What role do EVs have in SA's energy transition?

By Titus Mathe

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Tesla, the world-renowned electric vehicle company, is spearheaded by a South African named Elon Musk. However, the majority of Musk's fellow countrymen consider the technology to be unattainable and almost irrelevant. Moreover, electric vehicles appear counterproductive in a nation already grappling with electricity shortages. Introducing energy-intensive vehicles to the grid will undoubtedly exacerbate the problem.

Source: Unsplash

Nevertheless, the South African National Energy Development Institute (Sanedi) believes, if it is done smartly. In fact, studies in the UK, US and Germany have shown that charging electric vehicles in off-peak hours can contribute tremendously to balancing out electricity demand and supply during a 24-hour period. Avoiding significant fluctuations is critical to grid stability and makes planning for new capacity easier and more effective.

To achieve this, the electric vehicle-to-grid (V2G) model comes into play. In simple terms, it means that electric vehicles are in communication with the grid so that they can be charged during off-peak hours, which are typically in the middle of the day and during the night when household and commercial consumption, respectively, is at its lowest.

The V2G model integrates electric vehicles, charging stations, other energy providers, grid connections and smart metering. Smart charging enables communication and interaction among all connected elements in the system, and this turns electric vehicles into providers of energy services rather than simple users of electricity. If implemented correctly, consumers can provide energy to the grid through bidirectional charging stations, while generation, transmission, distribution, energy usage and storage are optimised across all actors.

A three-pronged solution

Who, however, will buy enough electric vehicles to make this potentially beneficial impact a reality? The existing exorbitant import duties on vehicles and components alike put electric vehicles beyond the reach of most South Africans, but Sanedi sees a three-pronged solution.

First, import duties must be reconsidered and incentives put in place for households and fleet managers to consider electric vehicles.

Secondly, original equipment manufacturers, fleet operators and municipalities must focus on transport in the public sphere, i.e., buses, taxis and sedans used in ride-share services. Not only is the market enormous, but public transportation will also make electric vehicles relevant to the majority of South Africans.

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Finally, the manufacturing of at least some EV components must be localised urgently. While a measure of importation will always be needed, much can be done to decrease our import dependency and, in the process, create the jobs that will sustain the transition to a new energy future.

Not an overnight implementation

For Sanedi, the energy transition has to be seen in the context of South Africa's socioeconomic realities. Therefore, as we introduce electric vehicles into the grid, we have to ask how it's going to help us create employment, even out inequality and deal with poverty. With V2G technology these outcomes are possible.

It is not, however, an overnight implementation. A smart grid is critical, which will require modernising the existing infrastructure. In addition, we need policy certainty and enabling industry norms and standards to develop the infrastructure, skills and investment needed for a V2G rollout.

The opportunities are many, varying from manufacturing jobs to opportunities for entrepreneurs to deliver services related to charging infrastructure, grid management and ancillary services such as voltage management. It is also important to consider a cloud-based big-data platform that optimises the V2G process to provide useful information to vehicle owners, OEMs, charger providers and government.

Electric vehicles themselves are not the silver bullet. However, as part of a well-conceived and properly implemented V2G programme, they can accelerate South Africa's energy transition, while becoming relevant and valuable to the entire population.

ABOUT THE AUTHOR

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