

CIHT Dubai Seminar (Online) – Bulletin

Ahmed Samir Elbermbali, Gary West,
Dominic Taylor and Andrew Jenkins

Electric Vehicles – Prospects, Challenges and Opportunities
for the Roads Sector

About the Speakers

Ahmed Samir Elbermbali, Managing Director, MENA Clean Energy Business Council



Ahmed Samir Elbermbali is Managing Director of the MENA Clean Energy Business Council (CEBC). Prior to that he was Strategy and Operations Manager at CEBC for 2 years. CEBC, a membership non-profit organisation, is an NGO representing the private sector involved in the clean energy & clean technology sector across MENA. Ahmed is responsible for handling day-to-day operations including member communications, meetings, events and conferences.

Gary West, Managing Director of Future Mobility, General Motors Africa and Middle East



Gary West is responsible for the strategic planning and implementation of GM's Future Mobility technologies in the Middle East, in line with the company's vision of zero crashes, zero emissions and zero congestion. Gary brings extensive fleet management experience, working in diverse locations in USA, China and Singapore. During these assignments he was responsible for growth, commercial sales, business strategy and best practice implementation.

Dominic Taylor, Low Emission Mobility Lead, Arup



Dominic Taylor leads Arup's Low Emission Mobility advisory services and has delivered projects across public and private sector clients. His focus is on the infrastructure necessary to enable the decarbonisation of transport, including both electrification and hydrogen fuel cells. He has worked with the UK Department of Transport, OLEV, Transport for Greater Manchester & Sheffield City Region on EV charging needs and infrastructure strategies.

Andrew Jenkins, Transport Director, Arup, CIHT Dubai Membership and Development



Andrew Jenkins has 25 years' experience in the planning, design and operation of transport systems in the UK, UAE and internationally. He has developed his knowledge through collaboration with transport operators, developers, architects and master planners. Andrew leads the transport and economics work for large and complex urban area regeneration masterplans, including demand forecasting, data, design, interchange design and innovation.

Presentations

The World has begun a major transition in the way road vehicles are powered. Globally, cities are seeking to simultaneously maintain mobility, reduce their dependency on fossil fuels, improve air quality and reduce their carbon footprint in order to combat global warming. Governments are setting stringent emission limits and looking to achieve net zero carbon in road transport, driving great interest and investment in Electric Vehicles (EVs), alternative fuels and other automotive efficiency & energy reduction measures.

With global EV stock (excluding two and three wheelers) exceeding 8 million in 2019 and forecast to grow to between 140 and 245 million (IEA EV Outlook 2020) within a decade, in prospect is sustainable mobility without many of the

externalities & drawbacks of the Internal Combustion Engine. Whilst focus to date has been on cars and light vehicles, commercial vehicles such as buses and trucks are also starting to see accelerated growth.

Until recently, limited consumer choice, poor range and performance, high purchase costs and a lack of charging infrastructure made EVs uncompetitive for significant early market adoption and commercial mainstreaming. With manufacturers now investing heavily in research and new product development, and bringing attractive commercial applications to market, governments providing incentives, and public awareness of environmental issues growing, EV market take-up looks likely to increase substantially in coming years. For many, the mass adoption of EVs is now considered inevitable and is a question of "when" rather than "if".



This seminar from CIHT Dubai focused on prospects, challenges and opportunities for EVs, globally and in Dubai. The benefits and practicalities of EVs and associated infrastructure were discussed, as well as factors affecting EV take-up and how electrification supports other agendas such as Smart Dubai. The bigger picture of EVs and a low carbon transport future was also addressed.

Ahmed Samir Elbermbali – Managing Director, MENA Clean Energy Business Council

Ahmed began his presentation on *Electric Vehicles in the UAE: Challenges vs Opportunities* by introducing the Future Mobility Club which aims to support the automotive industry transition in UAE and wider region, in line with green mobility goals.

The current EV market in the UAE was described. This includes currently 5,000 EVs (two thirds of which are Teslas, but with nine other models now available), 750 public charging points offering free charging until 2021, free registration of EVs, free Salik, free public parking and other incentives.

The range of different EV models, performance and pricing is wide, but with competitive propositions developing fast. Government targets have been set to encourage take up of EVs and Hybrid vehicles with a 20% share by 2025 and 30% by 2030.

A CEBC survey gives a better understanding of the challenges facing developers and building owners in the inclusion and take up of EVs, and the challenges facing fleet operators and companies electrifying their fleets. A White Paper is due in early February.

Amongst the challenges faced are concerns over vehicle range, worries about EV prices, lack of EV infrastructure and high cost of electricity. It is clear from the CEBC survey there is a lack of awareness about the development of EVs & infrastructure. However, it is also clear that incentives to develop the EV use and supporting infrastructure are required from the public and private sectors.

Ahmed ended his presentation with a nod to the future by stating that personal computers seemed weird at first! EVs are in fact the ‘new normal’.

Gary West – Managing Director of Future Mobility, General Motors Middle East

Gary opened his presentation on the *Current of Smart Cities: Planning for Alternative Propulsion* by quoting Mary Barra, Chairman and CEO of GMC who expects there to be more change in the automotive industry in the next 5-10 years than the last 50.

By 2100 there will be more people living in cities than live on Earth now! Without change, the resulting problems will be unsustainable. We therefore need the current automotive model to adapt and in this context, GM has a vision focused on zero crashes, zero emissions and zero congestion.

Technology is developing to address this vision and in Dubai HH Sheikh Mohammed has set a target of 25% of all trips being via smart, sustainable and driverless vehicle technology by 2030.



GMC is developing electric, connected and autonomous technology. New fleets will deliver new products and services such as in-car Wi-Fi, information and data apps, autonomy and remote control. This will lead to different modes/concepts of operation. This new technology is already being tested in real cities and in real life situations.

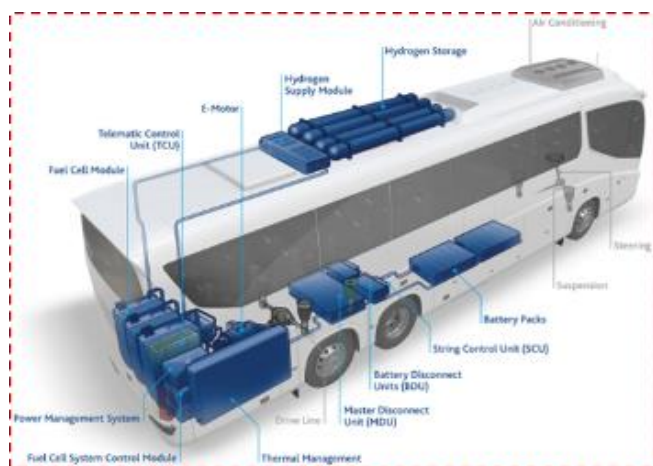
Gary highlighted a number of examples of the self-driving, electric and shared vehicles that could revolutionise urban transport in coming decades. In this respect, we are at an inflection point for the mass adoption of EVs, with 30 new models planned by GM by 2025 within a Zero Emissions Ecosystem.

There are various enablers to this Ecosystem. These include development of policy and fiscal incentives, raised awareness of change and technology, influence through people increasingly seeing and experiencing the presence of EVs on the road, development and location of infrastructure, and optimisation of assets through the use of data and connectivity. Government entities should also lead by example, providing a ready market in themselves and influencing others.

Dominic Taylor, Arup Low Emission Mobility Lead and Andrew Jenkins, Arup Transport Director

Dominic started his presentation on *Electric Vehicles: The Bigger Picture* with an overview of the changing contributions of various sectors to carbon emissions. Whilst emissions from industry have declined, emissions from the transport sector have remained constant and now represent the largest source of carbon emissions in the UK, as well as other countries. However, policy and regulation mean that the use of new conventional petrol and diesel cars on the UK’s roads will not be permitted from 2030, a deadline which has recently been bought forward from 2040 and parallels similar declarations elsewhere.

Hydrogen, as well as electrification, will be a feature of future road transport. In the UK the split is forecast to be 2/3 electric, 1/3 hydrogen propulsion by 2050. In fact a range of technologies will be part of the overall road transport picture, including potential instant charging topping up charging en route, overhead (catenary) electrification on certain stretches of road, replaceable batteries and hybrid technology as a bridge to either full electric or hydrogen propulsion. For larger vehicles, such as trucks, and moving into the marine and aviation sectors, hydrogen is likely to be more appropriate than heavy battery electrification.



There is a complex picture and set of actions for the introduction of new technology, people’s attitudes and behaviour to uptake, costs and benefits and the needs and interests of different stakeholder groups. Social inclusivity, economic challenges and opportunities, as well as environmental outcomes will need to be considered.

Dominic finished his presentation with a review of global developments in vehicle propulsion technology, governance and policy changes, challenges and opportunities, including the USA, where there is (currently) limited government support; to the UK, where all new car sales are to be zero emission by 2030; to Norway, where all new car sales must be zero emission by 2025 with 50% already being so now; in Hong Kong where uptake policies and targets are not being met; and to China where there is strong Government action and high uptake of New Energy Vehicles across all classes, including buses and powered two and three-wheelers.

Andrew Jenkins addressed the broader context at the end of the session with an observation that vehicle technology is only part of the story of delivering low carbon transport. Achieving Net Zero, as well as solving problems such as traffic congestion, will be about changing behaviours, often engrained, engaging with stakeholders to understand their needs, and raising the awareness of alternatives. Part of the solution is definitely about automotive technology, but we need to think about reducing the need to travel through integrated planning, prioritising active travel and minimising the impact of road transport through the adoption of new vehicle technology. This is the idea behind concepts such as Avoid-Shift-Improve (ASI) already at the heart of sustainable transport planning and design.



A copy of all presentation and a recording of the event is available on request by e-mailing ciht.dubaigroup@gmail.com.

Questions

Due to limited time during the seminar for extensive Q&A, some questions, comments and responses from the Zoom Chat are cited below.

Middle income countries struggle even today to provide reliable power supply to their residents. EV owners in these countries are resorting to buying diesel generators to ensure that they have a power backup to charge their EVs! On balance, are we damaging the environment more? Should we not address the basics across the World first before asking everyone to embrace, what is truly, the future?

A lot of people in UAE live in apartment buildings which would eliminate any way of charging at night-time (if there is a way of charging EVs in an apartment building, please do share). Does that mean most people would have to go to public charging stations, and what's the average charge time?

This is partly a building code issue with a minimum number of charging points in a shared parking lot. However, technology is also under development for robotic chargers to move around to charge vehicles in different locations within car parks. The average charging time for EVs is coming down and this should continue.

Does the price of gasoline in a country play a role in the wider adoption of EVs or are there are other more important factors?

Fossil fuel prices certainly do play a role, and current oil prices are at an historic low, but consumer sentiment, public policies and regulations and innovation from manufacturers are clearly important too.

Right now there is a very limited penetration of EVs in the market, yet we are already facing issues with charging infrastructure. What happens when EVs achieve higher market penetration? How would this electricity be generated? Furthermore, what is the environmental impact of the lithium extraction to our planet and of the final disposal of the batteries once they reach their end of life?

To answer your question on grid capacity to cater for EVs - in the UK there is not a concern that the grid as currently sized will have any issues, however it needs to decarbonise. This is happening but arguably not fast enough. In the early years we are probably just shifting emissions away from the tailpipe to the power generator. This will be solved by better grid flexibility and storage so base load generation is less an issue. Hydrogen is helpful and why many see a future including both EV and Hydrogen.

How will connected or automated vehicles behave with temporary traffic management schemes?

Do you think the future of EVs (and AVs) might be with the technology companies rather than automotive OEMs such as GM? Apple have declared they will start producing cars and surely others will join.

Car manufacturing is complex and requires extended supply chains. This is something the car industry has established now, and which may be difficult for tech companies to develop, with the possible exception of Tesla. Technology companies' strengths lie in systems and software development and for most this may remain the case.

We have talked about cars and light vehicles which are for longer trips and still require road space to be provided. How does the Panel consider other EV modes such as e-bicycles, e-scooters, etc, for shorter trips and first/last mile, some of which promote health by requiring some physical activity? What should the urban planners be designing for - carriageway dieting or providing capacity for cars and motor vehicles?

Do you think that when vehicles become fully automatous, ownership models will change where vehicles become communal/shared use and/or in high parking charge areas the vehicles are sent around the road network waiting to be called for pick up? They could charge on the way through road-based connectivity, parking in charging stations or with touch pad charging (like mobile phones). If you do think the vehicle ownership model will change, how much and by when? And would this be advantageous and supported by manufactures as less vehicles would be on the road, but they would run to full optimization instead of sitting idle 90+% of the time?

We must not forget that currently the production of batteries has negative environmental and social outcomes. They have a lifespan of 5-10 years and at best 50% of the battery can be recycled. Some mining and industrial manufacturing processes are questionable. BEVs still have a high carbon footprint.