***Final Assignment – Report Of Jaipur City***

*- By Aditya*

**Jaipur**, capital of Rajasthan state, northwestern India. It is situated in the east-central part of the state. It is Rajasthan’s most-populous city. Jaipur is a popular tourist destination and a commercial trade centre with major road, rail, and air connections. According to the City Development Plan, Jaipur is a very fast-growing metropolitan city, ranking 11th in the list of Indian mega cities with a population of 3.5 million and annual growth rate of 4.5%. Jaipur district has population of 66.26 lakh. The population density is 598 per sq. km with 48% people living in rural areas. Jaipur city’s population is around 3.07 million (2011 census), with 17% of total urban population of Rajasthan. As per census, Jaipur city witnessed 32.2% population growth during the decade. The Walled city has been used beyond its capacity and is now facing the problems of congestion, traffic and parking.

The year 2016-17shows registration of 14900562 motor vehicles in the state of Rajasthan, which shows a rise of 9.3% over the previous year where it was 13632176. Rajasthan had a total road network of 145807 kms (2017) and accounted for a total of 14900562 registered vehicles (up to March 2017) of which 18.73% were in Jaipur district itself thereby clearly implying one in every 5 registered vehicle in the state of Rajasthan is registered in Jaipur district.

|  |  |  |
| --- | --- | --- |
| Air Pollutants | Concentration (µg/m³) | Air Standard (India) |
| PM 2.5 | 48.8 | 40 |
| PM 10 | 110 | 60 |
| o3 | 53.1 | 100 |
| co | 720 | 2 |
| no2 | 18.4 | 40 |
| so2 | 9.6 | 50 |

Electric mobility can help to solve the problem of congestion and pollution in following ways:

* By designing effective, equitable, safe and secure public transport systems, integrated with mobility-as-a-service and other platforms.
* By adapting to vehicle innovation and adoption (autonomous, electric, shared).
* By crafting policies and strategies to promote adherence to air quality standards and other quality-of-life measures.
* By developing public-private partnerships and collaborating with knowledge institutions to address air quality, traffic congestion, and sustainability issues.
* By building sustainable infrastructure to support innovative mobility solutions from public and private sectors.

But there are some points that weakens the implementation of electric mobility such as low awareness in public sector, lack of regional and national financial instruments for new policies, lack of true electrical corridors and recharge infrastructure, weak relationship between enterprises and public, lack of needed funds to implement electrical mobility and also the most important factor is the threat of stealing of personal information which include cyber security.

**Solution by Three Perspectives**

*1. Technology*

The operation of the electric car itself is fundamentally very simple: the energy from the battery is used by the motor for driving and the power electronics helps in controlling the power flow. The electric motor together with the motor drive has the key benefit of providing close to full torque at all speeds and hence electric cars do not have gears and much simpler transmission system.

Charging infrastructure for electric cars will play a key role for the uptake of EVs in the future. Currently, EV charging isuncontrolled and the charging starts as soon as the EV is connected and it occurs at a fixed power. With smart charging, the charging process can be changed both in time and power to be controlled based on say, solar energy production or energy prices. By smart charging, the EV charging can be made cheaper, more efficient and more environmentally friendlier.

*2. Business*

*Business perspective of electric vehicle can be broadly classified into three disruptions -* electrification, automation and connectivity. Electrification is the most important positive sustainable disruption as we are spilling our resources and improved usage of solar energy could lead to energy positive vehicles in the future. Regenerative braking is another step towards energy positive vehicles. Fast charging infrastructure fed with 100% renewable energy is needed.

Smart e-mobility is possible only when electrification and automation come together. Traffic congestions and hence cost of congestions could drastically be brought down in the case of smart e-mobility. Also, mobility without accidents is possible. But for both of these to happen, acceptance of automated driving and master plan for mobility are crucial. Driving empty is a waste of cost and through connectivity, the total cost of ownership can be shared among many consumers. EVs will break even because of the economies of scale in the battery production and supply chain for the EV parts. This means that EVs will have about the same showroom price as an internal combustion engine vehicle.

*3. Policy*

Government intervention in any sphere is only justified if it seeks to defend the public interest and safeguard public values. Mobility is an essential service without which all economic activity in a country would come to a standstill. The current mobility system is not without its problems. Emissions from IC engine vehicles pose a threat to human health and contribute to global warming. The current dependence on fossil fuels also poses a long-term threat to energy security of many countries. These reasons are strong enough for governments to look at alternative solutions for clean and sustainable mobility. Additionally, the electricity generation mix is undergoing a sea-change with the penetration of renewables. Electric vehicles are not only clean, but they can also be integrated very well with renewable sources of electricity by implementing the concept of demand flexibility.

Mobility is an essential service which means that all policies related to EVs must be constructed within the framework of public values enshrined in the laws of countries. While mobility does not imply private ownership of cars, it does imply that the government arrange public transport services and provide supporting infrastructure. In a future world where autonomous electric vehicles might be the primary mode of transport in rural and even urban areas, it is essential that data privacy and cyber-security risks are addressed. Governments should be aware of negative social effects while designing incentive schemes, thus limiting these schemes in time and the amount of money transferred is essential. Eventually users will base their decision to buy an EV on not just material factors but also on other factors such as a cleaner conscience for not polluting the environment and peer pressure.