

# E-mobility and the decarbonization opportunities it presents to the higher education sector

2023 PURCO SA

Margo-Ann Werner

The legal partner  
for your business.

[cliffedekkerhofmeyr.com](https://cliffedekkerhofmeyr.com)



# PRESENTATION OVERVIEW

- **General overview** of the move towards decarbonisation globally and the carbon footprint of universities
- **Developments in South Africa's** electricity regulatory framework and how that will facilitate the implementation of e-mobility
- **E-mobility as a decarbonisation solution** and associated empowering policies, legislative and regulatory provisions
- **Benefits of the adoption of e-vehicles**
- **Challenges and next steps** lack of standardisation
  - Expense and funding solutions
    - borrowings
    - donor funding
    - fees
    - third stream income and
    - marginal investment returns.

# DECARBONISATION AS A PRIORITY ACTION

The need to decarbonize the global economy through low-carbon means such as renewable energy, green hydrogen and batteries is heightened by environmental regulations, can no longer be avoided.

Climate change mitigation solutions and effective implementation has become a matter of urgency

Globally the world of mobility is rapidly evolving, largely pushed by the need to decarbonize the world economy by 2050. For mobility, technological developments are enabling the movement from traditional internal combustion engines towards electric vehicles (EV) and other alternative propulsion motors. Although electric vehicles still account for a marginal share of global vehicle sales, governments of some of the biggest automotive markets have declared their intention and taken steps to embrace electric vehicles in order to decarbonize and curb emissions.

# CARBON FOOTPRINT OF UNIVERSITIES



South African universities have a high carbon footprint



Emission sources include:

- Transportation
- Electricity usage by the campuses and the associated residences; and
- combustion of diesel



Higher Education Carbon Footprint Reports 2021

UCT - Carbon Footprint Assessment Report  
Year of assessment: 2020 & 2021



There is a clear case for the need to reduce carbon-emissions of the higher-education sector through scope emissions reduction initiatives

- Scope 1** - Direct emissions from the company's operations
- Scope 2** - Indirect energy emissions
- Scope 3** - Other indirect emissions

2021 Emissions by Source

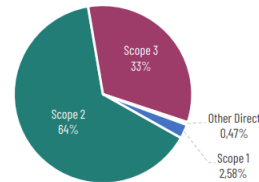
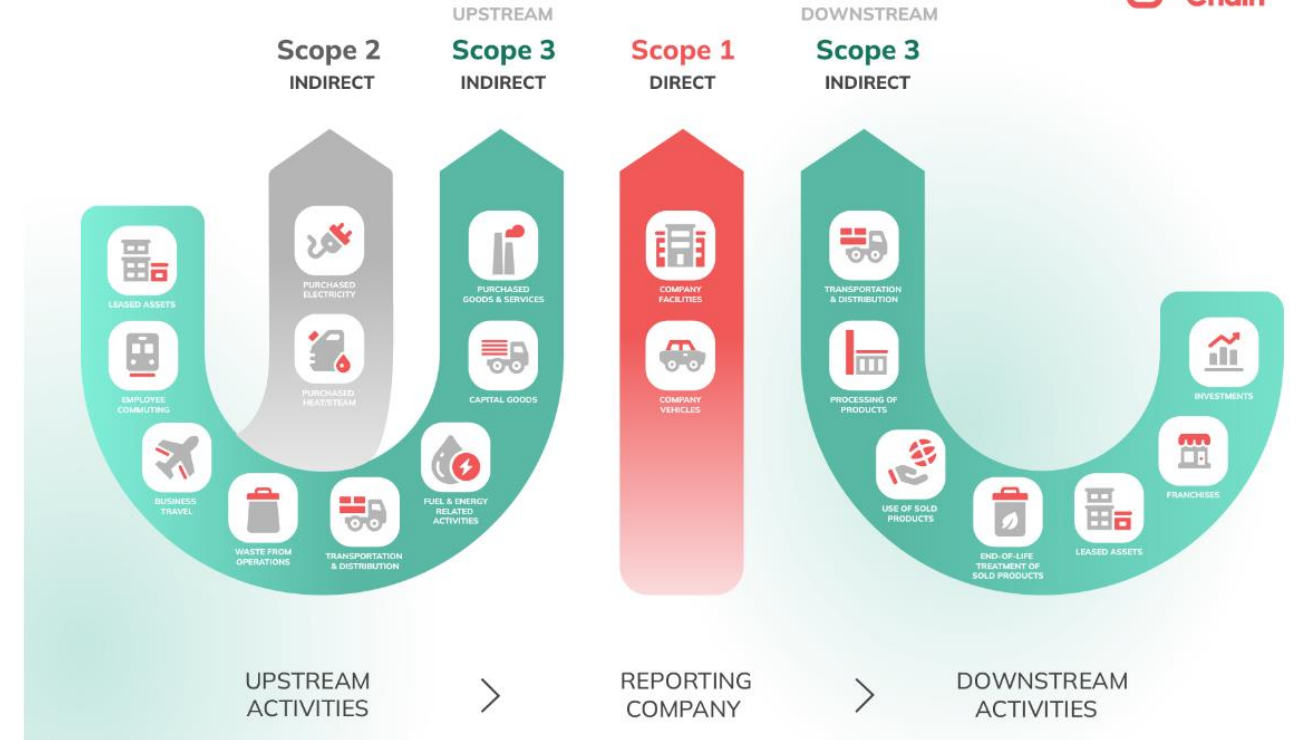


Figure 5: UCT's 2021 Total Carbon Footprint Emissions per Scope

# CARBON FOOTPRINT OF UNIVERSITIES



# DEVELOPMENTS IN ELECTRICITY REGULATION

- Schedule II of the ERA was amended in June 2021 to lift the licensing threshold for energy generation projects to 100 MW and allow for wheeling of such energy to one or more customers.
- This unlocked a deep pipeline of investments in the renewable energy market, as private offtakers were for the first time able to conclude corporate purchase agreements with IPPs for the supply of renewable energy by way of wheeling arrangements.
- With the electricity crisis nevertheless worsening, the generation licensing threshold was deleted in its entirety in December 2023, with all generation projects only requiring registration.
- The Energy Action Plan implementation update from August 2023 describes this as "a game-changing reform [enabling] private investment in generation projects of any size", with the number of private sector generation projects having increased to over 100, representing more than 10,000 MW of new capacity.

# E-MOBILITY AS A DECARBONISATION SOLUTION

South Africa has made an effort to develop several policies to assist towards reducing South Africa's Carbon Footprint. Such policies include:

- South Africa's Just Framework and South Africa's Just Energy Transition Investment Plan;
- The Green Transport Strategy for South Africa (2018-2050);
- Hydrogen Society Roadmap

# South Africa's Just Energy Transition Investment Plan (JET IP)

- This investment plan has been set up to give effect to the Just Energy Transition Partnership that was developed at the United Nations Framework Convention on Climate Change's COP 26. During this conference, there were robust debates on slowly but surely transitioning South Africa's dependency on fossil fuels to a more sustainable and climate friendly alternative. The main purpose of this is to reduce South Africa's carbon emissions.
- Looking more particularly at the JET IP's New Energy Vehicle (NEV) Sector, the JET IP seeks to increase NEV manufacturing and component manufacturing in order to protect the sector's employment and promote new growth in sustainable manufacturing. The purpose of this is that the development of NEV's will lead to a higher rate of decarbonisation in both private and public vehicles and this will lead to a more efficient transport system. It has been estimated that in order to properly utilise the NEV sector a total investment of about 128.1 Billion Rands would be needed.
- One of the main factors that increases the need for South Africa to move from the development of traditional Internal Combustion engine (ICE) vehicles to NEV's is due to the fact that European countries are moving more towards putting legislation in place to lower ICE vehicle that are imported to try and decrease their Carbon footprint and increase the drive towards decarbonisation.
- This is inadvertently leading to an increase in the necessity to produce NEV's.
- South Africa by the year 2050, plans to have its private passenger vehicles, its public passenger vehicles and its light commercial vehicles included in the scope of the NEV investment plan.





# The Green Transport Strategy for South Africa

- This document focusses on the increase in GHG emissions and its negative contribution to climate change. It recognises that the biggest contributors are fossil fuels.
- It recognises that transport activity levels are strongly related to the emissions and this is becoming more true as the economy further expands. This is due to the fact, particularly in South Africa's case where there was apartheid, the distribution of people within the urban and rural areas is unequally distributed. As such, many people rely on public transport to take them to their places of work.
- According to this paper, the Department of Transport, working alongside the Department of Trade and Industry and the National Treasury has committed to:
  - Offer incentives to the producers of Electrical Vehicles when it comes to the production and sale of Electric Vehicles in South Africa
  - They work with local research institutions to conduct research on EV batteries.
  - Work with National, provincial and local government departments and authorises and the automobile industry to set annual targets for the uptake of electric vehicles and hybrid electric vehicles in the government vehicle fleet, as well as monitoring the local content of the manufacturing of cars locally, in line with the Industrial Policy Action Plan.
  - Introduce the conversion of old technology vehicles with higher emission factors to be retrofitted with EV technology
  - Consider providing incentives related to the beneficiation of using local resources in the manufacturing of key machineries or components.
  - Assist in establishing and developing local EV OEMs



# Hydrogen Society Roadmap for South Africa (HSRSA)

- Following approval of the Hydrogen Society Roadmap for South Africa (HSRSA) by Cabinet in October 2021, support for development of the green hydrogen economy has gained significant traction in South Africa, with widespread acceptance that it will be the key strategic driver for sustainable economic growth. As provided in the JET-IP, *"it can enable the transition of a carbon-based and international trade-exposed sectors, protect the competitiveness of downstream industries, allow and enhance exports, boost GDP, support domestic decarbonisation and create jobs"*.
- At the request of Cabinet, the Department of Trade and Industry developed the draft Green Hydrogen Commercial Strategy (draft GHCS) which is intended to put the HSRSA in motion for development of South Africa's green hydrogen economic and industrial sector. The draft GHCS was released for comment in December 2022 and provides that government can undertake the following in promoting investment in domestic green hydrogen:
  - incentives including subsidies, taxes and levies, as well as accelerated depreciation on capital equipment (both supply and demand side incentives could be used to drive cost reductions in the long term and enable a Just Transition, which will enable energy supply, sustainability and stability);
  - carbon subsidies by using carbon taxes to subsidise green hydrogen production;
  - preferential funding to provide low-cost funding through state-owned development finance institutions, incentivise private sector institutions to fund green hydrogen projects at preferential interest rates and seek preferential funding terms from global private sector and development finance institutions; and
  - government to government arrangements that acknowledge that import countries will be looking for energy security and export countries for market share, which could allow for preferential arrangements such as long-term supply agreements.



# E-Mobility and its value chain

- It is clear that there is great value in investing in electric powered vehicle, not only because it is now more sustainable to do so but also because there is greater pressure on countries to impose laws that decrease the amount of Greenhouse gas emissions.
- In the production of Electric Vehicles and the concept of e-mobility as a whole, it encompasses 2 different types of vehicles. Namely those powered by hydrogen and those powered by electricity.
- In considering electricity, it is important to keep in mind the fact that currently, South Africa faces dire grid constraints and as such it would first need to be important to look at solutions to the electricity issue.
- Furthermore, South Africa heavily relies in the burning of coal when in the production of electricity and this has an extremely negative effect on the atmosphere and produces an undesirable amount of Greenhouse gases. As such, it is important to look at the other alternative, namely Hydrogen.
- Hydrogen, which can be produced from natural gas can be produced, stored and used in large quantities. It has been found to be an energy carrier in the growing need for decarbonisation. Hydrogen, due to electricity largely being produced as a result of burning coal is largely seen as an important process in the concept of decarbonisation.
- It has been predicted that the demand for Hydrogen by the year 2050 will reach up to 270 million tonnes per annum and would be used by 80% of the countries world-wide.



# Current Challenges

- What has been considered to be the biggest cost that has slowed the level of progress that would otherwise result in the large scale roll out of e-mobility would be the issue of cost.
- As previously mentioned, the cost of rolling this scheme out would cost billions of rands and even if one were to rely on additional tax revenue raised through environmentally friendly tax legislation, this would firstly have an impact on the individuals and considering the current state of the economy, it would lead to greater inequality, job loss and poverty as many businesses and individuals are currently struggling to cope with the current state of the economy.
- Even if the taxes were to be set at what would be considered to be an extremely low rate, an issue that would arise is that this would still result in in major challenges in the sense that there would not be enough revenue that would be collected to be able to move towards decarbonization in the transport sector in a sustainable manner.

# COPYRIGHT

All rights reserved. This presentation and/or any part thereof is intended for personal use and may not be reproduced or distributed without the express permission of the author/s.

© 2019

The legal partner  
for your business.

[cliffedekkerhofmeyr.com](http://cliffedekkerhofmeyr.com)

