JULY 2021
HEV TCP NEWSLETTER

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53RD EXCO MEETING HELD VIRTUALLY

The Fifty-third meeting of the Executive Committee for the Hybrid and Electric Vehicle Technology Collaboration Programme (HEV-TCP) held a virtual meeting in late May.

20 Executive Committee delegates and alternates were able to attend as well as 16 Operating Agents and 14 others consisting of observers, potential members, and invited presenters.

Task updates were given and discussed.

Three new task proposals were suggested:

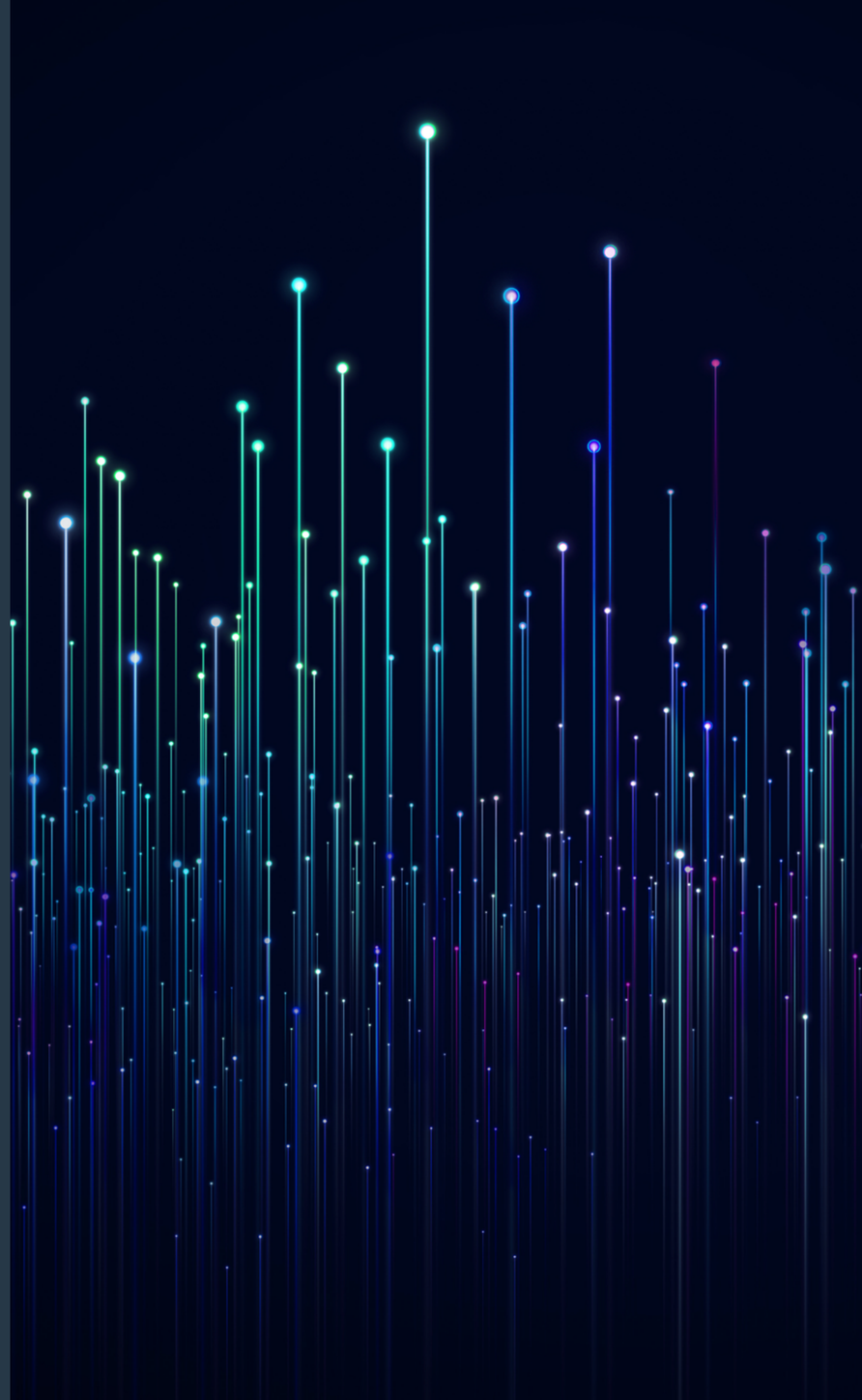
- G. Jungmeier (Austria), LCA of Trucks, Buses, Two-Wheelers, and Other Vehicles
- Clare Pennington (UK), Accessible EV Infrastructure
- P.T. Jones (USA), Electrification of Grounds Good Movement

Kate Palmer presented on Task 1 activities to include finalizing the Annual Report and voting on the name. *The Electric Drive Expands* was selected and print copies will be available in July. Ms. Palmer went over the new external HEV TCP website and requests for final reviews of the content was requested by Celeste Ferguson. This new website will be activated in July.

Mr. Jacopo Tattini from the International Energy Agency (IEA) gave an update on the recent IEA publications: Global Energy Review 2021, World Energy Outlook 2020, and the Global EV Outlook. It was proposed to work with all TCPs in the Transport Coordination Group (TCG) to build upon Argonne National Laboratory 's (ANL) GREET model. Task 30 experts were nominated to collaborate with IEA on this activity.

Tasks 32, Small EVs, and 42, EV Cities Casebook, were finalized and closed out. Books were published as a result of each task. No task extensions were requested.

Although travel is still unclear, the Fall ExCo 54 meeting, to be hosted in Dundee, Scotland, is being planned as an in-person meeting, while options for a hybrid meeting are being explored. The format of the meeting will be confirmed at the end of July. The Electric Vehicle Symposium (EVS35) is to be held in Oslo, Norway, June 11-15, 2022 and the possibility of Norway hosting ExCo 55 in conjunction with EVS in June 2022 is being investigated.



IEA TRANSITION TO 2050

IEA REPORT HIGHLIGHTS EV'S ESSENTIAL ROLE ON THE PATH TO NET ZERO

Electric vehicles figure prominently in two recently released reports from the International Energy Agency (IEA).

It published a report in May 2021 entitled **Net Zero by 2050: A Roadmap for the Global Energy Sector**. The report outlines a comprehensive plan for achieving global net carbon neutrality by 2050. One of its key conclusions is that electric vehicles (EVs) will need to account for more than 60% of global passenger car sales by 2030 to be sure we can reach net zero emissions by 2050 globally.

According to IEA, the development and deployment of electromobility is also one sector that is on track to support a transition to an emission-free sustainable future, as shown in their April 2021 report, **Global EV Outlook 2021**. The work of the HEV TCP, as part of the IEA's Energy Technology Network, supports and promotes this transition to a sustainable future.

TASK 30
CUMULATED ENVIRONMENTAL EFFECTS OVER LIFETIME IN A DYNAMIC LCA

Task 30 deals with issues on dynamic LCA—assessing the annual environmental effects of BEV introduction.

The environmental effects occur at different times during the lifetime of a transportation system. In LCA, the three phases are production, operation, and dismantling of EVs.

The cumulated environmental effects are allocated to the service provided during the operation phase, which is the functional unit in LCA, (e.g., per kilometre driven for vehicles and kWh electricity for power plants). Therefore, the functional unit gives the average environmental effects over a lifetime by allocating the environmental effects for production and end of life equally over the lifetime to the transportation service independent of the time when they really occur.

This new approach is now considering the environmental effects of production and end of life at the time, when they occur, as the lifetime of a vehicle is different from the lifetime of a power plant, which is described schematically as an example. Figure 1 provides the possible courses of the environmental effects over a lifetime of using hydro power in a battery electric vehicle (BEV) for transportation service.

The environmental effects of the construction of the hydro power plant become relevant before the operation phase of the BEV. After the operation phase of the BEV the electricity from hydro power is used for other purposes, so a “credit” occurs for the transportation service. The hydro power end-of-life phase is relevant for the BEV to the construction but takes place after the operation phase of the hydro power plant. So, the cumulated environmental effects are “V & H” for the transportation service.

This dynamic LCA approach will be further developed in Task 30 and extended to the development of BEV vehicle fleets and the increase generation of renewable electricity in new power plants.

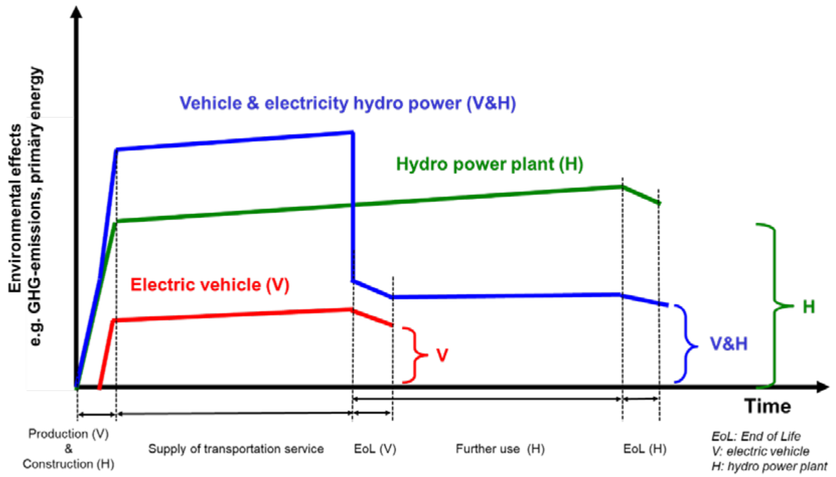


Figure 1: Timing of cumulated environmental effects over lifetime of using electricity from hydro power (H) in a battery electric vehicle (V) for a transportation service

TASK 30 ONLINE WORKSHOP
Overall Assessment in LCA of Electric Vehicles

13 - 14 October 2021

From Inventory Analysis to Impacts of Electric Vehicles

The aim of the workshop is to present and discuss the status and the future perspectives of the Impact Assessment and its impact categories - beyond global warming and primary energy consumption - relevant for LCA of electric vehicles and conventional ICE vehicles. Based on presentations from invited experts and from the task members the key issues on impact assessment are identified and discussed in a group work among different stakeholders. The result is a summary statement on the status of Impact Assessment methodologies and categories with its future perspectives for electric and conventional vehicles.

FURTHER DETAILS AND REGISTRATION

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TASK 32

BOOK PUBLISHED: SMALL ELECTRIC VEHICLES – AN INTERNATIONAL VIEW ON LIGHT THREE- AND FOUR WHEELERS

8.5K

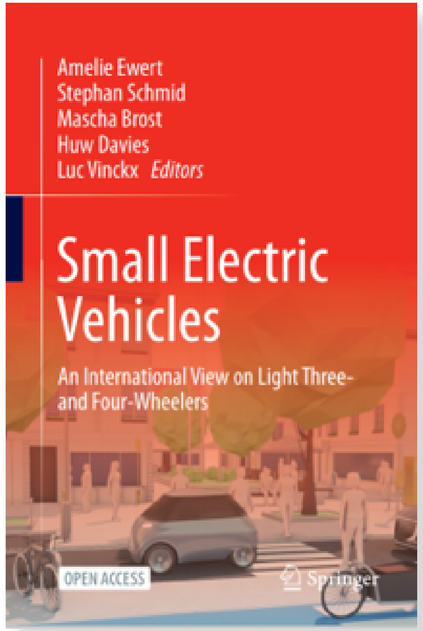
DOWNLOADS
(AS OF JUNE 2021)

Publication date: April 2021
Publisher: Springer Nature
50 authors, 14 contributions
189 pages
Open Access – funded by DLR publication fonds

Small and lightweight electric vehicles for sustainable mobility

Pressure on reconsidering transport options is increasing. Growing global population, motorization rate and urbanization as well as increasing problems related to climate change and limited resources require us to use available space, material and energy most efficiently. Small electric vehicles (SEV) could effectively support to achieve this.

The objective of Task 32 is to promote a broader commercialization, acceptance and further development of SEVs by collecting and sharing pre-competitive information, exchange about framing conditions, best practices and ideas, how to develop the market conditions and mobility concepts further. To this purpose, international workshops, discussion rounds and a survey were carried out as part of Task 32. The results were presented in scientific publications and at conferences. A book now complements these dissemination activities.



SEV considered in the book are three- and four wheel vehicles as well as cargo bikes. It gives a comprehensive international view on chances and obstacles for SEV, covering:

- Vehicle concepts and technologies
- Safety
- Homologation and regulations
- International markets
- research and pilot projects, case studies
- Mobility concepts, e.g. shared mobility, logistics
- SEV deployment, transport potentials
- Traffic effects, sustainable urban development

The results and network created within Task 32 served as a basis to invite international authors to contribute to the book on SEV. Experts reviewed and selected contributions in a double-blind two-step process.

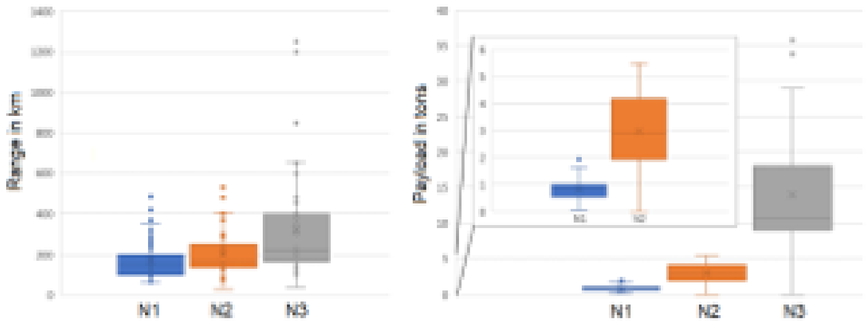
TASK 41

PUBLICATION ON TECHNICAL PERFORMANCE OF ELECTRIC FREIGHT VEHICLES

Task 41 aims to monitor progress and review the relevant aspect for a successful introduction of Electric Freight Vehicles (EFV) into the market.

The main challenges in the technical performance of Electric Freight Vehicles (EFV) are the available range, payload and charging time today. The traction battery has a major influence on the indicators. In addition, the limited availability of EFV models and the fast technological development plays a major role in the attractiveness of EFV in the market. However, the market is developing rapidly. The question therefore arises whether the current state of performance of EFV is competitive with a conventional freight vehicle today.

Figure 1: Distribution of range and payload of current EFV



A benchmark analysis of EFV was carried out using technical information on all available vehicle models and concepts that are publicly known. This includes Hybrid Electric Vehicles (HEV), Plug-in Hybrid Electric Vehicles (PHEV), Range Extended Electric Vehicles (REEV), Fuel Cell Electric Vehicles (FCEV) and Battery Electric Vehicles (BEV). The collected information was compiled over a time period from April 2018 to April 2020 and has been consolidated in a vehicle database.

The main results are summarized in the task 41 fact sheet “The State of the Art of Electric Freight Vehicles”, which is available here.

On September 29th 2020, the Task41 team hosted the 2nd webinar on “Electrification of Heavy-Duty Vehicles in Long Haul Transport”. In three sessions experts shared and discussed the present state of technologies, experiences and best practices – covering alternatives including fuel cell electric, battery-electric and catenary electric freight vehicles. In total, thirty four attendants from industry, research, logistics and governmental organization joined the webinar.

The full summary of the webinar is available on the IEA- HEV website, see here.

TASK 42

EV CITY CASEBOOK AND POLICY GUIDE

Urban Foresight has published the third EV City Casebook and Policy Guide, providing a global analysis of inspiring ideas, policy pioneers and city-led innovation in electric vehicles.

Building on the success of the EV City Casebook 2012 and 2014, this edition is focused on mass scale deployment of EVs. It uses cities across the globe as case studies to explore the incentives, investments and infrastructure needed to support this growth. It examines the role that city authorities play and distils ten policy insights to undertake a holistic approach to transport electrification in a city, as well as outlining a 'maturity model' for cities to benchmark their progress and identify their next steps.

Urban Foresight worked with the International Energy Agency (IEA), Electric Vehicle Initiative (EVI), Pilot Cities Program (PCP) and the Hybrid and Electric Vehicle Technology Collaboration Programme (HEV TCP) to deliver the 2021 EV City Casebook, having also delivered the 2012 and 2014 editions.

Gordon Hector, Principal Consultant at Urban Foresight said,

"There have been huge transformations in mobility since the first EV City Casebook was published in 2012. Cities across the world are now looking at scaling up EVs and accelerating their moves towards total electrification.

But getting beyond early EV pilots and trials has its unique challenges in policy, politics, and technology.

So, this 2021 edition of the casebook is focussed on that tricky next step. It's a showcase of inspiring work being done in cities across the world and a policy guide for cities to understand where they are, and what to do next.

There's huge momentum on EVs. The task now is to translate that into mass EV adoption. That's what this project is designed to help drive."

Read the full 2021 EV City Casebook here.

IEA UPDATE

NET-ZERO BY 2050

This special report is the world's first comprehensive study of how to transition to a net zero energy system by 2050 while ensuring stable and affordable energy supplies, providing universal energy access, and enabling robust economic growth. It sets out a cost-effective and economically productive pathway, resulting in a clean, dynamic and resilient energy economy dominated by renewables like solar and wind instead of fossil fuels. The report also examines key uncertainties, such as the roles of bioenergy, carbon capture and behavioural changes in reaching net zero.

GLOBAL EV OUTLOOK 2021

The Global EV Outlook is an annual publication that identifies and discusses recent developments in electric mobility across the globe. It is developed with the support of the members of the Electric Vehicles Initiative (EVI). Combining historical analysis with projections to 2030, the report examines key areas of interest such as electric vehicle (EV) and charging infrastructure deployment, energy use, CO2 emissions and battery demand. The report includes policy recommendations that incorporate learning from frontrunner markets to inform policy makers and stakeholders that consider policy frameworks and market systems for electric vehicle adoption.

Finally, it makes available for the first time 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.

THE ROLE OF CRITICAL MINERALS IN CLEAN ENERGY TRANSITIONS

Demand for critical minerals will grow quickly as clean energy transitions gather pace. This new World Energy Outlook Special Report provides the most comprehensive analysis to date of the complex links between these minerals and the prospects for a secure, rapid transformation of the energy sector. Additionally, the report examines whether today's mineral investments can meet the needs of a swiftly changing energy sector. It considers the task ahead to promote responsible and sustainable development of mineral resources, and offers vital insights for policy makers, including six key IEA recommendations for a new, comprehensive approach to mineral security.

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