# Energy Transformation In the Transport Sector

**FRANCIS ROMANO**
**Knights Energy**

# Drive Electric Study: 2 year study of e-Mobility

## YEAR 1

- Test a Used EV
- Energy Economy: EV vs ICE
- Capex Vs Opex study

## YEAR 2

- Test of new EV – ENV-200
- Targeted Sampling of Evs
- Study of market potential
- Driving pattern sampling

## YEAR 3:

- Study of policy framework
- Who are key Stake holders
- Barriers to adoption

# PHASE 1: TESTING THE TECHNOLOGY A USED EV VS USED ICE

Local Cost of Ownership USD 6,000

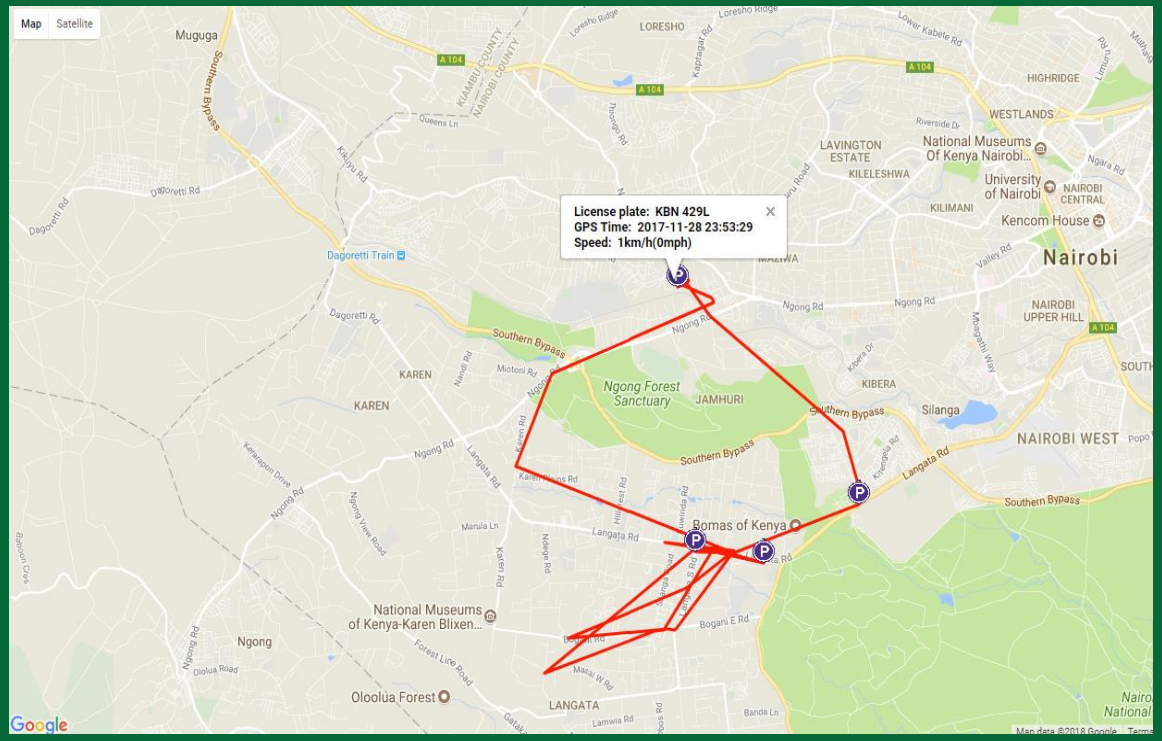
**Usage : Technical field work:  Light Cargo;** Light equipment and tool boxes, Company Errands, Daily commuting to work for technical staff

Local Cost of Ownership USD 13,000

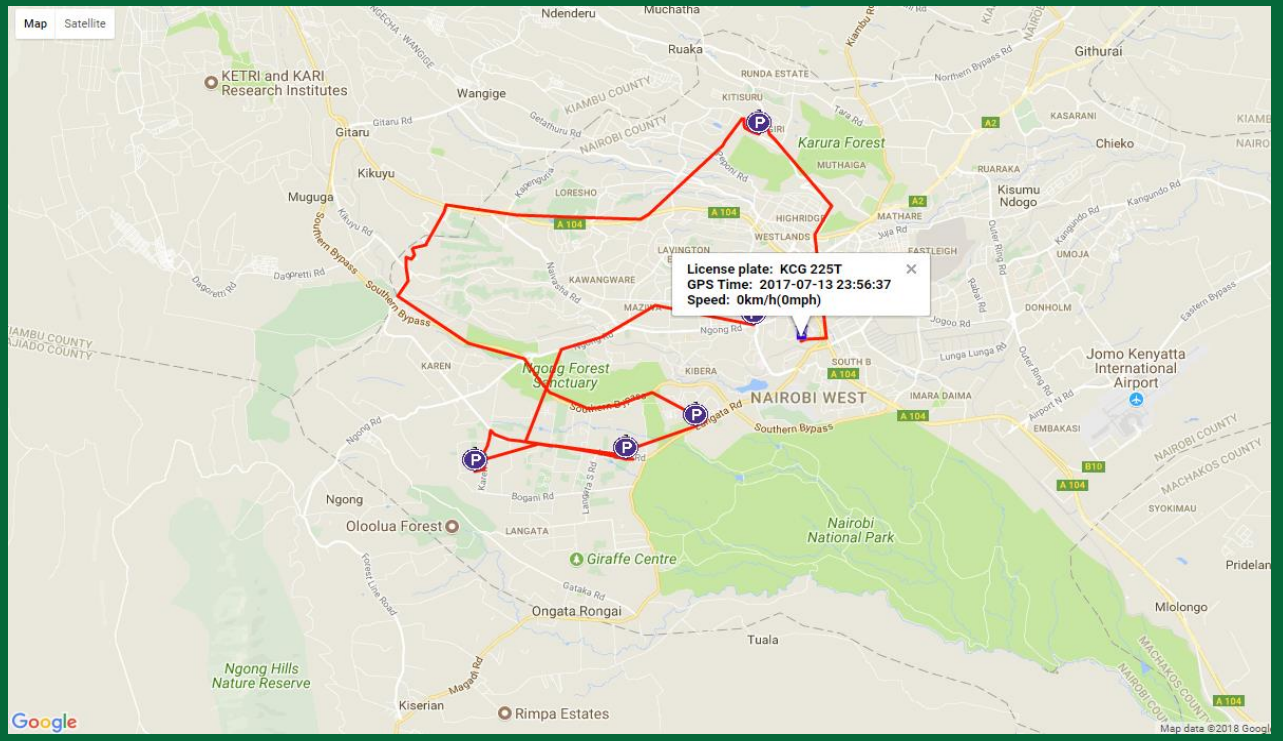

**Usage**: Field work, Urban transport, Light equipment and tool boxes, Company Errands, Daily commuting to work for technical staff, Business Meetings, Sales & Marketing, ;4

# Driving Pattern for Study Vehicles

**ICE; KBN 429L**
**Daily average = 75km**

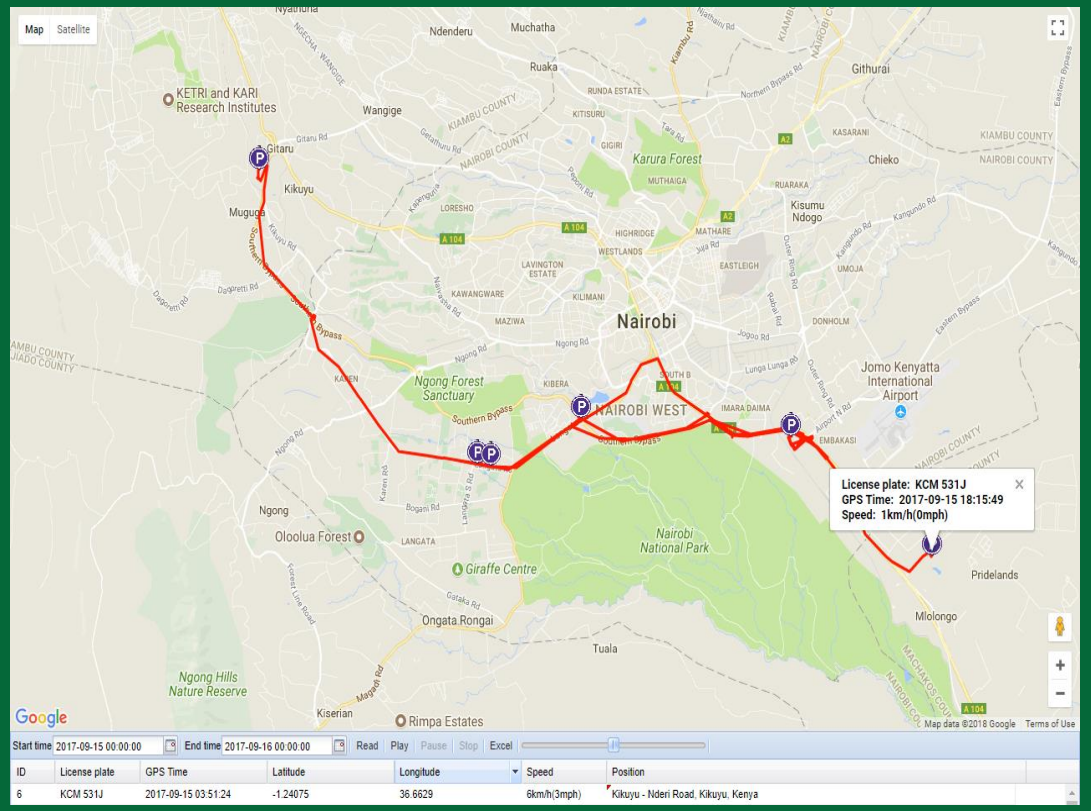



**EV; KCG 225T**
**Average Daily Distance=90km**

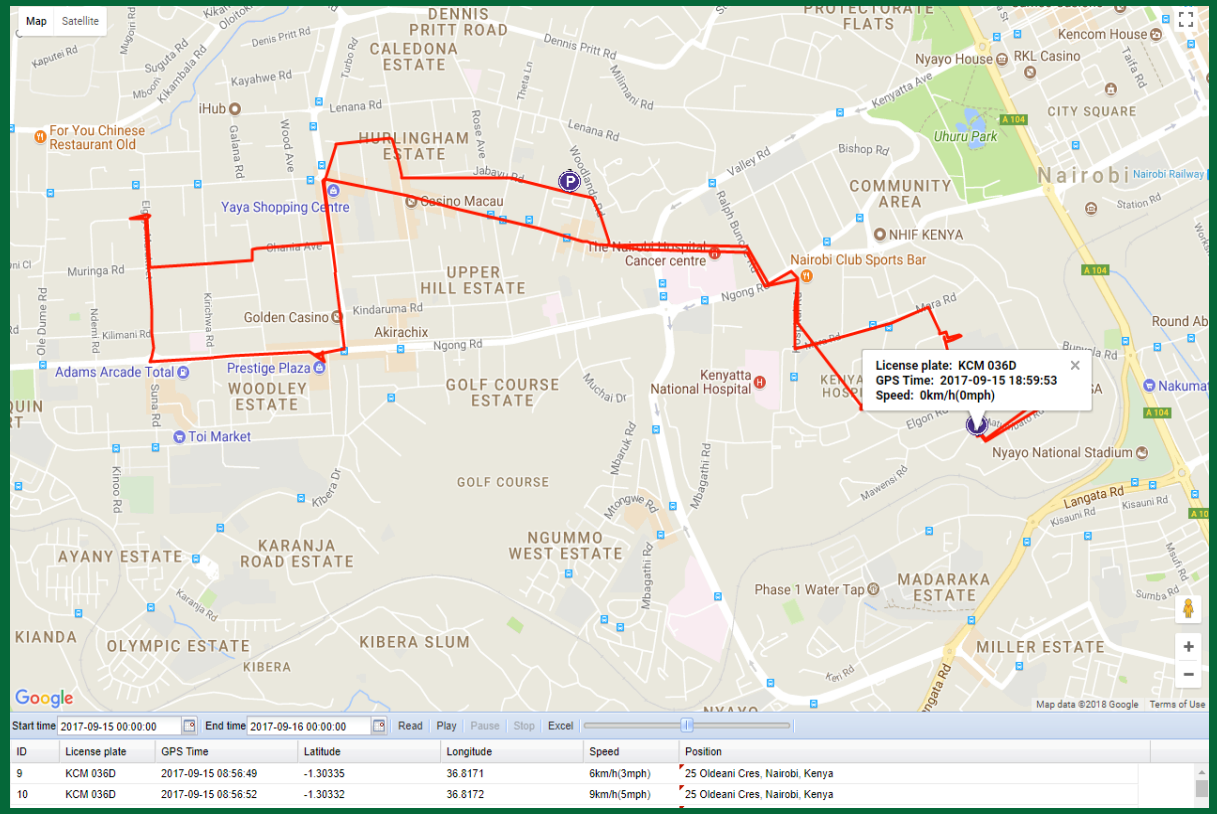


# Driving Pattern for Study Vehicles

**EV; KCM 531J**
**Average Daily Distance=60 km**




**EV; KCM 036D**
**Average Daily Distance=35km**



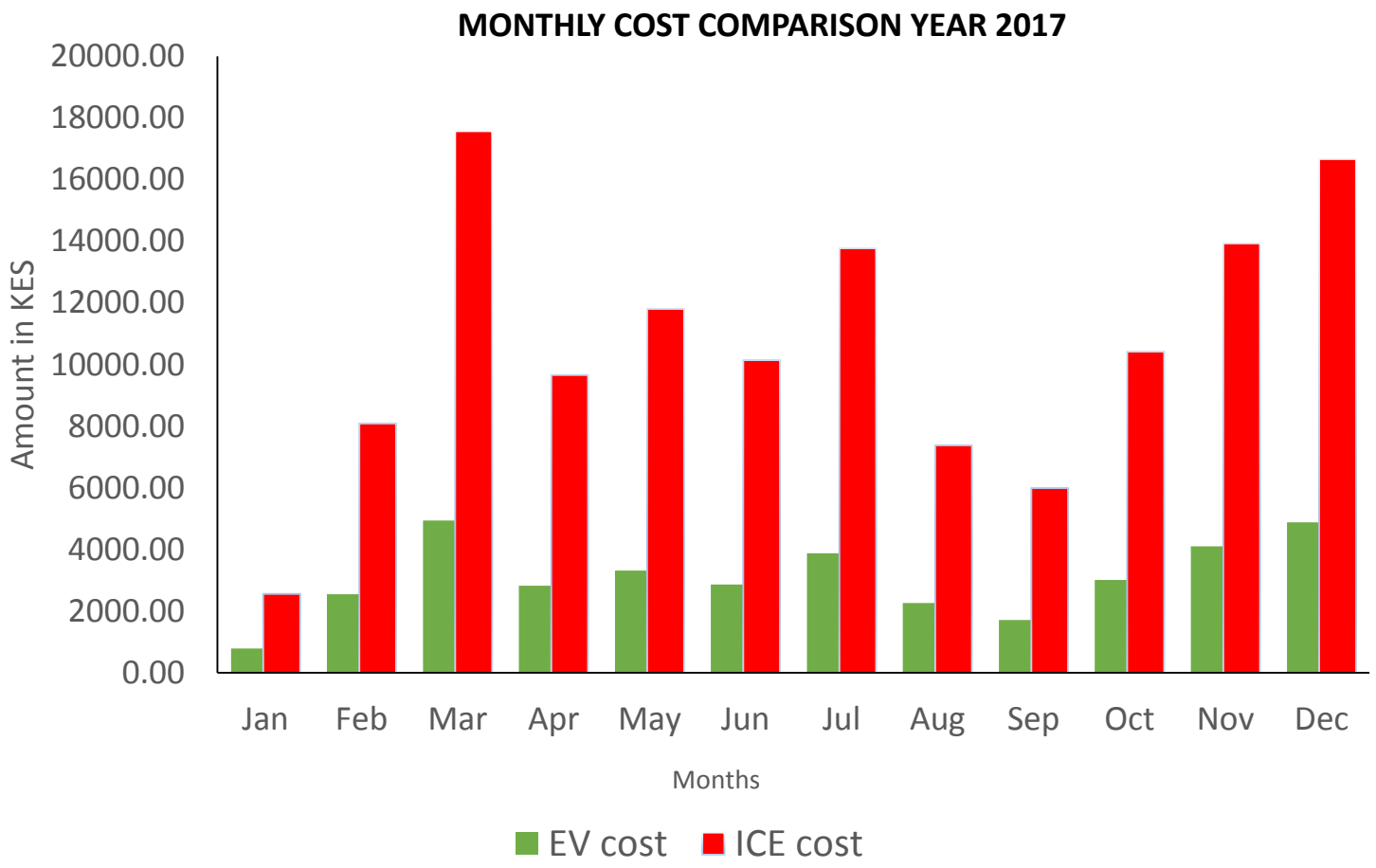
# Phase 1

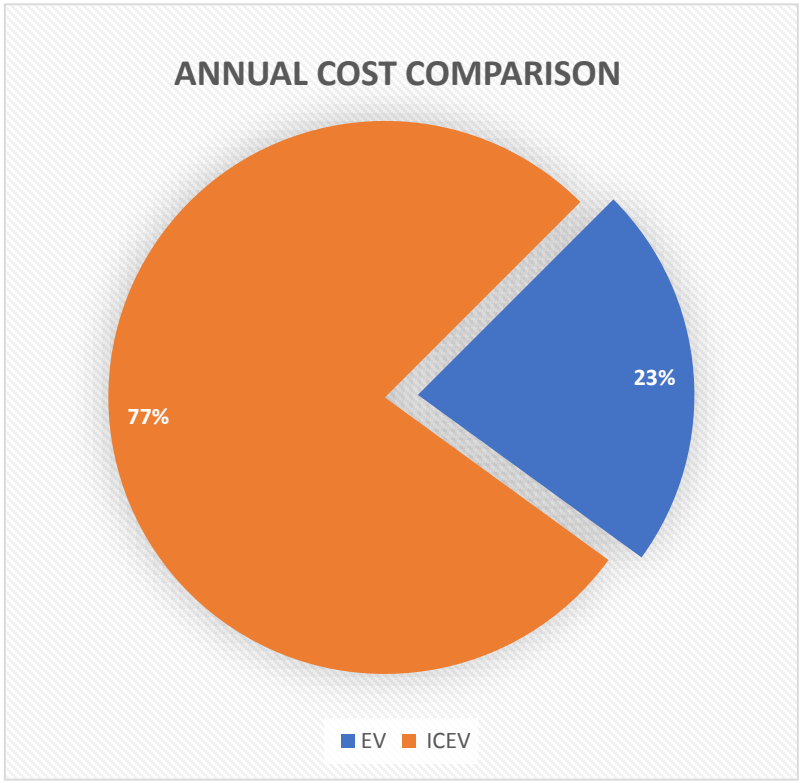
## Sampled results

- ✓ Cost of ownership
- ✓ Suitability
- ✓ Cost of Maintenance
- ✓ General Performance

| Study Parameter | Electric Car<br>Nissan Leaf | Petrol Vehicle<br>Nissan Advan |
|---|---|---|
| **Annual Energy Cost** | KES 33,745.42 for 11,005km | KES 126,558.65 for 11,005km |
| **Cost of Maintenance (Engine related service schedule)** | Nil<br>service was schedule at 12,000km | Service schedule Every 5,000Km<br>KES 7,500/ Service = 15,000km |
| **Energy Cost /KM travelled** | Ksh 4 per km.<br>120 Km full charge<br>Kes 20.91/KWh;<br>Average fuel economy 5km/KWh) | Ksh 8 per km.<br>(Consumption 12.68km/l<br>Average Petrol Cost of kes 106.3/L |
| **CARGO AND PASSANGER** | Compact Car<br>Body Style: 5 door Hatch-back<br>Perfect passenger space and room for cargo. | 5 Door Wagon<br>Perfect passenger space and room for cargo. |
| **TAIL PIPE CO2 EMISSIONS PER KM** | ZERO | 411gm of CO2 per 1.6km |

# RESULTS AND FINDINGS



# Phase 2

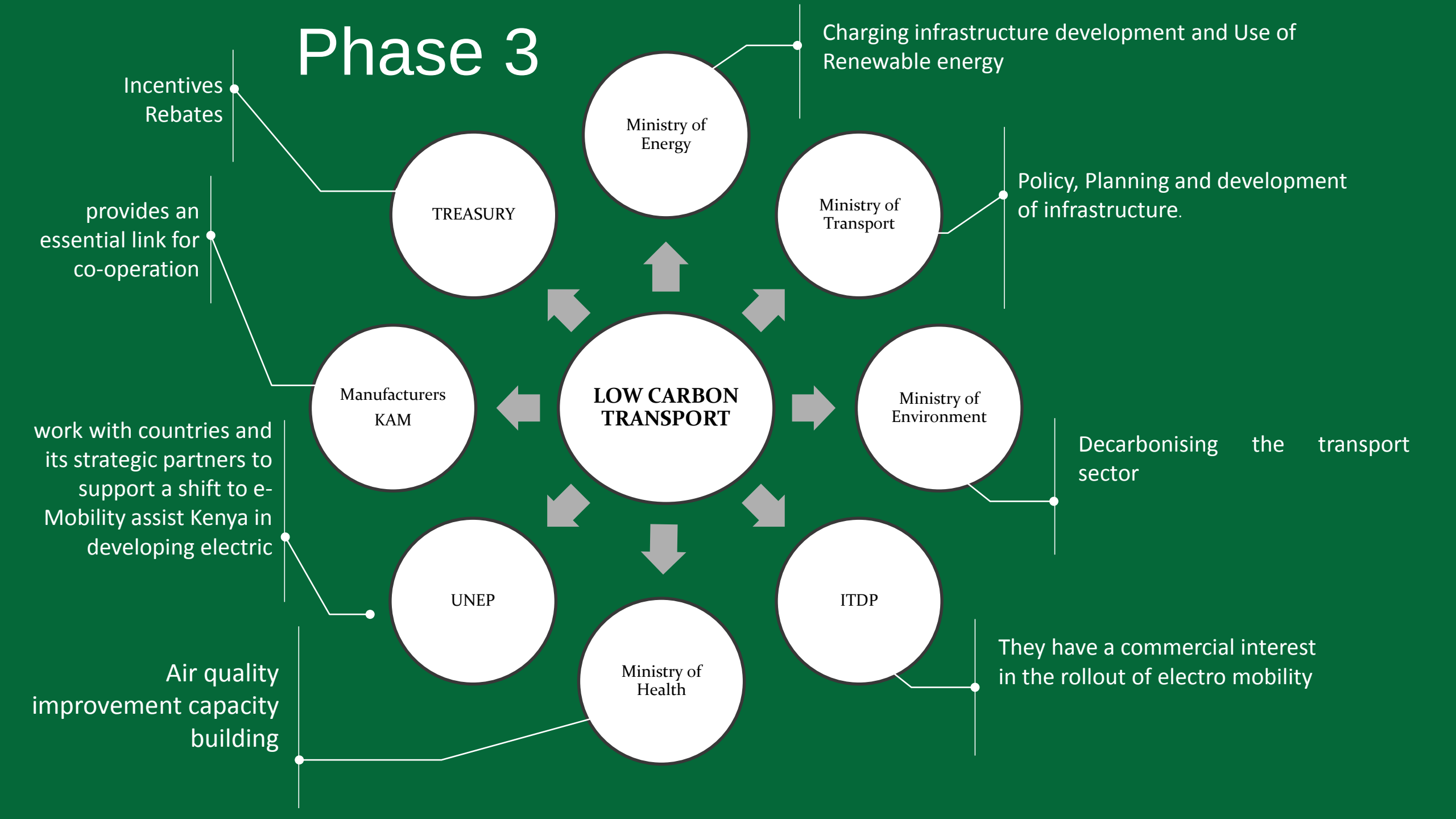
## Leased option

- Acquire independent opinion on acclimatization of used EVs in Kenya.
- Collecting feedback from consumers targeted road users

Main Queries Centered on

- Range anxiety
- Charging infrastructure.
- Technology questions - Is the EV battery affected when the car is driven in water?
- Capex and Opex questions - The high initial costs scare away new buyers. A policy framework can trigger the uptake of this technology

# Phase 3


Incentives
Rebates
TREASURY
Ministry of Energy
Charging infrastructure development and Use of Renewable energy
Ministry of Transport
Policy, Planning and development of infrastructure.
provides an essential link for co-operation
Manufacturers KAM
LOW CARBON TRANSPORT
Ministry of Environment
Decarbonising the transport sector
work with countries and its strategic partners to support a shift to e-Mobility assist Kenya in developing electric
UNEP
ITDP
They have a commercial interest in the rollout of electro mobility
Air quality improvement capacity building
Ministry of Health

# Strategies to accelerate EV deployment

All over the world, governments attempt to support the transition to e-mobility. The introduction of electric driving is a complex and unpredictable process that is not likely to occur all by itself.

## AWARENESS

- EV showcases and demonstration zones.
- Youth education and professional development.
- Awards and recognition
- Highly visible signage.
- Informational Websites
- National Drive Electric Week promotional events
- Encourage elected officials to drive EVs.

## INFRASTRUCTURE

- Providing direct financial incentives for setting up of infrastructure
- Investing in government-owned infrastructure.
- Partnering with EV stakeholders to ensure charging stations are accessible to the public.
- Adopting accredited standards to allow and encourage installation of charging stations throughout the city.

## POLICY

- Lower import duties and road tax for electric vehicles
- Preferential access and exemption from congestion fees in urban areas
- Adopt EV-friendly zoning and parking ordinances.
- Identify other policies and incentives that may promote EV use, such as free parking for EVs, or tax credits for businesses that offer EV charging.

# ECO-HUB

## STRATEGY FOR INITIAL INFRASTRUCTURE DEVELOPMENT

**Staff/School Bus**

EV Bus for staff or students

**Delivery Bike**

EV motorbike for errands or and deliveries

**Personal Car**

EV for personal utility

**Delivery Van**

EV vans for errands or and deliveries

**SCHOOL | AIRPORT| OFFICE | HOTEL | COMPANY**

# Eco-Hub

- Eco-Hub introduces solar power for charging stations.
- The Eco-Hub owner is a power generator, and uses the power to meet varied demand needs.
- Power from solar charges EVs and surplus can be fed to immediate loads e.g. lighting and office electrical loads.

# BENEFITS OF ECO-HUB

- Energy Security – Solar power protects the off-takers from fluctuating energy prices and unreliable grid power.
- Costs savings – We saved 78% with our EV on fuel costs alone(from table).With ECO-HUB, the cost of electricity is zero.
- Freedom to choose between ICE and EV car technologies.
- Commercial and Industrial fleet owners have a concrete data source for turning their fleets to EVs.
- Zero-emission from the EVs will improve on air quality, de-carbonize our transport system.
- Wide range market potential, from homes, institutions, shopping malls e.t.c.

# TO MEET OUR CARBON NEUTRALITY GOALS, IT IS CRITICAL THAT WE ELECTRIFY THE TRANSPORTATION SECTOR

The experience of cities with the highest rates of EV adoption demonstrates that local government can play a significant role in accelerating the transition to electric transportation by addressing the most significant barriers to EV adoption.

Nairobi has a unique opportunity to improve air quality and public health, advance environmental justice, and reduce the economic risks of fossil fuel dependence and worsening climate change through policies and programs which support electric vehicles.

Drivelectric

# THANK YOU


**FRANCIS ROMANO**
**romano@knightsandapps.com**