



**E-mobility as a Green
Transition Tool**
*The Role of Regulatory
Authorities*

By: Yosra Assaker

Senior energy Specialist, World Bank



Contents

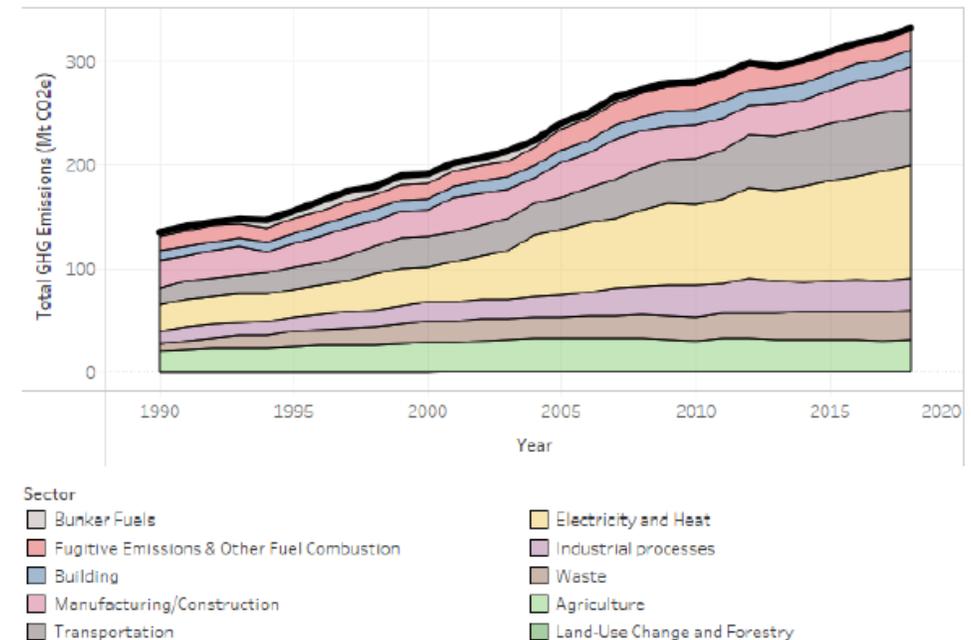
- Role of E-mobility in energy Transition – *insights from Egypt Country Climate and Development Report (CCDR)*
- WB Regional studies on Unlocking the E-Mobility Development Potential in the MENA Region- *Findings on Egypt*
- Role of Regulatory Authorities

Role of E-mobility in energy Transition

Insights from Egypt Country Climate and Development Report (CCDR)

- Egypt's global emissions remain at around 0.6%.5 (*Egypt's Biennial Updated Report (2018)*).
- In 2019, energy, transport, and industry (ETI) together accounted for about 80% of GHG emissions in Egypt.
- Official data estimates that for 2015, the Energy sector, which includes transport and industry emissions (65%), and Industrial Processes and Product Use (IPPU) (12%), together represented 77% of emissions.
- Carbon emissions from the transport sector have been rising and are projected to continue to increase.
- Progress toward a low carbon transition of the transport sector can enhance livability and productivity, while strengthening the competitiveness of goods.
- Well-designed, low carbon public transport systems can improve safety and security, increase access to employment opportunities and services , as reducing emissions in the transport sector can contribute to lowering the carbon content of final goods, increasing competitiveness in carbon-conscious markets.

Figure 7. Emission Profile



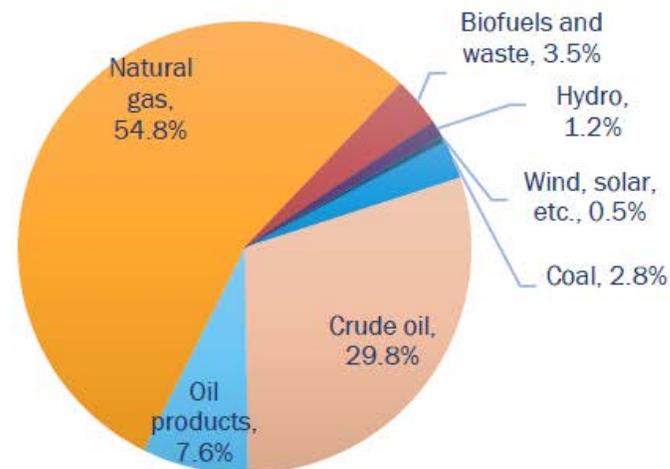
Source: WB team elaboration, using data from Climate Watch. 2022. Washington, DC: World Resources Institute. <https://www.climatewatchdata.org>.

Role of E-mobility in energy Transition

Insights from Egypt Country Climate and Development Report (CCDR)

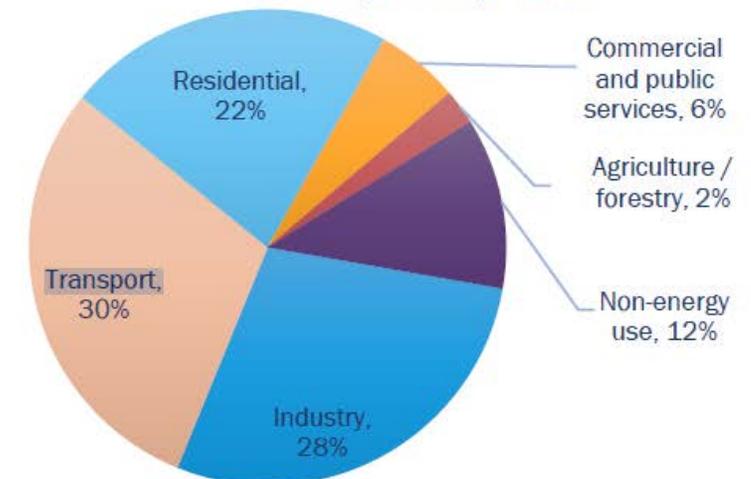
- Industry and transport represent a high percentage of final energy consumption, accounting for about 28% and 30%, respectively in 2019.
- In addition to reducing the carbon intensity of energy supply and electricity production, the fastest path to a low-emissions transition will require congruent and effective actions concerning these two major demand-side sectors, along with the buildings sector.

Figure 8. Egypt's Primary Energy Supply by source (percent), 2019



Source: IEA statistical data, 2019

Figure 9. Final Sectoral Energy consumption by sector (percent), 2019



Source: IEA statistical data, 2019

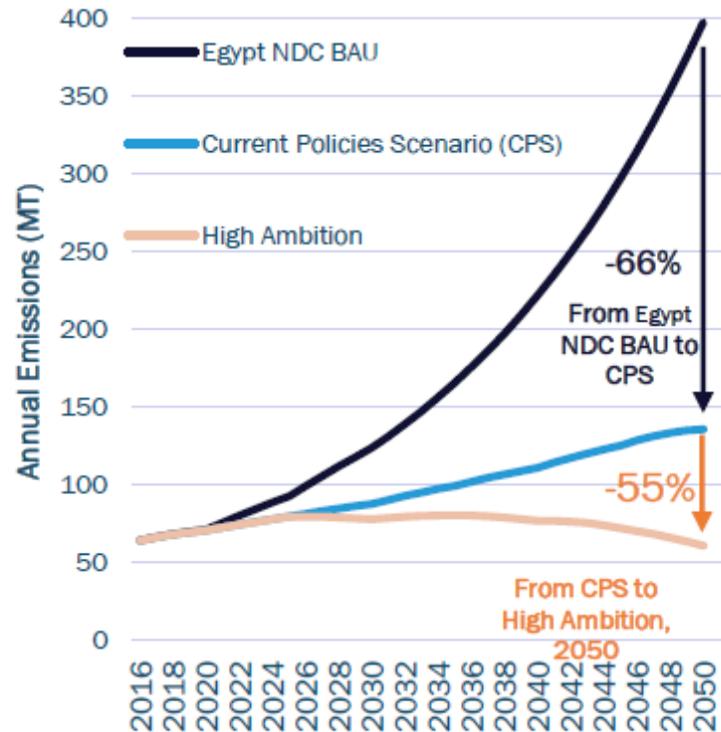
Transport Sector Green Transition

- Transport, the fastest-growing sector, accounts for 30% of energy consumption and is one of the largest air pollution emitters. imposing a high economic and health toll.
- Between 2005 and 2019, transport emissions increased 75%, from 31.47 in 2005 to 55.2 MtCO₂e in 2019, at a faster rate than total GHG emissions growth (44%).
- Official estimates indicate that between 2005 to 2015 transport emissions increased 66%, from 29.1 MtCO₂e in 2005 to 48.3 MtCO₂e in 2015, at double the rate of total GHG emissions growth (31%) during the same period.
- As of 2017, **road transportation accounted for 11% of overall CO₂ emissions**, the result of suburban sprawl, passenger cars in large urban regions, and dependency on trucks for freight transport.
- Emissions in Greater Cairo are among the highest of all global cities, imposing a toll on the health of its inhabitants. Even in MENA, which leads the world in rates of morbidity and mortality due to ambient air pollution (AAP), Egypt has the highest rates. More than 150 per 100,000 people died prematurely in Egypt due to AAP in 2019.

Large potential for reduced emission in Transport

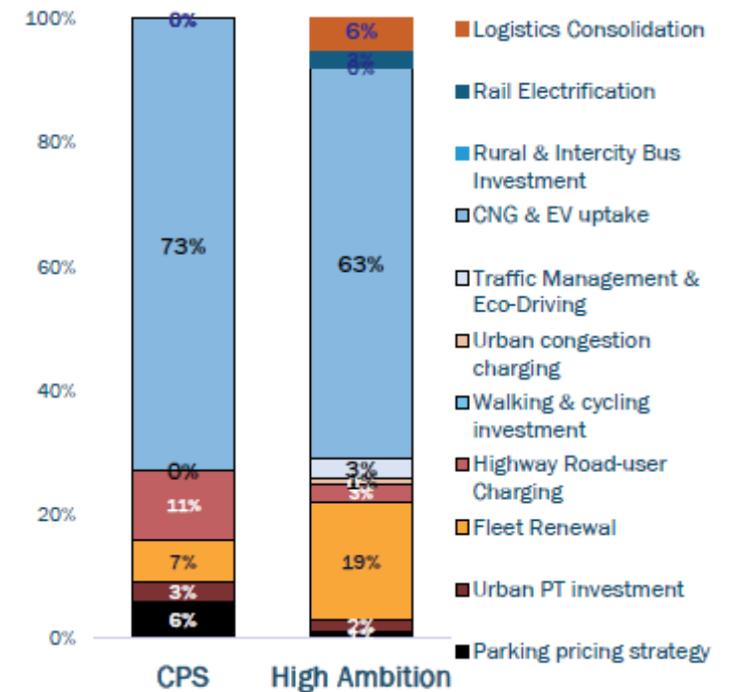
- Priority actions to achieve the transformational scenario would include:
 - Adopting pricing interventions and awareness-raising programs to manage demand;
 - Integrating multimodal transport systems;
 - Improving the fleet composition

Figure 17. Transport Sector Emission Projections by Scenario, 2016-2050



Source: World Bank Team calculations

Figure 18. Carbon Emission Abatement by Transport Policy Options, CPS and High Ambition Scenarios



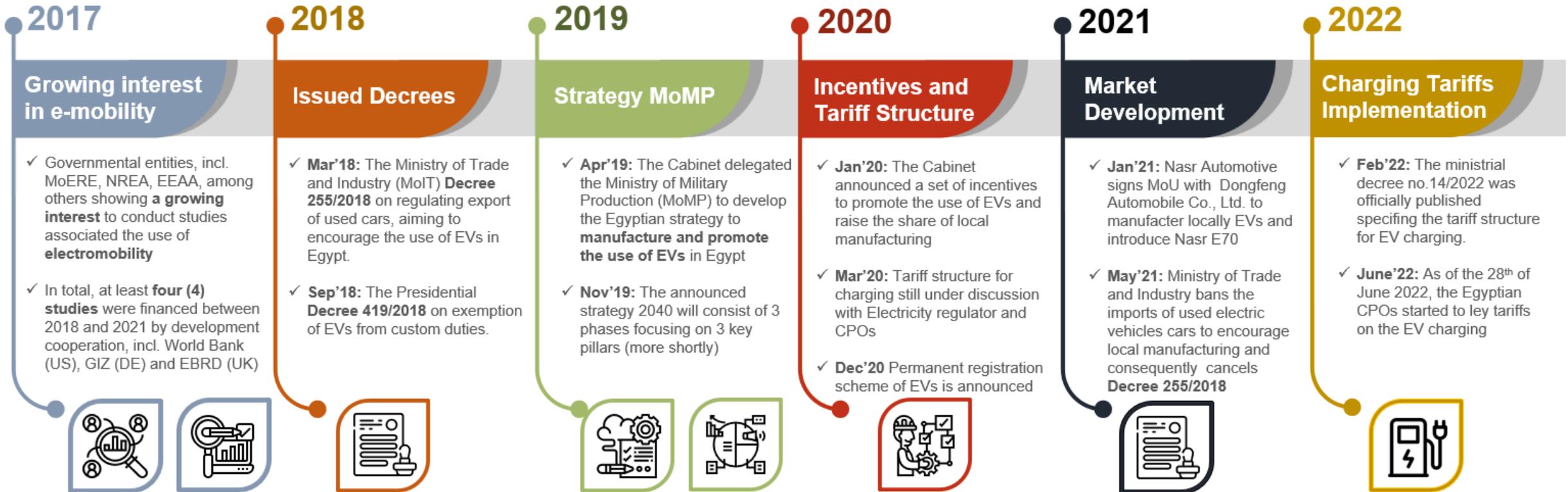
Source: World Bank Team calculations

E-mobility development in Egypt



WORLD BANK GROUP

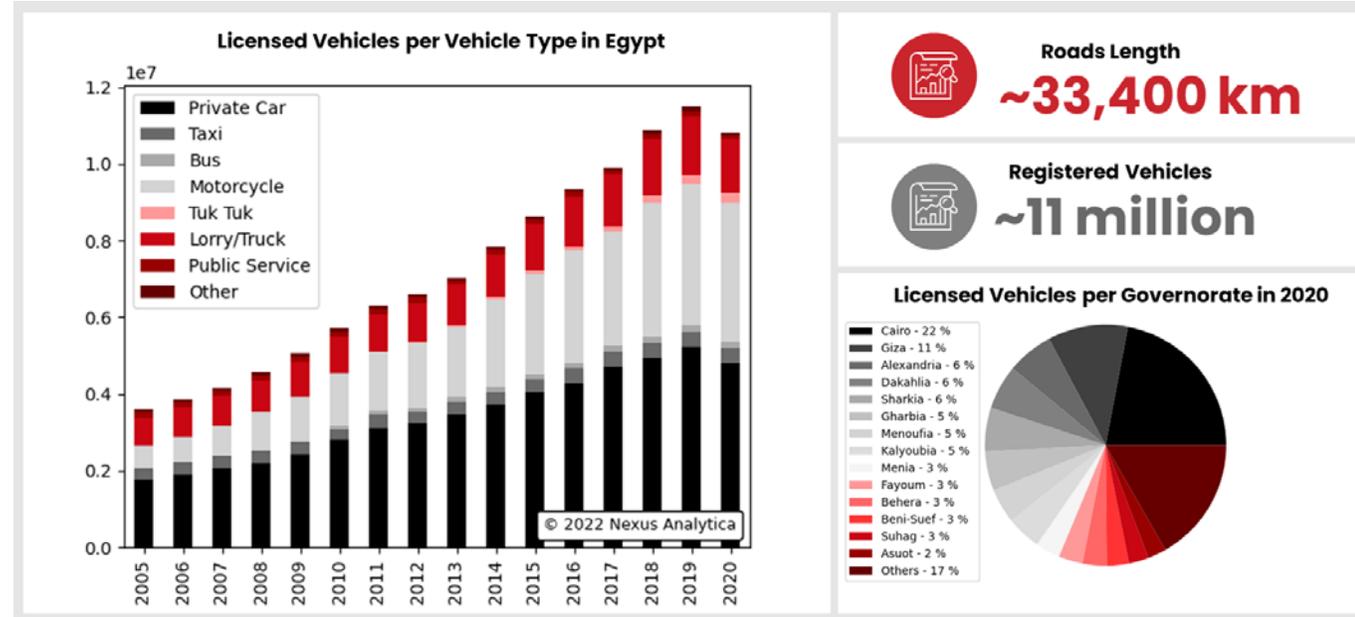
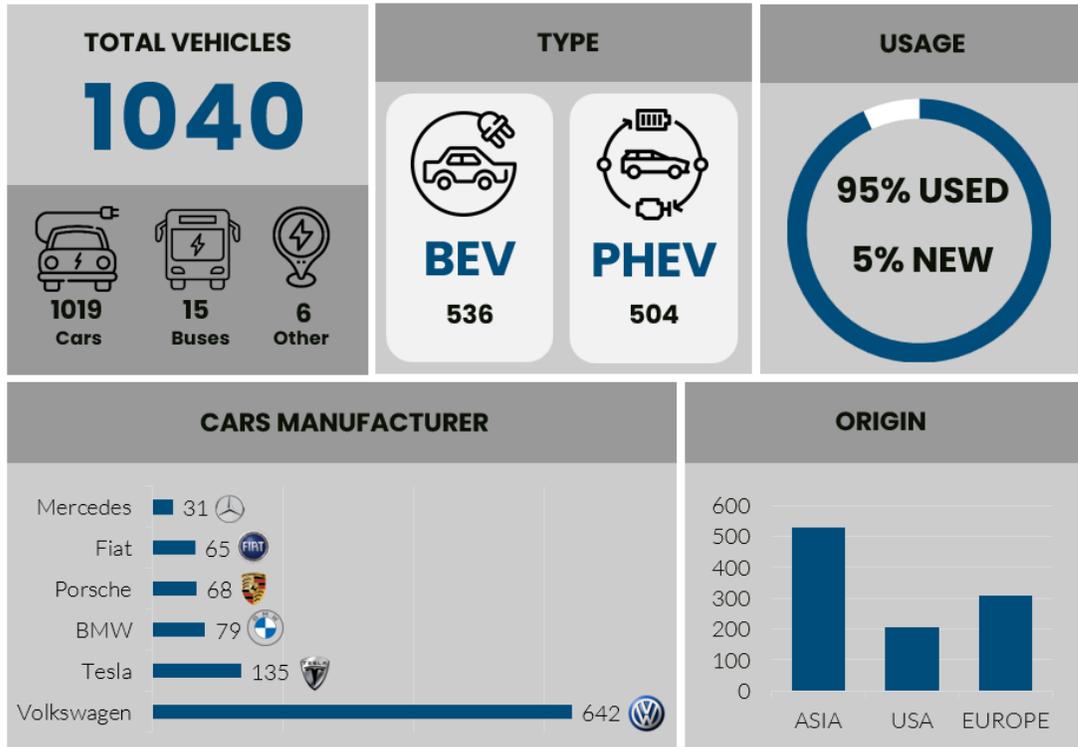
E-Mobility Development Timeline



Egypt country context of E-mobility

- EV charging Tariffs are not liberalized
- Electricity Distribution networks -especially within cities- might require reinforcements to host large EVCI facilities.
- Long routes and operational journeys prevent the deployment of e-buses,
- CNG is a strong competitor.
- There exist significant import duties on e-buses (40%)
- Other transport sector challenges; e.g Informality of the Public Transport System, and absence of Quality based transport payment schemes for BSPs

EV Market status quo (2021)



Key intakes

- ✓ The market is still in its early phase of development (total number of registered vehicles is **1040**);
- ✓ dominated by **used** electric cars following decree 255/2018 → This decree has been canceled in May 2021;

Key intakes

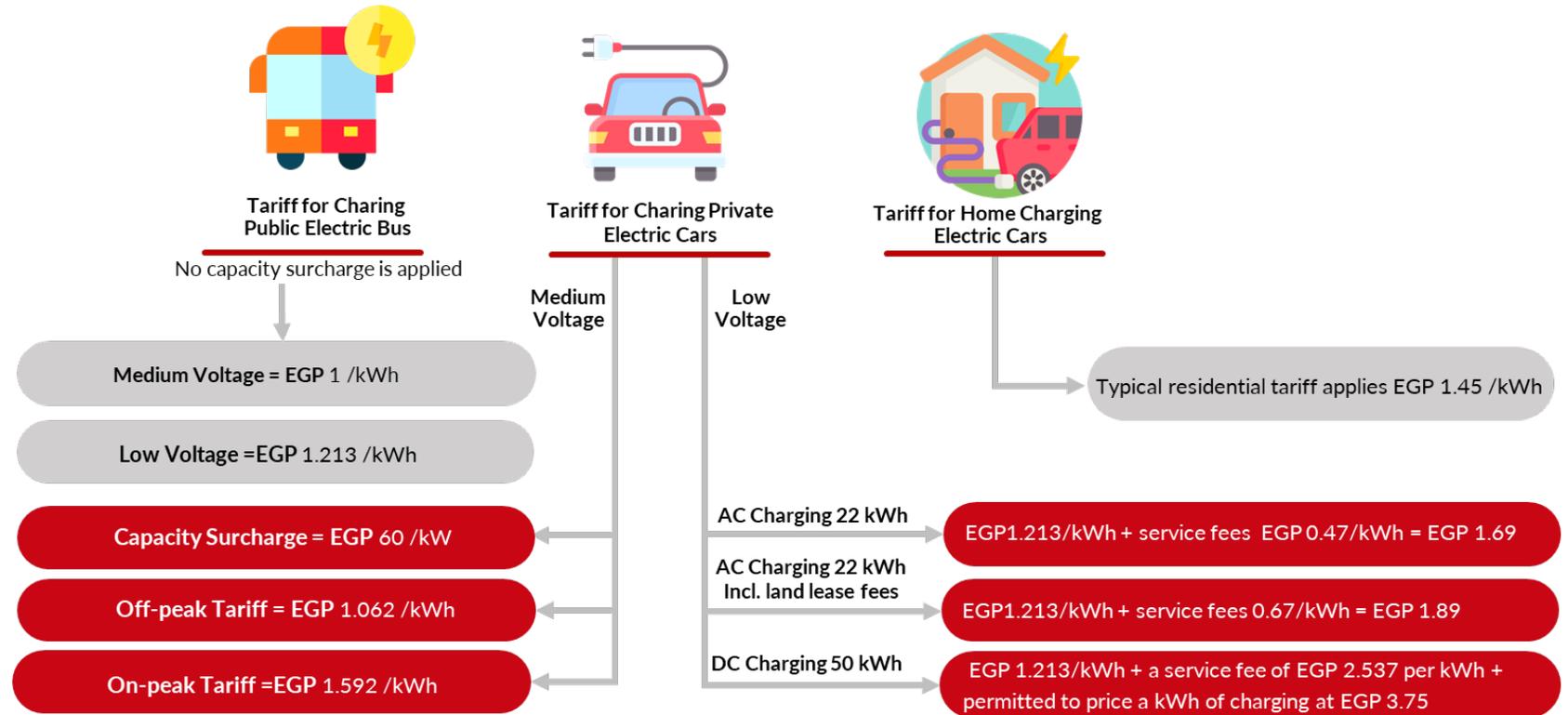
- ✓ There is a limited number of EV brands in the market;
- ✓ The penetration rate of BEV and PHEV is almost equal;
- ✓ Brand new cars are hardly **competitive** in terms of TCO compared to ICE.

Current Tariff Structure and Regulation

Key takeaways

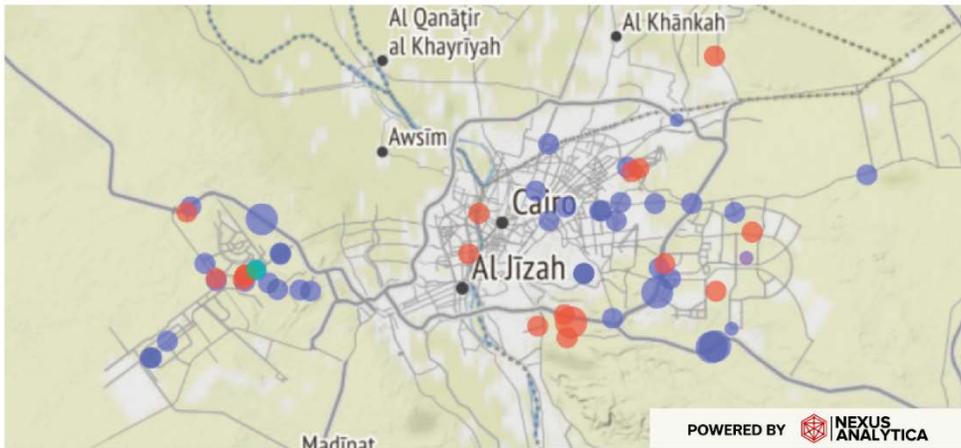
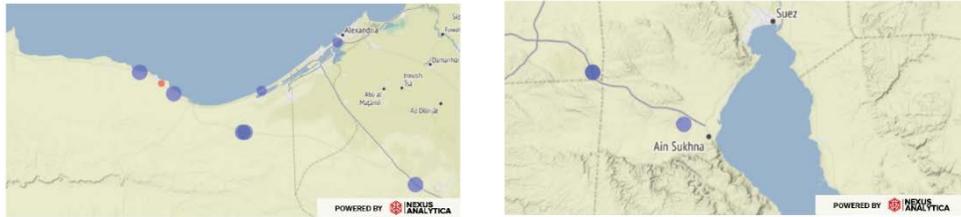
- ✓ CPOs are applying the **regulated tariffs**;
- ✓ E-Buses are offered a competitive tariff of EGP 1 / kWh
- ✓ A special rate is designed for EVCI installed on **a leased land**;
- ✓ DC-Charging service fees is 5X that of the AC charging fees.
- ✓ Residential tariffs applied for home charging
- ✓ Technical standards and regulations for EVCI **are still to be issued**.

✓ When should the Time-of-Use tariff be considered?



Source: Nexus Analytica Own Figure

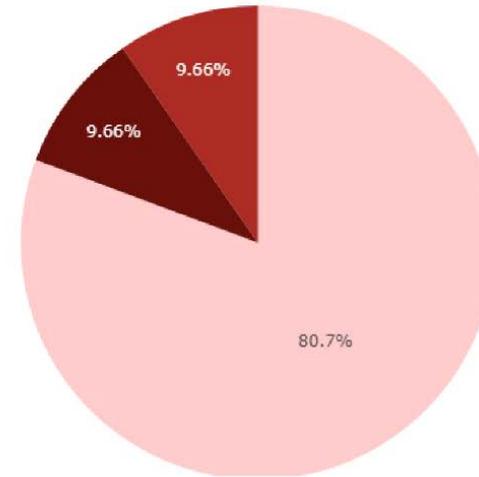
EV Charging Infrastructure



Company
 ● Infinity-e
 ● Revolta
 ● Porsche
 ● JuiceBox

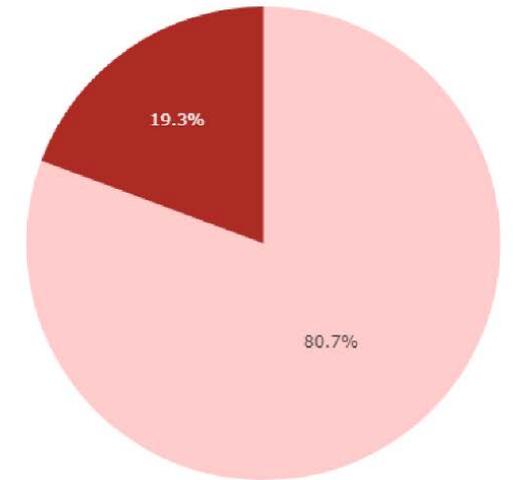
Proportion of Charging Port Types

■ IEC 62196-2 type 2 outlet (Mennekes)
 ■ Combo - Type 2 base
 ■ TEPCO



Proportion of Charging Port Electrical Specs

■ 380 - 480V, 3-Phase at 32A
 ■ 50-500V, Direct Current 125A (50kW)

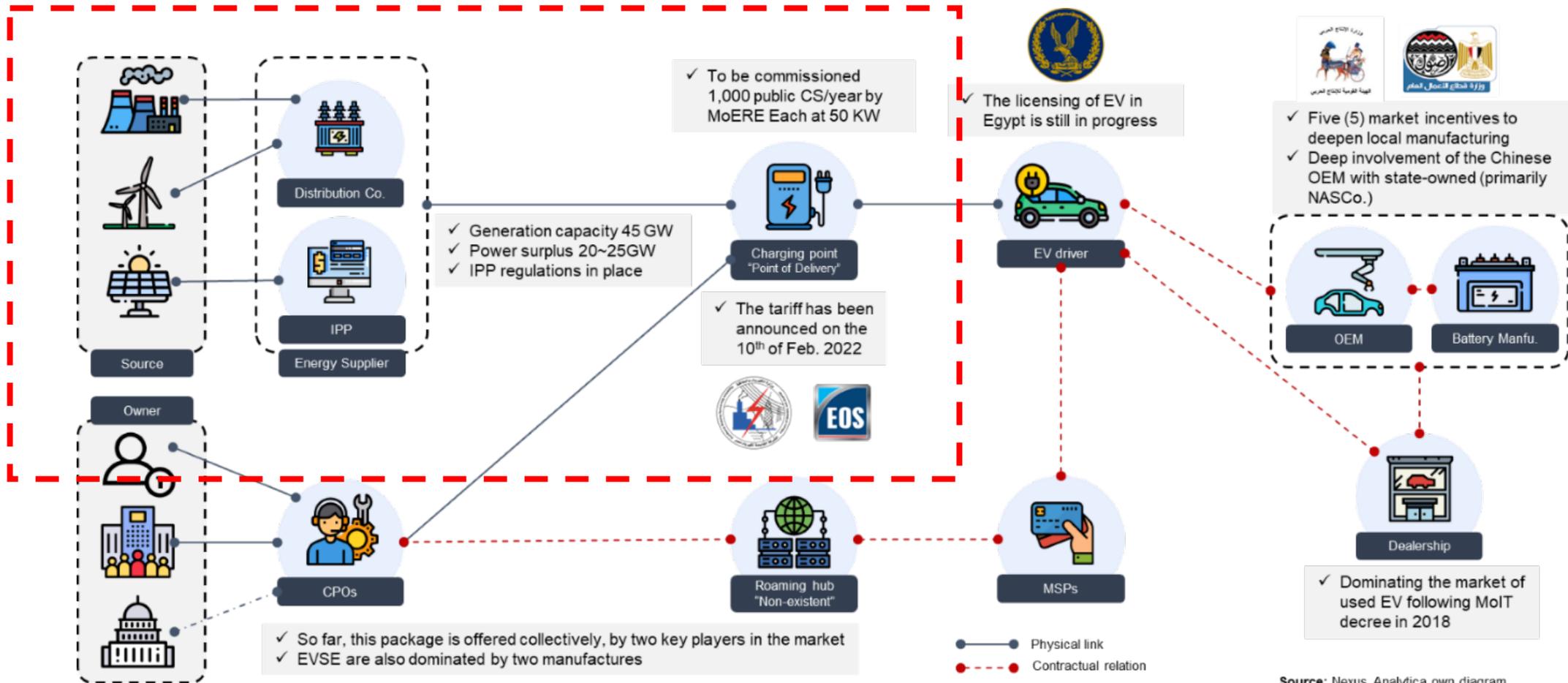


Source: Nexus Analytica Own Figure

Key intakes

- ✓ Most of the charging stations are located in Greater Cairo
- ✓ While the market is dominated by imported US and Asian cars, the charging stations are based on the **European Type-2** standard for AC charging
- ✓ Users primarily charge at privately owned space, e.g. garage, apartment with the standard charging **household tariff** in Egypt (maximum 1.45 EGP/kWh)

Electricity sector covers Key Stakeholders of EVs



Source: Nexus Analytica own diagram

Role of electricity Regulators

- Clarity and predictability on the business environment to gain the investor and consumer trust, e.g:
 - Transparency on development of tariff.
 - Stability on licensing and operating regulations
 - Considering the economic models of investors when assessing any regulatory / tariff change.
 - Balancing the interests of different stakeholders.
- Active and continuous engagement with stakeholders.
 - Feedback on service providers.
 - Market sounding and hearing sessions on change of regulations.
- Informing Government policies and coordination within electricity sector and others
 - Coordination between the ministry of transport plans (wrt other transport means) and electricity grid reinforcement needs.
 - Land allocation
 - CNG Vs. Battery EVs.

Thank You

