WRI INDIA

EVCONNECT

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NEWSLETTER

INSIDE THE ISSUE

FROM THE CEO'S DESK

Dear Friends,

I am delighted to present to you the fourteenth issue of EVConnect.

World over, electric mobility is rapidly shaping up as an ecosystem. Businesses are making early stage investments in electric vehicles and in turn helping manufacturers with assured volumes to produce. Policy makers in other countries are actively supporting such ventures. In India, state governments continue to lead - taking the important first commitment with electric vehicle policies. While these ideas will take time to create a clean transport system, the national government and businesses in India should actively and steadfastly work in this direction.

New developments are taking place at a very rapid pace, and it is often difficult to keep up with them. These are reported through multiple media channels and are hard to track. 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 who are seeking the latest information on electric mobility.

This edition of the newsletter includes a conversation with Mr. TC Gupta, Additional Chief Secretary, Transport, Power, New and Renewable Energy in the Government of Haryana. We discuss with him the electric mobility policy developments and projects that are on the horizon in Haryana. We have also consolidated a feature, that highlights the role of second-hand electric vehicles in creating an accessible market for electric vehicles, and an opinion piece that discusses the important pillars of electric bus network planning.

We hope you find this edition of the newsletter beneficial and share your thoughts so that we can improve further.

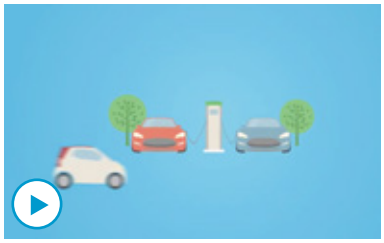
Sincerely,

Dr. OP Agarwal
CEO, WRI India

WATCH

Presenting the monthly EV Connect Powertalk interviews exclusively discussing insights from EV experts. We also present one hand picked video to showcase EV innovations from across the world.

Power Talk with Mr. TC Gupta, Additional Chief Secretary, Transport, Power, New and Renewable Energy, Government of Haryana



How to charge an electric vehicle with solar power

POWERTALK

IN CONVERSATION WITH MR. TC GUPTA

ADDITIONAL CHIEF SECRETARY, TRANSPORT, POWER, NEW AND RENEWABLE ENERGY, GOVERNMENT OF HARYANA

Interview taken by Amit Bhatt, WRI India

"The first pilot project will be on the national highway no. 44 (NH 44) between Delhi and Chandigarh. Second, the Gurugram Municipal Development Authority (GMDA) has received a sanction for 75 electric buses, under the FAME scheme, and these will be deployed soon."

Interviewer: **There is a lot of conversation on electric mobility - both at the national and state level. What is the thinking of the Haryana Government?**

Mr. Gupta: The Haryana Government proposes to encourage electric mobility in a big way, and I think our vision is to become a leading player in that. Accordingly, steps are being taken to further this. We have already drafted an EV policy which will shortly be open for public comments. The inputs will be considered and this will result in one of the most progressive EV policies in the country. Meanwhile, we have allowed EV charging stations to be set up, by individuals, for which no special commercial tariff is going to be charged. Secondly, from the government side, we are permitting petrol pumps to set up EV charging stations all along the highways.

"There is a subsidy available under the Government of India's FAME scheme and we have learned that there are some state governments who are topping it off with additional subsidies."

Interviewer: **In the case of EVs, what we have seen is that we need pilot projects and pilot corridors, initially, to demonstrate the electric mobility ecosystem. Is the Haryana government considering a pilot project?**

Mr. Gupta: The first pilot project will be on the national highway no. 44 (NH 44) between Delhi and Chandigarh. Second, the Gurugram Municipal Development Authority (GMDA) has received a sanction for 75 electric buses, under the FAME scheme, and these will be deployed soon. All the city bus service depots have provisions for EV charging stations. In addition, all 24 bus depots of the Haryana government will very soon have charging stations that will be open to the public at a very nominal rate. At the moment, we don't allow others to use the charging stations.

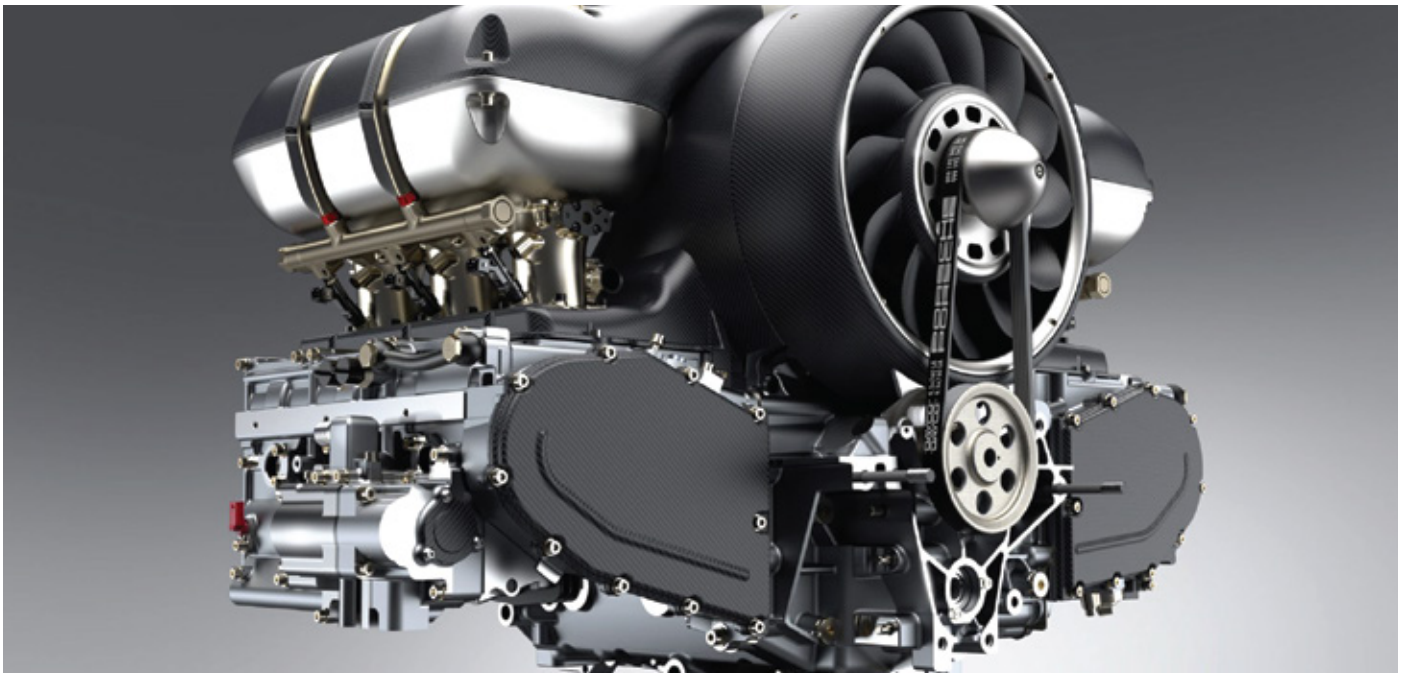
Interviewer: **In Gurugram, there are a lot of startups in the private sector. How can they help in scaling up electric mobility?**

Mr. Gupta: We recently saw Nagarro launching an electric vehicle fleet service for their employees. Similarly, by adopting electric vehicles, startups can help lessen the pollution in the region.

Interviewer: **There is also talk about how existing manufacturers can graduate to electric vehicles. Haryana has a lot of auto manufacturers. Is there any thought process around engaging the existing manufacturers?**
Mr. Gupta: Yes, we are actively engaging with them. In fact, there is a subsidy available under the Government of India's FAME scheme and we have learned that there are some state governments who are topping it off with additional subsidies. We are engaging with them to learn what it takes to make the switch to EVs in a big way.

Interviewer: **Where do you see electric mobility going in the next five years? Do you foresee substantive numbers?**
Mr. Gupta: I see a substantive rise because of the push given by the Government of India. NITI Aayog had a very special meeting regarding this a few days ago. We are contemplating future possibilities in Haryana. For example, at the moment, there is no power consumption by EVs but we are anticipating that in the next 3 years there is going to be a demand for at least 400-500 Megawatts. So, we are keeping a provision for that in our power demand forecast.

Interviewer: **There is also a conflicting view around electricity and sale of electricity when it comes to EVs. Is there any clarification on that?**
Mr. Gupta: A clarification has already been issued. For instance, when electricity is consumed by EVs it is not considered as a sale of electricity. Because if it is considered sale of electricity, one would have to get a license — a distribution license. But if the sale of electricity is only a service, which is being provided for, then no license is required. So, anyone can set up an EV charging station. We will encourage facilities like malls, restaurants etc. to set up charging stations so that even as people enjoy their meals, their vehicles can be charged.



UPDATES FROM THE WORLD

Daimler stops developing internal combustion engines to focus on electric cars | *Technology*

Although Daimler has had a strong foothold in making internal combustion engines, the company has decided to focus on electric vehicles instead of next generation internal combustion engines. Many manufacturers are shifting to an electric power train. Furthermore, several countries have announced bans on conventional vehicles, with a time limit, or have made fuel economy standards so stringent that electric vehicles are the only viable option. **Read more**

Takeawayfor India: Technologists worldwide have reached a consensus that diesel and petrol vehicles are in the process of waning out. They will be replaced by electric vehicles. Daimler's move is another indication of the impending rise of electric vehicles. In India, several manufacturers are investing in making electric vehicles which demonstrates their intent. But a collective recognition that the future is electric, and more resource efficient, is essential in creating a cost-effective transition roadmap

Tesla's ability to attract top software engineering talent explained | *Strategy and Market*

Tesla has been ranked as one of the most attractive employers for software engineers. This advantage, over other traditional automakers, contributes significantly to its work on futuristic and sustainable forms of transport – such as electric and autonomous vehicles. Along with higher compensation to software engineers, Tesla also offers a culture augmented by smaller team sizes where employees get to make a direct difference to the company's products.

Takeaway for India: Access to the right talent and the ability to retain talent is critical for Indian EV manufacturers too. The components of electric vehicles are different from that of conventional vehicles and hence need a significantly different set of skills. Along with developing strategies, to build a reliable labour force with the know-how of electric vehicles, manufacturers together with policy makers should pursue employee reforms and incentives to reward good performance and futuristic skill sets. **Read more**

Rivian lands an order of 100,000 electric delivery vans from Amazon | *Market Development*

The e-commerce retailer Amazon plans to go carbon neutral by 2040. As part of its policy, the company has placed an order for 1,00,000 electric delivery vans with Rivian – even before the company rolls out the first batch of its electric pick-up vans. Deliveries will be starting from 2021. Amazon's goal is to put all these vehicles to use by 2024. Rivian is an electric vehicle startup based out of Plymouth, Michigan. Amazon is one of the investors in this upcoming venture. Rivian is aiming to be the first to produce a mass-market electric pickup truck. It intends to begin selling its first model, R1T, by the end of 2020.

Takeaway for India: Business investment in promising early stage EV startups can help businesses achieve their carbon neutrality goals along with guaranteeing vehicle manufacturers assured volumes to produce. Logistics businesses are well positioned to attain viability on the money they spend in maintaining an electric vehicle fleet. Since their vehicles travel long distances, on a daily basis, they stand to benefit from the low operating costs.
Read more

UPDATES FROM INDIA

TN unveils new electric vehicle policy; targets ₹50,000 cr investment | *Policy and Market development*

Tamil Nadu's electric vehicle policy was recently released by the state government. The policy aims to attract investments worth INR 50000 crores along with creating 1.5 lakh new jobs. Tamil Nadu is already host to a major auto hub that supplies a substantial share of the country's automobiles. The state plans to carry forward its strength, in manufacturing and skill availability, to grow an electric mobility ecosystem locally. In addition, the policy also includes provisions such as exemption from road taxes and easy access to land for vehicle makers. **Read more**

India's first all-electric heavy-duty 60-tonne truck by Infraprime Logistics is already in operation | *Technology and Market Development*

A 60-tonne, heavy duty electric truck has been designed and manufactured indigenously by Infraprime Logistics Technology (IPLT), an Indian startup. It is already being used for logistics in the country. This is India's first ever heavy-duty truck that uses an all-electric power train. The truck has four systems - four major computer systems – motor control, transmission, battery management, and battery charging system. At the moment, the truck is not for commercial sale and will be sold only as part of a transport fleet. IPLT will launch five trucks, in the next one and half months, and 50-60 trucks per month starting January 2020, from its plant in Ghaziabad. **Read more**

Top India power financier looks for safer bets, like electric vehicles | *Strategy*

Power Finance Corp Ltd. is the largest financier of power projects in India. A host of factors, including financial stress in the power sector, are prompting the organisation to consider new sectors for project funding. The organsation is looking at electric vehicles and charging infrastructure related projects as an option. **Read more**

EV @ WRI

Substantive planning needed for introduction of electric buses

By Amit Bhatt, WRI India

The ridership in Gurugaman, the city bus service, has been growing steadily. This is welcome news. The bus service will complete one year of operations next month. A couple of weeks ago, the ridership crossed over 50,000 passengers per day. Incidentally, this is more than double the ridership in Gurugram's Metro rail system — the Rapid Metro. Gurugaman has seen a slow but steady increase in patronage. There are many reasons for the increase in the ridership, but largely, it has been due in an increase in coverage. Today, around 80 buses operate on seven routes. This number is expected to increase to 500 buses plying on 25 routes. **Read more**

EVFEATURE

THE $6,000 ELECTRIC VEHICLE: THE POWER OF THE USED CAR MARKET TO BRING ELECTRIC VEHICLES TO EVERYONE

by Ryan Sclar and Emmett Werthmann, World Resources Institute | September 2019

Transportation is the fastest growing source of carbon dioxide emissions and fossil fuel demand worldwide. That makes zero-emission vehicles a prerequisite for a sustainable future.

But while our glittering electric future is often defined by the sci-fi innovations of companies like Tesla and Rivian, the reality is that 70% of all car sales in the United States – the second-largest market for electric vehicles (EVs) – are for used vehicles.

New cars are exciting and tend to occupy headlines, but used cars are what actually occupy the streets. Nevertheless, manufacturers, policymakers and the general public have given almost no attention to used EVs. To ensure a clean vehicle transition for everyone, regulators can and should adapt established techniques for promoting new EVs to the used EV market.

A Nascent Secondary EV Market Ramps Up

Most cars sold in the U.S. today are not only pre-owned—they're also driven longer. The typical U.S. driver possesses a car more than 11 years old, with the average age of a car increasing 2.5 years between 2000 and 2017.

For the moment, sales trends for electric cars run opposite to those of conventional cars: 66% of electric cars are bought new and only 34% used, according to a 2017 CarMax survey. This is not surprising for a new technology without a well-developed secondary market.

Electric cars also buck another conventional procurement trend: 80% of new EVs are leased, while only 30% of conventional vehicles are leased. People tend to lease EVs to protect themselves from the acute depreciation and perceived obsolescence these cars often face as a result of the rapid pace of improvements for battery range, powertrain performance and other technologies. As these electric cars come off leases, they typically enter the used market.

As a result of these factors, the supply of used electric cars sometimes dramatically outstrips the demand to buy them. This imbalance has flooded the used EV market with older models with sub-100-mile ranges, such as the early-generation Nissan Leaf and Fiat 500e. These EVs were often originally priced above $30,000, but now start around $6,000 for a model that is typically only three or four years old with under 40,000 miles. Secondary EVs tend to depreciate sharply in value since they appeal to a limited clientele, given their short ranges and unproven longevity.

However, as we continue to see improvements to battery range and performance, the market for new EVs should expand swiftly, pulling along the secondary market at a similar, yet slightly delayed, pace. As new EVs become better, so will the used ones.

In turn, used EVs will likely be exposed to less price depreciation. This is already being seen with high-end EVs, which have above-average battery ranges and performance specs. Tesla's Model S, for example, not only holds its value three times better than the average electric car, but also two times better than the typical gas-powered car. As future mass-production EVs reach the range and power of current high-end models, the used EV market will ramp up.

The Power of the Secondary Market

As used electric car options expand, the growing secondary market for EVs could be instrumental in ensuring the air quality benefits of EVs can be experienced by more people. The impacts of trading an old gas car for an EV may be particularly impressive. One recent study found that 25% of the oldest and least maintained cars on the road account for roughly 90% of all vehicle-related pollutants.

The used market shows great potential to knock down steep purchasing prices for EVs, which still tend to run higher than their conventional drivetrain counterparts, at least upfront. While future EVs in the used market may not provide the staggering depreciation they do now, they will still present a cheaper option than buying new.

How to Expand Access

The second-hand market will likely be the best opportunity to bring EVs to a large client base, but only if people are willing and able to buy used EVs. Policymakers have a critical role to play in supporting and growing this market. Here are three actions policymakers currently use to increase new EV access, which could be adapted to boost the used EV market too:

- **Promote alternative access schemes**
  Governments should incentivize alternative ownership schemes to extend EV access to people who are unable to or do not want to purchase their own vehicle. To help distribute the risk and responsibility associated with used EVs, governments can help establish buyers' clubs, which pool members' collective buying power to leverage bulk purchase prices from manufactures. Policymakers can also increase the economic viability of electric car-sharing programs by including used vehicles in the fleet. Both initiatives could increase demand in the EV secondary market.

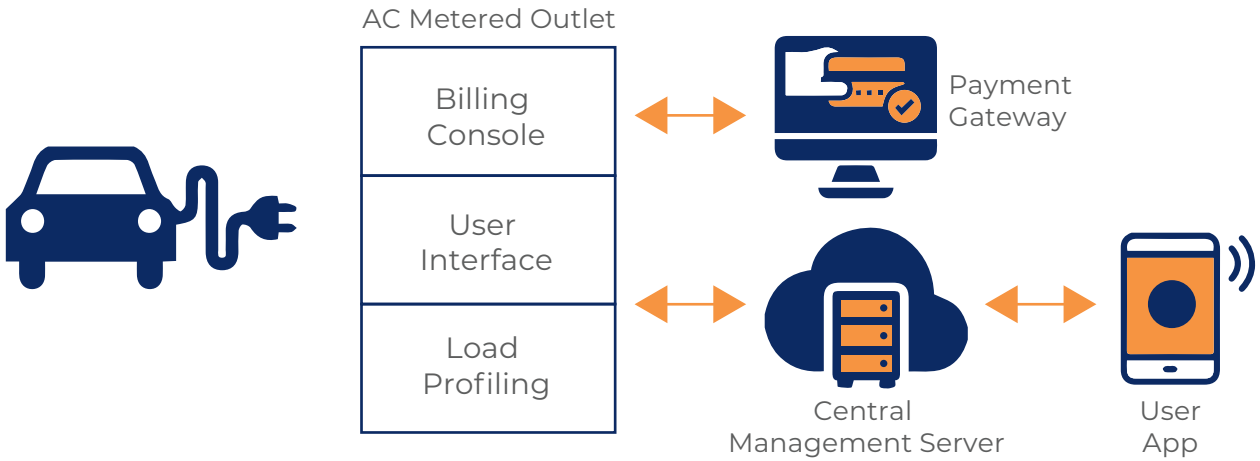
- **Provide targeted infrastructure support**
  Historically, electric car drivers have done roughly 80% of their charging at home. As the used market lowers price barriers, electric cars will be within the price range of more people who do not have their own space to charge at home. Therefore, decision-makers should craft policies to ensure adequate charging infrastructure is provided in or near multi-family buildings, especially low-income housing and other areas where residents may face difficulties plugging in.

- **Establish incentives**
  Despite the low price of many used EVs on the market today, depreciation rates will likely reach parity with conventional cars as more EVs with decent range and reliability hit the roads. In fact, the long-lasting drivetrains in electrified cars may ultimately help them depreciate slower compared to today's gas-powered fleets. Incentives for new EV purchases are common but almost never extend to the used-car world. In the United States, for example, the federal government provides a tax credit worth up to $7,500 for a new EV purchase, while providing no incentives for used purchases. Extending a comparable incentive to used sales would functionally reduce prices even more, encouraging more demand. Similarly, governments can retool trade-in schemes to financially reward people who replace their old car with a used EV. Furthermore, research from California's incentive program indicates that means-tested monetary policies, which provide larger incentives for people of lower income, can be particularly effective in increasing the overall number of EVs bought, expanding access to a greater cross-section of users.

The newest, flashiest EVs will undoubtably capture the attention of the public and of policymakers. Nevertheless, we must not forget the role of the used vehicle market in supporting the EV transition for everyone.

EVISUAL

Communication between an EV, a public slow charger and mobile payment technology



Source: WRI India and CBEEV, IIT Madras. (2019).
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