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Kolkata

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THE BENGAL CHAMBER

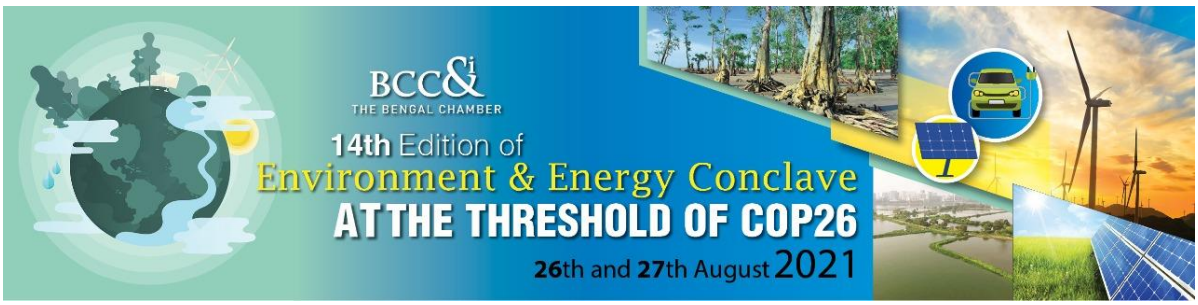
The Bengal Chamber of Commerce and Industry, in association with British Deputy High Commission, Kolkata, organized an online seminar on "**E- Mobility - Infrastructure, Business Readiness Strategies and Green Jobs Creation"** on 14th January 2021.

You are invited to join
"E- Mobility: Infrastructure Readiness and Green Jobs Creation"
4 pm (IST) onwards on 14th January 2021 online
Precursor to 14th Edition of
The Bengal Chamber Annual Environment and Energy Conclave in August 2021

Sponsored by **RPG Power Trading Company Limited**

RP-Sanjiv Goenka Group
Growing Legacies

The programme was the first precursor to the 14th Edition of The Bengal Chamber Annual Environment and Energy Conclave 2021, to be held on 26th and 27th August on theme "At the threshold of COP26".



The programme focused on:

1. To be ready for EV adoption from the point view of infrastructure assuming accelerating fleet especially in reference to the success story already made in Kolkata for EV in public transport.
2. E-Mobility in context of livelihood focusing e-rickshaws and totos and finances available for the same.

Prepared by The Bengal Chamber of Commerce and Industry

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Highlights

Backdrop

- **Electric vehicles will offer a value proposition which is far superior to an IC engine vehicle**.
- For the time being, the electric vehicles are little bit more expensive, however, over time, **the cost will come down as the cost of the battery will go down** and the **UK Government is putting effort behind it**.
    - The UK Government will invest in research into the zero-emission market as it looks to develop greener vehicles and help improve vehicle charging technology.
    - The UK and India are exchanging knowledge and collaborating on accelerating transition to zero emission vehicles through a wide range of technical partnership programmes with NITI Aayog, Ministries from across the Government of India and with state and city Governments.
    - Ahead of COP 26, British Deputy High Commission in Kolkata is committed to working even more closely with West Bengal in its initiatives to accelerate state-wide adoption of electric mobility and to bring in innovative strategies that can draw on their experience and the lessons they have learnt in the UK – from innovative technologies to schemes to enhance the pace of transition, creating greener jobs and cleaner air.

Geely has invested 500 million pounds ($649.1 million) in LEVC, which also includes a new state of the art factory in the small English town of Ansty since 2014. The factory has a capacity of over 20,000 units a year.

Opportunities

- As per **CEEW Centre for Energy Finance (CEEW-CEF) Analysis,** EV sales present an investment opportunity of **INR 12,39,800 crore (USD 177 billion) for OEMs in vehicle production, INR 20,600 crore (USD 2.9 billion) for the deployment of charging infrastructure, INR 85,900 crore (USD 12.3 billion) in battery manufacturing and INR 14,42, 400 crore (USD 206 billion) revenue opportunity from end-consumers**.
- **Electrification of Highways & Expressway Corridors would encourage inter-city bus routes and long-distance fleets.**
- Allocating certain percentage of expenditure under the **CSR towards EV Charging Stations is required till adequate EV infra and revenue opportunities for Corporates is created.**
- **Introduction of AD/ tax exemption benefits for FAST Public Charging Stations** can also be merged with the CSR.

E-rickshaws

- **The e-rickshaws have played a vital role in connecting people to the last mile when the public transport infrastructure improves**.
- **The e-rickshaw industry is providing direct and indirect employment to 6.5 lakh people in India and it is expected that in next 4-5 years, this industry will provide direct or indirect employment in India not less than 1.4 million which will be higher than the existing number of employment in the country**.
- The e-rickshaw industry is providing not only the good quantitative employment, but also **good qualitative employment to the people who are right at their door step.**
- **None of the major banks are providing finance facilities due to the demographic of e-rickshaw drivers.**
- **E-commerce companies are not ready to accept green vehicles as a tool for business.**

E-bikes

- **Speed of E-bikes while carrying load need to be increased.**
- **Weight carrying capacity of E-bikes need to be standardized.**
- **Mechanical support need to be made available.**

Focus to be made on:

- Comprehensive policy intervention from Government is needed to promote E-mobility.
- **Infrastructural support, such as charging stations, need to be in place.**
- **Industries, Government and financial institutions need to work in synergy.**
- **Awareness generation among stakeholders, citizens about Green Mobility and 'Smart City Scheme' is required.**

- Since the West Bengal Government has introduced E-buses and announced to switch public transportation to electric mode by 2030, the plan need to more inclusive to make it effective.
- To electrify India, **the electrification has to be done where there is the biggest impact potential and where it is more feasible to do the electrification.**
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The major challenges

- **Consumer anxiety**: high price of electric vehicles, poor public charging system; batteries of electric vehicles are not enough technologically developed; range anxiety of electric vehicles.
- **Patchwork regulation:** At the moment, within the countries, there are mix and match policies and regulations on national level which are very confusing for the consumers which prevents consumers to procure electric vehicles.
- **Misunderstanding of EV technology:** Despite of policy support and technological progress, consumer adoption of electric vehicles remains limited globally. One important barrier to electric vehicle adoption may be limitation of consumer awareness on EV technology.. **Parallel hybrid technology-** parallel hybrid is propelled by both an internal combustion engine (ICE) and an electric motor connected to a mechanical transmission. This means that the ICE component of the vehicle can drive the wheels if the driver chooses to drive in ICE mode, which can result in similar to emissions to that of a traditional ICE vehicle. **Series hybrid technology-** a series hybrid is like a battery electric vehicle (BEV) in design. A small combustion engine drives an electric generator instead of directly driving the wheels. At LEVC, they use series hybrid technology in their electric vehicles, which means the vehicle is only ever electrically driven. The small petrol engine maintains battery charge in situations where the driver can't get to a charge-point and reduces emissions by 90% in comparison to petrol and diesel vehicles.

Solutions of the challenges of E-vehicles:

- **Consumer anxiety and ranging anxiety:** The main strategies to alleviate range anxiety among electric car consumers are the deployment of extensive charging infrastructure, the development of higher battery capacity at a cost-effective price, battery swapping technology, use of range extenders, accurate navigation and range predictions. In regards to electric vehicles price, UK Government has helped with grant schemes for electric taxis and vans which has been critical in reducing cost and increasing uptake.
- **Patchwork regulation:** LEVC has suggested that there should be joint up national and regional approach to electrification. The patchwork regulation, in UK, is imposing mechanism, policies and regulations in increasing EV uptake and is changing the consumer behavior. In London, all the newly licensed black taxis must be electric.
- **Misunderstanding of EV Technology:** Commercial operators may look at the electric vehicle market today and state that a vehicle that meets their business needs is not available. They may be right when they look at pure battery electric vehicles, but if they consider using hybrid technologies, especially range extended (series hybrid) vehicles, they will have an immediate impact in significantly reducing emissions. Most importantly, we have to think how many miles can be electrified today using the technology available now and how we can grade up over next ten years.

The programme synopsis

The programme was commenced with the formal Welcome Address by **Mr Deb A Mukherjee**, President, The Bengal Chamber of Commerce and Industry and Managing Director, Cenergist Energy Private Limited. The Opening Session was graced by **Mr Nick Low**, British Deputy High Commissioner, Kolkata delivering the Introductory Address; **Mr. Rajanvir Singh Kapur, IAS,** Managing Director**,** West Bengal Transport Corporation delivering the Special Address; **Ms. Hannah Feiner**, Public Affairs Manager, The London Electric Vehicle Company (LEVC) addressing on "Strategies to adopt new-age electric cars and vans"; **Mr. Anirban Ghosh**, Chief Sustainability Officer, Mahindra Group delivering the Keynote Address on "EV Ecosystem" and **Ms. Haimanti Poddar,** Senior Energy, Climate Change & Urban Adviser, COP 26 Zero Emission Vehicles Transition-India Lead, Prosperity Team--UK Trade, Economics and Prosperity delivering formal Vote of Thanks . **Mr. Gautam Ray**, Chairperson, Energy and Environment Committee and Vice President, The Bengal Chamber of Commerce and Industry, Executive Director (HR & Admin.) - CESC Limited & President (HR) – Power Group, RPSG moderated the Session.

The Session on **Infrastructure Creation and Business Readiness Strategies** was graced by **Mr. Sanjoy Mukherjee**, Vice President (Director Technical), CESC Limited; **Ms. Divya Sharma**, Executive Director, The Climate Group; **Mr. N Mohan**, Deputy General Manager, Energy Efficiency Services Limited (EESL); **Mr. Appurva Appan**, Associate, RE Mobility, World Business Council for Sustainable Development and **Mr. Alekhya Datta**, Area Convener, Electricity & Fuels Group, The Energy and Resources Institute (TERI).

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The Session on **Green Jobs creation was graced by Mr. Vishwanath Tiwari**, Chief E-Rickshaw & Dynex Business, Exide Industries Limited; **Mr. Vikash Mishra**, Founder and CEO, MOEVING and **Ms. Dolon Ganguly**, Programme Director, Azad Foundation. **Mr. Arun Kumar Mukherjee,** Mentor, Energy and Environment Committee, The Bengal Chamber of Commerce and Industry and Director (Technical), Prerana Engineers & Consultants Pvt. Ltd. chaired the session.

Proceedings

Opening Session:

Mr. Gautam Ray said that The Bengal Chamber of Commerce and Industry was one of the pioneer in promoting e-mobility in the country. Mobility is the driver for human civilization. If we go through all the civilization, starting from invention of steaming, locomotive, integrated circuit and all the vehicles what we observe today, is motion in particular is the most important prime work for the advancement of human civilization and e-vehicle is the latest form of it. Ultimate success may lie on the storage with the invention of lithium ion battery and its use. The e-vehicle and its own business module and the viability have become more competitive. **Mr. Ray** also stated that the infrastructure with respect to the charging facility as well as the promotion of e-vehicles would be the priority now.

Mr. Deb A Mukherjee stated that The Bengal Chamber would be embarking on an initiative of Vision Bengal 2030 to create a vision document creating winning narratives on the rich heritage and contemporary vibrancy of Bengal. It is synchronized with the Sustainable Development Goals of the United Nations to be achieved by 2030. E Mobility Ecosystem is an important area the Chamber is engaged in and would like to take the work forward towards the ambitious target of 30% Zero Emission Vehicles by 2030. The Chamber applauds Government of West Bengal for the achievement of electric vehicles in public transport which has received global recognition being featured in EV Outlook of International Energy Agency. The Chamber believes that e-mobility may also be a viable option in connecting to the last mile and create green jobs. Towards this, the Chamber's endeavour is to promote e-mobility in cross segment of transport mix of the State. Led by e-buses in public transport the acceleration to be made through private vehicles and also the likes of e-rickshaws and totos. Keeping in mind the enhanced fleet, the Chamber is willing to work with all stakeholders on infrastructure readiness. Green jobs in e-mobility ecosystem is also expected to bring gender parity with appropriate skilling and financial models.

Mr. Nick Low said that:

- United Kingdom would be hosting the United Nation's COP26- Climate Summit in November 2021. As COP President, we are bringing together the international community to make progress in five critical areas: Clean transport, clean energy, adaptation & resilience, finance, and nature-based solutions.
- Electric vehicles are much cheaper to run than fuel transport.
- United Kingdom is fast moving in promoting electric vehicles.
- The transition to electric vehicles within the timeframe of 2030-2035, with zero emission target, will really give a way forward how things should move.
- The UK Government will invest in research into the zero-emission market as it looks to develop greener vehicles and help improve vehicle charging technology.
- In United Kingdom, the offices of Zero Emission Vehicles are working with the industries to increase confidence in charging network.
- Great innovation is taking place across entire EV ecosystem- batteries, smart electric buses, charging infrastructure, power trends, vehicle to grid technology and so on.
- United Kingdom is creating a new forum for international collaborations. The Zero Emissions Vehicle Transition Council set up by the UK is supporting and accelerating the global transition to clean transport.
- The UK and India are exchanging knowledge and collaborating on accelerating transition to zero emission vehicles through a wide range of technical partnership programmes with NITI Aayog, Ministries from across the Government of India and with state and city Governments.
- Ahead of COP 26, we are committed to working even more closely with West Bengal in its initiatives to accelerate state-wide adoption of electric mobility and to bring in innovative strategies that can draw on our experience and the lessons we have learnt in the UK – from innovative technologies to schemes to enhance the pace of transition, creating greener jobs and cleaner air.

Ms. Hannah Feiner stated that:

- London Electric Vehicle Company (LEVC) – The London Taxi Company, has been around more than 100 years, manufacturing famous black taxi in London.
- The focus of LEVC is on the production of electrically-driven vehicles for the commercial sector, including passenger transport and business operations.
- The vision of LEVC is for smarter, cleaner mobility, using technology to benefit both commercial enterprise and the environment.
- LEVC, which was acquired by Zhejiang Geely Holding Group in 2013, changed their name to London Electric Vehicle Company (LEVC) in 2017 to reflect their new mission of developing and producing electric commercial vehicles.
- Geely has invested 500 million pounds ($649.1 million) in LEVC, which also includes a new state of the art factory in the small English town of Ansty since 2014. The factory has a capacity of over 20,000 units a year.
- LEVC has launched their electric black taxi in 2018 and electric van in November, 2020.
- The major challenges with electrification now a days are:
    - **Consumer anxiety**: high price of electric vehicles, poor public charging system; batteries of electric vehicles are not enough technologically developed; range anxiety of electric vehicles.
    - **Patchwork regulation:** At the moment, within the countries, there are mix and match policies and regulations on national level which are very confusing for the consumers which prevents consumers to procure electric vehicles.
    - **Misunderstanding of EV technology:** Despite of policy support and technological progress, consumer adoption of electric vehicles remains limited globally. One important barrier to electric vehicle adoption may be limitation of consumer awareness on EV technology.. **Parallel hybrid technology-** parallel hybrid is propelled by both an internal combustion engine (ICE) and an electric motor connected to a mechanical transmission. This means that the ICE component of the vehicle can drive the wheels if the driver chooses to drive in ICE mode, which can result in similar to emissions to that of a traditional ICE vehicle. **Series hybrid technology-** a series hybrid is like a battery electric vehicle (BEV) in design. A small combustion engine drives an electric generator instead of directly driving the wheels. At LEVC, they use series hybrid technology in their electric vehicles, which means the vehicle is only ever electrically driven. The small petrol engine maintains battery charge in situations where the driver can't get to a charge-point and reduces emissions by 90% in comparison to petrol and diesel vehicles.

- **Solutions of the challenges of E-vehicles:**
    - **Consumer anxiety and ranging anxiety:** The main strategies to alleviate range anxiety among electric car consumers are the deployment of extensive charging infrastructure, the development of higher battery capacity at a cost-effective price, battery swapping technology, use of range extenders, accurate navigation and range predictions. In regards to electric vehicles price, UK Government has helped with grant schemes for electric taxis and vans which has been critical in reducing cost and increasing uptake.
    - **Patchwork regulation:** LEVC has suggested that there should be joint up national and regional approach to electrification. The patchwork regulation, in UK, is imposing mechanism, policies and regulations in increasing EV uptake and is changing the consumer behavior. In London, all the newly licensed black taxis must be electric.
    - **Misunderstanding of EV Technology:** Commercial operators may look at the electric vehicle market today and state that a vehicle that meets their business needs is not available. They may be right when they look at pure battery electric vehicles, but if they consider using hybrid technologies, especially range extended (series hybrid) vehicles, they will have an immediate impact in significantly reducing emissions. Most importantly, we have to think how many miles can be electrified today using the technology available now and how we can grade up over next ten years.

Mr. Anirban Ghosh said that:

- Electric vehicles are inevitable. **Electric vehicles will offer a value proposition which is far superior to an IC engine vehicle**. For the time being, the electric vehicles are little bit more expensive, however, over time, **the cost will come down as the cost of the battery will go down** and the **UK Government is putting effort behind it**.
- Solar energy is now common around the world. **Germany's effort to scale up solar energy in their country, brought prices down for solar panel for all of us.** Similarly, **India's initiatives in LED lights brought prices down for everyone around the world**. Going forward, UK Government has put up efforts to scale up e-vehicle industry and to make e-vehicles inevitable around the world.

- **E-vehicles are already gaining the round**. There were 1 million vehicles on the road in 2016 and presently there are 7.2 million e-vehicles on the road in the country. In Kolkata, **most of the rickshaws have become electric and the experiments being done in New Town with electric mobility system in Kolkata is setting the base for a much greater ecosystem in the coming future.**
- **Some use cases of e-vehicles are viable already – last mile good transport and shared mobility.** There are 1000 of electric taxis in Bangalore today taking people to various places which is economically viable.
- In recent times, **Mahindra Group has launched a service through its logistics arms called "E-delivery" where there is three wheeler powered by batteries which is used for last mile transport. The transition path for electric vehicle in India is through two wheelers and three wheelers as 80% of vehicles**, sold in India, are two wheelers and three wheelers. In India, 1.56 lakhs e-vehicles were sold in 2019 and about 40 lakhs of e-vehicles are expected to be sold in India by 2025.
- It would be a great opportunity to build up competence in ecosystem, in ev components right from electric motors to battery pack and even power electronics. **It gives us an opportunity for localization**, for cost deficiencies and it creates a possibility of 5 billion dollar ev ecosystem in ev industries going forward in India. As we transition through two wheelers and three wheelers towards larger electric vehicles , it gives us an opportunity to build on some of India's conventional strengths.
- When we move towards electric vehicles, **a large part of value is software** , **another large part of value is embedded electronics** , in which India has developed very rapidly in the recent past.
- **Mahindra Group has had electric vehicles running on the road for more than ten years now and the electric vehicles of Mahindra Group have covered 230 million kilometers reliably without changing batteries**.
- Mahindra Group has taken an interesting approach towards enabling the countries to move towards e-mobility. Mahindra Reva Electric Vehicles Private Limited launched its electric car named Mahindra Reva.
- The Mahindra E2O, previously Reva NXR, is an urban electric car hatchback manufactured by Mahindra Reva or Reva Electric Vehicles in 2013–2017. The E2O is the successor of the REVAi and was developed using Reva's technology and has a range of 120 km
- Mahindra brings eSupro, a stylish & spacious van which is a whole new concept in cargo transportation and people movement. It is an advanced electric van that brings emissions down to zero, absolute zero. The eSupro van with zero emission has many advantages. eSupro comes in two variants that is first of its kind in India: a spacious and secure cargo van and a stylish comfortable 8-seater passenger van.
- Mahindra Treo is a revolutionary new range of electric autos, e-rickshaw and cargo version. Powered by the advanced Lithium-ion technology, Mahindra Treo offers higher savings, superior ride quality and best in-class interior space.

Mr. Rajanvir Singh Kapur, IAS stated that:

- In today's world, a consumer, who is opting for electric vehicle, has to think about the maintenance, charging stations, cost of running the vehicle, the price, mileage, speeding up, comfort and branding.
- At the national level, on the holistic plan, there has to be manufacturing capability, policy and regulation, a planning infrastructure, skill and also awareness. So, unless, we have satisfaction on the consumers meeting all their demands and a holistic approach at the policy level, it will be difficult to fulfill all the ambitious plans.
- West Bengal Transport Corporation has been acknowledged and appreciated for the first promoting public e-vehicle and that is probably the heritage, the tradition they are carrying with the tramways.
- Mr. Kapur, IAS also requested TERI and British Deputy High Commission Kolkata to invest some energy fund to create EV awareness.

Ms. Haimanti Poddar delivered the formal vote of thanks. She mentioned that the British Deputy High Commission is working with Government of India, particularly with Niti Ayog on a web portal to raise awareness on electric mobility and they are very hopeful that it is going to be one of its kind one stop solution provider so that the consumer is able to understand the choices that he or she has. The objective of putting the forum together is that the actions we take today in dialogue with the industries, businesses, cities, regions and civil society organizations, this will determine the pace of global transition of zero emission vehicles. While the national context, the regional context and the local context may be different, the policy approaches may be different, but the transition will be faster and the cost will be lower for all if we work together. **Ms. Poddar** also highlighted the importance of adoption of electric vehicles across entire ecosystem, adoption of electric vehicles by Government, businesses, aggregated operators and consumers.

You Tube link of the Opening Session:- https://youtu.be/haXceUIayt0

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Infrastructure Creation and Business Readiness Strategies

The Session on **Infrastructure Creation and Business Readiness Strategies** was graced by **Mr. Sanjoy Mukherjee**, Vice President (Director Technical), CESC Limited; **Ms. Divya Sharma**, Executive Director, The Climate Group; **Mr. N Mohan**, Deputy General Manager, Energy Efficiency Services Limited (EESL); **Mr. Appurva Appan**, Associate, RE Mobility, World Business Council for Sustainable Development and **Mr. Alekhya Datta**, Area Convener, Electricity & Fuels Group, The Energy and Resources Institute (TERI).

Mr. Sanjoy Mukherjee mentioned that E-Mobility was always there in India. The first electric tramcar in Calcutta ran from Esplanade to Kidderpore on 27 March 1902. Indian Railways began using electric mobility in as early as 1925 through electric locomotives. These locomotives drew electricity from the overhead electrical lines. The first metro line in India was completed on 24th October 1984, a stretch of about 3.4 km between Esplanade and Bhowanipur (Netaji Bhavan), thrown open for the Public. Battery Electric Vehicles (BEV), Hybrid electric vehicles (HEV) and Plug-in Hybrid Electric Vehicles (PHEV) are on road in many parts of the country. **Mr. Mukherjee** addressed some key challenges for EV Adoptions such as:

- Travel Range
- Charging Infrastructure
- Maintenance & Battery Life
- Limited Vehicle Options
- Battery Technology
- High Upfront Cost

Mr. Mukherjee mentioned about **EV Development Scheme:**

- Vehicle Segment
- Charging Infrastructure
- Supply Chain
- Technology Upgrade (Battery and Components)

Mr. Mukherjee shared DISCOM's perspective on various aspects of EV Adoption:

1. **Technical and Operational Aspects**
   - Identification of suitable nodes for Electric Vehicle Charging Station (EVCS).
   - Importance of communication infrastructure and grid interactive EV Charging Infrastructure (EVCI)
   - Connection agreements/ connectivity regulations for providing connectivity to home charging, or a public charging station
   - Technical challenges in the grid due to current/future EV penetration
   - Grid infrastructure augmentation in-order to accommodate increased load due to EVCS
   - Clean energy integration

2. **Commercial Aspects**
   - Business Models for installing and operating EV Charging stations
   - Impact of DISCOM investment in Public charging infrastructure (PCI) on electricity tariffs.
   - Managi8ng EV charging load

3. **Regulatory and Policy-related Aspects**
   - Increased power-procurement during peak-hours for EV charging-load
   - Costs anticipated in augmenting distribution network to accommodate rising EV charging load
   - Alternative revenue and business models for supporting development of EVCI
   - Standard guidelines and Single-window clearance for approvals from Municipal Authorities and other statutory bodies for operation of charging stations

Mr. Mukherjee also mentioned about the following **initiatives taken by CESC Limited towards building EV ecosystem in the city:**

- Installation of EVCS at petrol pumps
- Engaging with EV manufacturer for in house fleet change-over
- Advocating changes in building rules and favourable policies
- Promoting EV at various events and fora like CREDAI and Book Fair
- Putting up three new Public Charging Stations in collaboration with KMC- Park Circus (Below MAA flyover); Beckbagan (beneath AJC Bose Road Flyover)

- Providing charging connection to 13 WBTC's Electric bus charging stations

Ms. Divya Sharma stated that The Climate Group was an international NGO, founded in 2004 with offices in Europe, North America, India and China. They work on the sidelines of business actions, Government and Policy through their campaigns and through these campaigns they drive collaborations and impact in renewable energy, productivity and electric vehicles **.**

Ms. Sharma mentioned about The Climate Group's Business action campaigns on Electric Vehicles such as:

1. **EV100:**

- EV100 is a global initiative led by the Climate Group, which brings together companies committed to making electric transport the new normal by 2030.
- Members are increasing demand, influencing policy, and driving mass roll-out – helping to make electric vehicles more rapidly affordable for everyone.
- Mindspace Business Parks REIT pledges commitment to Climate Group's EV100 initiative.
- Flipkart has targeted to move to 100% EV usage by 2030 and has joined Climate Group's EV100 initiatives.
- EV100 Commitments by 2030 includes:
  - Battery Electric Vehicles
  - Plug-in hybrid electric vehicles
  - Extended range electric vehicles
  - Hydrogen fuel cell electric vehicles
- **Business Motivation to join EV100**
  - Align action with the national agenda on climate
  - Be a rising leader on sustainability across different sectors
    - **a.** Godrej & Boyce is the latest company to join the EP100 initiative in December 2020, at the Climate Ambition Summit 2020.
    - **b.** Several new-age companies like Bounce, Shuttl and Flipkart have pledged to our sustainability initiatives
  - Showcase green growth to investors/shareholders
  - Learn and leverage from other strong global member network
  - Engage with the highly vibrant ecosystem of civil society and thinktanks
  - Meet the new norm in the Indian business circle
- **Top drivers for going electric:**
  - Reducing GHG emissions
  - Reputational benefits
  - Reducing local air pollution
  - Potential for financial savings
  - Customer demand for EVs is rising, customers are increasingly demanding robust climate action from businesses
  - Businesses also note that EVs already compete on cost in most cases, which makes the economic case

- **Top Barriers towards going electric:**
  - Lack of supply of right electric vehicles – auto industry is not responding fast enough for supply to match demand
  - Lack of charging infrastructure
  - Capital cost of EVs
  - Lack of attractive EV product offerings in target markets
  - Lack of grid capacity for charging was not much of a concern
  - Anxiety over new technology was not much of a concern

- **Breaking down EV myths in India:**
  - In its long-term vision towards a successful economic recovery, India must look to include electric mobility as a critical socio-economic element.
  - Electric mobility, today, is ready for accelerated adoption by individuals, businesses and governments at scale.
  - As we enter a new decade of recovery and climate action, it is critical for us to take steps towards making EVs the new normal by 2030.

2. **EP100:**

The Climate Group's global EP100 initiative brings together a growing group of energy-smart companies committed to improving their energy productivity and doing more with less.

3. **RE100:**

The world's most influential companies, committed to sourcing 100% of their global electricity consumption from renewable sources.

Mr. N Mohan mentioned that Energy Efficiency Services Limited is Joint venture of four Central Public Sector Undertakings under Ministry of Power, Government of India- National Thermal Power Corporation Limited (NTPC); Power Finance Corporation (PFC); REC Group and Power Grid Corporation of India.

Mr. Mohan also mentioned about **National e-mobility Programme of EESL:**

- The programme launched in March 2018.
- **Goal:** The programme provides an impetus for Indian EV manufacturers, charging infrastructure companies, fleet operators, service providers, etc. to gain efficiencies of scale and drive down costs, create local manufacturing facilities, and grow technical competencies for the long-term growth of the EV industry in India.
- EESL has aggregated demand of EVs and chargers from various government departments such as the Prime Minister's Office, Fifteenth Finance Commission, MoP, NITI Aayog, UN Environment, NDMC, SDMC, GMDA, NTPC, PGCIL, PFC, among others.
- EESL has already deployed around 1,500+ EVs and 1225+ captive points across Government offices in the country.
- 70 Long Range EV's deployed by EESL to Kerala Motor Vehicle Department (MVD) through ANERT in Kerala State .

Mr. Mohan highlighted the challenges of EV Ecosystem:

- **High upfront cost:** FAME II expected to lower the upfront cost for EV's and Chargers
- **Limited EV models:** No. of OEMs in process of launching new EV models (in view of the policy direction)
- **Lack of charging infrastructure:**
  - Viability of public charging infrastructure a key challenge – key variables
  - **Upfront costs:** Cost of EV Supply Equipment and related infrastructure such as canopy structure, barricading, meter and meter box, and accessories such as canopy, LED screens, CCTV camera.
  - **Utilization**
  - **Operational cost:** Gateway charges, parking charges, insurance premium
  - **Provision of Land**

Mr. Mohan also stated the approach for installation of Public Charging Stations:

- **Approach and Design:**
  - Categorizing city into a grid of 3km x 3km
  - Secondary assessment of potential focus areas
  - Stakeholder mapping and business model blueprint

- **Location Assessment:**
  - List of sites for assessment
  - Formation of joint survey team
  - Site visit and assessment on pre-defined parameters

- **Implementation :**
  - Agreement signing with the land partners
  - Application for power connection with DISCOM
  - Procurement of charger
  - Installation of charger

- **Operation:**
  - Operation and maintenance of chargers
  - Monitoring and Evaluation
  - Customer service

- **Sustainability of business operation:**
  - Cost recovery
  - Tie ups with OEMs and fleet operators
  - Other sources of revenue
  - Innovative pricing and periodic review

Mr. Mohan mentioned that EESL ties-up with land partners to install Public Charging Stations (PCS). EESL owns and operates PCS over ten years . EESL has been allocated a total of 1145 chargers under the DHI- FAME India Scheme Phase II. EESL plans to complete the installation of the 1145 chargers by June 2021. EESL has installed first EV Charging Station at Kolkata City with NKDA. EESL in collaboration with NDMC has established India's first of its kind public EV Charging Plaza at Rafi Marg, New Delhi.

Mr. Mohan highlighted key outcomes of EESL Charging Business :

- 1226 + Captive Charging Points in India
- 200+ EV Chargers and 375+ Charging Points in India
- 3,17,000+ units of electricity consumed between May 2019 – December 2020

Mr. Mohan also mentioned about Policy Interventions and Support:

- Introducing preferential EV Charging tariff for the operations of Public Electric Vehicle Charging Stations (PCS) in the West Bengal.
- Exempt fixed/demand charges for EV Charging Stations for at least a period of 5 years (2021-2025).
- Enabling EV Charging Infrastructure for all segments of electric 2/3/4 wheelers and buses.

Mr. Appurva Appan shared his perspectives on conceptualizing India's EV ambition; incorporating targets and mandates as the cornerstone of the EV adoption strategy and how businesses can deliver for India's climate goals.

Mr. Appan mentioned that REmobility members collaborate to build knowledge, lead through own actions and advocate for right policies to help in accelerating EV adoption in India**.** WBCSD is working on following project deliverables:

- **REmobility coalition –** Over 50 business come together to set ambition, lead through own action, share knowledge and advocate for policy initiatives that help accelerate fleet-led EV adoption in India.
- **India Business Guide to EV Adoption** – A ready reckoner for fleet adoption across use-cases such as ride-hailing, employee transport and urban freight created by business for business (launched by Indian government at COP 25).
- **Demonstration projects –** Supported and documented learning from India's first all-electric ride hailing service (BluSmart) to showcase viability of transitioning ride-hailing to all electric in India. A similar demonstration project under progress with India's largest e-commerce company.
- **Policy recommendations –** Developed policy recommendations for various government departments and ministries to support faster adoption of EVs by fleets and attract private investments in charging. Recommendations shared with senior government officials**.**
- **Ambition statement –** CEO backed ambition statement, in partnership with UK Government, to be launched in the run up to COP26 to support Indian government to enhance its transport related NDCs.

Mr. Appan also stated that **India needs for EV ambition:**

- Developing confidence and clarity among businesses.
- Defining the RATE of EV transition.

Mr. Alekhya Datta mentioned that:

- As per **CEEW Centre for Energy Finance (CEEW-CEF) Analysis,** EV sales present an investment opportunity of **INR 12,39,800 crore (USD 177 billion) for OEMs in vehicle production, INR 20,600 crore (USD 2.9 billion) for the deployment of charging infrastructure, INR 85,900 crore (USD 12.3 billion) in battery manufacturing and INR 14,42, 400 crore (USD 206 billion) revenue opportunity from end-consumers**.
- **Electrification of Highways & Expressway Corridors would encourage inter-city bus routes and long-distance fleets.**
- Allocating certain percentage of expenditure under the **CSR towards EV Charging Stations is required till adequate EV infra and revenue opportunities for Corporates is created.**
- **Introduction of AD/ tax exemption benefits for FAST Public Charging Stations** can also be merged with the CSR.

YouTube link of the Infrastructure Creation and Business Readiness Strategies:- https://youtu.be/Zf7_gkQ0ecM

Green Jobs creation

Mr. Arun Kumar Mukherjee mentioned that embracing the EV system is inevitable as Niti Ayog understands that India can step 64% of anticipated passengers road based and mobility related energy demand and 37% of carbon emission by 2030 if electric mobility is pursued. The need for affordable, efficient green mobility is a necessity for our sustainable inclusive socio economic growth. The development of sustainable mobility ecosystem requires a collative, cooperative and operating in a commonly understanding platform in a synergetic manner amongst all the stakeholders so that it can smoothly get introduced and it can expand meeting our requirement. As a primary stakeholder, Central and State Government as well as the Nodal Agencies must identify the policies and regulatory barriers to facilitate private investors. Subsequently, the stakeholders must identify the ways to promote the transitions of the existing mobility value chain in adopting newer technologies, preserving and creating jobs and maintaining the economic contribution. Livelihood and green job creation will happen in the entire mobility value chain with its huge opportunity for growth with the adoption of electric vehicle ecosystem. The electric vehicle ecosystem comprises of the OEM(manufacturer of vehicles), the battery manufacturing facility , the ancillaries to support both these manufacturers, charging system, delivery value chain, financial players, mobility solution players and huge electronic industry which are required for the manufacturing of electric vehicles. The huge opportunities of employment in these areas will be successful only when we understand what are the barriers , as of today, the stakeholders are facing at their journey.

Mr. Vishwanath Tiwari said that in 2013, few enterprising business men from India went to China and started importing e-rickshaws. In 2014, Exide Industries Limited decided that the e-rickshaws need different kind of batteries and with the help of their established RND facilities, they developed a new product of e-rickshaw and started putting those batteries in the e-rickshaw business and that was their first encounter with the e-rickshaws as a brand. Due to their natural succession from battery, Exide Industries Limited has launched their own e-rickshaw named "Exide Neo" in 2018. **Mr. Tiwari** mentioned about the job opportunities in the EV segment in India. The last 10-15 years in India have been very remarkable year as far as the infrastructure related to public transportation. The CNG buses, the electric buses, the network of the metros across the city have played a very crucial role in the last mile connectivity. **• The e-rickshaws have played a vital role in connecting people to the last mile when the public transport infrastructure improves**. **• The e-rickshaw industry is providing direct and indirect employment to 6.5 lakh people in India and it is expected that in next 4-5 years, this industry will provide direct or indirect employment in India not less than 1.4 million which will be higher than the existing number of employment in the country**. The e-rickshaw industry is providing not only the good quantitative employment, but also **good qualitative employment to the people who are right at their door step.** In terms of remunerations, any e-rickshaw driver, at a normal place earns about Rs. 800-900/- on a daily basis and in high business volume area, the driver earns closed to Rs. 1200-1400/- per day. **Mr. Tiwari** also highlighted the major challenges of this sector. Though there is disposable income everybody is having of Rs. 800-900/- on a daily basis and the finance cost is Rs. 150/- only, in spite of having such strong value proposition, **none of the major banks are providing finance facilities due to the demographic of e-rickshaw drivers.** The nationalized banks have certain norms and if they don't fit into these norms, they won't be eligible to get the finance facility from the banks. If these major banks come forward, the e-rickshaw drivers start lending money generously and it would be a great business opportunity for the banks as well.

Ms. Dolon Ganguly deliberated her speech on **Job Creation For Resource Poor Women In India.** She stated that**:**

- In India, women's workforce participation rate is declining.
- According to World Bank in 1990 the women's labour force participation rate was 30% which came down to 20.5% in 2019. According to SDG review report, 2019, this rate is even lower, i.e. -18.5%.
- 93% of women in workforce are in the informal sector.
- This decline has happened at a time when country's GDP has doubled and when the proportion of women in the working age have increased by 25%.
- While **the men's labor force participation rate slightly decreased over time, too, it is four times that of women at 76.08 percent in 2019.**

Ms. Ganguly mentioned that women's employment is at risk due to the outbreak of pandemic globally. Since lockdown, Female-dominated sectors such as arts and entertainment, domestic work and other services have been heavily impacted.61% of female workers impacted. As per ILO report, Those who are most likely to lose their work and income are casual workers. 118 million workers in India are casually employed. Higher number of women are in casual work than men. Therefore, women are likely to experience greater loss of employment than men.

Ms. Ganguly highlighted that Skill Training needs to be more inclusive. 2.74% of working-age population (15-59) formally trained in Technical and vocational training. 90& of youth between 15–30 years of age who are unemployed have had no vocational training. 7.2% . Youth had vocational training - not resulted in employment. 42% of youth are NEET (Not in Employment, Education or Training) segment. 96.2% of this segment comprises women. She also mentioned that to create employment for women, following actions to be taken:

- **Enabling Ecosystem**
  - Gendered social norms need to be changed to create an enabling ecosystem for women to Join Non-traditional professions.
- **Support In Care Work**

  - Engaging men in care work
  - Crèches for child care
- **Equal Pay**
  - Equal pay for equal work
- **Remove Digital Divide**
  - Access to smartphone, computer, internet connection
- **Skill**
  - Skills need to match Industry Standards
- **Skill Building:**
  - Skill building opportunities need to be expanded for women : Non-traditional skills .

Ms. Ganguly addressed Azad Foundation's Mission, their work and their experience in Green Mobility.

Mission:
Azad Foundation's mission is to equip resource-poor women so that they excel as professionals and/or entrepreneurs, and earn a "livelihood with dignity" in jobs and markets that had traditionally been closed to them.

Work:
- Azad started its operation in 2008 in Delhi and is presently working in 8 cities in India - 4 cities directly and 4 with partners.
- They engage urban resource-poor women in non-traditional livelihood, i.e. they impart four wheelers and two wheelers training to women and their strategic partner Sakha Consulting Wings engages them with the market which has been traditionally closed to women.
- In more than a decade Azad Foundation has been able to make more than 2500 women employable and 1000+ women are now working as drivers in the roads of different cities in India.

Azad Foundation's experience –Green Mobility:
- Aspire to make our planet sustainable
- Committed to SDG Goals (Goal 13)
- Training women to drive E-vehicles
- Their strategy has been to include women in E-Commerce Industry

Ms. Ganguly also highlighted key challenges and recommendations towards Green Mobility:

Challenges:
- **No Loan Support:** Banks don't provide loans saying e-vehicles are not registered vehicles
- **Reluctance by companies:** E-commerce companies are not ready to accept green vehicles as a tool for business.
- **Speed of E-Bikes:** Speed of E-bikes while carrying load need to be increased.
- **Capacity of E-bikes:** Weight carrying capacity of E-bikes need to be standardized.
- **Mechanical Support:** Mechanical support need to be made available.
- **Charging station:** No charging stations in cities and in companies where women work.

Recommendations:
- Comprehensive policy intervention from Government is needed to promote E-mobility.
- Infrastructural support, such as charging stations, need to be in place.
- Industries, Government and financial institutions need to work in synergy.
- Awareness generation among stakeholders, citizens about Green Mobility and 'Smart City Scheme' is required.
- Since the West Bengal Government has introduced E-buses and announced to switch public transportation to electric mode by 2030, the plan need to more inclusive to make it effective.

Mr. Vikash Mishra mentioned that the vision of **MOEVING** is to deliver logistics in cost effective and efficient way. In India, 86% of the vehicles are two wheelers and three wheelers. If we have to electrify India, **we have to electrify where there is the biggest impact potential and where it is more feasible to do the electrification.** On both accounts, where both the impacts and feasibility are high, the two wheelers and three wheelers fix the bill very rightly and henceforth MOEVING has come out with the concept of using the two wheelers and three wheelers in electrifying the last mile delivery. MOEVING is in discussion with Amazon , Flipkart, Big basket and they have been agreed to be the part of the last mile delivery. **Mr. Mishra** stated that financing is a big challenge and getting right bikers is also a big challenge. MOEVING is very keen to work with Azad Foundation as they are shortly going to start their operations in Delhi, Pune and Bangalore and they are looking for the bikers who don't have to purchase vehicles. The vehicles will be purchased by the MOEVING companies and the riders will be asked to do their jobs of delivering the last mile purpose and as per the norms of the market, **they would be happy to onboard female drivers as well to empower the women through the last mile delivery. If e-commerce has to grow in India and if true benefit of digitization has to come to**

British Deputy
High Commission
Kolkata

BCC&I
THE BENGAL CHAMBER

India, we have be more inclusive. Mr. Mishra also mentioned that **EV Ecosystem has four components- a) vehicle; b) charging; c)driver and d) technology.**

- **Vehicle:** In India, about 20 million of two wheeler vehicles have been sold every year. In the next five years, we can achieve the target of 100% electrification. If it happens, which means, 20 million of products have to be manufactured, 20 million of batteries have to be manufactured and entire ancillary units have to be set up to develop the entire battery manmade system for that as well. Thus, there will be huge growth opportunity from job perspective in the vehicle product segment.
- **Charging:** In India, there are about 70,000 petrol pumps which are sufficient to meet the demands of 1.3 billion people , however, when it comes to the public charging stations, the number of charging stations will be required like multiples of 100 of what we have in terms of petrol pump stations and new business model to be evolved.
- **Driver:** Different skill set is required to drive electric vehicles. The electric vehicle riders have to be trained how to run electric vehicles and for their training purposes, multiple training centers to be set up.
- **Technology:** There are two components of technology- hardware and software.
    - ✓ **Hardware**: A telematics system has to be built and installed in the vehicle which allows the sending, receiving and storing of telemetry data. The telematics data captured can include location, speed, idling time, harsh acceleration or braking, fuel consumption and vehicle faults.
    - ✓ **Software:** Right Fleet Management Technology is required. Lot of software has to be built up on top of the charging infra, on top of the vehicle and on top of the battery which will require IT professionals who can create software solutions.

YouTube link of the Green Jobs creation:- https://youtu.be/1XlHGqYVkHo