

ELECTRIC MOBILITY (EM) WORKING GROUP MEETING

7 February 2022
3.00 pm – 4.30 pm

180 Kitchener Road, #06-10, City Square Mall (Sky Park), Singapore 208539

No	Name	Company	Signature
1	Sanjay Kuttan	Global Centre for Maritime Decarbonisation	Present
2	Keenan Kuah	Beep Technologies Pte Ltd	Present
3	Sherman Lee	Beep Technologies Pte Ltd	Present
4	Yatin Premchand	Black & Veatch Singapore Pte Ltd	Present
5	Ashish Anilan	Bureau Veritas Singapore	AWA
6	Eng Yew Yeoh	Bureau Veritas Singapore	Present
7	Kes Shotam	Climate Resources Exchange International Pte Ltd	Present
8	Vinod Kesava	Climate Resources Exchange International Pte Ltd	Present
9	Anurag Chatterjee	DNV Singapore Pte Ltd	Present
10	Douglas Duncan	Durapower Technology (Singapore) Pte Ltd	Present
11	Edouard Lavillonniere	EDF HQ Singapore Pte Ltd	Present
12	Jian Ming Cheang	EDF HQ Singapore Pte Ltd	AWA
13	Justine Yuan	EDF HQ Singapore Pte Ltd	AWA
14	XueQi Miao	EDF HQ Singapore Pte Ltd	AWA
15	Joseph Tan	Energreen Technologies Pte Ltd	Present
16	Hans van Mameren	Energy-Renewed Pte Ltd	Present
17	Patrick O'Shea	England & Company	Present
18	Syed Mubarak Abdul Razaak	Eps (S) Pte Ltd	Present
19	Abhishek Kaul	IBM Singapore Pte Ltd	Present

No	Name	Company	Signature
20	Michael Brouwer	Impiro Pte Ltd	Present
21	WeiXuan Wang	Lindenberg Energy Solutions Pte Ltd	AWA
22	Peter Ng	Narada Asia Pacific Pte Ltd	Present
23	Alex Ng	Orcades Marine Asia Pte Ltd	Present
24	Jia Hui Lau	Schneider Electric Singapore Pte Ltd	AWA
25	Jia Hau SIN	Schneider Electric Singapore Pte Ltd	Present
26	Zulkhairi Pasuni	Sembcorp RECs Pte Ltd	AWA
27	Kian Heong Tan	SMRT	Present
28	David Koh	Sumitomo Mitsui Banking Corporation	AWA
29	Made Putra	Teale Asia	AWA
30	Shuo Xian Tan	TotalEnergies	Present
31	Hafiz Haslir	TUV SUD PSB Pte Ltd	Present
32	Srinivas Tati	Yinson Green Technologies Pte Ltd	AWA

No.	Agenda	Action by
1	Welcome and introduction by SEAS Executive Director, Kavita Gandhi (KG) on formation of Electric Mobility Working Group and brief sharing of SEAS activities.	
2	<p><u>Welcome and introduction by Chairman, as well as members introducing themselves.</u></p> <p>Electric Mobility Chairman, Dr Sanjay Kuttan (SK), proceeded to explain the purpose of the meeting, which is to discuss the activities for the working group and the issues that members would like to see being addressed in this working group.</p>	
3	<p><u>Proposed Terms of Reference</u></p> <p>SK shared the TOR and asked for feedback from the members.</p>	Secretariat to share final TOR with members – Annex 1
4.	<p><u>Proposed Activities and gathering of feedback</u></p> <p>SK proposed one of the activity of the working group is to help LTA paint the vision of Smart City and to picture what Singapore’s electric mobility ecosystem will look like and where members could fit in.</p> <p>SK also suggested that we should articulate the narrative for the government to hear us out. The idea is to use the Smart City platform to testbed and demonstrate member technologies in Singapore and build members’ business regionally.</p> <p><i>Suggested action: Advocacy with LTA and use JTC platform to testbed.</i></p> <p>SK proceeded to explain the other proposed activities and asked for feedback and comments.</p> <p><u>Issues that members brought up:</u></p> <p>A. Advocacy on issues such as:</p> <ul style="list-style-type: none"> ▪ Price and affordability <p>The increasing prices which will impact building, charging infrastructure, and vehicle owners and how to manage the cost to make EV affordable for the public.</p> <p>Separate category for COE for electric vehicles as the high cost of COE does not encourage individuals to purchase electric vehicles</p> <ul style="list-style-type: none"> ▪ Pilot projects <p>Partner with government bodies and institutions in finding testbeds for pilots that can be used to show to the region.</p> <p>Transparency of LTA sandboxes: To explore working with LTA on curating and defining sandboxes</p>	

- Building owners

Electricity supply and load management after the growth of EV might not be able to handle the surge of demand in the future.

- Cost of upgrading

The demand for smart charging might impact the upgrading of the grid and require Professional Engineers (PE) to certify them. PEs are very costly and are in short demand and caused the added increase for charging operators.

It was suggested that perhaps prices for LEWs can be regulated for the consultation / certification to keep the cost reasonable.

KG shared that SEAS will be discussing this with EMA as this problem is also faced by SEAS' solar and energy efficiency / ESCOs members.

- Battery Repurposing

The working group also highlight business opportunities of battery recycling. More study should be done to identify use cases as each part of the ecosystem has different use cases that we could dissect to address the challenges and tackle with solutions. By being pro-active on this, we can avoid it being a problem like how it is now for plastics.

- Battery Swap as a potential solution

Encourage battery-as-a-service or battery swap to consumers since space for infrastructure is a constrain. However, the issue is that manufacturers have specific battery size, technology, and different factors, so this solution is only relevant when deployed as a fleet.

- EE of EV system
- Charging infrastructure for other vehicles

In the future, encouraging the use of public transportation would be the norm so most of the charging infrastructure should cater for them and the commercial vehicle industry but the infrastructure needed is different than what is being planned for private vehicles now.

Chairman suggested to paint what the future will look like in stages - 2030, 2040, 2050 to see where the gaps are between today and the future and address the issues of the future of transportation in a shared economy.

B. Training

	<ul style="list-style-type: none"> ▪ Lack of consumer education <p>a. Introduction of technology to end user - Some consumers would be keen in changing their ICE to EV if they knew the extent of how green their EV can be – Questions like where the electron comes from, how green it is, certifying the origin of the energy might encourage more adoption of EVs.</p> <p>b. Managing of current and existing buildings</p> <p><u>Action Items (Questions to ask members)</u></p> <ol style="list-style-type: none"> 1. What are the additional skills and knowledge you think is required to enhance the effectiveness of skill course and executing this project? What is missing? 2. What is the future going to look like in the various industries? 3. How do we have the conversation with the right parties? 	<p>Secretariat to create form for members to answer the questions and compile to share with members on the findings</p>
5.	<p><u>Next meeting date</u> KG shared that Secretariat is planning a Roundtable discussion on 10 May 2022. More details on the session will be shared closer to date after looking through the inputs sent by members.</p>	
6.	<p>As there were no other matters, the meeting concluded with thanks from the Chairman and participants at 4.30 pm.</p>	

Annex 1 – Draft Electric Mobility Terms of Reference (subject to inputs by members to SEAS Secretariat – by 15 March 2022)

1. To provide vision, direction and guidance in the development and implementation Electric Mobility ecosystem in and outside Singapore
2. Promote awareness of Electric Mobility through training development and capacity building
3. To work with all other committees on common thread of Electric Mobility opportunities
4. To engage and collaborate with the relevant government agencies, ministries, and industry associations both in Singapore and globally to implement the above-mentioned terms of reference.
5. Identify and promote commercial opportunities in the Electric Mobility industry

Annex 2 – References shared during the meeting

1. LTA Master Plan 2040

https://www.lta.gov.sg/content/ltagov/en/who_we_are/our_work/land_transport_master_plan_2040.html

Recorded by : Nur Asyiqin
Vetted by : Kavita Gandhi
Approved by : Dr Sanjay C Kuttan