



# EVCONNECT

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NEWSLETTER

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## FROM THE CEO'S DESK

Dear Friends,

I am pleased to present to you the eighth issue of WRI India's newsletter, EV Connect.

India's electric mobility landscape is shaping up, sometimes by leaps and sometimes by increments, on both the technology and policy front. In this regard, FAME 2 scheme has been an exciting and a timely development that focuses electrification on small, public and affordable modes of travel. To keep moving in the right direction and keep pace with new developments, we firmly believe that the knowledge we share through the newsletter will allow all of us to learn the new dimensions that electric vehicles and their ecosystem add in sectors such as automobile, power, renewables, finance, to name a few. On that note, we are pleased to share with you this edition of WRI India's electric mobility newsletter.

EV developments are taking place at a very rapid pace, and it is often difficult to keep track of the innovations and the latest news that are reported via multiple media channels. This newsletter seeks to bring together several of these developments into one accessible document. We hope this curated and compiled content will come in handy to those seeking the latest information on electric mobility.

This edition includes an interview with Mr. Sohinder Gill who heads the Society of Manufacturers of Electric Vehicles (SMEV) in India. He shares his insights on electric mobility and its future in India. This newsletter also includes information about the FAME 2 scheme that was recently launched and an article on how to make EVs profitable.

We hope you find the newsletter beneficial and share your thoughts to improve this newsletter.



Sincerely

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



# POWERTALK

## IN CONVERSATION WITH MR SOHINDER GILL

DIRECTOR GENERAL, SMEV AND CEO, HERO ELECTRIC

Interview taken by Shravani Sharma, WRI India.

(Copy-edited for the print version)

"We conducted an external pooling of ideas on what is happening outside India too. The result was a sort of think tank which could talk to policymakers. So the second part would be education and awareness of the policymakers. Because they also wanted to know from an unbiased organisation like ours – what will be good for India in terms of electric mobility."

"Awareness is foremost. And behind that is the confidence of saying that I bought the right product, I got into the right segment and the environment or the other questions don't come to mind."

**Interviewer:** Tell us more about your organisation and your offerings in the EV space.

**Mr Gill:** I will talk on two accounts. One as director general of SMEV. It is an organisation that we formed ten years ago when we ventured into electric vehicles from Hero cycles. This organisation has grown year on year and today we have 52 members. Everybody from Tata, Mahindras and Bosch to so many others are now in 2W, 3W and 4W segments. The growth of SMEVn has been critical. To begin with, when we started the organisation we realised that this category needs to be taken up together. It would be very difficult to take up electric mobility single-handedly - organisation by organisation. So we had to bind people together into one single purpose, to get their ideas, hash it out, and so by consensus reach out to policy makers and other stakeholders. So the first task of the organisation became building consensus amongst ourselves, across segments, across categories and across products. We conducted an external pooling of ideas on what is happening outside India too. The result was a sort of think tank which could talk to policymakers. So the second part would be education and awareness of the policymakers. Because they also wanted to know from an unbiased organisation like ours – what will be good for India in terms of electric mobility. So that was the critical role we started playing at MNRE first, then the DHI, DTM and NITI Aayog. That's awareness, education and discussing key policies and the low hanging fruit was an outcome of that. Today SMEV is a very strong force when it comes to giving relevant inputs which represent manufacturers but not from a business perspective. It has got more to do with the category growth and the best part is that we are still able to build consensus rather than dichotomy of views. We also provide a platform for component makers and for academia, to get an interface into the EV organisation. Today we are working with IITs, public sector undertakings like HPCL, and component makers like Bosch and Sony.

The second cap that I am wearing is CEO of Hero Electric. And that's also ten years old. Obviously that role is much harsher, as we are swimming in muddy waters and trying to breathe. And it has been difficult all these years striving to push business economics and electric mobility.

The goal was to conserve – but not conserve to the extent that we fold up. That's why the network expansion in Hero went on and on. Today we have 400 networks across India and the good part is the efficient network has happened despite so much in the business not being favorable to expansion. Our network is largely just breaking even now after years of work. So keeping the network together, keeping the team together, keeping the morale high, offering incentives and rallying everybody around a common objective rather than merely being business minded was key here. Where the larger goal of what is good for society, what is good for the nation and then what is good for you is so instilled in the team and the network. That is perhaps the binding force of the organisation. So we have up to 100 team members and 400 networks and we are the largest market share holders of all electric vehicles put together - electric buses and electric cars, except e-rickshaws because we don't count them. In electric vehicles we have close to 50% of the market share of the country.

*Interviewer:* Where do you see electric mobility heading in the short and medium term in India?

*Mr Gill:* Unfortunately, electric mobility needs the third leg always and that is policy intervention and government support. And it's the same case globally. Time and time again the government has not been invested in it and as a result electric mobility is flattening out. Some sort of policy intervention is required in electric mobility – that's a universal truth. Now, as we saw in today's session, policy makers are perhaps not savvy enough to know what is required in electric mobility. They have very limited amount of resources. That's why perhaps, the short run is more important than the long run for electric mobility. That's why SMEV and I have been advocating that let's not talk of ten years or five years – let's make a start and put 1 million electric vehicles in some 4, 5 states within the next 2 to 3 years. Why? Because the most important part of electric mobility – two-wheeler or bus – is positive word-of-mouth. That is "I have bought something costlier but it's so great and it is saving me money." How will it come about? It will only come out of a real user on the road. It will not come from ten years of talking about it. Nobody is convinced about it. So if you put those 1 million vehicles on road, the visibility will be there. And how do you get that first 1 million on road? The golden thing is price parity here. Today, a guy going to a petrol vehicle showroom, if he is offered a choice similar in price, he will immediately jump to the electric one. Because he knows it has a lithium battery, equal to 4-5 years of petrol. So today the resistance is the price tag. The sticker shock. If you are able to remove that sticker shock for the personal user, he will take over surely. Businesses who pollute the environment can simply be told switch 20% of your fleet to electric. So anyone in the deliveries, couriers, rentals, taxis can be told to convert 10% of their goods to electric. So in the short run if you are able to do it and if you are able to put the first 1 million then the third prop can slowly be done away with. The result will surely be positive word-of-mouth for all to see. Then the tipping point will come.

*Interviewer:* What is the role of the private sector in growing the share of electric vehicles in the country?

*Mr Gill:* It is a very large role, very critical. But unfortunately, the private sector is so business oriented that they sit on the fence. For example, the component makers are sitting on the fence. We want to make in India but people who want to invest are not seeing anything on this side of the fence – If I invest will I get anything in return in 10, 5 or 3 years? So private sector has to have a leap of faith here. That will come out of the people who are already into this business and looking at them others will get the confidence to invest too. So the other private sector, which is not into EVs, should not spread negativity about losses or lack of policy support. Positive vibes of exiting investors will help and also envisioning ways and means of drawing the component makers and technology suppliers, who are on the fence, into the system – by giving them confidence through contracts, volume equations and co-working. Co-working will help in a big way. E.g. Hero is working with partners and that is giving them confidence that together we can be much better.

**Interviewer:** In your opinion what are the challenges of increasing the adoption of electric mobility in India?

**Mr Gill:** Well. Awareness is foremost. And behind that is the confidence of saying that I bought the right product, I got into the right segment and the environment or the other questions don't come to mind. It's pure economics of mind or value for money equation. So value for money has to be established in the minds of the Indian customer who is so cost conscious or value conscious. He doesn't want a cheap product but a product of value. So that is the biggest challenge in adoption. Private players who are already into the business can do it – but they have limited budgets and if they do, it is taken as slick marketing. If somehow the industry and the policy makers could do it together. For example, we could have a clean air campaign under the Swachh Bharat campaign and that will work wonders. If the Government talks to people on clean air and the need to switch to electric mobility via subsidies, I believe there are many people in the country, especially youngsters, who will switch over. So awareness is number one.

Second is that for the first 1 million to come on the road, some sort of nudge is required. It has to be a 'polluters must pay' principle here. People who are not buying electric, even when there is a viable option of electric, those people must pay for what they are doing to the country and the environment. So some sort of green cess has to be imposed. So at the time of buying there is something that comes to the mind – that I am being penalised for using diesel or petrol. So why shouldn't I go for electric? So that is the second thing that needs to be done.

And the other challenge is about financing. Because financing is so horribly high here and there is a glaring lack of financing, especially of two-wheelers. 45-50% are financing their petrol two-wheelers and for electric vehicles only 2%. So that bank of 40% people who could have bought electric vehicles is not there for us. I am not asking reduced rate of interests but only priority lending, charge your 12%. So financing could tip the balance for people who don't have too much of money but who still want to buy an electric vehicle.

And state level – if we can use some of the states – Telangana, Delhi etc – if EVs can be pushed. States can help with RTO, licensing problems. So states can do a comprehensive job of making sure their state is EV-friendly. If these challenges can be overcome, it will be a totally different scenario.

**Interviewer:** What can research organisations like WRI India do towards electrification of transport in India?

**Mr Gill:** So WRI has its own high standards of researching the right things and projecting the relevant points and not getting influenced or swayed by businesses. So on the policy side the Government needs some people or institution, like WRI, who can give them inputs on what works. If this role is amplified by WRI and is consistently performed across the center and state government, I think that will do the job. Also, on the research side, WRI needs to look into the attitude and behavior of people. Going beyond value for money, what is the behavioural change that will catalyse electric mobility could be a wonderful project that can be taken up by WRI.





## UPDATES FROM THE WORLD

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### Japan wants to boost the use of electric vehicles as a power source during natural disasters |

#### *Policy and Technology*

Japan has frequently faced natural disasters such as earthquakes and tsunamis. These calamities almost instantaneously disrupt power supply. To overcome this, Japan is planning to use the batteries of electric cars as an alternative residential power supply during such emergencies. Nissan, the manufacturer of the electric car, Leaf, is doing an experimental pilot in the City of Yokosuka. The company will be providing electric cars to the residents so that they can use the electric car and see how the battery of the car can power their homes.

*Takeaway for India:* Many regions in India are also prone to natural calamities such as floods and typhoons that cause power outages leaving homes shrouded in darkness and people without any means to contact their neighbors and family. Other than natural disasters, many cities face shortfall in power during the peak season. City governments, utilities and electricity departments and disaster management teams can explore how the batteries of electric vehicles can be used to supply power to homes during outages and shortfalls. [Read more](#)

### Renewables, EVs and whole-system strategy: Scotland unveils 2030 networks vision |

#### *Policy and Strategy*

In its vision for electricity transmission and distribution for 2030, Scotland will be taking a whole systems approach to decarbonize its energy mix and to increase the use of decentralised resources such as the batteries of electric vehicles. By 2030, the country aims to have 50% of its energy supplied by renewables. As much as possible local city models will be used that will fundamentally alter the communication between consumers and the grid. The goal is to engage and reward consumers easily, reduce peak loads, and integrate electric vehicle infrastructure into the new system.

*Takeaway for India:* Scotland's vision for 2030 offers worthy insights for agencies managing the transmission and distribution of electricity. India is committed to increasing the share of renewables and electric vehicles. To achieve its goals, it is imperative that the grid be designed to reward consumers who are using energy efficient vehicles and are switching to cleaner sources of energy or who are altering their use patterns by consuming electricity during off peak times. [Read more](#)

## Could ultracapacitors replace batteries in future electric vehicles? | *Technology*

Automobile makers are looking at ultracapacitors as a potential replacement of batteries in electric vehicles. This is mainly because ultracapacitors are lighter, faster to charge and are non-toxic - although batteries have greater energy density. An ultracapacitor stores energy electrostatically, whereas a battery stores it electrochemically. Many automakers have, in the recent past, used ultracapacitors. The article explores the pros and cons of both technologies. It also discusses how the suitability of each varies with application in an electric vehicle.

*Takeaway for India:* The article spotlights innovations in electric vehicle battery that can shape policy actions for developing the market demand for EV batteries - For instance, through the National Energy Storage Mission that was recently launched by the Government of India. [Read more](#)

## Uber plans to roll ahead of competition with custom electric scooter | *Market Development*

Uber, the ride-hailing company, will be designing and making custom electric scooters which will debut end 2019. So far scooter rentals has been a relatively small part of its business. The company earned a revenue of \$11.3 billion last year. But it sees scooters as an essential part of short mobility solutions and believe its relevance will continue to rise. So far the scooters are bought off the shelf from a Chinese manufacturer, Ninebot. By designing them in-house, Uber will be able to improve on the design more quickly and come up improved versions.

*Takeaway for India:* Many fleet operators and ride hailing companies are shifting to electric fleets and are buying vehicles off the shelves from manufacturers. However, these vehicles are not customized for rental operations. Taking cues from Uber's strategy, ride hailing services in India could benefit from using custom built electric vehicles. [Read more](#)

## This electric trike is the newest addition to the shared micromobility revolution |

### *Technology and Market Development*

An electric mobility as a service company, Gotcha, is creating a three-wheeled bike 'Trike' to complement its existing offerings of two-wheeled bikes and scooters, and an electric ride hailing service. Trike is the first of its kind in the mobility-as-a-service market. The company's objective is to create multiple kinds of end-to-end solutions that can be used by commuters on a daily basis.

*Takeaway for India:* Two and three wheelers are popular private and public transport respectively. What Gotcha's innovative Trike highlights is that to encourage people to ditch private car ownership, service providers need to come up with attractive and viable alternatives that fulfill every kind of commuters' needs. [Read more](#)



## UPDATES FROM INDIA

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### **FAME II: India approves second phase of electric vehicle scheme with higher outlay** |

#### *Policy and Market Development*

The Cabinet Committee of Economic Affairs approved an ₹10,000 crore outlay package for the FAME 2 scheme that encourages faster adoption of electric vehicles in India. It provides upfront purchase incentives, subsidies for the setting-up of charging infrastructure and electrification of public transport. The bigger goal is to electrify 30% of India's vehicle fleets by 2030. The government plans to support 10 lakh electric two-wheelers, 5 lakh three-wheelers, 55,000 four-wheelers and 7,000 buses. [Read more](#)

### **Delhi announces tender for 385 electric buses in two Clusters** | *Policy and Market Development*

The Delhi government has invited proposals for procuring 385 electric buses for the Delhi NCR region. The bid submission deadline is April 16, 2019. Cluster 1 has a requirement of 275 buses while Cluster 2 has a requirement of 110 buses. The transport department of the Delhi government is soliciting proposals for electric buses that can operate for 16-20 hours, with peak loading of over 100 passengers, and an average traveling speed of about 15 Kms per hour with starts/stops every 200 to 300 meters. The motor should be able to handle the peak overload of 20%. The batteries and other parts of the bus should be able to withstand ambient temperatures that range from near zero in winters to 50 degree centigrade in summers. The buses should have a lifespan of 12 years or 1,000,000 Kms, whichever is earlier. [Read more](#)

### **Ola in talks to buy custom-made e-vehicles** | *Market Development*

Ola has been purchasing electric vehicles off the shelf from auto makers until recently. Now, the ride hailing company is looking to procure custom built electric vehicles to suit the commercial functions of its company. Ola is in talks with multiple manufacturers. This strategy was originally used by Didi Chuxing in China which partnered with Volkswagen to customise cars for its ride share services. Ola has raised INR 400 Crores for its electric vehicle business from US-based hedge funds. [Read more](#)

## Cabinet clears Transformative Mobility and Battery Storage Mission for phased manufacturing of EV batteries | *Policy and Market Development*

The government has launched a mission to begin phased manufacturing of battery storage systems in India. The goal is to manufacture batteries locally which will prevent dependency on global markets for procuring transportation technologies. The first phase will focus on creating battery modules and their assembly into battery packs, and the second phase will focus on cell manufacturing. [Read more](#)

## Tata arm's DC fast chargers to 'power' EVs | *Market Development*

Tata AutoComp, a subsidiary of Tata Group, has signed a Memorandum of Understanding (MoU) with Australia-based Tritium to bring DC fast chargers for EVs to the Indian market. These units will be able to charge two wheelers, passenger vehicles and other commercial variants as well. [Read more](#)

## Fleets are the way towards popularisation of electric vehicles: Anand Mahindra | *Technology*

Industry experts are betting big on fleet operations as the launchpad for scaling up electric mobility in India. This is because such commercial services allow for a quicker break even and longer vehicle kilometers which reduces the cost of operations. Manufacturers also benefit from bulk purchases by fleet owners. Fleets also provide a high demonstration value for familiarising city dwellers with the concept of electric vehicles and thus speeding up adoption.



## EV @ WRI

### Centre's plan to promote electric vehicles is a step in the right direction

*by Amit Bhatt, Director, Integrated Transport, WRI India*

Under the FAME 2 scheme, the government has rightly put focus of shared transport in case of 2- and 3-wheeler category, while in case of private vehicles the support has been extended to two-wheelers. As per the announcement, incentives will be given to three- and four- wheelers that ply as commercial vehicles or public transport, only. Private two-wheelers that intend to avail the benefit of this scheme need to be using advanced battery packs made of lithium ion or other advanced chemistries. [Read more.](#)





# EV FEATURE

## MAKING ELECTRIC VEHICLES PROFITABLE

By Yeon Baik, Russell Hensley, Patrick Hertzke, and Stefan Knupfer of McKinsey and Company

March 2019 | This article first appeared on McKinsey and Company.

Most OEMs don't profit on selling electric vehicles. But addressing elements of the product and business model can put them on a better path. We have a clear roadmap for EV profitability.

"The future looks bright for electric-vehicle (EV) growth. Consumers are more willing than ever to consider buying EVs, and sales are rising fast. Most major markets have consistently registered 50 to 60 percent growth in recent years, albeit from small bases."

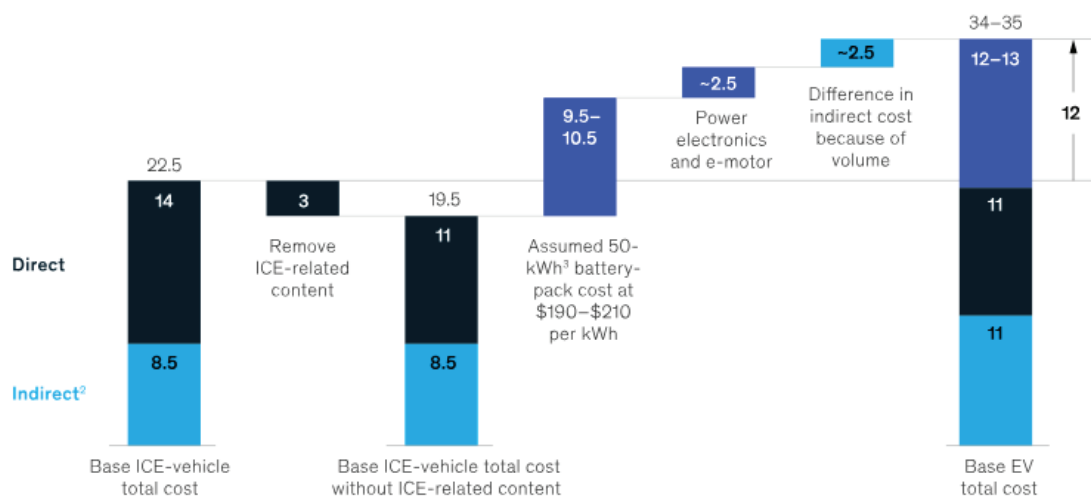
The future looks bright for electric-vehicle (EV) growth. Consumers are more willing than ever to consider buying EVs, and sales are rising fast. Most major markets have consistently registered 50 to 60 percent growth in recent years, albeit from small bases. More new models from a growing cadre of automotive OEMs make finding a suitable EV easier: in 2018 alone OEMs launched about 100 new models and sold two million units in total globally. Likewise, performance improvements continue with respect to range, performance, and reliability.

Regulations in major car markets—namely China, the European Union, and the United States—compel OEMs to produce more EVs and encourage consumers to buy them. However, there is a problem: today, most OEMs do not make a profit from the sale of EVs. In fact, these vehicles often cost \$12,000 more to produce than comparable vehicles powered by internal-combustion engines (ICEs) in the small- to midsize-car segment and the small-utility-vehicle segment (Exhibit 1). What is more, carmakers often struggle to recoup those costs through pricing alone. The result: apart from a few premium models, OEMs stand to lose money on almost every EV sold, which is clearly unsustainable.

Exhibit 1

### There's a cost gap of about \$12,000 between electric vehicles and internal-combustion-engine vehicles today.

Cost walk of ICE<sup>1</sup> to electric-vehicle (EV) C-Car in 2019, estimated average per vehicle, \$ thousand



<sup>1</sup>Internal combustion engine.

<sup>2</sup>Includes average incentive cost of \$2,000.

<sup>3</sup>Kilowatt-hour; includes battery-management system.

Source: Industry experts; UBS, McKinsey analysis

Many carmakers appear to be resigned to this fate, at least for now. Battery costs represent the largest single factor in this price differential. As industry battery prices decline, perhaps five to seven years from now, the economics of EVs should shift from red to green. Current thinking holds that the industry will continue to produce EVs—largely because it has little alternative in the face of stringent fuel-economy and emissions policies—and that the industry will, in the meantime, absorb the losses.

Our analyses show that better options exist, even today, to accelerate the industry toward profitability from both product and business-model perspectives. Some of these options include aggressively reducing cost through “decontenting,” optimizing range for urban mobility, partnering with other automakers to reduce R&D and capital expenditures, targeting specific customer segments, and exploring battery leasing.

## **An industry in a jam**

Understanding the challenges and opportunities for OEMs requires examination of the changing landscape of consumer attitudes, product availability, EV economics, and regulatory tailwinds.

### Consumer preferences on electric vehicles

Consumers’ EV preferences are shifting. The share of global consumers that would consider purchasing an EV is on the rise. In the United States, between 10 and 30 percent of consumers indicated their preference to consider an EV as their next purchase on national surveys.<sup>1</sup> In Europe, the reported share of consumers considering EV purchase was higher, at 40 to 60 percent,<sup>2</sup> and in China, it was over 70 percent, given the presence of strong government incentives to adopt these vehicles.<sup>3</sup> This trend is even more pronounced among customers younger than 50 years old living in urban areas. Sales in 2018 only provide a partial view, given that EVs accounted for less than 5 percent of sales in most markets. However, the pace of change tells a different story, with annual sales’ growth rates now frequently in the range of 100 percent or more.

### Product availability

On the supply side, this increasing demand will be met with a broader set of choices. Today, new EV models are launching at a rate of approximately 120 a year, providing significantly more options regarding vehicle segment, performance, feature set, and value. Compare this with the prior seven years, during which new plug-in-hybrid-EV (PHEV) and battery-EV (BEV) launches globally averaged about 20 per year, often with premium prices. Historically, domestic Chinese OEMs provided the widest selection of models, but by 2020, most global OEMs across China, Europe, and the United States will offer a broad range of vehicles and price points.

### Electric-vehicle economics

Our survey from 2017 also revealed that an EV’s purchase price and driving range are the biggest hurdles to wider consumer adoption—and both are linked inextricably to battery economics. Today, a typical BEV in the United States, priced around \$30,000, does not provide a reasonable payback period for many buyers, given the size and cost of a battery pack; to recoup the price premium for an EV versus an ICE vehicle through savings on fuel and maintenance, the payback period is five to six years for an average US buyer driving 13,000 miles a year. For high-mileage drivers exceeding 30,000 miles per year—such as full-time cab, Uber, and Lyft drivers—EVs are already “in the money” during a typical two- to three-year ownership or lease period. Looking ahead, each 20 to 25 percent improvement in battery cost reduces payback by one year, but OEMs will need to take other actions to accelerate profitability.



## Regulatory tailwind

The role of the regulator in today's EV landscape cannot be overstated. Ever-tightening government emissions regulations act as direct stimuli for OEM EV investments, and current subsidies and tax exemptions help bridge gaps between OEM pricing and consumer willingness to pay. In China, for example, the 2018 regulatory-incentive system, including supply and demand incentives and restrictions, pushed global EV sales above one million units.<sup>4</sup> However, China is not the only major market increasing regulatory pressure. In December 2018, the European Union's 28 member states agreed to new carbon-dioxide regulations that would set a target of 37.5 percent reduction in car emissions by 2030 when compared with 2021. This was significantly more aggressive than the European Commission's original proposal of a 30 percent reduction.

**Read full article [here](#)**

## COURTESY FOR THE ARTICLES

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