

Transport and climate change

Climate Change mitigation: United Nations Economic Commission for Europe For Future Inland Transport Systems tool.

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UNECE

ForFITS recent and forthcoming activities

Index



- 10 years of ForFITS
 - Recap since its implementation to ITC
 - ForFITS outreach
 - Strategies for the future
 - ITC decisions
- Paper on Realtime emissions of EVs during recharge
 - Need to look at the emissions from EVs
 - Case study for the UK, high resolution information on:
 - Electricity demand profiles
 - Carbon intensity of the grid
 - EV charging behaviour
- Conclusions / next steps

Internal application of ForFITS

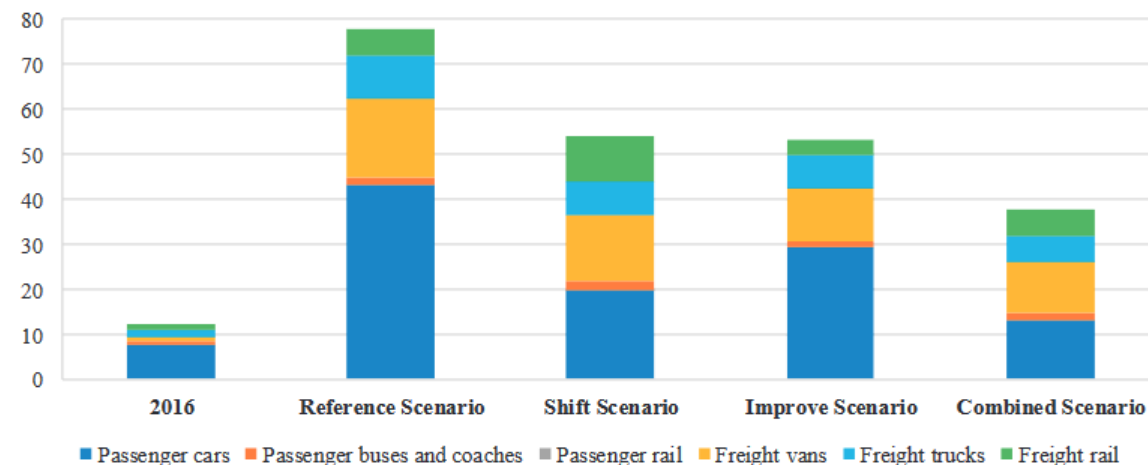
In the transport, environment and energy divisions of UNECE



- Main regular application as part of the Environmental Performance Reviews (EPRs) of the ECE Environment Division;
 - 4 Applications to date: 2015 (Belarus), 2016 (Georgia and Tajikistan), 2017 (Albania) and 2019 (Uzbekistan)
 - 2 finalized recently: 2021/2022 (Azerbaijan), 2022 (Armenia)
- Internal activities in the transport division;
 - ECE Study 2016 (Informal document ITC (2016) No.13)

- Inclusion of Non-Road Mobile Machinery feasibility study
- THE PEP studies, Lithuania, Kaunas and Mannheim
 - Example, Passenger transport CO2 emissions in Kaunas, 2012-2030

Figure IV.13: WTW CO₂ emissions by mode, all scenarios in 2045, Mt CO₂



External use and on-line visibility of ForFITS

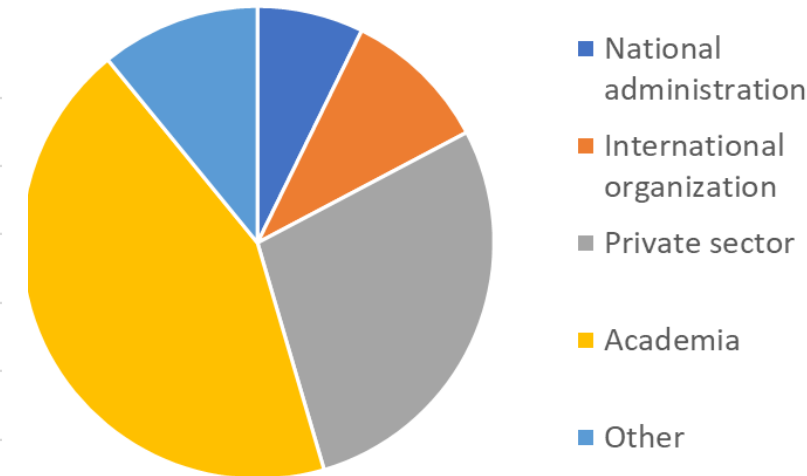
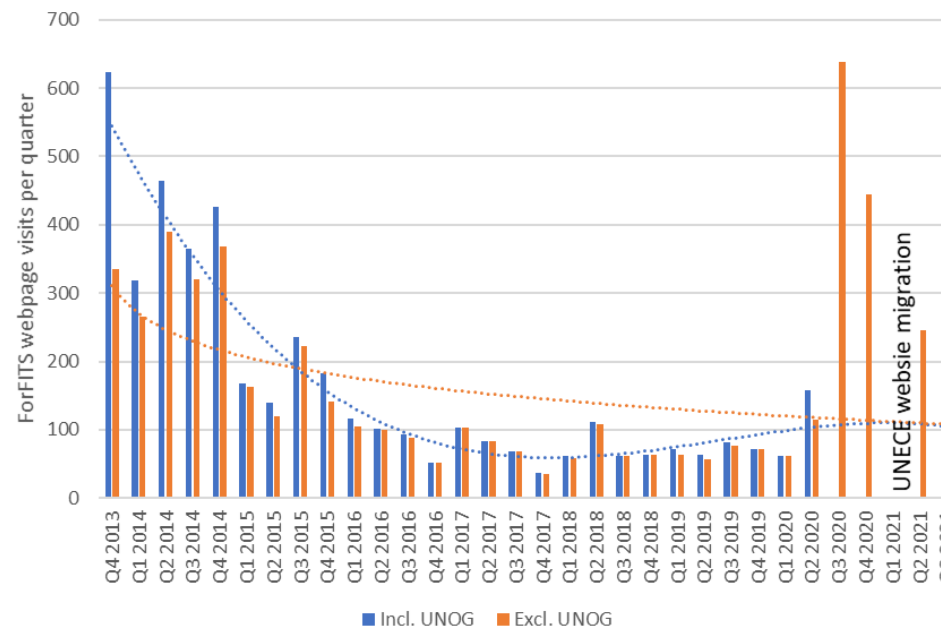
For any stakeholder



- ForFITS publicly available since its inception
- Survey put in place since 2019 to monitor external downloads
- More than 100 person / institutions have downloaded ForFITS since 2019
- Gender dimension also tracked

60% male
40% female

- Website audience



ForFITS outreach

Activities with other groups working on transport and energy modelling



- ForFITS a member of the International Transport Energy Modeling partnership (iTEM) since 2018
- ForFITS also involved in the Energy Demand changes Induced by Technological and Social innovations (EDITS) network
- ForFITS has become an Intergovernmental Panel on Climate Change (IPCC) registered model for the inception of the Assessment Report 6 (AR6)
- ForFITS has been invited to join the International Energy Agency (IEA) Mobility Model (MoMo) partnership
- ForFITS as a partner in the Transport Data Commons Initiative

Next steps: Model developments strategies

Way forward for ForFITS



- Two-level strategy for future activities, endorsed by ITC
 1. With additional funding secured:
 1. Develop a ForFITS 2.0 simplified model for a broader audience,
 2. Develop additional features for ForFITS 1.0 on a modular approach or through a new modelling framework.
 2. With no additional funding (using existing limited resources),
 1. carry on with the existing ForFITS model and internal use pattern and implementation of digital infographics / visuals to be used with digital component of ECE publications, when deployed
 2. continue the reach out strategy to closely collaborate with other modelling groups, partnerships and activities to mutualize resources and to maximize the added value of ForFITS
- ITC to support secretariat in fundraising for ForFITS

ITC decisions

Way forward for ForFITS



- During its 84th session in Feb 2022, ITC: (decision 35.)

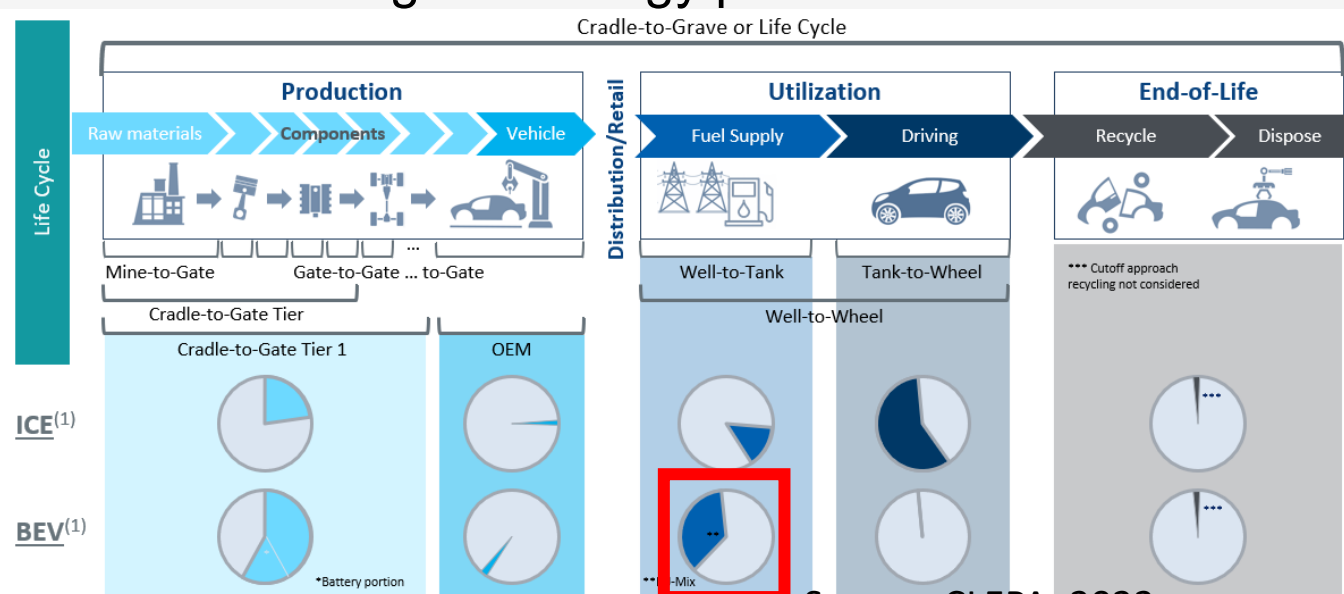
Welcomed the work on climate change, in particular the For Future Inland Transport Systems (ForFITS) tool, and **emphasized** its importance for the realization of the ITC Declaration on “Enhancing sustainable inland transport solutions for global climate and environmental challenges: a united call for universal action”, endorsed by the Committee at its eighty-second session; **supported** the proposed approach in order to further develop ForFITS, sustain its use internally, develop partnerships with other modelling groups, and engage in future technology modelling, pending additional resources;

WP.6 paper on CO2 emissions from EV during recharge

INLAND TRANSPORT COMMITTEE



- Last June, ECE/TRANS/WP.6/2022/6 has been released as a preliminary analysis by the secretariat presented during the 70th session of WP.6
- The context requires a closer look at emissions from EVs
 - EV sales almost doubling every year in the recent past, despite the pandemic
 - Environmental impact shifting from end-use phase to upstream phases, from vehicle manufacturing and energy production



Exploring the potential for real-time determination of CO2 emissions during recharge



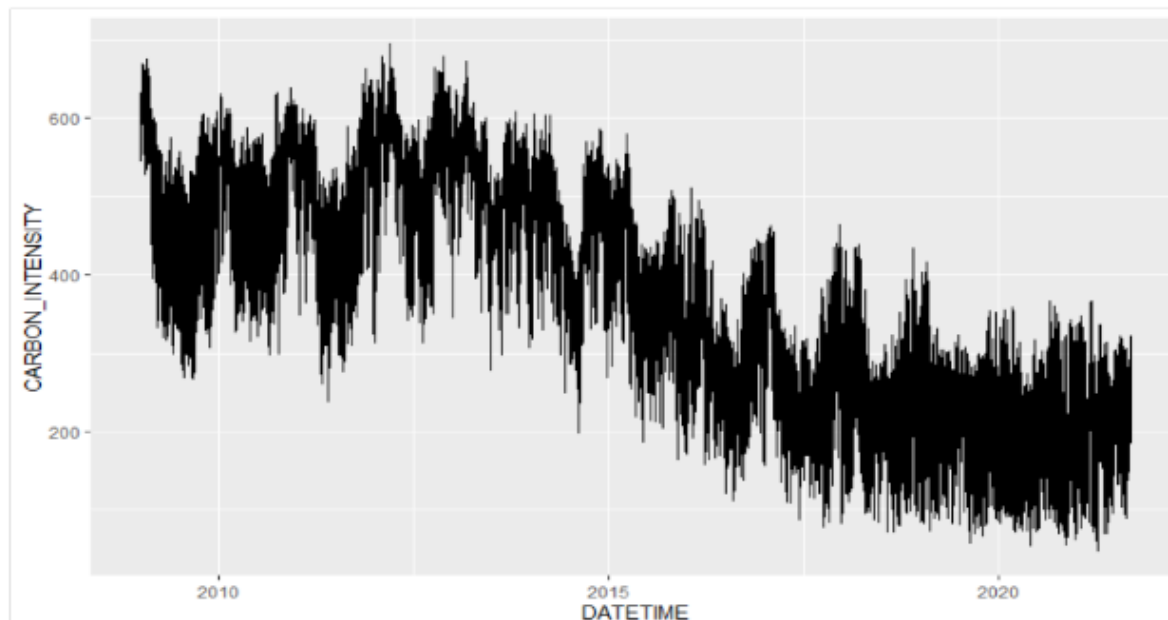
- Workshop organized between the Sustainable Transport and Energy Divisions of UNECE in May 2021: “Real-Time Upstream Emissions of Electric Vehicles During Recharge”
 - <https://unece.org/sustainable-energy/events/online-workshop-real-time-upstream-emissions-electric-vehicles-during>
- Stakeholders suggested to:
 - go beyond annual average to calculate EV electricity use emissions
 - explore the mitigation potential of EV recharge during low carbon intensity hours
- Secretariat developed a paper on the topic: ECE/TRANS/WP.6/2022/6
- Develop dedicated ForFITS module following ITC’s decision to support the work on future technology modelling, if resources available

Case study for the UK



- Publicly available data on electricity mix and carbon intensity in 30-min steps from 2009
- 2019 Study on charging behaviour from Element Energy

Figure 3
Great Britain carbon intensity of electricity (grams per kWh) over time



Source: National Grid



UK case study



- Peak demand in evenings also matches time of higher carbon content

Figure 2
Great Britain daily electricity demand, 2020 and seasonal averages

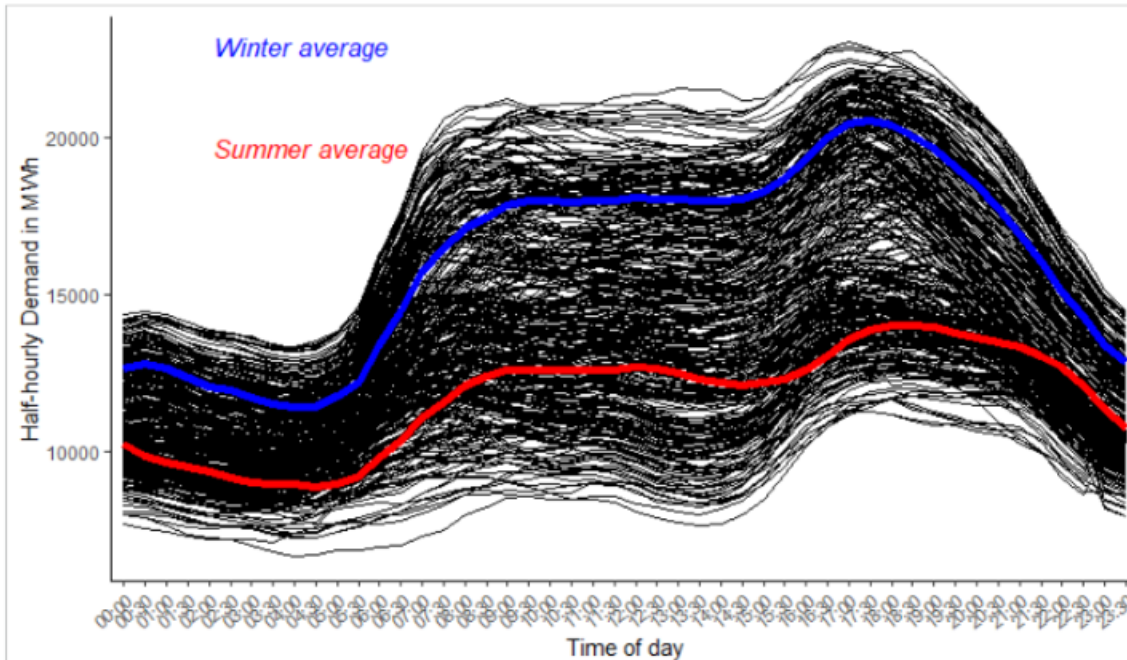
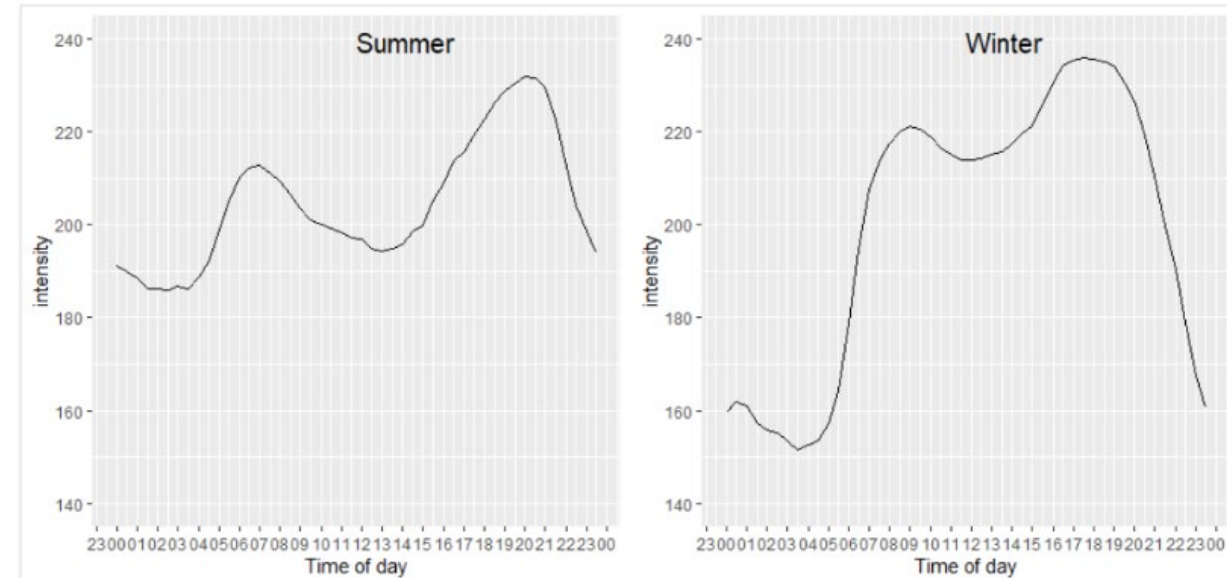


Figure 5
Great Britain CO₂ intensity in 2020, daily trends in Summer and Winter



Source: National Grid

UK case study

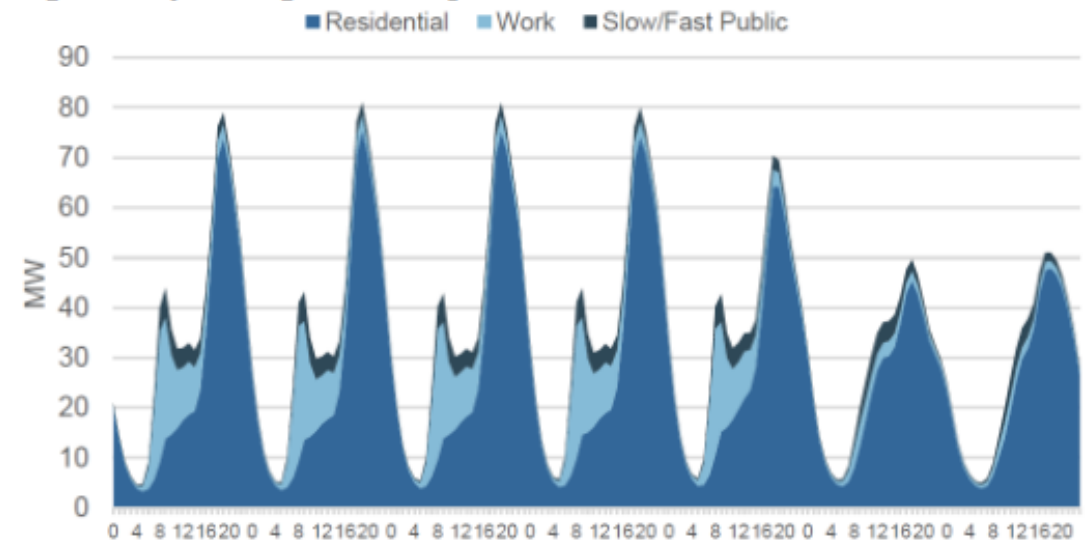


- Recharging peak demand also in evenings

Further analysis to determine:

- Use of average annual carbon intensity underestimates real recharging behaviour
- CO2 mitigation potential if recharging occurs at lowest carbon intensity times

Figure 7
EV recharge weekly average demand profile in Great Britain



- Resources constraints at the secretariat

Conclusions



- After 10 years of activities, ITC supported the proposal for the future of ForFITS, to look at more partnerships in case no additional funding is available to further develop the model
 - Internal applications within UNECE uses most of the resources available
 - Outreach and partnerships with external organization key of the future strategy
- ForFITS development to focus on modular approach where more added values can be encountered
 - EV area of interest
 - ⇒ welcomes interest from WP.5 on the topic of EV / EV recharging infrastructure



Thank you!

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