



# EVCONNECT

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NEWSLETTER

## INSIDE THE ISSUE

### Power Talk

Conversation with Mr. Kailash Gahlot, Transport Minister, Government of NCT of Delhi

### Updates from the World

IKEA targets home delivery by electric vehicle in five major cities by 2020 • France's Saft plans next-gen EV battery output in 2020 • Electric buses and trucks play a leading role at GCAS • Grid storage batteries help electric vehicles go truly green • National drive electric week draws new attention to electric vehicles • Virtual power plant to test if electric vehicle batteries can deliver frequency reserve

### UPDATES FROM INDIA

After initial questions, government clears 100% railways electrification • India inaugurates AC-001 charging infrastructure • Ather electric scooter deliveries begin, Flipkart founder Sachin Bansal buys one too • GAIL India gets future ready, to set up battery charging stations for electric vehicles, build solar plants • Hyundai to make smart EVs in India for emerging markets

### EV@WRI

*Blog* - Learning by doing: lessons on electric mobility from the Netherlands

### EV Feature

India's MOVE Summit:  
7 learnings on Electric Mobility

## FROM THE CEO'S DESK

Dear Friends,

I am delighted to share with you the third issue of WRI India's electric mobility newsletter, **EV Connect**.

Last month, NITI Aayog, the policy think tank of government of India hosted the Global Mobility Summit MOVE in New Delhi. There was a large and diverse gathering from national and international auto industry, government officials and civil society organisations to realise the key promises of electric mobility for India. WRI India also convened a pre-MOVE discussion in collaboration with NITI Aayog. Many international success stories were shared regarding alternative fuels and renewable energy, battery charging technologies and standards. The increasingly important role of shared mobility and rising concerns about emissions shaped the discussion. Overall, participants were unanimous in their belief that the time is ripe to push for electric mobility.

In this sector, new and multidimensional developments are rapidly taking place and reported through multiple media channels, making these difficult to track. EVConnect seeks to bring together several of these developments into one document. We hope that over time, this curated and compiled content will be useful to those who are seeking the latest information on electric mobility.

This edition of the newsletter includes a conversation with Mr. Kailash Gahlot, Transport Minister, Government of NCT of Delhi on the issues related to electric mobility in Delhi and the way forward. It also features our take on discussions about electric mobility that took place during the MOVE Summit.

We hope that you find the third edition of the newsletter useful and share your suggestions with us. Our goal is to improve this newsletter to cater to the needs of readers like you.

Sincerely,



**Dr. OP Agarwal**  
CEO, WRI India



# POWERTALK

## IN CONVERSATION WITH MR. KAILASH GEHLOT

TRANSPORT MINISTER, GOVERNMENT OF NCT OF DELHI

*Interview taken by Amit Bhatt, Director, Integrated Transport, WRI India.*

“Delhi Government has announced procurement of 1000 Electric buses in the 1st phase and intend to roll out these buses by 2019 ”

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**Interviewer:** There is a growing emphasis on electrification of vehicles both globally and nationally. Is Delhi Government aligned with the same?

**Minister:** Yes, Delhi Government has been thinking of electrifying public as well as private vehicles. For this purpose, the Delhi Government has already announced procurement of 1000 electric buses. Alongside this, the Delhi Government is also looking into how to create a charging infrastructure in Delhi. Basically, we can say that the entire ecosystem around Electric mobility is being created in Delhi.

**Interviewer:** Some states in India have created policies around the electrification of vehicles. Is Delhi also looking at formulating an EV policy?

**Minister:** Delhi Government is looking forward to formulating an electric vehicle policy. For this purpose, we have undertaken serious discussions with all stakeholders. Through this policy we intend to encourage both two wheelers and four wheelers to electric and almost 25% new electric vehicle registrations by 2023. Also, I am hopeful that with the new policy many new jobs also shall be generated.

**Interviewer:** How is the Delhi government moving forward with converting the public transport fleet to EV?

**Minister:** Keeping in mind the pollution levels in Delhi and that 20% of this comes from vehicular pollution, we do require electric buses, so are taking concrete steps towards shifting entire public transport to electric vehicles. As stated earlier, the Delhi government has announced procurement of 1000 Electric buses in the 1<sup>st</sup> phase and intends to roll out these buses by 2019.

**Interviewer:** You mentioned the potential and opportunities of EV penetration in Delhi, what do you think are the bottlenecks in the process of EV penetration?

**Minister:** I think the main bottleneck in the advancement of electric mobility would be setting up and creating a reliable charging infrastructure, especially in the context of Delhi which has multiple land owning agencies. A charging infrastructure must be set up such that any person shifting from a conventional fuel to clean electric vehicle doesn't face issues of charging vehicle itself and this stand as a major challenge. Also, in terms of Electric vehicle penetration nextbottle neck is the manufacturing and cost of batteries which stands as 50% of overall cost of the vehicle. Lastly, the foremost challenge is creating awareness among people because this there is a lot of apprehension among the public about electric vehicle and its workings.

**Interviewer:** These are great insights, thank you. In your opinion, what is the role of research organizations like WRI in accelerating EV adoption in Delhi?

**Minister:** I think research organisations like WRI can play a crucial part in accelerating the entire shift towards electric vehicles. I am keen that research organisations like WRI may collaborate with the Delhi Government and other state governments and bring their professional expertise and rich experience to the respective governments so that electric mobility can become a reality in true sense.





## UPDATES FROM THE WORLD

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### **IKEA targets home delivery by electric vehicle in five major cities by 2020** | *Market Development*

The world's biggest furniture retailer announced that by 2020, all of its home deliveries will either be done by electric vehicles or other zero-emission modes. Five major cities will be targeted: inner cities of Amsterdam, Los Angeles, New York, Paris and Shanghai, which together account for 25% of Ikea's home deliveries. The retailer looks to expand its business in a sustainable way and hence is accelerating its uptake of electric vehicles.

*Takeaway for India:* India is witnessing a rapid growth in the eCommerce business, logistics and the last mile delivery services sector, leading to a consistent expansion of their delivery fleets, which are predominantly two-wheelers. Therefore, it would be a worthwhile effort to examine policy measures and incentives that encourage these businesses to transition to electric vehicles. Alternatively, electrification of delivery fleets could also be a strategy for creating demand for electric vehicles for manufacturers in India. [Read more](#)

### **France's Saft plans next-gen EV battery output in 2020** | *Market Development, Policy and Strategy*

Europe's battery market will be in the range of 150 – 200 GWh by 2025, creating a battery value chain worth 250 Billion Euros. At present, major market players include China's BYD and CATL, and South Korea's Samsung SDI and LG Chem, which are looking to launch production in Europe. In response to impending demand and localizing battery manufacturing, Saft, has teamed up with three other companies, Siemens, Solvay and Manz, to mass-produce high density liquid electrolyte lithium ion batteries, the third generation battery, and solid state batteries lithium ion, the fourth generation of batteries, starting early 2020 and 2024, respectively. These batteries will have energy density levels that are 50% better than the current state.

*Takeaway for India:* Taking lessons from Europe's strategy of localizing battery-manufacturing capabilities, energy and automobile businesses could jointly invest in lithium ion battery manufacturing and innovation in India. Such a united effort could help the country overcome its lack of primary raw materials needed to manufacture batteries like lithium and cobalt, and create a competitive market of EV batteries. As the price of internal combustion engines and electric vehicles attain parity by 2023-2025, the demand for electric vehicles will peak and so will the need for batteries with high energy density. Hence, taking cues from businesses in France, this might prove to be the right time to make a united effort and invest in battery manufacturing, research and innovation for future needs.

[Read more](#)



### **Electric buses and trucks play a leading role at GCAS** | *Policy and Strategy, Market Development*

At the Global Climate Action Summit (GCAS) in California early September, many cities, state organizations, retailers, non-profits and philanthropists pledged to buy and/or support the replacing of existing fleets of diesel trucks and buses with electric vehicles. Worldwide, commercial and industrial fleets emit heavy amounts of greenhouse gases and criteria pollutants. While many regions have dealt well with commercial fleets, such as China, which has 300,000 electric buses, many more regions need to step-up to reduce fleet emissions. The event echoed the need for making zero-emission vehicles a dominant part of vehicle sales by 2025. The Summit also witnessed announcements on joint efforts, e.g. the Climate Group and C40 Cities' "The ZEV Challenge," with 26 states, cities, regions and businesses committing to 100 percent zero emission vehicles, and 11 cities in the United States making a joint investment of US\$ 11 Million to purchase 376 electric vehicles.

*Takeaway for India:* Learning from GCAS, cities and state governments in India could explore the formation of joint coalitions for setting up a charging infrastructure network, which is crucial yet capital-intensive. Additionally, there is a renewed focus on last mile connectivity in many cities and states. As these regions purchase shuttle buses and other small commercial vehicles for better connectivity to public transit, they can consider leapfrogging to electric vehicles rather than adopting conventional ones. [Read more](#)

### **Grid storage batteries help electric vehicles go truly green** | *Technology Development*

Batteries used in electric vehicles could help grids better integrate renewable energy, which are intermittent in nature. As a result, utilities in the United States, Australia and the United Kingdom have started to make sizeable investments in ever-larger battery storage systems. By 2025 the cost of energy storage systems should fall down further by 50-70% due to economies of scale and design improvements and the global battery storage market could reach 175 GW by 2030. Interestingly, battery to grid integration wouldn't require greater manufacturing of batteries, rather as electric cars grow, their batteries could be used for energy storage for electric grids. E.g. ten Nissan Leaf electric cars contain enough energy to power 1000 homes for an hour. Some battery start-ups, utility companies and car companies are studying how to reward drivers for allowing their electric car batteries to be used by the grid.

*Takeaway for India:* Battery storage systems could be a promising technology for helping India realize its commitment with regard to expanding the share of renewables in its energy mix. As solar and wind potential varies with states in India, using electric vehicle batteries with power grids could provide consistent supply of renewables across regions. Additionally, used batteries could also be utilised for storing energy and managing batteries once their usefulness in vehicles is exhausted. [Read more](#)



## **National drive electric week draws new attention to electric vehicles** | *Policy and Strategy*

Spread across 29 events across the United States, the National Drive Electric Week recently led efforts to raise awareness and build consumer knowledge on electric vehicles, number of models available, affordable prices, vehicle range, etc. Many cities have set up ambitious goals for moving to electric vehicles and are making numerous efforts for consumers to understand and adopt EVs. One example includes, an Experience Center in Columbus, Ohio, where consumer can test-rides EVs and find out more about them. Car dealers and salespersons play a key role in answering the queries consumers may have on owning and operating electric vehicles.

*Takeaway for India:* As India strives to mainstream electric vehicles, giving the consumers adequate knowledge on electric mobility is essential. Policymakers and industry specialists could fill the gaps in consumer experience on handling electric vehicles, charging mechanisms through demonstrations and public awareness campaigns.

[Read more](#)

## **Virtual power plant to test if electric vehicle batteries can deliver frequency reserve** |

*Technology Development*

Stable voltage and frequency are two important factors for effective functioning of the power grid. Many stakeholders have been concerned that as the number of electric vehicles grows, excessive power will be drawn from the grid, leading to a likely crash. In Europe, Virtual power plant (VPP) operator Next Kraftwerke and electric vehicle aggregator and smart charging App Jedlix has launched a trial to test if EV batteries can be used to provide automatic frequency reserve. This two-year project will start in 2019 and will run with TenneT, the transmission system operator for the Netherlands and large parts of Germany. Jedlix, through the EV fleet connected to its app, will provide data on the available number of batteries to supply energy to the grid. This data on aggregated energy is shared with Next Kraftwerke, which then interfaces with Tennet to market the aggregated energy in restoring the frequency of the grid and bid for the right price (reward) for consumers.

*Takeaway for India:* Crashing of the power grid and managing instantaneous load has been a frequent concern for regulators and other stakeholders in India. Restoring grid frequency through EV battery storage could be a possible solution for these concerns. In the near to mid-term future, this measure can be explored in the form of policies and business models. [Read more](#)



## UPDATES FROM INDIA

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### **After initial questions, government clears 100% railways electrification** | *Policy and Strategy*

Settling a decade long debate, the Indian Railways will be fully electrified by 2021-22, tentatively. When complete, this will make Indian Railways one of the largest electrified networks in the world after China, which has 68% of its railway routes, nearly 87000 km, electrified. At present, around 48% of the country's 61680 km of broad gauge railway network is electrified. Majority of these routes are traffic intensive. The goal of 100% electrification is to reduce dependency on crude import and aid in efforts to curb climate change. As per the government's projections, Rs.13500 crores will be saved annually on fuel bill. Diesel engines will be used as back up during shortages in the electric system. [Read more](#)

### **India inaugurates AC-001 charging infrastructure** | *Market Development*

The Department of Heavy Industry of India, under the FAME Scheme, recently inaugurated 18 charging stations for the convenience of electric rickshaw drivers at New Delhi's Dwarka Sector-10 Metro Station. Rajasthan Electronics and Instruments Ltd (REIL) was the infrastructure provider. REIL has a total order of 200 charging stations in Delhi, Jaipur and Chandigarh, out of which 45 have been installed. The performance and availability of all 200 chargers will be monitored via an app-based Central Monitoring System. [Read more](#)

### **Ather electric scooter deliveries begin, Flipkart founder Sachin Bansal buys one too** | *OEM and*

#### *Market Development*

Ather Energy, the Bengaluru-based electric mobility start-up, is ready with the first deliveries of its flagship scooter, the Ather 450. In June, Ather launched two models of scooter, Ather 450 and Ather 340, priced at Rs.1.1 Lac and Rs.1.25 Lac, respectively. While the two models are similar design wise, Ather 450 has a higher performance than Ather 340. Currently, these products will be offered for sale in Bengaluru only, with expansion to other major metros likely in the next few years. The company has a city-based approach as they intend on putting charging infrastructure on the ground before starting sales in any given city. [Read more](#)



## **GAIL India gets future ready, to set up battery charging stations for electric vehicles, build solar plants**

### *Policy and Strategy*

India's largest natural gas processing and distribution company, GAIL India, is looking to be future-ready and invest in emerging business areas, some of which are tightly linked to its core business such as energy and natural gas sector, and non-core areas such as health and environmental sectors. In a bid to do that, GAIL is exploring the possibility of having electric vehicle charging stations at its existing CNG dispensing stations. GAIL has pan-India presence through the natural gas pipeline, which it views as an advantage to create a widespread network of charging stations. However, the company awaits clarity on regulations to foray into this new business. [Read more](#)

## **Hyundai to make smart EVs in India for emerging markets | OEM Development**

Hyundai is considering expanding its manufacturing capacity in India to make compact electric models for the Indian market. Taking into consideration India's strategic location in South Asia and market preference towards economical models, it intends to use India as a testing ground and export hub for other emerging markets of South Asia. India comprises 15% of Hyundai's global operations and the company is planning on implementing the second phase of investment in India. At the MOVE Summit early in September in Delhi, India, Hyundai indicated upcoming plans to launch new electric and hydrogen fuel based models in India for next year. [Read more](#)



## **EV @ WRI**

### **Learning by doing: lessons on electric mobility from the Netherlands | Blog**

India's transition to EV requires comprehensive policy and legislative interventions that cut across sectors – automobile, energy, climate, to name a few. China and the Netherlands have succeeded in increasing the share of electric vehicles. While China focussed on the automobile industry, The Dutch spurred the electric vehicle growth by focussing on charging infrastructure. Read this blog by Shrikant Shastry and Deepak Krishnan to learn what India can learn from the Dutch success in rapidly increasing charging infrastructure. [Read more](#)





Prime Minister Shri Narendra Modi in his inaugural speech presented his thinking on mobility of 21st century for India. This included 7Cs: **Common, Connected, Convenient, Clean, Congestion-free, Charge, Cutting edge.**

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# EV FEATURE

## INDIA'S MOVE SUMMIT: 7 LEARNINGS ON ELECTRIC MOBILITY

By Neha Yadav, WRI India

On September 7th and 8th, NITI Aayog, the policy think tank of the Government of India, conducted the Global Mobility Summit, MOVE, in New Delhi. WRI India provided inputs in the capacity of a knowledge partner for the MOVE summit. More than 2200 national and international participants from industry, academia, state and local governments, technology companies and entrepreneurs were in attendance. Ministers from the department of Power, Renewables, Road Transport, Railways, Finance, Information technology and Housing & Urban Development also participated in the summit.

In his inaugural speech, Prime Minister Shri Narendra Modi presented his thoughts on mobility in the 21st century for India. This included the 7Cs: Common, Connected, Convenient, Clean, Congestion-free, Charge, Cutting edge. PM Modi highlighted the urgent need for tackling carbon emissions and air pollution, which is heavily impacted by transportation. He urged the audience to embrace the ideal of 'caring for others, sharing with others'. This was followed by thematic sessions and panel discussions covering the sub-sectors of mobility, such as public transportation, asset utilisation, freight and logistics, relevance of mobility data and electric mobility and clean fuels. In addition, six publications were presented to the PM.

On the preceding day, WRI India convened a per-MOVE gathering to provide a platform for the diverse set of stakeholders that will need to work together on electric mobility. WRI India also conducted a series of knowledge-sharing webinars and workshops to promote discussions on urban mobility and its potential to transform cities and states, hence creating momentum in the lead up to MOVE. A multidimensional analysis of the mobility sector took place, which addressed electric mobility and intersecting topics like ride sharing, road safety, energy demand management, along with other environmental, economic and social aspects.

Given the emphasis it received at the dialogues held during and prior to MOVE, seven observations can be drawn with regard to electric mobility. They capture what India needs to focus on in order to reap the rewards from electric mobility and become a leader in state of the art automotive technologies that curb pollution and carbon emissions, bringing equitable development and environmental sustainability.



### Key learnings: Electric Mobility

**'Affordability' is the holy grail of scaling electrification:** Keeping India's price-sensitive market in mind, there was a consensus that for electric motors to replace internal combustion engines, it is critical that the total cost of ownership of the two reach a comparable level, without any compromise in the performance of EVs. As the battery prices fall and energy density of the batteries increase, affordable electric vehicles will not be far. The majority felt that two and three wheelers, public buses and shared fleets may serve as the early adopters of electrification in the country.

Both government and industry must ensure that battery cells can be manufactured locally for a self-reliant supply of energy storage as this sector picks up the pace in India.

**A country of battery localisation, not battery imports:** The shift to electric vehicles in part has risen from the country's need to be less oil dependent. The energy to run EVs is stored in batteries that are Lithium Ion (and its many varieties). While lithium remains the material of choice in energy storage, India does not have any reserves of this mineral. Both government and industry must ensure that battery cells can be manufactured locally for a self-reliant supply of energy storage as this sector picks up the pace in India. Some speakers also highlighted that a second use ecosystem for batteries would be beneficial.

**Even a slow shift to renewable energy sees gains from EVs:** A consistent concern has been that electric vehicles are as clean as the source of electricity that powers them, particularly in India where 60 percent of the power is generated by firing coal. It was unanimously acknowledged that the ideal scenario for powering EVs with electricity from renewables such as solar is the best option to move to a cleaner future. However, until solar reaches its full potential, switching to EVs that use conventionally generated energy still offer gains for curbing toxic vehicle emissions in cities.

**Cost reduction by manufacturers and government support:** As it emerged from the lessons learned by international players, deploying a large scale network of electric mobility needs two pillars - cost reduction and government support. One cannot be sustained without the other. Industry leaders cautioned that excessive reduction in costs through light grading of EVs can compromise the reliability and safety of the vehicles.

This is likely as auto manufacturers expose themselves to the price risk of a new market. Others mentioned that the promotion of EVs in India should steer clear of subsidies, as they impede the market from innovating and producing highly energy efficient and high quality vehicles, but to keep the tariffs low for EVs instead.

**Collective effort of cities, states, automakers and charging infrastructure providers:** Some speakers spoke of timely reminders for sub-national governments and technology companies to work as an integrated whole for creating a dense network of chargers. This is to ensure that infrastructure is responsive to consumer needs for recharging vehicles. While transport services work individually, cities and municipalities can ensure that upcoming development in cities is not driven by the car-centric planning of the 20th century, and is compact enough to enable citizens to access clean rides.

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**Brand-neutral citizen education:** Widespread adoption of electric vehicles hinges on how proactively consumers are able to appreciate the economic value and environmental benefits of this transition. There was a clear consensus on the immediate need for educational strategies targeting consumers. However, it should not be driven for a particular vehicle model or company. Particular emphasis was given to building consumers' understanding of the convenience in recharging vehicles - at home or at public charging stations. In light of the fact that two and three wheelers are being emphasized to achieve scale, many speakers highlighted the urgent need for road safety and improved driving behavior in this segment.

**EVs are good for the electricity grid, but excessive subsidies not needed:** Contrary to popular beliefs on grid crash, some speakers highlighted that the widespread adoption of EVs will actually benefit the grid. For instance, one speaker mentioned that night time charging (10 pm to 5 am) is actually good for the grid in the case of two wheelers. However, this requires time of the day pricing for encouraging consumers. Increased focus is also needed for setting up the battery and battery charging standards for user safety and product durability. Electricity usage price without over subsidisation is the key.

### **India is on the MOVE. Let's get the direction right.**

Technical wizardry of electric vehicles aside, India needs to put deep thought into how electric mobility can contribute to creating communities that are habitable, equitable and environmentally conscious. For this, the technological and ecological agenda needs to coincide. It was clear from the MOVE discussions that creating a timeline and definite policy targets is the need of the hour. For zero emissions mobility to thrive, strong cooperation is required between public and private sectors. India must take cues from other countries and cities which have led the battle against emissions with large scale use of electric vehicles in their public transportation services. India should acknowledge the unique dimensions of its own mobility sector such as a majority share of two wheelers in the fleet and the technological and digital prowess in the region.

## COURTESY FOR THE ARTICLES

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