



## Green Auto Market

The Business of Green Cars, Fuels & Technologies

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#### India seeking solutions to oil imports, power blackouts, and polluting vehicles



India offers a look at steep challenges and vast opportunities for clean transportation and energy from the fastest-growing country in the world.

India is expected to soon have the world's largest population at 1.25 billion people. The United Nations predicts India's population will be larger than China's by around 2030. Energy demand and oil consumption are expected to reach record levels as an increasing urban population with rising income has propelled greater use of cars, trucks, and motorbikes.

And plenty of electricity consumption, as the infamous blackout demonstrated. The July 30, 2012 blackout affected over 300 million people and was briefly the largest power outage in history in terms of the number of people affected. It's a country where millions of workers are moving to cities for jobs, renting apartments and buying houses, and blowing out power stations through turning up air conditioners on hot and muggy days.

India has been dependent on coal for electricity, and oil imports for its transportation.

**India's auto sales**, including commercial vehicles and motorcycles, rose 9.2% last year to 21.9 million, according to the Society of Indian Automobile Manufacturers. It's the fifth largest auto market in the world. The country needs a lot of oil to fuel its fleet. Oil consumption set a record by growing 11% last year. Demand for gasoline jumped 12% last year to 23.7 million tons, while diesel demand grew 5.6% to 76.7 million tons.

Ever-increasing urban air pollution and the government's commitment to reduce carbon emissions are drivers for change. India has also been quite concerned over its dependence on foreign oil imports, mostly from the Middle East. Neighboring nation China has very similar concerns. More than 80 percent of India's crude oil demand is being met through foreign oil suppliers.

Along with air pollution, climate change, and the geopolitics of importing oil, India faces capital intensive road and infrastructure issues. Poorly developed roadways and infrastructure will be another hurdle for the Indian government – and Indian and foreign automakers – to clear for vehicle transport to become more viable.

India's goals include more domestic oil production; electrified transportation; liquefied natural gas for commercial vehicles; compressed natural gas for light-duty vehicles; and renewable energy replacing coal. The nation would also like to see its rail system expand.

Like China, India has put in place incentives to get automakers to build plug-in electrified vehicles in the country, and to import their PEVs from elsewhere. India's renewable energy ministry launched a program in 2010 that included a reduction of battery import duties from 26% to 4%, and consumer rebates of up to 20% off the window sticker price.

The PEV market could offer huge potential in coming years for Indian and foreign automakers. Finding a charging infrastructure will also be an issue blocking car shoppers, as will be cost, and trying out a new technology that they have little experience with.

Maruti Suzuki India Ltd., a subsidiary of Suzuki Motor Corp. of Japan, is India's largest provider of passenger vehicles. Tata Motors and Mahindra & Mahindra Ltd. are two leading automakers in India, with other Indian commercial vehicle and motorcycle manufacturers doing well in sales in that market. Korean maker Hyundai has been another leading foreign import company in India along with Suzuki's subsidiary. An Indian government program called "Make In India" has been helping the auto industry grow and create jobs in India.

**Mahindra & Mahindra's electric vehicle division** has been selling its e20 small electric car in the country, and its eVerito electric sedan, but there are few import PEVs to choose from. Mahindra Electric just introduced a new electric car, e20Plus. The challenge for Mahindra Electric has been selling the idea of owning and driving an electric car, [according to Mahesh Babu](#), chief executive officer. Making people understand the need for "sustainable mobility" has been a very important point to make, the Mahindra Electric chief said.

Babu sees the need for developing an ecosystem with adequate infrastructure to encourage consumers to try out the new technology.

The company had increased its production capacity to 5,000 vehicles a year, and would like to sell its cars globally. As for now, meeting the aspirations of Indian customers has been challenging enough, he said.

**Tesla, Inc., is taking its global outreach very seriously this year.** Tesla's website says that outside the U.S, the company has a presence in Mexico, Canada, Europe, Australia, China, Hong Kong, Japan, and Taiwan. The electric automaker will soon be adding India, Dubai, and South Korea to its list.

CEO Elon Musk on February 7 tweeted that Tesla is hoping to open a store in India during summer 2017. Musk has been thinking about entering the Indian market for a few year now; in 2015, he mentioned setting up a Gigafactory in that country.

Indian Prime Minister Narendra Modi and his delegation toured Tesla's California corporate campus in fall 2016. Tesla was invited to be a part of India's strategy to become a global center for renewable energy leadership. Modi was particularly interested in Tesla's Powerwall energy storage product as part of its own renewable energy campaign. The country has a serious problem to overcome in distributing energy evenly, and affordably, across the country and Powerwall could help accomplish the government's goals.

One thing to keep in mind is that vehicles built for the Indian auto market are similar to the UK market – steering wheels are placed on the right side of the vehicle. Tesla's manufacturing plant in Asia, which is expected to be located in China, will have to accommodate that need.

Tesla will be entering the Middle East to sell and service its electric vehicles through online sales and a retail store in Dubai. Tesla said that it's opening a store at the Dubai Mall. A Tesla service center will be opened on Dubai's Sheikh Zayed Road in July. At a Dubai press conference, Musk recently said that a store and service center will open in Abu Dhabi in 2018, with plans by the company to expand to Bahrain, Oman, and Saudi Arabia.

Tesla is preparing to enter the Korean market in May following the South Korean government's approval, and will establish Tesla service centers. The service centers will also offer Superchargers and will oversee Tesla autonomous driving features. Tesla went into talks last year to set up a Tesla store at what has become South Korea's largest shopping mall, Starfield Hanam, which opened in September.

JSW Group, an Indian power and metals conglomerate, will be building electric cars by 2020; that's coming from expectations the India government will further promote PEVs and falling battery prices will make them more affordable. The Mumbai-based corporation will set up the PEV business on its own and initially buy batteries from suppliers, Chairman Sajjan [said in an interview](#). The company will consider setting up a joint venture for making batteries in the longer term.

The Indian government has set a few goals to reduce oil imports, improve air quality, and reduce carbon emissions. Objectives include more domestic oil production, liquefied natural gas for commercial vehicles, compressed natural gas for light-duty vehicles, and renewable energy replacing coal. Strong demand for oil and fuel production has led Indian refiners to spend billions of dollars in recent years to meet market demand, especially in nationalized companies. State-run Indian Oil Corp. has been expanding its existing refineries across the country.

India is seriously considering LNG as a replacement for oil. Indian conglomerate Tata is bringing long-distance trucks powered by LNG as a replacement to diesel-fueled trucks to the market. Public transport, taxis, rickshaws, and quite a few private cars have been converted to compressed natural gas (CNG), which is cheaper and cleaner than diesel or gasoline. The country is looking for economic stability and environmental gains from reducing its dependence on oil and coal.



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**Infrastructure: US Fueling and Charging Stations – February vs. January**

Biodiesel (B20 and above): 209 – up from 191 in January

Compressed Natural Gas (CNG): 947 – up from 937 in January

Electric Vehicle Charging Stations: 15,509 – up from 15,315 in January

Ethanol (E85): 2,832 – up from 2,782 in January

Hydrogen: 33 – the same number as in January

Liquefied Natural Gas (LNG): 76 – down from 83 in January

Liquefied Petroleum Gas (Propane): 298 – up from 292 in January

Source: Alternative Fuels Data Center