



Eskom's eMobility programme

The automotive industry is undergoing an exciting change with the global rise of electric vehicles (EVs). Market analysts are predicting an even higher increase in EV market share in the short to medium term, compared to conventional fuel-based vehicles.

This is driven by a positive shift in consumer perception and choice, through increased awareness of environmental sustainability and the call for a transition to cleaner energy sources. Many countries have shown their support by amending and introducing policies to encourage the uptake of EVs. The rise of the EV market will have a large impact on the global energy sector and related industry, with an increase in the demand for electricity required to power these vehicles, the rollout of charging infrastructure to support adoption and value-added services to enhance the EV owner's experience.

We acknowledge the opportunities that the increased adoption of EVs will provide to Eskom and the South African economy. To this end, we have embarked on the development of an eMobility programme. The programme will create opportunities to unlock new revenue streams by facilitating the supply of electricity to the EV market using innovative solutions.

Our eMobility business model has three primary focus areas, namely advocacy, advanced eMobility solutions and platform-based services, with the objective of assisting us in adapting to the evolving energy landscape and restoring our financial and operational sustainability.

- eMobility advocacy is required to raise awareness and educate vehicle owners on EV benefits, in order to stimulate demand for EVs and related products and services
- Advanced eMobility solutions will allow us to demonstrate our commitment to future electric transportation by including EVs in our own fleet to research and evaluate the performance, infrastructure and related service requirements of EVs in a commercial environment
- eMobility platform-based services will see the implementation of a platform that enhances the overall EV owner experience, by providing incentive schemes aimed at stimulating a culture of off-peak grid charging, allowing customers access to payment and billing options, locations of available charging stations, as well as statistical information on the operation of their EV and home charging infrastructure

The eMobility programme aims to provide value by load levelling through smart charging technologies, monitoring customer usage patterns and increasing responsiveness to customer needs, thereby

contributing to reducing national transport-related carbon emissions and noise pollution, as well as skills development and job creation through establishing a new market sector.

Eskom undertook EV research from 2014 to 2016, with a fleet of 10 vehicles. The vehicles were monitored to evaluate usage profiles of consumers in Johannesburg, Gauteng. The general driver experience was noted as very positive; the EV was seen to be an ideal commuting vehicle in and around the greater Johannesburg area. The EV research fleet and charging stations at our Megawatt Park head office is shown below.



There are less than 1 000 electric and hybrid vehicles in South Africa. Our simulation models predict a conservative uptake of around 234 000 electric vehicles by 2040. There is also potential to improve public transportation by introducing electric buses and minibus taxis in the local market. It is envisaged that this would benefit public transport users by lowering the cost of public transport.

Our research indicates that a 3% increase in EV market share in South Africa would increase energy demand by approximately 0.5%. The implementation of incentive schemes and charging credits will aim to limit the impact of this increase to our peak load profile by encouraging off-peak charging.

We are optimistic that we can positively influence the adoption of EVs in South Africa through our eMobility programme. The programme will allow us to understand, quantify and model the macro-economic impacts of EV uptake on the economy; research and demonstrate business models that will support economic development; engage with stakeholders to encourage eMobility manufacturing industry localisation; inform and enable Government policy reforms that will support the uptake of affordable electric transportation across all sectors and income groups; understand and quantify the peripheral benefits associated with eMobility; move towards a customer-centric digital future; and ensure readiness of our grid to facilitate the uptake of mass electric transportation. We further believe that the successful implementation of our eMobility strategy can be replicated elsewhere in the African continent.

Knowledge management

We regard knowledge as invaluable intellectual capital for sustained business performance, as access to relevant knowledge is critical to ensuring effective decision-making. We ensure organisational compliance with the international quality management standard, ISO 9001:2015, by managing the knowledge of the organisation, safeguarding loss of knowledge as a result of employee turnover or failure to capture and share information, as well as encouraging knowledge acquisition as a learning organisation through the Eskom Academy of Learning.



Refer to "Our people – Building and retaining strong skills" from page 133 for additional information on improving knowledge through learning and development

One way in which we manage knowledge is through our governance of capital projects. We employ the project lifecycle model (PLCM), which delivers projects from pre-project planning to the concept, design, execution and benefits realisation stages. It includes many interrelated processes ranging from project development and engineering, contracting and procurement, construction, contractor management and commissioning.

Through our new build programme we have identified the need for formal mechanisms to record and disseminate learnings gained throughout the life of our projects. To this end, the knowledge management process is integrated and embedded into project management to ensure that learning occurs systematically across the project lifecycle phases. In our project environment, knowledge management involves the people, processes and tools that support organisational collection, analysis, and implementation of lessons learned, which are a critical component of knowledge management and are captured and shared in various forms throughout the organisation. This is done with a clear purpose to reduce and prevent repeats of mistakes and failures, and to repeat successes and continuously improve delivery and operational performance.

For general knowledge management, we maintain a document and knowledge management platform which provides access to governance and supporting documentation to our employees to perform their duties. These include plans, policies, procedures, process control manuals, guidelines and work instructions. Knowledge management in this form supports standardisation and continuous improvement of our business processes.

Memberships and knowledge transfer

Our national and international memberships, partnerships and agreements provide us with an opportunity to profile our organisation and our know-how, as well as establish relationships with international utilities, professional industry bodies, research and academic institutions, councils and forums. This enables us to effectively identify, manage and benchmark our contribution to value through exchange of intellectual capital, including information, research, knowledge, technology, best practice and expertise, in order to deliver on our strategic objectives. Our cooperation

and collaboration with these organisations provide us with an opportunity to leverage intellectual capital to maximise our information and knowledge base and improve the way we operate.



Dr Rob Stephen, Eskom General Manager: Master Specialist, is the President of Conseil International des Grands Réseaux Électriques (CIGRÉ), an international council on large electric systems.

Founded in 1921, CIGRÉ is an international non-profit council which promotes collaboration with experts from around the world by sharing knowledge and state-of-the-art technology, facilitating technical exchanges and informing policy makers and regulators in order to improve electric power systems of today and tomorrow. The council consists of 1 137 collective members and 6 360 individual members. Its activities are divided into 16 study committees which cover issues related to planning, operation and protection of power systems, information systems, telecommunications, as well as design, construction, maintenance and disposal of high-voltage equipment and plants.

Our memberships, partnerships and agreements cover broad disciplines such as business and trade, research, sustainability and the technical energy industry. A select list of our memberships, partnerships and agreements for the exchange of intellectual capital is provided below.

- *Business and trade:* International Chamber of Commerce, Industrial Development Corporation, World Economic Forum, Southern African Power Pool (SAPP)
- *Research:* Electric Power Research Institute (EPRI), Council for Science and Industrial Research (CSIR), South African National Energy Development Institute
- *Sustainability:* World Business Council for Sustainable Development (WBCSD), United Nations Global Compact (UNGC), International Integrated Reporting Council (IIRC), International Sustainable Energy for All, Global Reporting Initiative (GRI)
- *Technical energy industry:* CIGRÉ, World Energy Council, Grid Operators (GO15), South African National Energy Association (SANEA)

Intellectual property

Our management of intellectual property aims to ensure organisational compliance to applicable legislation including the Copyright Act, 1978; the Patent Act, 1978; the Trade Marks Act, 1993; the Intellectual Property Rights from Publically Financed Research and Development Act, 2008; and the Designs Act, 1993.

Our capabilities include identifying, acquiring, developing, protecting and managing intellectual property assets, such as patents, trademarks and designs. Currently, we protect and manage 34 patents and four trademarks across the organisation. We are exploring ways in which to commercialise and develop a revenue model



A video on eMobility is available at <http://bit.ly/2Lxlvqm>