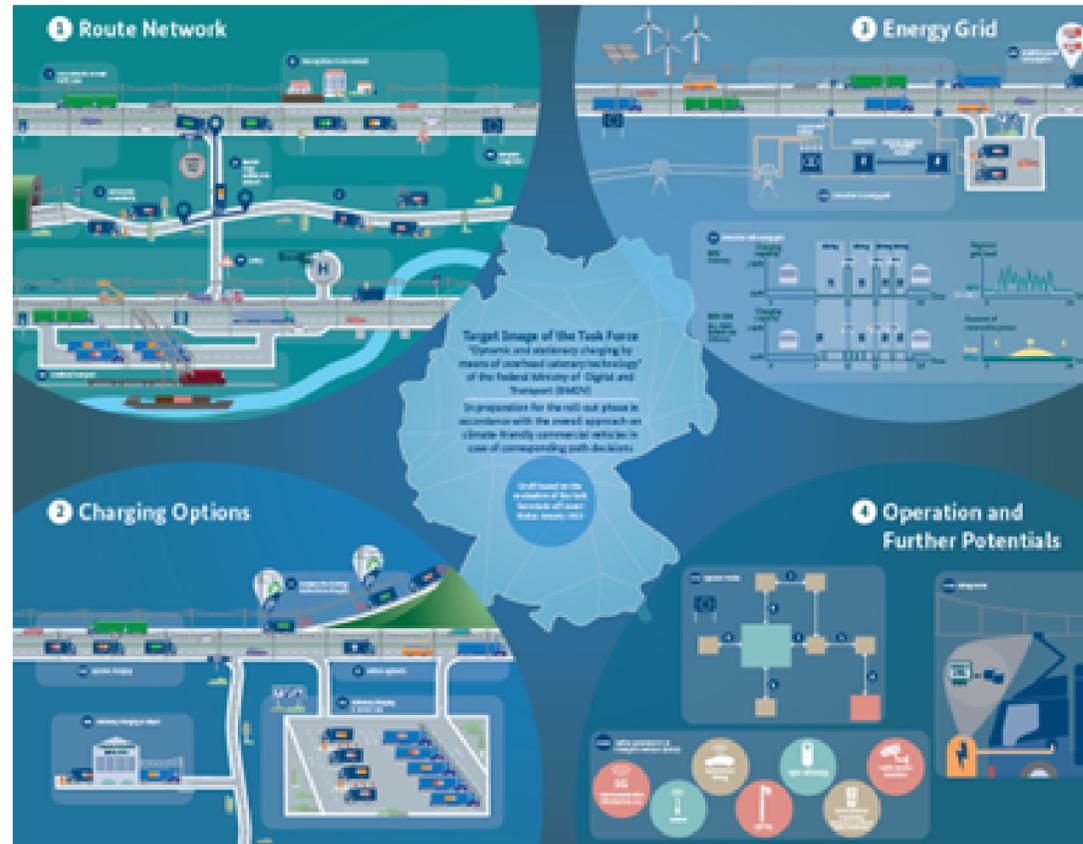


Figure: Target Image of electrified transportation networks (Eichler, et al NOW - GmbH)

Task 45 on Electrified Roadways (E-Roads) held its 3rd workshop in June. This was the first in-person meeting, with seven of the eight member countries represented.

Siemens hosted the workshop in Berlin, Germany, which provided proximity to the “eHighway” test track for a technology tour and experience. Each of the task members had the opportunity to ride in

SCANIA trucks operating ‘On-Wire’, which meant the vehicles were operating on grid power - while in motion. The task members were able to inspect the vehicles and the grid-side equipment, as well as interact with the test drivers and learn about the systems that make driving on grid power possible.

The participants and presenters engaged in the discussions focusing on the business case for E-roads over the two-day workshop. The task was fortunate to have presentations from external stakeholders, providing viewpoints from research experts.

The keynote address from Dr. Katharina Eichler of NOW- GmbH, focused on the relationship between “climate-friendly” commercial vehicles and the relationships with E-Roads. The NOW task force has developed a Target Image representing the systems involved in the electrification of commercial vehicles.

Some members were also able to engage and exchange information and perspectives with members of the IKEM Institute and other attendees of their conference on policy, law, and operations for E-Roads.

Task 45 and Task 41 had worked together on a joint workshop at the end of 2021, which led to the creation of a poster which was on display during the EVS35 conference in Oslo, Norway.

TASK 46

ONLINE EXPERT WORKSHOP

The IEA HEV TCP Task 46 (2022 – 2024) focuses on environmental effects based on Life Cycle Assessment (LCA) of electricity based propulsion systems – battery electric, hydrogen fuel cell and e-fuels - in comparison to fossil fuels.

In addition to the identification of the most relevant methodological issues, necessary inventory data and impact categories, new approaches for assessing “climate/CO2-neutrality” and “circularity” in a LCA perspective are discussed and developed. Currently 8 countries are participating in Task 46 – AT, CA, DE, CH, NO, SE, UK, US – represented by LCA expert and institutions. The task is executed in a close cooperation with Task 64 “E-fuels and End-use Perspective” of the TCP on Alternative Motor Fuels (AMF).

The first online expert workshop on **“Environmental Effects of Trucks – Towards Climate Neutrality and Circularity”** will take place on **October 13 – 14, 2022**.

The aim of the expert workshop is to analyse, assess and discuss the environmental effects of trucks with different propulsion systems based on LCA. The main topics of the workshop are:

Trucks and LCA

- The Environmental Performance of Current and Future Lorries – Drivetrain and Fuel Options
- Comparative Life-cycle Analysis of Medium- and Heavy- Duty Trucks
- LCA and LCC of Fuel Cell and Battery Electric Trucks
- E-fuel Production Pathways

Methodological aspects

- E-Fuel LCA Methodology
- Aspects of Circularity in LCA – Case of Recycling and Reusing of Batteries
- Life Cycle Assessment of Direct Air Carbon Capture and Storage
- Scenarios for a Climate Neutral Truck-Fleet in Austria 2040

Group work

- Identification of Key Issues on LCA of Trucks
- Assessment Methodologies on „Climate Neutrality“ and „Circularity“
- Goal and scope of LCA Case Study of Trucks

For further information and registration please contact the Task manager Gerfried Jungmeier from JOANNEUM RESEARCH in Austria (gerfried.jungmeier@joanneum.at). The participation is free of charge.

The management of the task the Austrian participation and are financed by the Austrian Climate and Energy Fund and the FFG.

Austria - The 2030 Mobility Master Plan: the compass on our pathway to meeting Paris targets

Mobility satisfies basic human needs, and goods transport plays a key role in economic progress

At the same time, tackling the climate crisis in the transport sector is especially challenging. We need clear frameworks and dedicated implementation programmes to reverse the trend in carbon emissions. The 2030 Mobility Master Plan therefore identifies ways to (1) avoid, (2) shift and (3) improve traffic and transport and significantly increase the share of eco-mobility in total transport – foot and bicycle traffic, public modes of transport, and shared mobility. Clear targets are helping to monitor the progress while a set of dedicated instruments are in place to improve traffic and transport.

Road Targets - Passenger transport

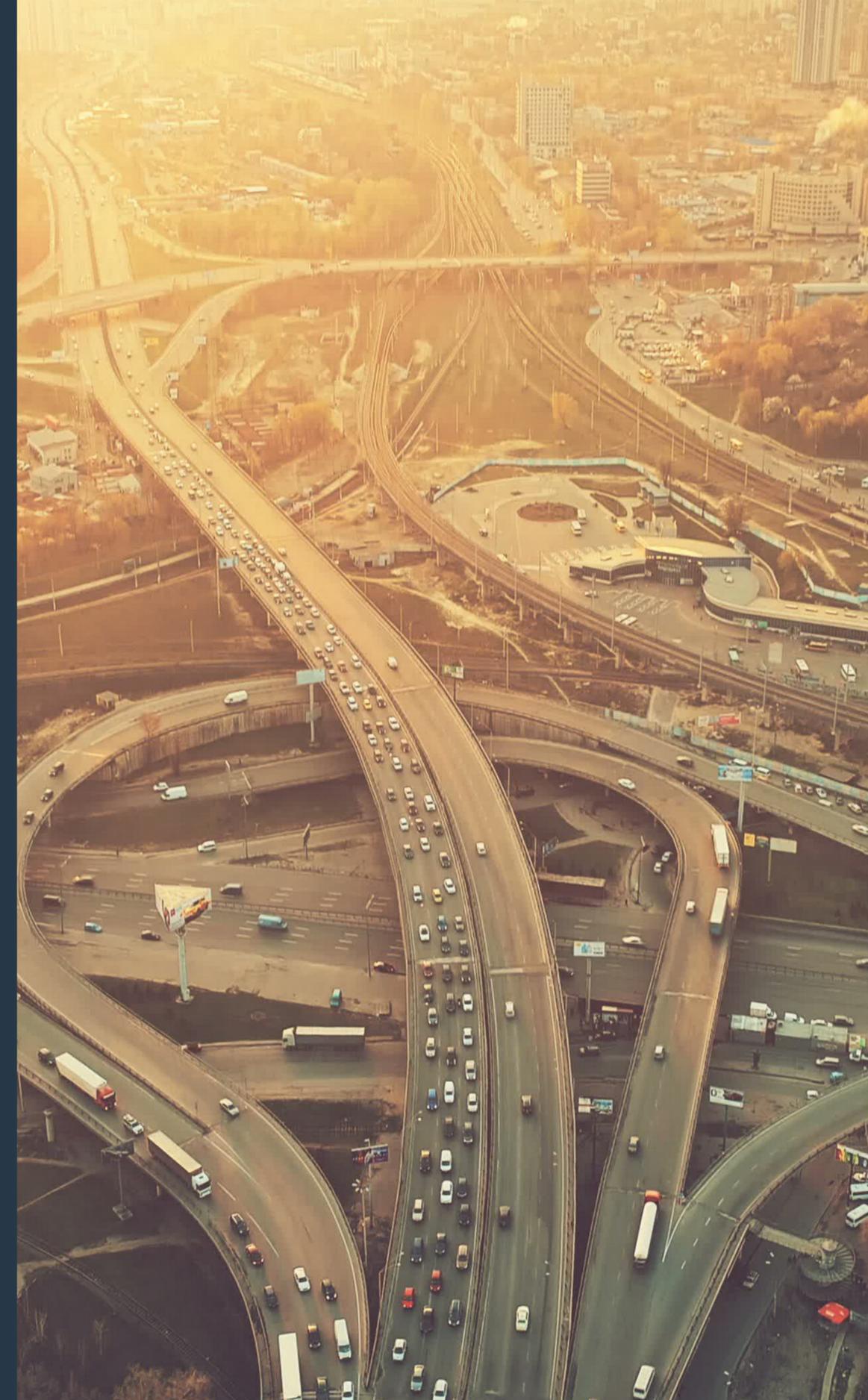
- 100% of new car and two-wheel registrations are zero-emission (2030)
- 100% of new bus registrations are zero-emission (2032)

Road Targets - Freight transport

- 100% of new light commercial vehicle registrations are zero-emission (2030)
- 100% of new heavy goods vehicle registrations (<18 tons) are zero-emission (2030)
- 100% of new heavy goods vehicle registrations (>18 tons) are zero-emission (2035)

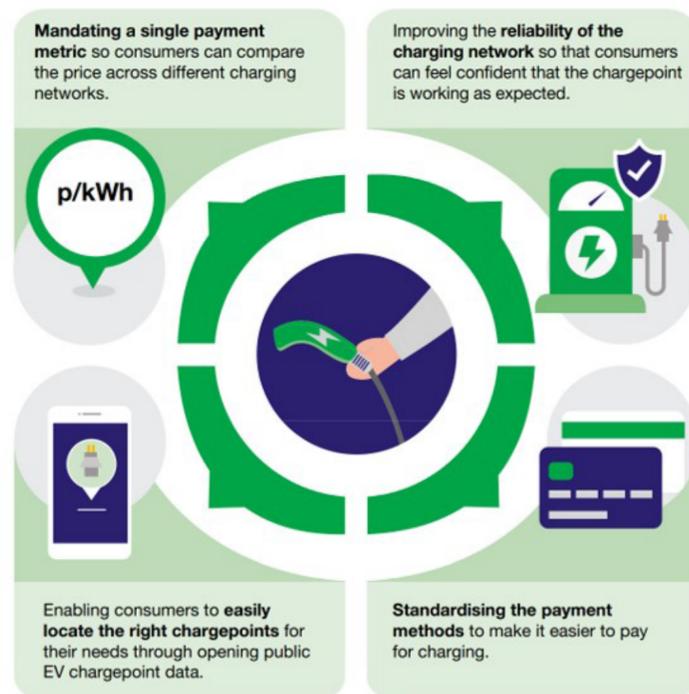
Dedicated instruments to improve traffic and transport

- Mobility Master Plan
- R&I Mobility Strategy 2030 – projects
- Zero Emission Mobility program – demonstrator
- Legislation - »Right to Plug«, Experimental spaces in transport law
- Electric Vehicles & charging infrastructure: Financial support
- EBIN – Emission-free busses & infrastructure
- ENIN - Emission-free commercial vehicles & infrastructure



UK Government publishes Taking charge: the electric vehicle infrastructure strategy

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EV Ownership in the UK has now reached a tipping point and while it is clear that the majority of EV drivers charge at home, we must ensure chargepoints are in place to support those without off street parking. For this reason, in March this year, the UK Government published Taking charge: the electric vehicle infrastructure strategy. This strategy sets out our vision and commitments to make EV charging cheaper and more convenient than refuelling at a petrol station. It will ensure that;

- Drivers can find and access reliable public chargepoints wherever they live.
- Charging is effortless for on and off-street charging for private and commercial drivers.
- Public charging is fairly priced and inclusively designed.
- There is a 99% reliability rate at rapid chargepoints.
- Infrastructure is seamlessly integrated into a smart energy system.
- And that innovation is continued to ensure it meets the evolving needs of drivers.

Lifecycle analysis of UK road vehicles

A battery electric car now produces only a third of the lifecycle emissions of an equivalent petrol car

(gCO ₂ e/vkm)	2020	2050
Battery	97	38
Plug-in hybrid	128	66
Fuel cell	169	60
Petrol	275	205

The UK Office for Zero Emission Vehicles commissioned Ricardo Energy & Environment to produce UK specific lifecycle analysis for greenhouse gas emissions of cars, vans, buses, and heavy goods vehicles with different powertrains. The main conclusion found that during its lifetime, a typical battery electric car is currently estimated to emit just a third of the greenhouse gas emissions of an equivalent petrol car, even when taking into account battery production and disposal.

HEV TCP presents results at the 35th International Electric Vehicle Symposium & Exhibition (EVS35)



[International Electric Vehicle Symposium & Exhibition](#)

Participants from the HEV TCP presented three papers at the 35th International Electric Vehicle Symposium & Exhibition (EVS35) that was held in Oslo, Norway on June 11-15, 2022.

The International Electric Vehicle Symposium (EVS) is the most traditional electric vehicle symposium/forum/exhibition in the world and the leading international event to address electromobility issues. With over 50 years of activity, EVS has grown and developed into an event that is both academic, with hundreds of papers being discussed, and business-oriented, with several thousand square meters of exposition, ride & drive. The event featured over 11,000 visitors, 300 exhibitors, 100 accredited media, and 300 technical presentations.

The results from Task 30 were presented in the paper “Climate Neutrality of Growing Electric Vehicles Fleets (2010 - 2050) in a Dynamic LCA Considering Additional Renewable Electricity: Example Austria”, by Gerfreid Jungmeier. The environmental effect of electric vehicles can only be assessed based on life cycle assessment (LCA) covering production, operation and end of life. Since 2011 in the Technical Collaboration Program (TCP) on “Hybrid & Electric Vehicles” (HEV) of the International Energy Agency (IEA) with 20 participating countries an expert group develops and applies LCA methodology to estimate the environmental effects of the increasing electric vehicle (EV) fleet globally. This approach was further developed to a dynamic LCA by taking the time depending effects of the BEV fleet introduction and the parallel increasing supply of renewable electricity into consideration aiming for a long-term climate neutrality. The BEV introduction in Austria started in 2010 and the BEV fleet is now 50,000 BEVs and consumes 140 GWh electricity, which is about

1% of the additional renewable electricity generated since 2010. Assuming each BEV substitutes for an ICE in 2020 the BEV fleet in Austria emitted 170 kt CO₂-eq and avoided 190 kt CO₂-eq. In a next step this methodology was applied in scenarios up to 2050 to reach a climate neutral Austrian transport sector and to identify its necessary framework conditions.

The Task41/Task45 joint workshop results were presented in the paper [“IEA Hybrid and Electric Vehicle Technology Collaboration Platform. Electrifying Road Freight – Moving on from a Diesel Mindset”](#), by Huw C Davies, Özcan Deniz, P. T. Jones, and Sourabh Jha.

From Task 23, Hannes Neupert gave a presentation on the future of LEVs, covering the Task 23 content as well.

James Miller, HEV TCP Secretary, served as the session chair for the technical session on heavy-duty electric vehicles. This popular session covered drivetrain optimization, total cost of ownership, high-power charging, and modelling of a charging infrastructure network for electric trucks in a logistics system.

Global EV Outlook 2022

The [Global EV Outlook](#) is an annual publication that identifies and discusses recent developments in electric mobility across the globe.

It is developed by the International Energy Agency with the support of the members of the Hybrid and Electric Vehicle Technology Collaboration Program.

Combining historical analysis with projections, the report examines key areas of interest such as electric vehicle and charging infrastructure deployment, energy use, CO2 emissions, battery demand and related policy developments. The report includes policy recommendations that incorporate lessons learned from leading markets to inform policy makers and stakeholders with regard to policy frameworks and market systems for electric vehicle adoption.

The 2022 edition features an in-depth assessment of the EV battery supply chain and reviews government targets and strategies in this area. It assesses charging infrastructure development targets in key regions. A section on the integration of EVs into the distribution grid is also included. Finally, the report makes available two online tools: the Global EV Data Explorer and Global EV Policy Explorer, which allow users to interactively explore EV statistics and projections, and policy measures worldwide.





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