WRI INDIA

EVCONNECT

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FROM THE CEO'S DESK

Dear Friends,

WRI India's monthly newsletter, EVConnect, has successfully completed one year. I am delighted to share with you the twelfth issue of the newsletter.

Without a doubt, the electric mobility sector is ratcheting up. Take for example the incentives for EVs in the recently released Union Budget of 2019-2020. Steadfast emphasis on the electric vehicle ecosystem, introduction of FAME 2 and multiple state EV policies are supporting the market development. Business investments are also growing optimistically. This is a good beginning, but a lot more action is needed on the ground - in cities and states. In the past year, we have learned that close coordination between multiple departments ranging from power to land to finance is essential. In addition, identifying the unique characteristics of mobility and energy-use in cities and at the state level is crucial for making electric mobility policies benefit the public and the country.

New developments are taking place at a 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 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 includes a conversation with Jasmine Shah, Vice President, Delhi Dialogue and Development Commission, Government of NCT Delhi. It also includes a feature that discusses the role of heavy transport, including freight, in reducing greenhouse gas emissions through efficiency measures such as switching to the electric power train.

I hope you will benefit from this edition and share your feedback on how to improve it.

Sincerely,

Dr. OP Agarwal
CEO, WRI India

WATCH

Presenting the montly 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 Jasmine Shah
Vice President, Delhi Dialogue and Development Commission, Govt. of NCT Delhi

New idea for electric car battery change animation

WATCH the full interview **here**

POWERTALK

IN CONVERSATION WITH JASMINE SHAH

VICE PRESIDENT, DELHI DIALOGUE AND DEVELOPMENT COMMISSION, GOVERNMENT OF NCT DELHI

Interview taken by Amit Bhatt, WRI India

(Copy-edited for the print version)

"We already have the draft policy for Delhi out with various strategies spelled out. The first is subsidies that certain priority segments will get because, with the present price disparity between ICE and EVs, there is a case for subsidy."

"We are looking at freight as one of the primary thrusts of our policy. Our draft policy came out in November 2018 and our final policy should be out in a few weeks from now. Our draft policy had measures and incentives for goods carriers and two-wheelers that are used for last mile delivery services."

Interviewer: **Can you give us a background on the Delhi EV policy? What led to the EV policy coming up?**

Jasmine Shah: The imperative for this policy is the larger pollution challenge that Delhi and other cities in India face. The Delhi government was tasked with creating an ambitious and aggressive subnational policy to complement the national policy while simultaneously addressing the local factors, and the local composition of vehicles, that contribute to vehicular pollution. Keeping this in mind, and after consultation with all stakeholders of civil society expert groups and manufacturers, we formulated a very comprehensive draft of the EV policy.

Interviewer: **If Delhi's EV policy builds on the national policy could you give examples of where Delhi's policy gets linked to the national policy?**

Jasmine Shah: We already have the draft policy for Delhi out with various strategies spelled out. The first is subsidies that certain priority segments will get because, with the present price disparity between ICE and EVs, there is a case for subsidy. But the subsidy should also take into consideration existing national subsidies. In many cases we linked it to the national subsidy where the national subsidy was good enough to catalyse a large scale shift to electric vehicles. At the end of the day, the success of any policy is the response it garners and we are hopeful that the subsidies we designed in Delhi's EV policy, taken together with the national policies, can effect that kind of transition. The second part is the charging infrastructure and how we build it. Here we actually saw that there were gaps – this was the FAME 1 scheme, FAME 2 wasn't launched at that time – so our EV policy actually lays out a plan for public as well as private charging infrastructure with battery swapping and charging modes. And then it looks at the capacity of the state - i.e. where will the funding come from, will there be a feebate mechanism wherein the more polluting vehicles pay more to enable a quicker transition to electric vehicles. So, we looked at all of these factors, and identified gaps in the national policy, keeping in mind the needs specific to Delhi. We also had to keep in mind the vision of Delhi's EV policy which is not necessarily to make Delhi the hub of EV manufacturing of the entire nation.

Some states have moved in that direction. Our primary goal was to lower the pollution in Delhi. We wanted a rapid take-up of electric vehicles, so we were looking at the demand side rather than the supply side. Because if demand is catalysed, supply will take care of itself with increased economies of scale.

Interviewer: **Many people have pointed out that FAME 2 is silent on freight. Is Delhi's EV policy also silent on freight?**
Jasmine Shah: We are looking at freight as one of the primary thrusts of our policy. Our draft policy came out in November 2018 and our final policy should be out in a few weeks from now. Our draft policy had measures and incentives for goods carriers and two-wheelers that are used for last mile delivery services. However, the final draft will have a strong emphasis on freight as it is a low-hanging fruit. In fact, even before the policy has been finalised, the Delhi government has mobilised the entire freight ecosystem in Delhi - especially in the two and three-wheeler and light commercial vehicle category. Last month, we organised an Urban Mobility Lab which saw participation from about 26 players including Zomato, Swiggy and courier companies like Gati. All these players sat down with the Delhi government to systematically list out the regulatory support needed for them to make the transition and the needed infrastructure and subsidies. We have a commitment, from these players, that in the next 12 months we will have 1000 electric freight vehicles on the roads in Delhi. We feel 1000 is on the lower side as we are expecting much more than that.

Interviewer: **By when can we expect to see the final policy?**
Jasmine Shah: It is in the final stages and my sense is that in a month's time it should be out.

Interviewer: **One thing that we have seen is that the policies are very qualitative in nature without any hard numbers. So, is there any quantitative target which says x% of fleet to be electrified by y deadline in Delhi's EV policy?**
Jasmine Shah: Our policy draft correctly spelled out the big picture because I think if any policy doesn't spell out its vision then it's not clear how ambitiously you need to push certain levers. In this case, we have said that in five years - our policy is going to be out in 2019 so by 2024 - we want 25% of all newly registered vehicles to be electric. That's a goal which will be consistent in our final policy as well. We believe that Delhi is rightly positioned to be the EV leader in India. And the goal of 25% electrification of new vehicles is achievable.

Interviewer: **Do you think there is a role for research organisations like WRI India in helping you achieve this goal and in rolling out the EV policy?**
Jasmine Shah: Absolutely. I feel WRI India has been working closely with us in our evolution. The one thing that we must address is the constraint, in the state capacity in India, to really understand the various aspects of this complete ecosystem – electric vehicles, the various challenges of battery swapping and charging etc. I think there are concepts that are not known to officials within state governments. And making global research accessible to Indian policymakers, working with state governments, will ensure the entire process of deploying EVs happens smoothly. For a smooth transition, research organisations, the government as well as manufacturers, who are interested in catalysing the larger ecosystem, must work hand-in-hand.

UPDATES FROM THE WORLD

Toyota strikes a deal with the world's top supplier of electric car batteries | *Market Development*

Toyota has inked a partnership with CATL, a major Chinese battery manufacturer, to secure an advance supply of batteries for electric vehicles – the market for which is slated to grow globally. This agreement will expand the market share of CATL in the battery storage industry. At present, Toyota obtains its supply from Panasonic. The company has also struck a deal with BYD of China to obtain batteries from diverse sources. Toyota is forecasting annual sales of 5.5 million EVs globally in 2025 - a target that was pegged to be achieved in 2030 earlier. After years of focusing on, and investing in, hybrid and fuel technology, the growth in global sales is now seeing the company shift its stance to all-electric cars.

Takeaway for India: Businesses in India that are looking to make electric vehicles should secure a supply of electric vehicle batteries for the future. This can be done by partnering with key players from the battery manufacturing industry. Learning from the case of Toyota, such businesses could benefit by partnering with a wide range of battery manufacturing firms, instead of relying on only one source. **Read more**

New UK homes to have car charging points by law | *Policy and Strategy*

The UK government is mandating that all new homes being built must have charging points for electric vehicles in response to the expected uptake of clean vehicles. This initiative will help the country achieve its goal of net zero emissions by 2050. As of 2018, EVs accounted for only 2.7% of new vehicle purchases in the UK. The new legislation complements the broader efforts of the government, such as a GBP 400 million Charging Infrastructure Investment Fund which is part of the country's 'Road to Zero' strategy in transitioning to clean transportation. At present, transport accounts for 33% of the total greenhouse gas emissions in the UK.

Takeaway for India: India has made some advances in amending its building by-laws (done by the Ministry of Housing and Urban Affairs) to make it easier for home owners to create charging points in the parking premises. UK's case is a step ahead in that it uses legislative powers to facilitate a dense charging point network for a growing share of EV owners. This approach is ambitious, but not without merits, if the intent is to create a dense charging point network to facilitate EV usage. **Read more**

Electricity billionaire is building the Tesla of Thailand | *Market Development and Strategy*

Thailand's biggest electric utility, Energy Absolute Pcl, will be making electric vehicles, batteries and charging stations, in addition to supplying power to run the vehicles. The market of electric vehicles in Thailand is nascent with barely 2,000 all-electric vehicles in the city. Energy Absolute is using subsidies and tax breaks to put 5000 electric vehicles on the road and 700 plus charging stations. The company recently showcased its passenger electric five-seat hatchback, Mine Mobility, which is locally made and runs about 200 kms on a single charge. It is priced at USD 38,000 and is cheaper than a Nissan Leaf or Kia Soul EV. Energy Absolute will be supplying 3,500 cars, spread between five taxi unions, later this year.

Takeaway for India: The key point to note here is how the automobile and transportation sector will merge with the power and energy sectors. With this, the traditionally known roles of the utilities – which are generally known to supply power to homes and businesses – will evolve. This is already visible in parts of India where oil retail companies are venturing into the charging infrastructure business. More such diversification needs to take place to further electric mobility in India. **Read more**

UPDATES FROM INDIA

India looks to lead electric vehicle race with latest push in budget | *Policy and Strategy*

India's new financial budget apportions support to growing the electric vehicle sector in the country. The budget avowed rebates up to INR 1.5 lakh, on interest paid on loans to buy electric vehicles, with a total exemption benefit of INR 2.5 lakh over the entire loan period. In addition, the budget also exempts customs duties on lithium–ion cells to help lower the cost of li-ion batteries in India and make local production viable. Manufacturers of li-ion battery storage will also benefit from the income tax rebates announced in the budget. **Read more**

Ola's e-vehicle arm nears USD 1 billion valuation | *Market Development*

Ola Electric Mobility recently raised USD 250 million from Softbank at a valuation close to USD 1 billion. This deal will see the valuation of the company rise to USD 960 million, taking it several steps closer to becoming the sixth unicorn in the country. The company will prioritise on charging infrastructure - which will include battery swapping and deployment of two and three-wheelers. **Read more**

Big boost for EVs as three lithium-ion companies are likely to set up plants in Telangana | *Policy and Market Development*

Telangana is expecting three electric vehicle battery manufacturers to set up manufacturing units, with a combined capacity of 10 gigawatts, in the state. The initial battery production capacity will be 1 gigawatt which will be ramped up to 10 gigawatts spread into three phases. The total investment will be about INR 6000 crore. Complementing the national intent on the local manufacturing of EV batteries, the government of Telangana is also developing a 200-acre park for EV manufacturing that can be extended to 800 acres in the future. This initiative will help in creating a localised ecosystem for electric mobility in the state. **Read more**

Hero Electric looks at fivefold expansion in output capacity | *Market Development*

Anticipating a rise in demand for electric two-wheelers, Hero Electric plans to increase its production capacity to 500,000 from its current capacity of 10,0000. Simultaneously, the company is also investing in the local manufacturing of components and will invest INR 40-60 crores every year along with expanding its dealerships from 600 to 1000 by next year. **Read more**

EV @ WRI

Optimise budget push to electric vehicles with mobility innovation

By Amit Bhatt, Director of Integrated Transport, WRI India

Last week's Union budget gave a further impetus to electric vehicles. The GST on electric vehicles (EVs) was reduced from 12% to 5%. An additional income tax deduction of Rs 1.5 lakh was proposed on the interest paid for buying EVs. In addition, the budget also increased the price of petrol and diesel by Rs 2 per litre through an additional cess, creating a further nudge towards the EVs. This comes after the government initiated the second round of the Faster Adoption and Manufacturing of Electric Vehicles in India, also known as FAME scheme. FAME 2 has an allocation of the Rs 10,000 crore and looks to bring 15 lakh electric vehicles in India in the next three years. **Read more**

EVFEATURE

PLANES, TRAINS AND (BIG) AUTOMOBILES: HOW HEAVY TRANSPORT CAN REDUCE EMISSIONS AND SAVE MONEY

by Faustine Delasalle and Delger Erdenesanaa | July 2019

The world is vastly underestimating the benefits of acting on climate change. Recent research from the Global Commission on the Economy and Climate finds that bold climate action could deliver at least $26 trillion in economic benefits through 2030. This ground-breaking research, produced by the Global Commission and more than 200 experts, highlights proof points of the global shift to a low-carbon economy, and identifies ways to accelerate action in five sectors: energy, cities, food and land use, water and industry. Our blog series, The $26 Trillion Opportunity, explores these economic opportunities in greater detail.

Heavy duty transportation—freight trucking, shipping and aviation—accounts for approximately 13% of global greenhouse gas emissions. Although the sector has long been a major challenge to clean up—especially as demand for transporting goods increases—research shows it can now reach net-zero emissions by as soon as 2050. Remarkably, getting to zero doesn't need to cost much either given recent progress in clean technologies. The same research shows that decarbonising heavy transport, along with heavy industry (cement, steel and plastics) would cost less than 0.5% of the global GDP by mid-century.

Companies are beginning to buy in. Towards the end of 2018, Maersk, the world's largest shipping company, made waves by pledging to become carbon neutral by 2050.

These commitments by Maersk and other transportation companies are critical elements of the global climate action effort, which could bring $26 trillion in global economic benefits by 2030. By acting quickly and ambitiously on climate change, the world could generate 65 million new low-carbon jobs in 2030, and avoid more than 700,000 premature deaths from air pollution by 2030. Here are some of the biggest opportunities in the transportation sector:

Make Way for Electric Trucks

Only five countries—Canada, China, Japan, the United States and India—have national fuel-efficiency standards for freight trucks. Others including Brazil, the European Union, Mexico and South Korea are considering regulations. Implementing standards across the world's major economies is step one to greening the trucking industry.

Step two is embracing electric vehicles. Companies are beginning to produce electric trucks, some with batteries and some with hydrogen fuel cells. Tesla starts production of electric battery semi-trucks this year, and Mercedes-Benz will follow in 2021. Last year, Anheuser-Busch ordered a fleet of 800 hydrogen fuel cell trucks from U.S. company Nikolas. Researchers predict that electric trucks will become cost-competitive with diesel and gasoline vehicles by about 2030. As road transport goes electric, the power grid that charges these vehicles needs to go low-carbon, by swapping out fossil fuels for renewables.

Better Fuels & Efficiency for Shipping and Aviation

Between 2008 and 2015, tighter air pollution regulations across the shipping industry resulted in 30% greater fuel efficiency. There's still further savings to be had. The least efficient tankers use five times more fuel than the most efficient ships. Taking full advantage of available efficiency measures could save shipping companies more than $30 billion in fuel costs each year. What's more, the International Maritime Organization has issued efficiency standards for the design of new ships, which should save an additional $200 billion in annual fuel costs by 2030.

There's also a strong case for airlines to invest in energy efficiency. American Airlines spent $300 million on fuel-saving programs since 2005, but saved $1.5 billion on fuel. Industry-wide, fuel accounts for one-third of airlines' operating costs.

For shorter distances over sea and air, electric ships and airplanes are a viable solution. Hybrid and electric ferries already operate in Finland, Norway and Taiwan. Operating Norway's electric ferry is 80% cheaper than operating fuel-powered counterparts, and the electric model produces 95% less emissions. But without breakthroughs in battery technology, long-distance shipping and aviation will require biofuels or synthetically made fuels. For longer trips, pairing energy efficiency with low-carbon fuels is crucial.

Railroads to the Rescue

Not all transportation is equal. Just shifting to cleaner forms of transport—from trucks to railroads and ships, or from short flights to rail—combined with streamlined logistics, could cut heavy transport emissions by 20%.

Railroads are an underused alternative for trucking especially. Trains move 32% of goods in the United States, but generate only 6% of freight-related greenhouse gas emissions. Meanwhile trucks account for 40% of American freight transport and 60% of freight-related emissions.

Some companies are already changing their practices. UK supermarket chain Tesco is moving from trucks to trains for many of its products, aiming to save 26 million truck miles every year, which would cut its freight-related emissions up to 80%. Since introducing the initiative in 2014, Tesco has saved 15 million gallons of diesel.

When It Comes to Moving Stuff Around, Less Is More
As the global middle class expands and spends more on consumer goods, demand for heavy duty transport will rise. The resultant emissions are projected to rise from 4.5 gigatons of CO2 per year to 8.2 gigatons per year by 2050.

Efficiency and renewable energy can do a lot to reduce transportation emissions. But to tackle the problem long-term, managing demand is also important. A more circular economy can help. Instead of a "take-make-waste" business model, companies should design longer-lasting products and services that recycle and reuse materials. By reducing the amount of stuff that enters and exits the economy, we can dramatically lower emissions along the life cycle of these goods—including at the transport stage.

All Aboard for Clean Transport
The burden isn't on companies alone. Policymakers have the power to encourage cleaner transportation by setting fuel efficiency standards, phasing out fossil fuel subsidies and pricing carbon. Governments should also invest in research and development to further bring the costs down on key technologies like batteries, charging infrastructure for electric vehicles, hydrogen fuel and sustainable biofuels. Many of these technologies rely on electricity, so developing the renewable energy sector will underpin much of the change to come.

In today's economy, transportation provides the essential arteries for global trade. With concerted effort from companies and governments (including the international governing bodies for shipping and aviation), the transport sector can step into a zero-carbon future right alongside the industries that depend on it. Climate experts consider heavy transportation and industry the hardest sectors to tackle. But research and real-life examples show that the challenge isn't as big as we thought. There's no excuse now—every part of the global economy can go green.

EVISUAL

The story of batteries until now

Source: Quartz/qz.com

COURTESY FOR THE ARTICLES

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Video Courtesy: https://www.youtube.com/watch?v=ngS7cPEil8A

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Under the Electric Mobility Initiative

Shakti Sustainable Energy Foundation works to strengthen the energy security of the country by aiding the design and implementation of policies that encourage renewable energy, energy efficiency and sustainable transport solutions.

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