



D 2.3

Annual Winter/ Summer School 1 Report

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Dissemination Level

PU = Public

PP = Restricted to other programme participants (including the EC)

RE = Restricted to a group specified by the consortium (including the EC)

CO = Confidential, only for members of the consortium (including the EC)

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Introduction

The NEEMO (Networking for Excellence in Electric Mobility Operations) TWINNING project aims at upgrading the scientific, engineering and research performance and innovation capacity of the Malta College of Arts, Science and Technology (MCAST) Energy Research Group (MCAST Energy) within the MCAST Institute of Engineering and Transport (MCAST IET) in the field of Electric Mobility (e-mobility) research, related integration of technologies, modes and operations. The project Electric Mobility research themes range from terrestrial to marine activities and from heavy-duty to micro-solutions. The NEEMO TWINNING project approach involves several activities with a group of top world-leading research centres (AIT and CEA) and ANEL, Nicosia Development Agency, in Cyprus, both involved in technology transfer in a widening country, another island state, as well as a provider of know-how on policy field. All partners provide access to an extensive network and contacts in the field. Talented researchers can participate in various events, including meetings, conferences, schools, workshops and exchange programmes.

These one-week schools are open to local and international academic and research institutions and industry around the Mediterranean in addition to partners and stakeholders and beyond. These schools establish a series of annual events expected to continue beyond the end of the NEEMO project as part of the sustainability research strategy. This task under the NEEMO project aims to provide training for early career researchers and high-level technical staff to address e-mobility and their related technologies. In these schools, the participants will have the possibility to interact and share experiences and activities with high-level experts.

This deliverable D2.3 Annual Winter/ Summer School 1 Report documents our first NEEMO School, held Online on MS TEAMS Platform and supported by the Moodle Virtual Learning Environment (VLE) between 15th and 18th March 2021. This document provides an overview of the:

- The First NEEMO School
- The Programme of the School
- The School Statistics and Feedback

This document aims to report the main activities carried out in the frame of this activity, the presentations made by each speaker and other contributions from industry and academia. This deliverable is part of Task 2.2.

This deliverable was postponed from September 2020 to March 2021 because of the onset of the coronavirus (COVID) pandemic, which delayed the School event from delivery.

1st NEEMO School: Electric Mobility on Islands

The NEEMO School series is entitled "Electric Mobility on Islands". This 1st NEEMO School attracted over 38 participants and speakers from 9 countries. The School elaborated the conceptual framework of the integration challenges associated with Electric Vehicles (EVs). It also included driving habits and islands drive cycle-related topics and sub-topics, including an online exercise. It provided the participants with the opportunity to understand and master the main concepts relating to these topics. This School also explored state-of-the-art theories and frameworks. The School exposed participants to apply these methods and evaluating solutions to problems by adopting scholarly approaches. Participants were awarded a certification of attendance.

School Learning Outcomes

The School learning outcomes were:

1. Identify the main concepts, issues and concerns relating to solutions for electric mobility on Islands.
2. Discuss and explain the main challenges related to electric mobility and its concepts.
3. Apply theories and frameworks to problems that require a scholarly approach.
4. Evaluate the performance of solutions adopted to specific themes and topics.

The Programme

The NEEMO School 1 booklet is published on ISSUU

<https://issuu.com/neemoproject/docs/book>

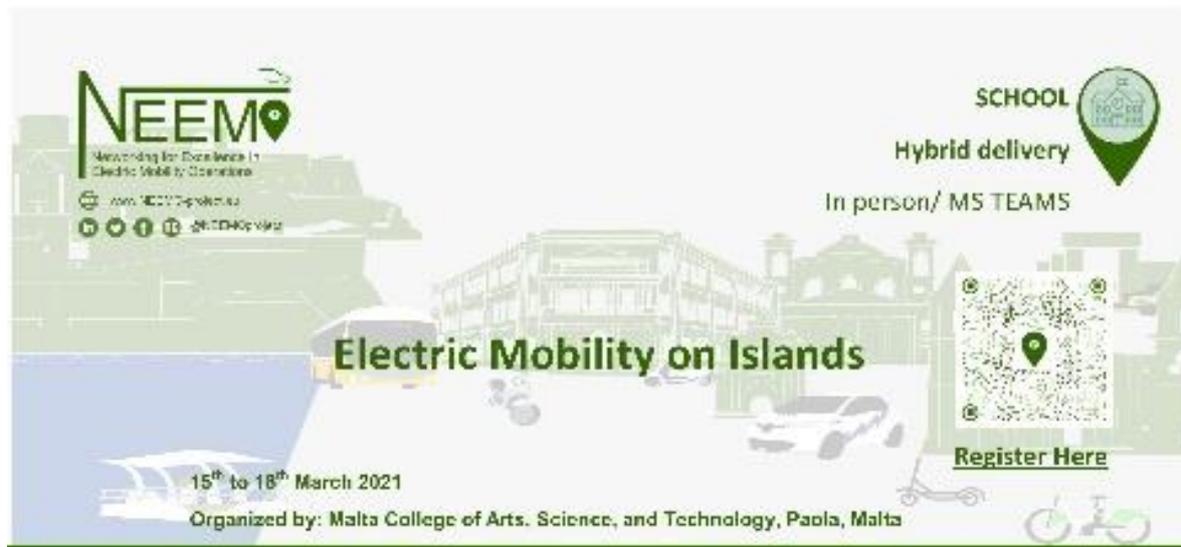
The summary of the programme is shown in Table 1.

The online School was facilitated through prior calendar invitations to the participants, and a closed group was formed on Microsoft 365 to avoid any GDPR based issues. The poster for the online School was published as shown in Figure 1, and multiple social media posts were also published strategically announcing speakers and programme over three weeks period.

Furthermore, all participants were given access to the MCAST Virtual Learning Environment (VLE) Moodle, where all materials, recorded presentations and assignments submission may be accessed, as shown in Figure 2.

Table 1: The NEEMO School 1 Programme

NEEMO School 1	Mon, March 15	Tue, March 16	Wed, March 17	Thu, March 18	Fri, March 19
09:30 - 10:00	Registration	Refreshments	Refreshments	Refreshments	Public Holiday (Malta) Feast of St Joseph
10:00 - 10:30		Urban mobility & new city trends vs electric vehicles (Emilia Romero)	Exercise: From mobility data towards e-mobility (Matthias Prandtsteter)	The road to zero emissions for urban deliveries (Verena Ehler)	
10:30 - 11:00					
11:00 - 11:30					
11:30 - 12:00					
12:00 - 12:30	Lunch	Lunch	Lunch	Lunch	
12:30 - 13:00					
13:00 - 13:30					
13:30 - 14:00	Welcome	Electric Mobility in Cyprus (Eleftherios Loizou)	Exercise: From mobility data towards e-mobility (Matthias Prandtsteter)	European Research Landscape of e-Mobility (Wolfgang Ponweiser)	
14:00 - 14:30					
14:30 - 15:00				Electric Mobility: A case for Maltese Islands (Brian Azzopardi)	
15:00 - 15:30	Stakeholders Discussion				
15:30 - 16:00	Refreshments	Refreshments	Refreshments		
16:00 - 16:30	Formalization of the game of players in the electric mobility market (Florian Selot)	EVolve: Smart charging at CEA (Bruno Robisson)	E-car sharing - Operational planning and optimization (Bin Hu)		
16:30 - 17:00					
17:00 - 17:30					
17:30 - 18:00					
18:00	Dinner	Dinner	Dinner		



SPEAKERS



Emilia Romero
IDMADA Spain



Dr Bin Hu
AIT Austria



Dr Verena Ehrler
Universite Gustave Eiffel



Dr Wolfgang Ponwieser
AIT Austria



Florian Selot
CEA, France



Dr Matthias Prandstetter
AIT Austria



Dr Brian Azzopardi
MCAST, Malta



Bruno Robleson
CEA, France



Eleftherios Loizou
ANEL Cyprus

NEEMO School Package
 NO REGISTRATION FEES - registration is on first come first served basis based on Registration and Consent Form submission
 Certificates provided after successful school completion
 Hybrid Delivery: In person (Malta) and MS Teams



The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857484

Figure 1: Poster for first NEEMO School

Somesh Bhattacharya

MRC My courses

Home > My courses > Projects > NEEMO School 1: Electric Mobility on Islands

Announcements

Forum 4 unread posts

You may submit any discussion here. Let us know of e-mobility initiatives you may know. Share mobility data. This section is moderated. Anyone may intervene in any questions and discussions.

NEEMO School 1 Booklet

Attendance

Attendance certificates will be issued to all registered participants that have shown active participation in all required submitted/uploaded information/files, placed at least one question during the week to one of the speakers and attended whether in synch or asynch to 70% of the NEEMO School 1 content.

IMPORTANT ANNOUNCEMENTS

NEEMO School 1 - MOVED FULLY ONLINE

EVENT IS ONLINE. COVID-19 pandemic health authority, MCAST and meals guidelines will be followed strictly. IMPORTANT: REGISTRATION IS OBLIGATORY AND OPEN UNTIL 12/03/2021 09:00 CET. CALENDAR INVITATION FOR ONLINE MS TEAMS AND VLE Moodle Link WILL BE SENT ONLY TO REGISTERED PARTICIPANTS. Local Participants will have delivered meals, as per schedule lunches and dinners subject to registration, attendance and details of delivery and menu choice provided by 12/03/2021 17:00 CET. A separate Form is here on Moodle to be filled in. This option is subject to limited availability, regional delivery availability and on a first-come-first-served basis.

NEEMO School 1 Lunch and Dinner Delivery (Maltese Residents Only)

We understand that your time and focus is required during NEEMO School 1. Furthermore, the current COVID-19 pandemic restrictions make it difficult to multi-task at home and following our School. We, therefore, are offering Malta local residing residents the option to have their lunches and dinners delivered to their preferred address. Lunches will be distributed between 10:00 and 13:00, while dinners will be distributed between 17:00 and 20:00. We hope that this gesture lightens up your busy schedule and stay in tune during the whole School sessions. If you feel that you would like to update your info regarding any inputs submitted here please contact our supplier by email: events@urbanvalleyresort.com and placing SUBJECT: NEEMO School 1 Requests or contact +356 2138 5926. As a registered participant and have already filled our GDPR forms, we would like to inform you that this information including your personal details name, telephone, address and any other inputs to our service provider. Submitting this form you are agreeing that we will share this information with our food and delivery service provider. The deadline for submission is 12 March 2021 till 17:00

Introduce Yourself

We would like you to submit a very short video, with/out presentation introducing yourself. As an ONLINE School, we miss the interactions we may have during the welcoming part. Hence an introductory video about yourself, your team, your interest especially related to the School and what your expectations are of the School would be a great way for others and us to get to know you. The videos will be available on Moodle to registered participants.

Get Prepared!!!. Show us your video and background

One way to interact online is to ensure your video camera is on. We understand that you may wish to hide your local environment. Hence our suggestion is to choose a background that is most suitable for the NEEMO School Topic. SHOW US YOUR VIRTUAL BACKGROUND!!!. You may wish to change your virtual background regularly. We are happy to see active participation in this and will be rewarding the best active video and background participant!

Love | Like | Share | ReTweet

Facebook: Like and Share our NEEMO page, Tick Going/Interested, Invite, Share with your contacts <https://bit.ly/36CmJ5>
 LinkedIn: Like and Share our NEEMO page, Tick Going/Interested, Invite, Share with your contacts <https://bit.ly/2MPae8m>
 Twitter: Love and ReTweet https://twitter.com/NEEMO_project

Conclusion Clip

We would like you to submit a very short video, with/out presentation concluding on the material presented in NEEMO School 1. As an ONLINE School, we miss the interactions we may have during the exercise and conclusion part. Hence a concluding video about your insights, your calculations, your continuous interest, and feedback especially related to the School and what your expectations are for future Schools, Technology and Research would be a great way for us to get to know you and be informed. The videos may be available in Moodle to registered participants.

Latest announcements

Add a new topic...

Conclusion session update
18 Mar, 12:15 Somesh Bhattacharya

NEEMO School 1 Feedback form
18 Mar, 10:52 Somesh Bhattacharya

Conclusion Clip
18 Mar, 09:23 Brian Azzopardi

The NEEMO School booklet is now out for your viewing!
10 Mar, 16:49 Somesh Bhattacharya

Older topics ...

Upcoming events

There are no upcoming events

[Go to calendar...](#)

Administration

- Course administration
 - ⚙ Edit settings
 - ✎ Turn editing on
 - 📊 Course completion
 - 👤 Users
 - 🔍 Filters
 - 📄 Reports
 - 📅 Gradebook setup
 - 🏆 Outcomes
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 - 📁 Backup
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 - 📥 Import
 - 🔄 Reset
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Monday 15th March 2021

Session 13:30 - 15:30 MS Teams Link

Session 16:00 - 18:00 MS Teams Link

Welcome Notes

NEEMO School_ Welcome and Lecture 1-20210315_133051-Meeting Recording.mp4

Electric Mobility: A case for Maltese Islands (Brian Azzopardi)

The Maltese Islands have been a case study for electric mobility since early in the millennium. The Islands offer unique characteristics for electric mobility due to their size and their modest terrain as well as their electrification throughout the island. This lecture will focus on the lessons learned through a number of projects that have been ongoing since early 2001 including the required maintenance and monitoring of fleets.

Brian Azzopardi is Senior Lecturer II at Malta College of Arts, Science and Technology (MCAST), Visiting Senior Lecturer at the University of Malta (UM) and Consultant. Since 2011, I held senior academic and research positions in the United Kingdom and Lithuania, and have served the industry, governments agencies and ministries and research as of 1998. Dr Azzopardi is Senior Member IEEE and member of The IET, EI, RSC and Chamber of Engineers. In 2008 he received the Eur. Ing. title followed by the CEng and the EI Chartered Energy Engineer titles in 2012. In 2002, he received the BEng(Hons) from UM and PhD from The University of Manchester in 2011. I also received teaching and pedagogical qualifications from MCAST (2008) and PGCE from Oxford Brookes University (2012). He is the editor and co-author of two books, 100+ research papers in peer-reviewed impacts listed journals and conferences, and invited speaker.

Figure 2: MOODLE Platform snapshot for the NEEMO School

Grant Agreement: 857484

Day 1 - 15th March 2021

Introduction to the School (Brian Azzopardi)

Dr Ing. Brian Azzopardi, Coordinator of NEEMO, introduced the NEEMO project and School, partners, MCAST Energy and distinctive speakers. Hon. Dr Owen Bonnici, The Minister for Research, Innovation and the Coordination of the post-COVID-19 Strategy, gave a welcome address, followed by Ing. Stephen Sammut Director of The MCAST Institute of Engineering and Transport. Figure 3 shows a snapshot of the Introduction Session. Finally, NEEMO coordinator appealed for the attendees to join in the NEEMO Moodle VLE and participate actively in the online Forums and wished the participants for an exciting and fruitful school and asked.

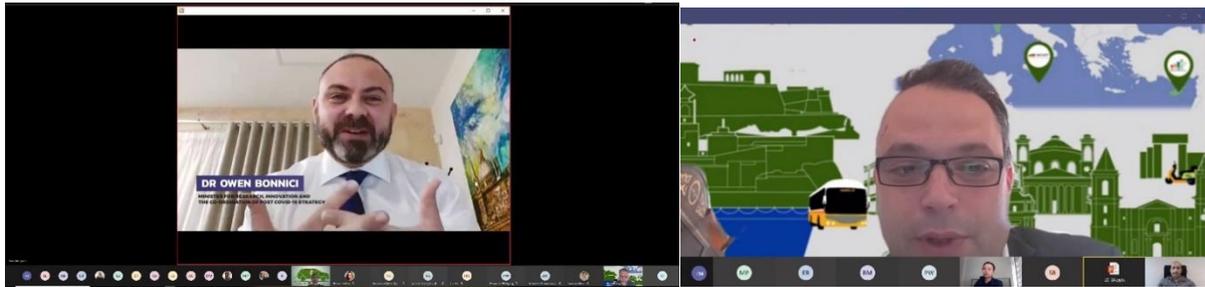


Figure 3: Hon. Owen Bonnici (left) and Dr Ing. Azzopardi (right) during the Introduction session

Electric Mobility: A case for Maltese Islands (Brian Azzopardi)

This lecture provided an overview of the first Maltese Islands case study for electric mobility since early in the millennium. The lecture outlined the Island unique characteristics for electric mobility due to its size and its modest terrain, and its electrification throughout the Island. This lecture helped the candidates focus on the lessons learned through several projects that have been ongoing since early 2001, including the required maintenance and monitoring of fleets. Dr Ing. Brian Azzopardi, during the first lecture of NEEMO School 1, is shown in Figure 4.

NEEMO
Networking for Excellence in Electric Mobility Operations
www.NEEMO.project.eu
@NEEMOproject

FIRST EV PILOT PROJECT IN MALTA

Clean Transportation Concepts and Successful Implementation of Electric Vehicles in Malta
Brian Azzopardi, Joseph Catta, Edward Malin, Klaus-Dieter Metz

Abstract
In 2001 a company (EVM Ltd.), with a small team of engineers and electric vehicle experts, was set up to meet an ambitious plan to introduce proven electric vehicles in Malta. The initial aim focused on the basis of two main characteristics of electric vehicles: limited range and impact of low temperatures on battery pack performance. The project started with a one-year test period of BEVA electric vehicles to evaluate the suitability of EVs on this small island. After this successful test period the vehicles could be commercially introduced. This paper describes the activities of EVM Ltd. in the implementation of electric vehicles and projects on two islands and its relevance to the public. An important part of the presentation is focused on the present activities and work required before international-friendly electric cars is introduced.

Keywords: Battery, EV (Electric Vehicle), ICE (Internal Combustion Engine), Size of Charge (SOC)

Introduction
Malta is a small island located in the central Mediterranean, with a typical southern European climate of hot summers (30°C) and mild winters (17°C). The main island is 33km in length and less than 13km in width, with a highly irregular coastline, a 1,100 km² in highest point. The flat areas lie in the center and on the rest of the island.

There is a high degree of car ownership and extensive car use, bringing about traffic congestion and acute parking problem. The average daily travelling distance is under 50km, made up in three or four journeys, each about travelling distance, together with the type of climate make Malta suitable for EVs.

After selection of Malta as the test area, the commercial agent was considered in terms of cooperation points of electric vehicle and operation costs. The most suitable vehicle, fulfilling the market requirements and in addition offering a certain comfort, was the BEVA electric car manufactured in Shanghai, India. One important point in favour of this choice was the fact that this vehicle has been thoroughly tested under various road conditions and extreme temperatures.

The mission was given to a company group that runs a car service station (for car hire business) and also a computer network department (for building fire or computer sales). The selection of the right partner was ultimately in support for daily running and maintenance of the car. The electrical system support, based on information from the car on-board computer management system transmitted by the internet, is provided by the electrical engineers of EVM. The EVM team has organized and guided the proper operation of the service facilities for BEVA.

System Overview
The main functional blocks of the BEVA car are shown in figure 1: charge, controller, energy management system, battery and DC motor.

The DC Diesel Separately Excited Motor has a continuous rating of 4.13V and a peak rating of 11.8V. The motor is controlled by a microprocessor-based, three-quadrant motor controller rated at 48V, 40A. The motor controller can be found in the required drive and braking arrangements and it is

Legend
→ 48V / 12V Supply Links
→ Communication / Signal Links

MCAST
Malta College of Arts, Sciences & Technology

AIT
Institute of Applied Information Technology

C2A

The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 857484

Figure 4: Dr Ing. Azzopardi delivering lecture

Formalisation of Game of Players in Electric Mobility Market (Florian Selot)

This work, carried out at the INES, uses its technological platform to manufacture cells and modules and its software platform to simulate the behaviour of a future grid with renewable energy sources and storage and consumption equipment. As part of the research to anticipate the problems of integration in the grid, Florian Selot at the INES addresses the formalisation and modelling of the French electricity balancing market. This lecture presented the primary results of this work on the formalisation through a use case: the synchronisation of electric vehicles and variable renewable energy sources. Florian Selot from CEA during his lecture is shown in Figure 5.

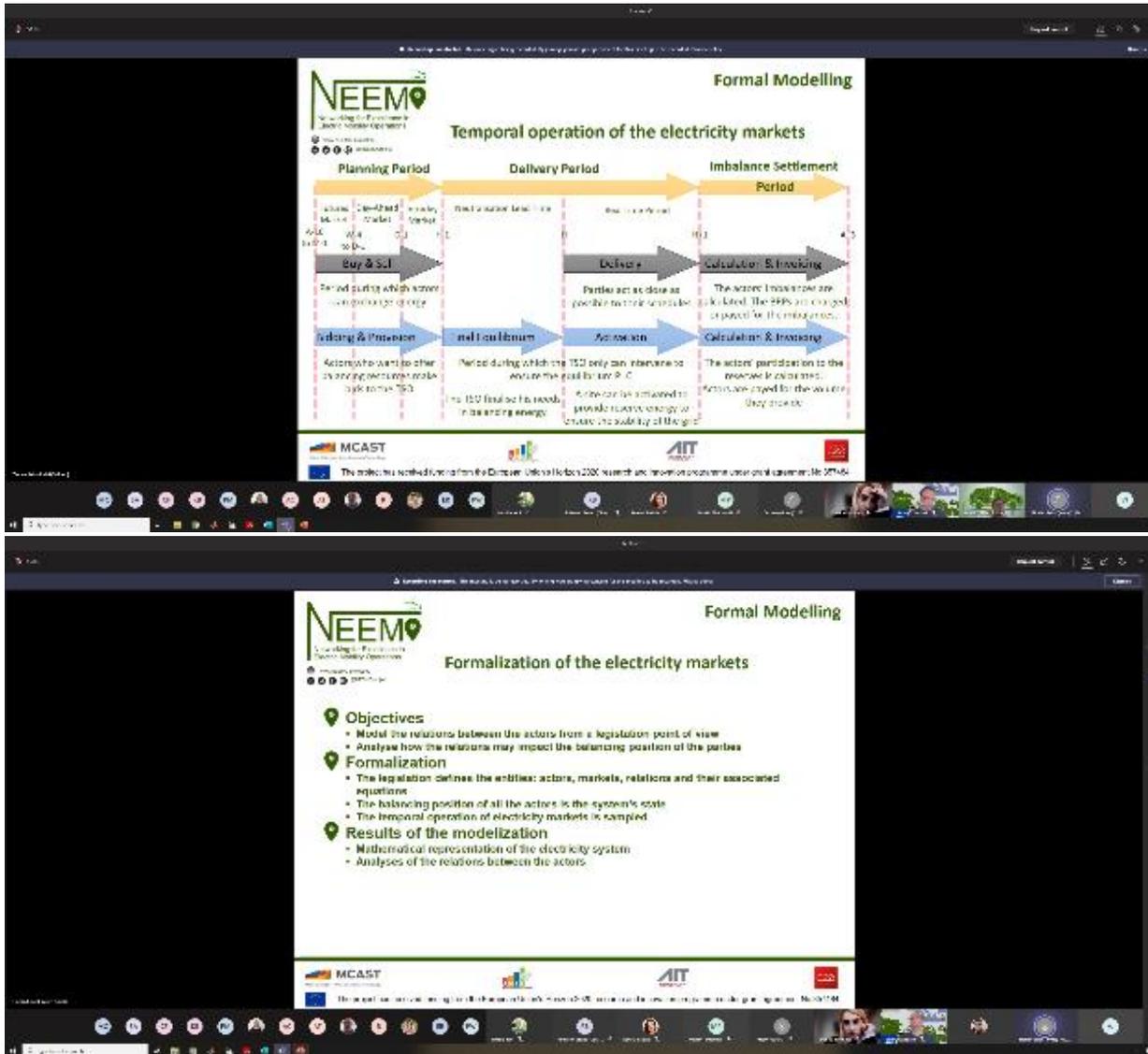


Figure 5: Florian Selot from CEA delivering lecture

Urban mobility & new city trends vs electric vehicles (Emilia Romero)

Highlights of the keynote: New mobility solutions share the same challenges globally, while each city has its particular needs. Malta receives approximately 2.5 million tourists per year, thousands of English language students, and, as a European centre for iGaming, it is also attracting an increasing influx of foreign workers. This phenomenon causes massive overpopulation during the summer months, in an island that also needs to import 80% of the food and essential products. For all these reasons, this lecture focused on solutions aligned with the trends of cities that combine governance, digitalisation and new business models for the movement of people and last-mile delivery of goods. This approach includes selecting suitable vehicles for travel purpose. It further considers technological maturity and the challenges that are opening up concerning implementation. Figure 6 shows Snippets of the keynote by Emilia Romero from APPLUS IDIADA.

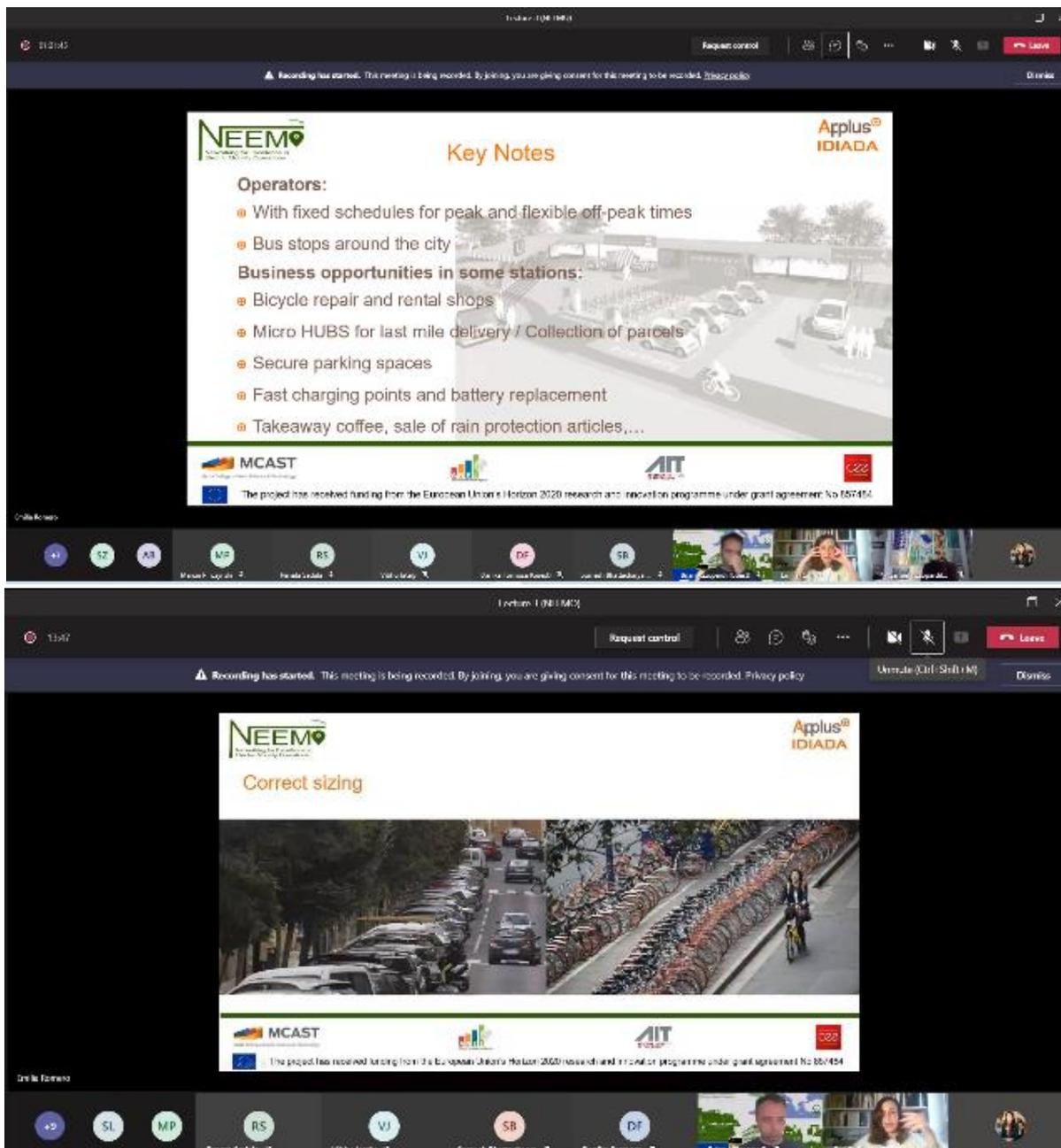


Figure 6: Snippets of the keynote by Emilia Romero from APPLUS IDIADA

Grant Agreement: 857484

Electric Mobility in Cyprus (Eleftherios Loizou)

Highlights of the lecture: One way to ensure the security of energy supply and broad use of renewable and carbon-free energy sources in the transport sector is to manage electricity as an energy vector for vehicle propulsion. This approach offers substitute oil with oil a wide diversity of primary energy sources. Eventually, this approach becomes even more important in islands where the access to oil is not direct. Islands in the Mediterranean are wealthy in natural resources used to achieve this task. This keynote speech presented Cyprus's approach to dealing with this matter and the national/local initiatives. Figure 7 shows Eleftherios Loizou giving insights on e-Mobility in Cyprus.

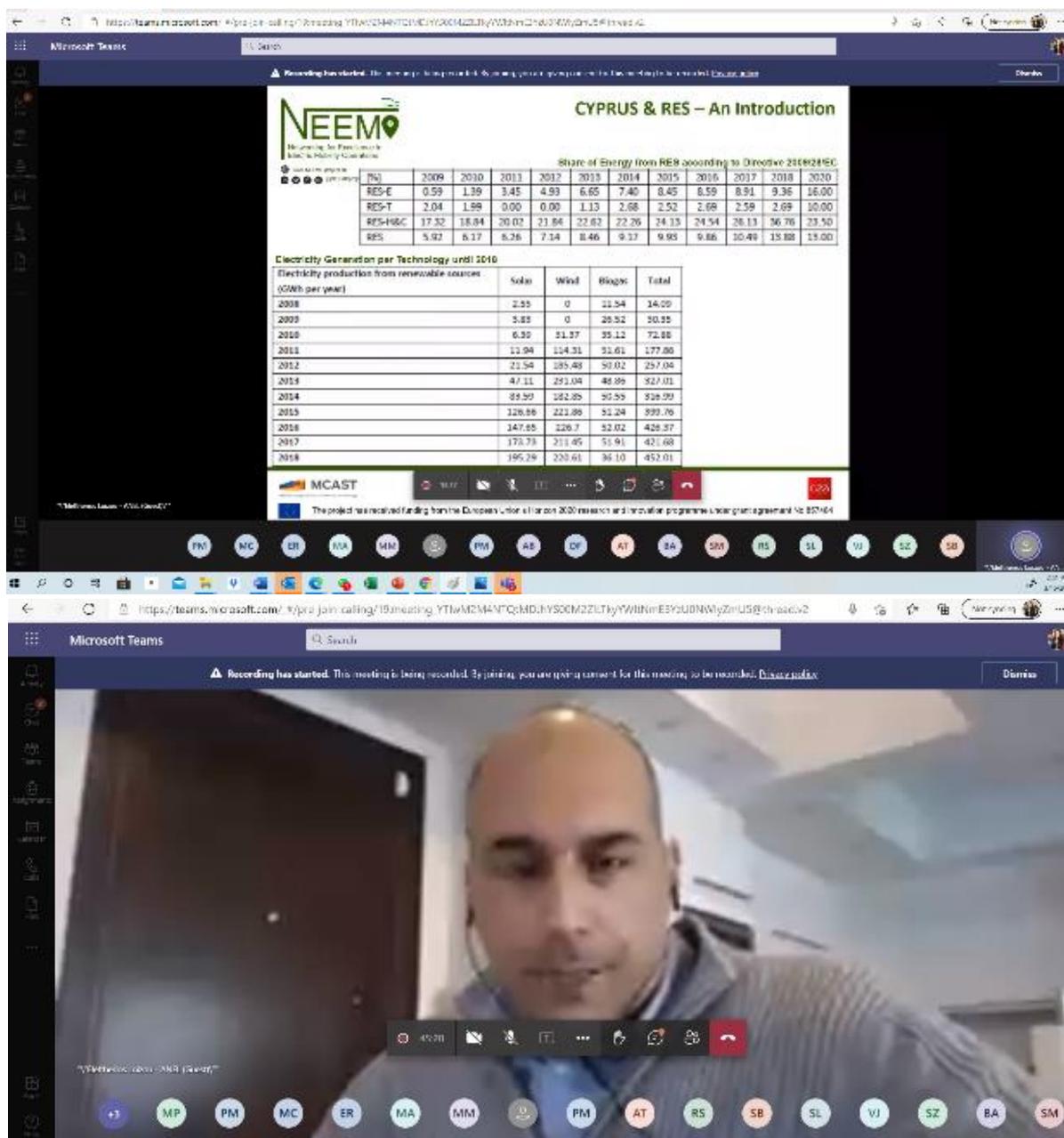


Figure 7: Eleftherios Loizou giving insights on e-Mobility in Cyprus

Stakeholders' Session (Suzanne Maas)

The EIT Urban Mobility hub was introduced as a potential stakeholder to the NEEMO project during the School session. Some opportunities such as EIT Jumpstarter, EIT Climate KIC accelerator, EIT urban mobility matchmaking days and innovation calls were highlighted during the stakeholder discussion. The mobility hub for Malta was also introduced as the Valletta Design Cluster, an innovation partner and a Community creative hub. Some snippets of the session can be seen in Figure 8.

EVoVe: Smart Charging at CEA (Bruno Robisson)

Key highlights: The CEA is established in nine centres spread throughout France. The CEA has installed large-scale electric vehicle charging infrastructures (EVCI) in its main research centres. The EVCI of Cadarache, near Aix-En-Provence, comprises more than 80 22kW-charging points spread over 30 zones. This EVCI was set up in 2016 and currently supplies more than 200 vehicles, including taxis, service vehicles, and employees' vehicles. This infrastructure constitutes one of the largest private EVCI in the region. As part of an R&D project, the CEA will synchronise the consumption of a fraction of the EVCI of Cadarache (about 20 charging points spread over five zones) with the production of the Mégasol solar photovoltaic plant located near the research centre. This lecture presented the method that is applied to carry out these experiments and described the main results. Figure 9 shows Bruno Robisson presenting the Smart Charging system at CEA Cadarache.



Figure 8: EIT Urban Mobility hub as a potential stakeholder to NEEMO Project

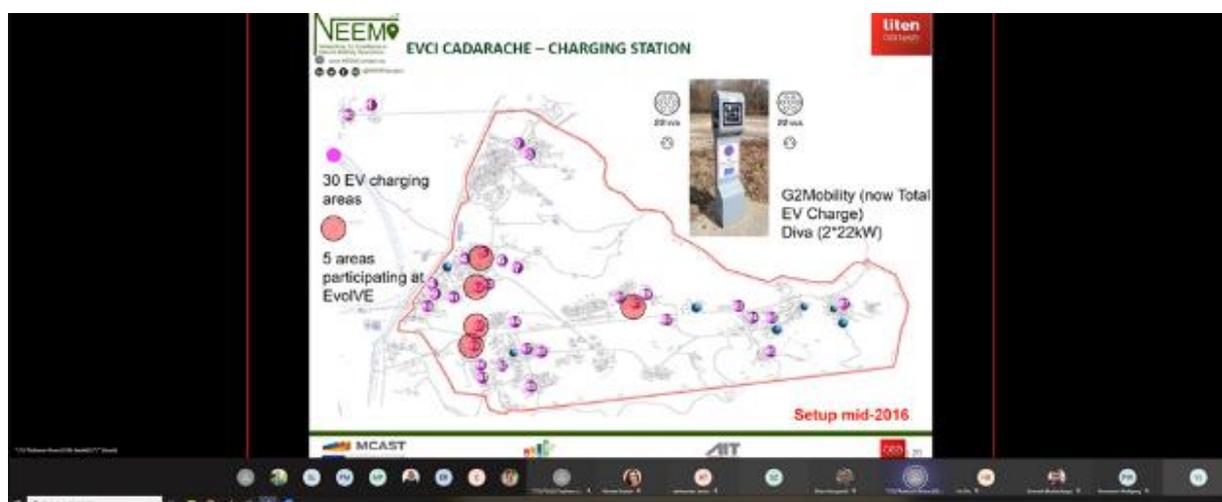


Figure 9: Bruno Robisson presenting the Smart Charging system at CEA Cadarache

From mobility towards e-Mobility (Exercise Session by Matthias Prandtstetter)

This exercise aimed to learn essential data analytics methods to process mobility data and optimisation methods to plan infrastructure for e-mobility. In a case study example where raw mobility data is given (e.g. from GPS trackers), the first step is to apply filter, folding and processing techniques to capture the mobility demand for a certain period. Mobility demand is a key factor in analysing the supply side's needs, i.e. fleet composition and charging infrastructure. The ideal locations for charging stations can then be optimised by applying operations research methods. Following that, the participants learnt basic methods for visualising the results.

The exercise started with a presentation session where problem description and the methodologies will be shown. The school participants participated in small groups/ solo to apply the methods and solve some tasks. Finally, the group results were presented. Figure 10 summarises some snippets from the exercise session by Matthias Prandtstetter.

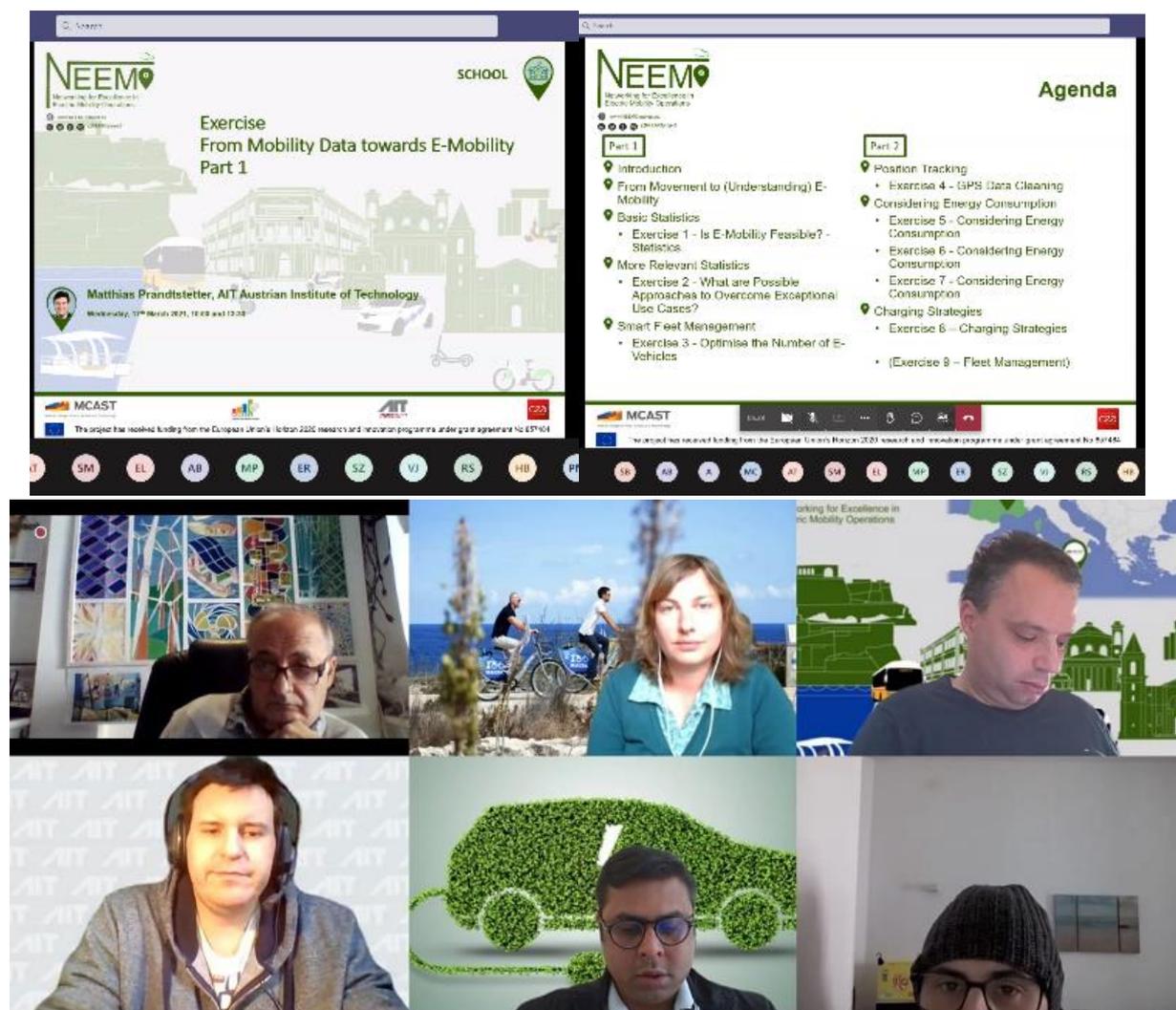


Figure 10: Exercise session by Matthias Prandtstetter

E-Car Sharing: Operational Planning and Optimisation (Bin Hu)

Highlights of the keynote: Free-floating car-sharing systems are the current state-of-the-art method of public vehicle sharing concepts. Making them electric further contributes to lowering the local emissions in the urban area. However, car-sharing systems generally impose complex strategic and operational challenges due to the spatial and temporal imbalance of the mobility demand. This keynote, Figure 11, presented a simulation method to plan and optimise a self-sustainable electric car-sharing system concerning vehicle fleet size, charging infrastructure, and monetary user incentive policies. A different approach was also presented that a data-based optimisation approach optimised the area of operation for free-floating car-sharing systems. By using data extraction methods, mobility demand data is filtered to extract those that can be reasonable for car-sharing systems. Then a mixed-integer programming approach maximises the number of trips that can be fulfilled in the system.

History of (E-)Car Sharing

- First projects started in 1970s and 1980s, but not very successful and short-lived
- Real boom since 2000 with big players such as Avis, Hertz, Enterprise, Zipcar, ...
- Free floating system since 2005 by VULOG, car2go started in 2008

Systems:

- Station-based (roundtrip)
- Free-floating (one-way)
- Peer-to-peer
- Fractional ownership

U.S. Carsharing Memberships

Year	Memberships	Memberships Predicted
2002	~50,000	~50,000
2003	~60,000	~60,000
2004	~70,000	~70,000
2005	~80,000	~80,000
2006	~100,000	~100,000
2007	~150,000	~150,000
2008	~200,000	~200,000
2009	~250,000	~250,000
2010	~300,000	~300,000
2011	~400,000	~400,000
2012	~500,000	~500,000

EV's Range and Price Problem

Based on Wright's Law, EV sales will 20-fold from 2.2 million (2020) to 40 million units (2025)

The more we produce, the cheaper it gets!

Li-Ion Cost Decline Model

Cumulative kWh Produced	Modified Cost Decline (USD/kWh)	Forecast Cost Decline (USD/kWh)	Reported Prices (USD/kWh)
100	~\$100	~\$100	~\$100
1,000	~\$80	~\$80	~\$80
10,000	~\$60	~\$60	~\$60
100,000	~\$40	~\$40	~\$40
1,000,000	~\$25	~\$25	~\$25
10,000,000	~\$15	~\$15	~\$15

Vehicle Prices

Year	Toyota Camry (USD)	2016-Mile Range EV (USD)
2019	\$24,000	\$50,000
2021	\$25,000	\$39,000
2023	\$26,000	\$26,000
2025	\$24,000	\$18,000

Figure 11: E-Car Sharing concepts by Bin Hu

The Road to Zero Emissions for Urban Deliveries (Verena Ehrler)

Key takeaways from the keynote: More and more cities struggle to ensure that targeted air quality levels are reached. Urbanisation is one of the megatrends of our times, and more and more people live in cities, move around cities need to be supplied with goods, and their waste needs to be collected and disposed of. Electric vehicles are one of the solutions which are considered as an option to improve air quality in urban areas as they do not cause local emissions. Even though this propulsion technology is developed over 100 years ago, electric vehicles are scarce, even in city centres.

A few questions answered within the keynote were:

- Why is this the case, that they are scarce?
- What needs to happen to increase the use of electric vehicles for urban deliveries?
- Are electric vehicles the solution to achieve zero-emission urban deliveries?

The lecture answered the development of electric propulsion for delivery vehicles, Figure 12. Based on recent and ongoing piloting projects in logistics, urban delivery and courier services and municipal waste services, carried out jointly by industry and research, the advantages and challenges from the conception of new logistics concepts to the operational implementation are discussed. This includes innovative distribution structures developed and tested in connection with new vehicle concepts and propulsions, user acceptance experienced, and unexpected insights gained. Requirements for the realisation of zero-emission urban deliveries are mapped out, and an outlook on a pathway for future zero emissions were discussed.



Figure 12: Keynote by Verena about the road to zero emissions

Final NEEMO School 1 Session

Address (Live) by Hon. Dr Miriam Dalli

Keynote by Wolfgang Ponweiser

Closing Session

In the final session, Hon. Dr Miriam Dalli, Minister for Energy, Enterprise and Sustainable Development, made a live keynote address about the activities and upkeep of Electric Mobility in Malta. She emphasised the importance of such projects in making people aware of the challenges and possible solutions to achieving e-mobility more market in Malta. Some snippets of her presence during School can be seen in Figure 13.

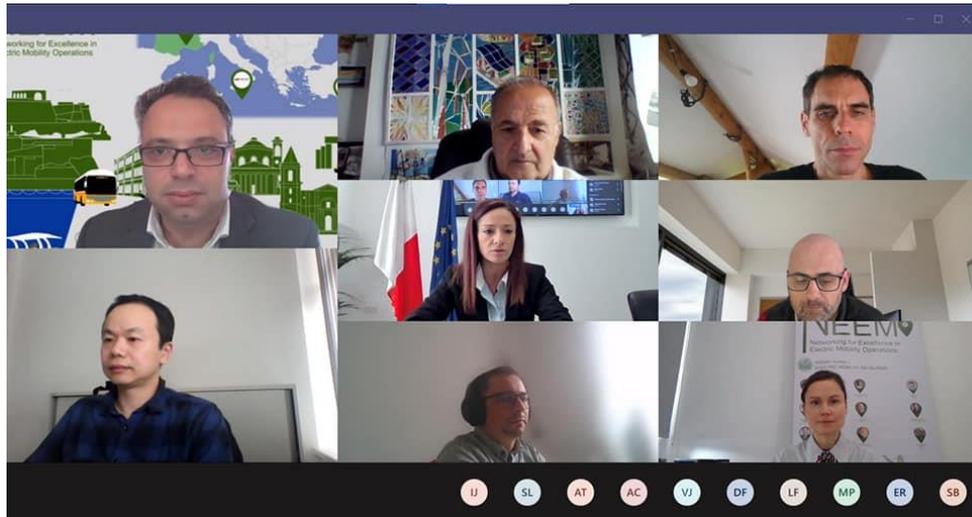


Figure 13: Hon. Miriam Dalli addressing live the NEEMO School

European Research Landscape of e-Mobility (Wolfgang Ponweiser)

Highlights of the lecture: The European research agenda is in the transition from the former EU Framework Program "H2020" to its new one called "Horizon Europe", which is active from 2021 till 2027. This talk, Figure 14, presented an overview of the most important initiatives and actions regarding research and innovation in the field of electric mobility. This overview covers partnerships between the European Commission and the private sector like the 2ZERO partnership, funding programs and opportunities to network and lobbying topics like the special conditions at islands. Furthermore, he discussed the options for single persons (students, professionals) and organisations of all kinds of stakeholders to get involved.

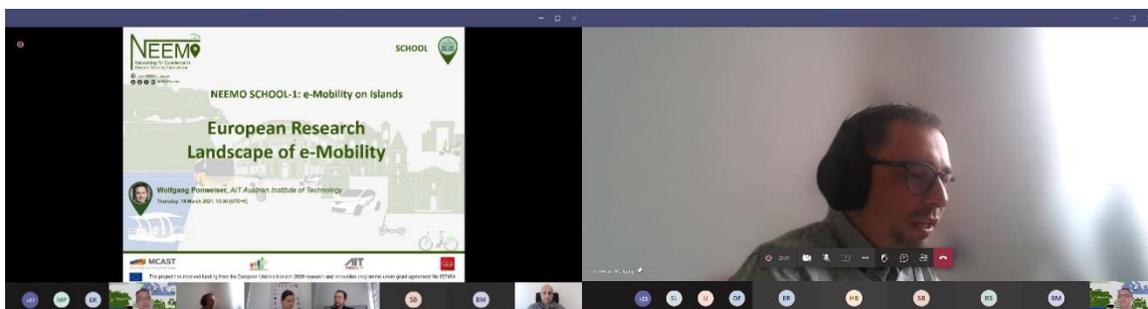


Figure 14: Keynote by Wolfgang Ponweiser about possible participation in Horizon Europe

Closing Session (Brian Azzopardi)

The NEEMO School 1 was summarised and closed by Dr ing. Brian Azzopardi, coordinator NEEMO Project. Some highlights and summaries were also given by Dr Bin Hu, from AIT as Work Package Leader on Knowledge Gain in the NEEMO project. Some social media parameters were highlighted, which showed the traffic when the School was live, Figure 15.



Figure 15: Brian Azzopardi addressing the summary for the first NEEMO School

Other School Highlights

Catering provided to local participants

As the first NEEMO school activities were restricted because of the COVID-19 regulations, the School managed to provide the local participants refreshments at the comfort of their homes/offices. The School hosting was initially scheduled at Urban Valley resorts and Spa, where the catering was prepared for the registered local participants. Figure 16 shows this highlight.

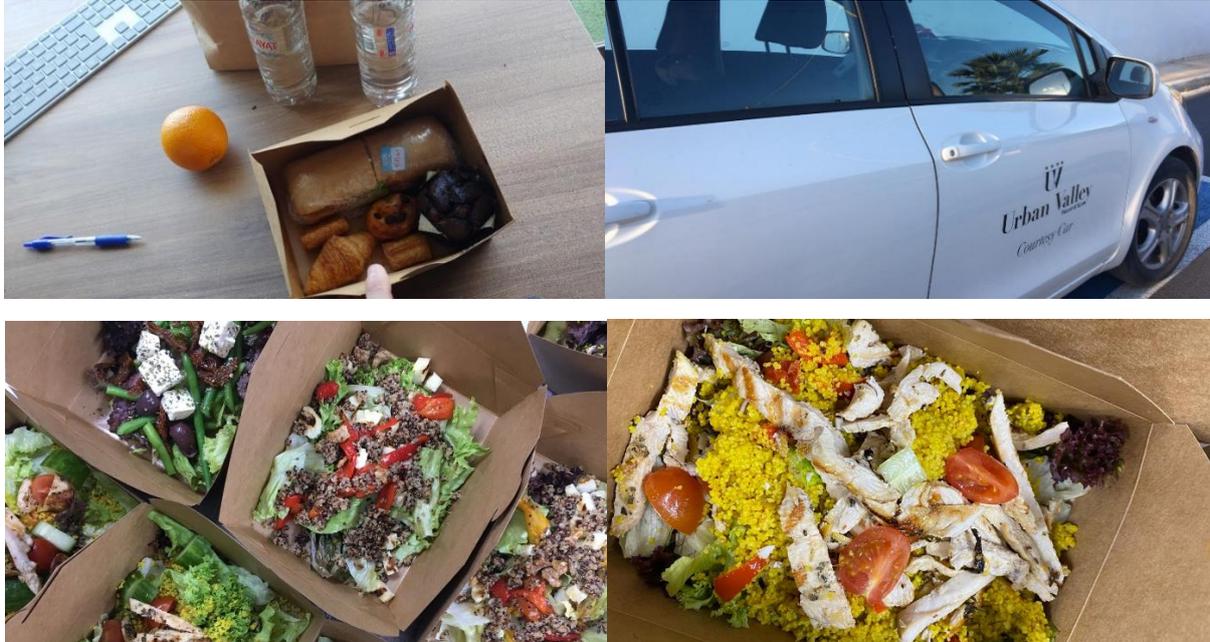


Figure 16: Meals received to local participants during the 1st NEEMO School

Recordings, Vodcast and Livestreaming

All school activities are recorded, and participants have access to all recordings via Moodle. The livestreaming option was not open to the public as a fully online school.

The School Statistics & Feedback

The following are a summary of the School Statistics:

The School had 38 participants and two Malta Government Cabinet members.

11 Female | 27 Male

9 Speakers | 1 Stakeholder(s) | 28 Candidates

22 MCAST | 3 AIT | 2 ANEL | 2 CEA | 9 OTHERS

15 undergraduates | 14 post-graduates | 9 PhD holders

23 Electrical Engineers | 6 Environmental Engineers | 4 Computer science engineers | 5 Management positions

24 Malta | 4 Austria | 2 Cyprus | 3 France | 1 India | 1 Jordan | 1 Rwanda | 1 Spain | 1 Tunisia

Hon. Dr Owen Bonnici, Minister for Research, Innovation and the Coordination of Post COVID-19 strategy, addressed the introductory session on the 15th of March 2021. He referred to the need for rigorous studies for the proliferation of electric mobility in Malta on a larger scale in his address. He emphasised how the NEEMO School will help develop a basis for the Maltese stakeholders to obtain a broader technology outreach.

Hon. Dr Miriam Dalli, Minister of Energy, Enterprise, and Sustainable Development, addressed the closing day of the School on the 18th of March 2021. She addressed the School with the latest developments in Malta related to the proliferation of PVs and energy storage in the form of hybrid inverters and how the government is working towards the ease of business to promote renewables on the Island and on electric mobility integration.

During the first NEEMO School, the social media presence was palpable, with higher traffic from the 15th till the 18th of March 2021. Some of the keynotes and the ministerial addresses, and their online reach can be seen in Table 2.

Table 2: Social media engagement statistics during the first NEEMO School

Date	Keynotes/Sessions	Facebook 'reach' and 'engagement rate' (percentage of the total followers)	LinkedIn reach
15/03/2021	Introduction Session		
	Keynotes by Brian Azzopardi and Florian Selot Welcome Address by Hon. Dr Owen Bonnici	327 and 36%	11
16/03/2021	Keynotes by Emilia Romero, Eleftherios Loizou, and Bruno Robisson	547 and 64%	31
	Stakeholders' session led by Suzzane Maas		
17/03/2021	Keynote by Bin Hu	528 and 17%	8
	Exercises led by Matthias Prandtstetter		
18/03/2021	Keynote by Verena Ehrler, and Wolfgang Ponweiser	667 and 44%	18
	Closing Address by Hon. Dr Miriam Dalli		
	Closing and feedback session		

Participants of the School provided constructive feedback through an online form developed by the MCAST Energy Research Group, as shown in Figure 17. The School provided all candidates with an excellent opportunity to learn about electric mobility on islands, particularly driving habits and islands drive cycle-related topics and sub-topics, including an online exercise and the opportunity to collaborate with peers present within the School for future research and publications.

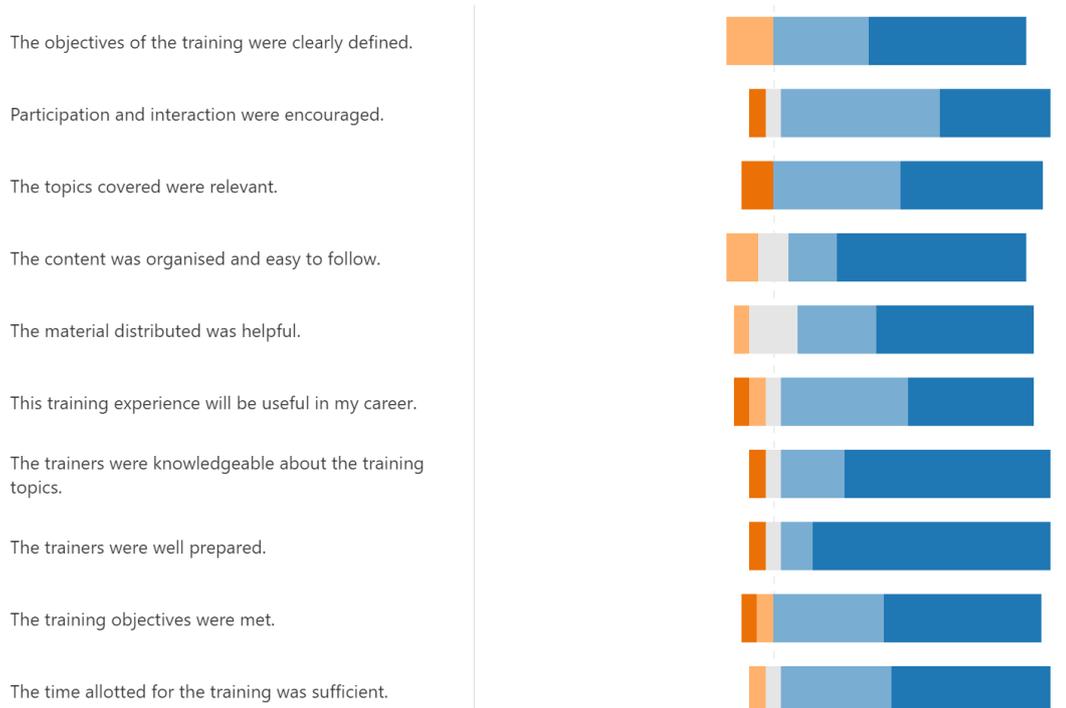
Some of the kind feedback received by the delegates are:

1. *Very good organisation*
2. *Adequate information*
3. *Had fun knowing new things about eco-friendly cars*

1. Please indicate your level of agreement with the statements listed below

[More Details](#)

■ Strongly disagree
 ■ Disagree
 ■ Neutral
 ■ Agree
 ■ Strongly agree



2. Organisation

[More Details](#)

■ Strongly disagree
 ■ Disagree
 ■ Neutral
 ■ Agree
 ■ Strongly Agree

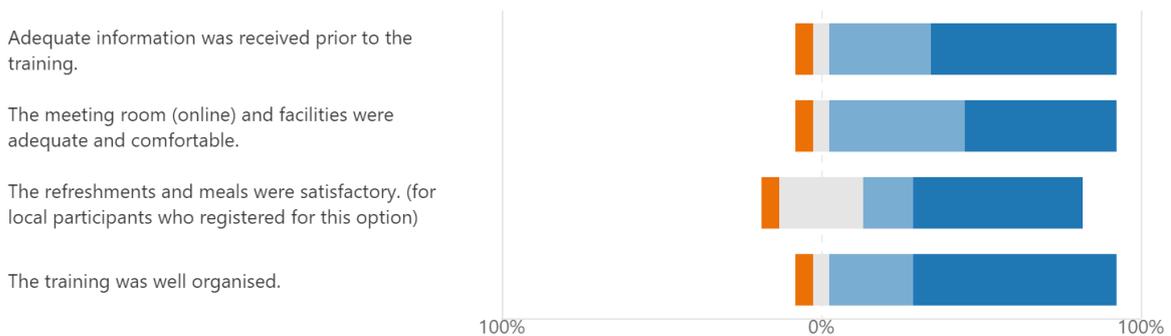


Figure 17: The Feedback provided by the participants.

4. *The school program was well organised and the topics of the lecturers were well focused*

The participants also provided valuable testimonials on the NEEMO School 1. Some of the testimonials are given below:

"During this conference, I learnt a lot about various aspects of EVs through the studies and research presented. This is invaluable to my own research and gives me the opportunity to explore other areas related to my own studies."

"It's great pleasure to be part of this training, it was well delivered and helpful in all aspect from the EV charging, operational and it's manageability. It help me to understand more about EV and it usefulness to an island country like mine and how environmental friendly it could be compared to emission vehicles" - Ismaila Joof, MCAST Student.

"The program was well targeted for my interest and the case studies for electric mobilities explained better the importance of such studies. The course helped me to improve my knowledge in the electrical mobility research, related to the latest integration of technologies, modes and operations" – Carmel Azzopardi, former Lab Technician, University of Malta.

"The NEEMO School offered a great opportunity to learn more about the latest insights from research and practice on the promotion of e-mobility, specific to the situation on the islands of Malta and Cyprus, and provided a hands-on opportunity to learn more on how to use data for e-mobility planning." - Suzanne Maas, Research & Project Manager, EIT Urban Mobility Hub Malta, MCAST.

Conclusion

As the first NEEMO School, the training and activities have been a success from the number of participants, and the feedback received. Some improvements may be required, including the enhanced facilities where the School will be held and more hands-on time for participants and interactions. The in-person participation would undoubtedly improve the outcome of the School. We are planned and continue to interact with the local Electric Mobility stakeholders from vehicle dealers, services and policymakers. An in-person School would undoubtedly have provided more interaction opportunities.

The following Schools are scheduled for November 2021 and October 2022.