THE IMPACT OF ELECTRIC MOBILITY ON FINANCING OF ROAD MAINTENANCE

21st African Road Maintenance Funds Association (ARMFA) Annual Meeting

May 2024

Abidjan, Ivory Coast

SITUATION OF E-MOBILITY IN KENYA- Relevant Legal & Policy Framework in Kenya

Legal Framework

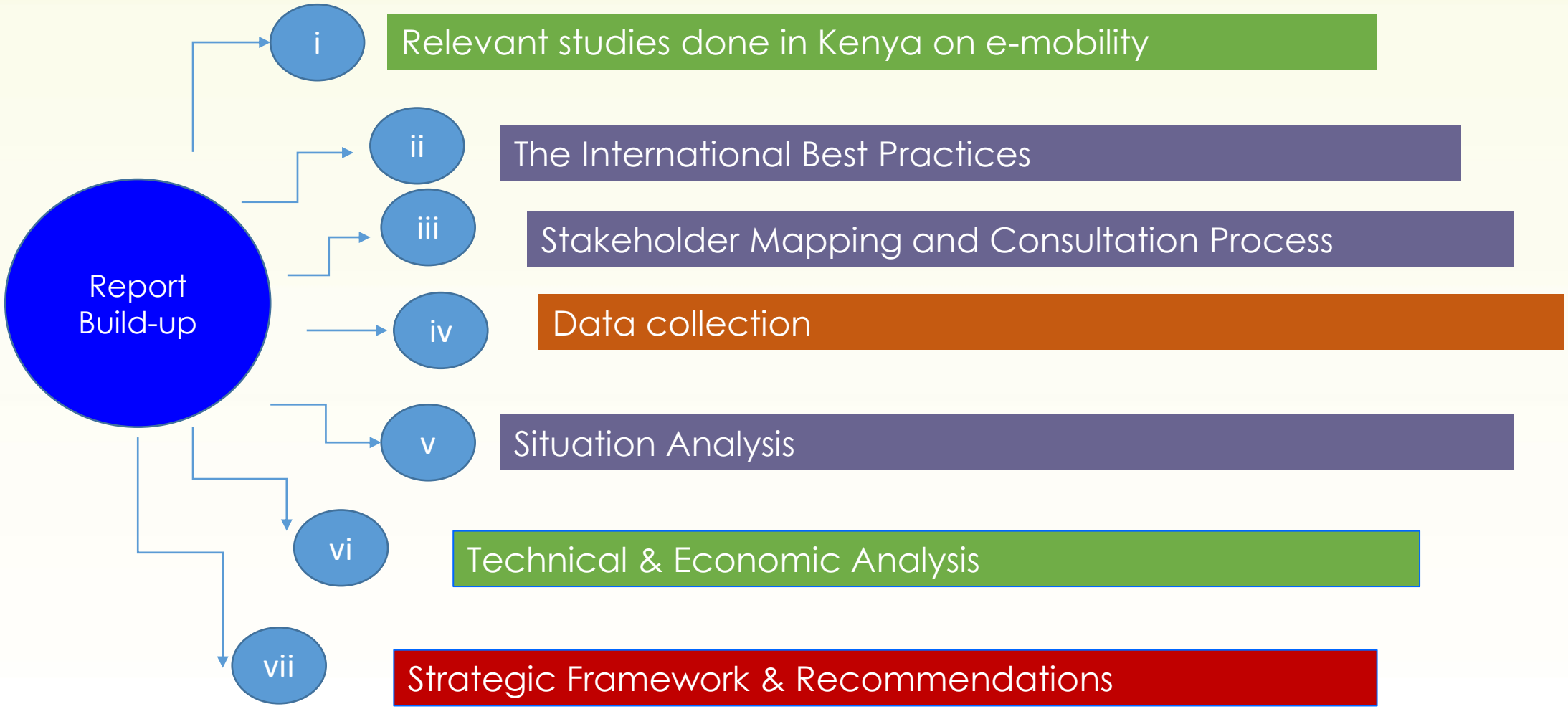
- Public Road Tolls Act (1984)
- Road Maintenance Levy Fund Act (1993)
- Kenya Roads Board Act (1999)
- Kenya Roads Act (2007)
- Finance Act 2019
- Others

Policy Framework

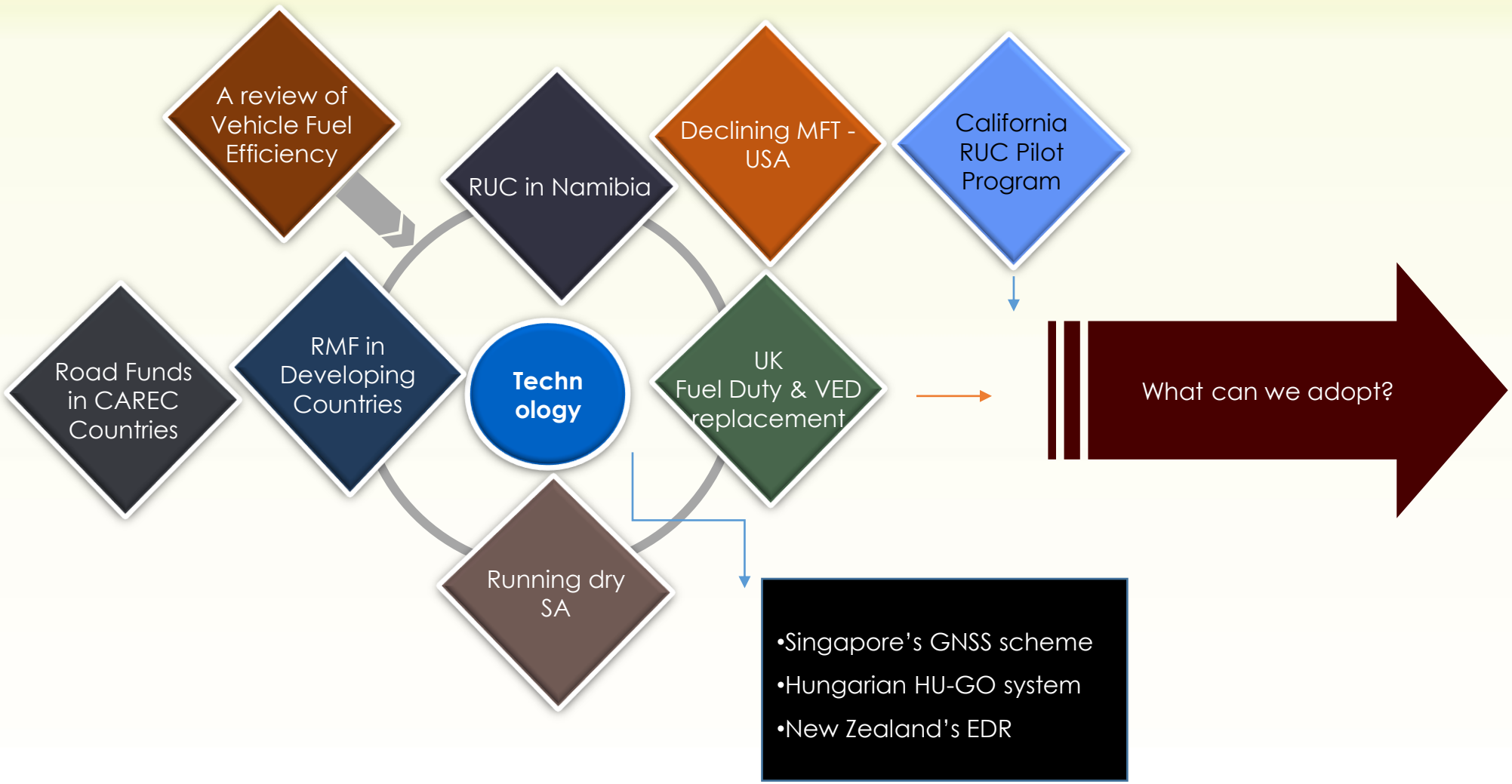
- ✓ National Climate Change Action Plan (NCCAP) 2018-2022
- ✓ The Integrated National Transport Policy (2020)
- ✓ EV Standards in Kenya (January 2021) & EPRA Guidelines
- ✓ National Energy and Petroleum Policy (2018)
- ✓ Kenya National Energy Efficiency and Conservation Strategy 2020
- ✓ National Green Fiscal Incentives Policy Framework, December 2022
- ✓ Kenya Roads Board Strategic Plan FYs 2023/24– 2027/28
- ✓ Others

SITUATION OF E-MOBILITY IN KENYA- Recent developments on e-Mobility in Kenya

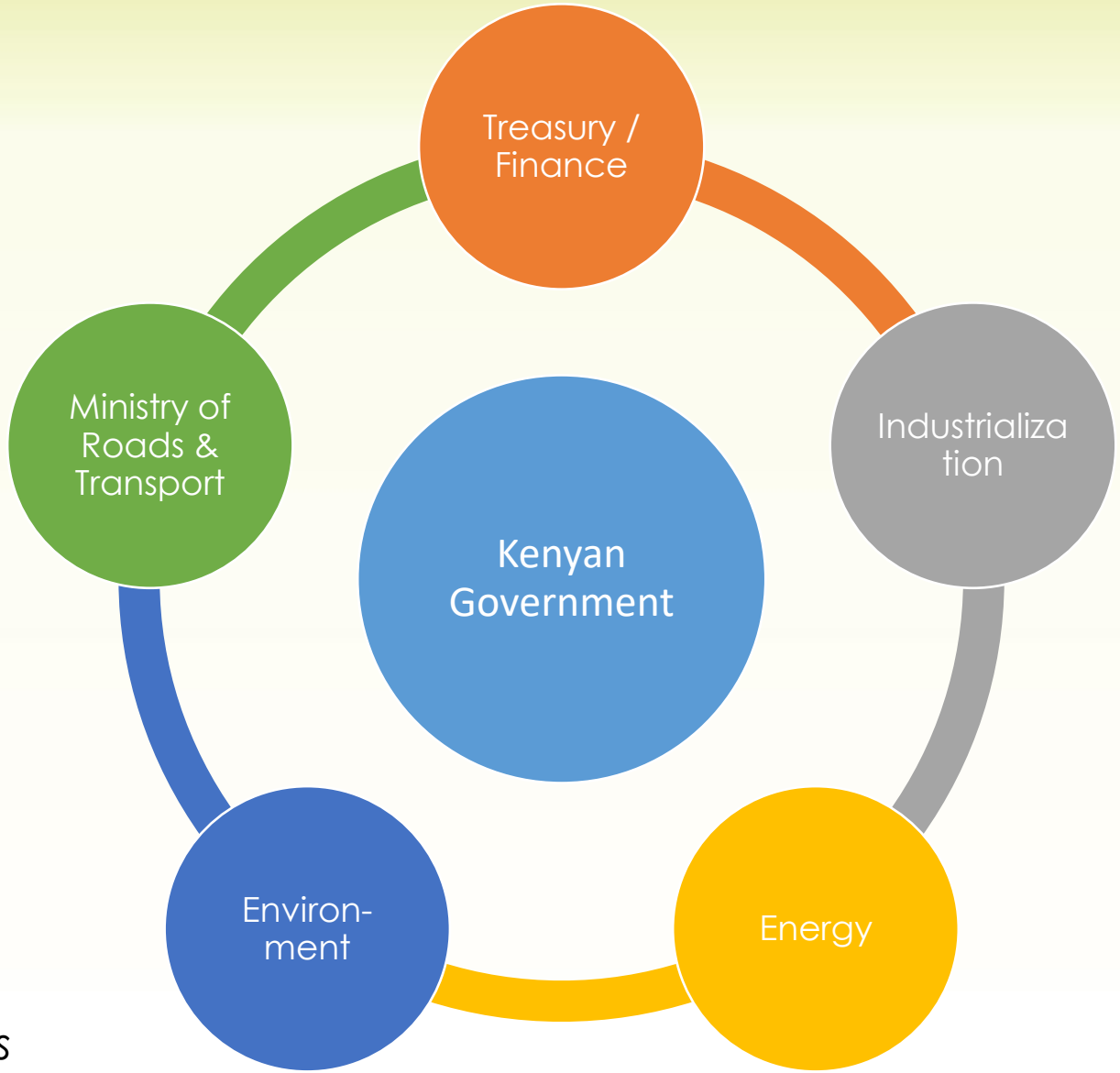
REPORTING- Report Build-up



INTERNATIONAL BEST PRACTICES - Selected

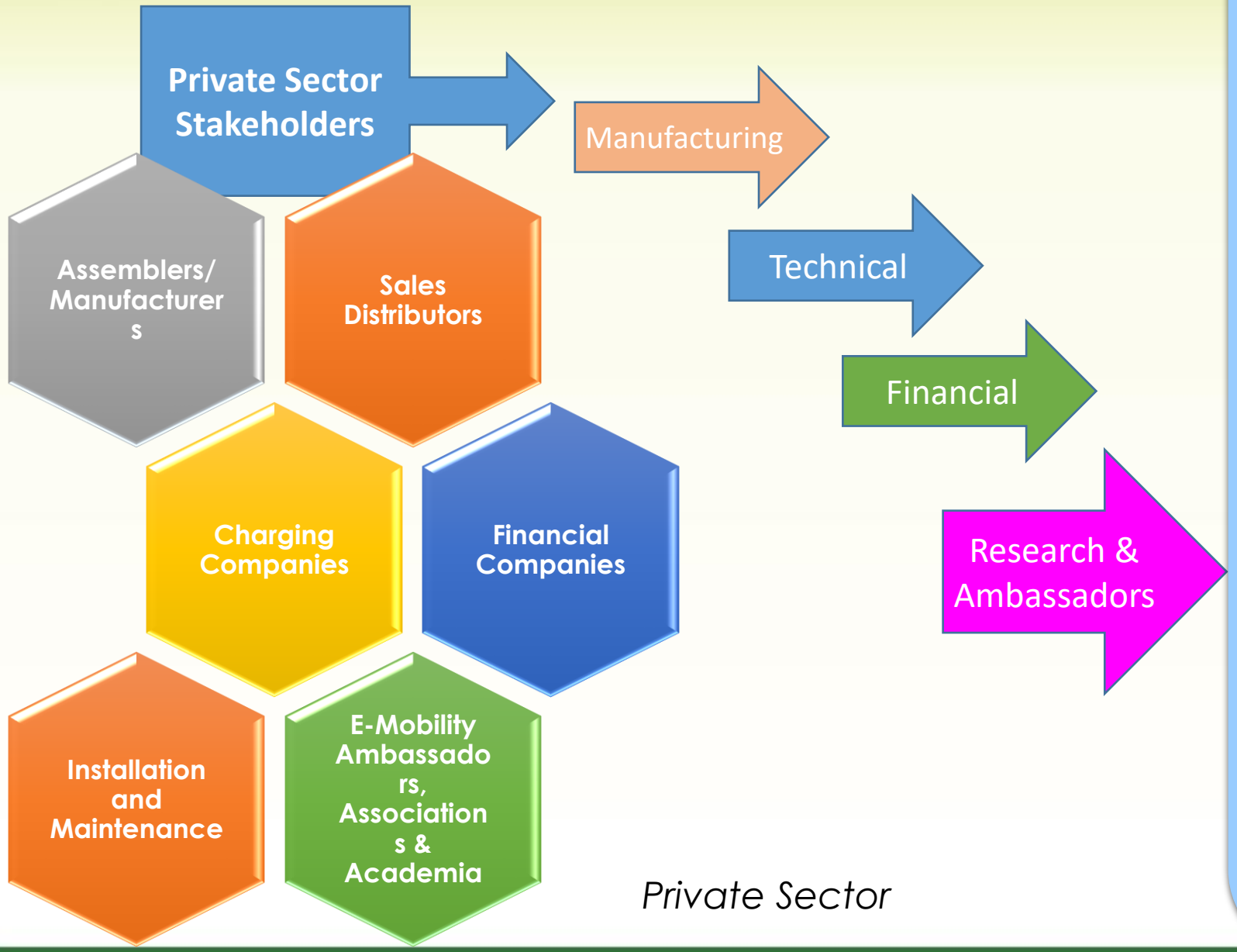


RAPID SITUATION ANALYSIS – Stakeholder Mapping



Government key players

RAPID SITUATION ANALYSIS – Stakeholder Mapping



BASIGO
Power Hive
OpiBus/Roam
Auto Truck
Mazi Mobility
KIRI EV
ARC Ride
Ecoboda
Fika Mobility
AMPERSAND
META Electric
Drive Electric
Stima Boda
E-Safiri
EVChaja
Chaji
Ecotrify
Watu
Mogo
NCBA Bank
Anywair
META Electric
MANTLE
TUGENDE
KCB Bank
NopeaRide
Uber
Bolt
Jumia / eBee
Sendy
Kenya Renewable Energy Association / Strathmore
KTA
AEM&DA
ABOK

Private Sector

Technical and Economic Analysis- Introduction

- The approach to Economic Analysis involved econometric modelling.
- To assess the impact of EVs (that will not pay fuel levy even though they use the road), the study team collected historical data.
- The maintenance needs assessment was developed using the Strategic Analysis.
- The Road Maintenance Levy (RML) predominantly relies on RMFL (99%).
- RML is critically dependent on the consumption of fuel by ICE vehicles.
- Review of Kenya road network and condition rating.

Technical and Economic Analysis

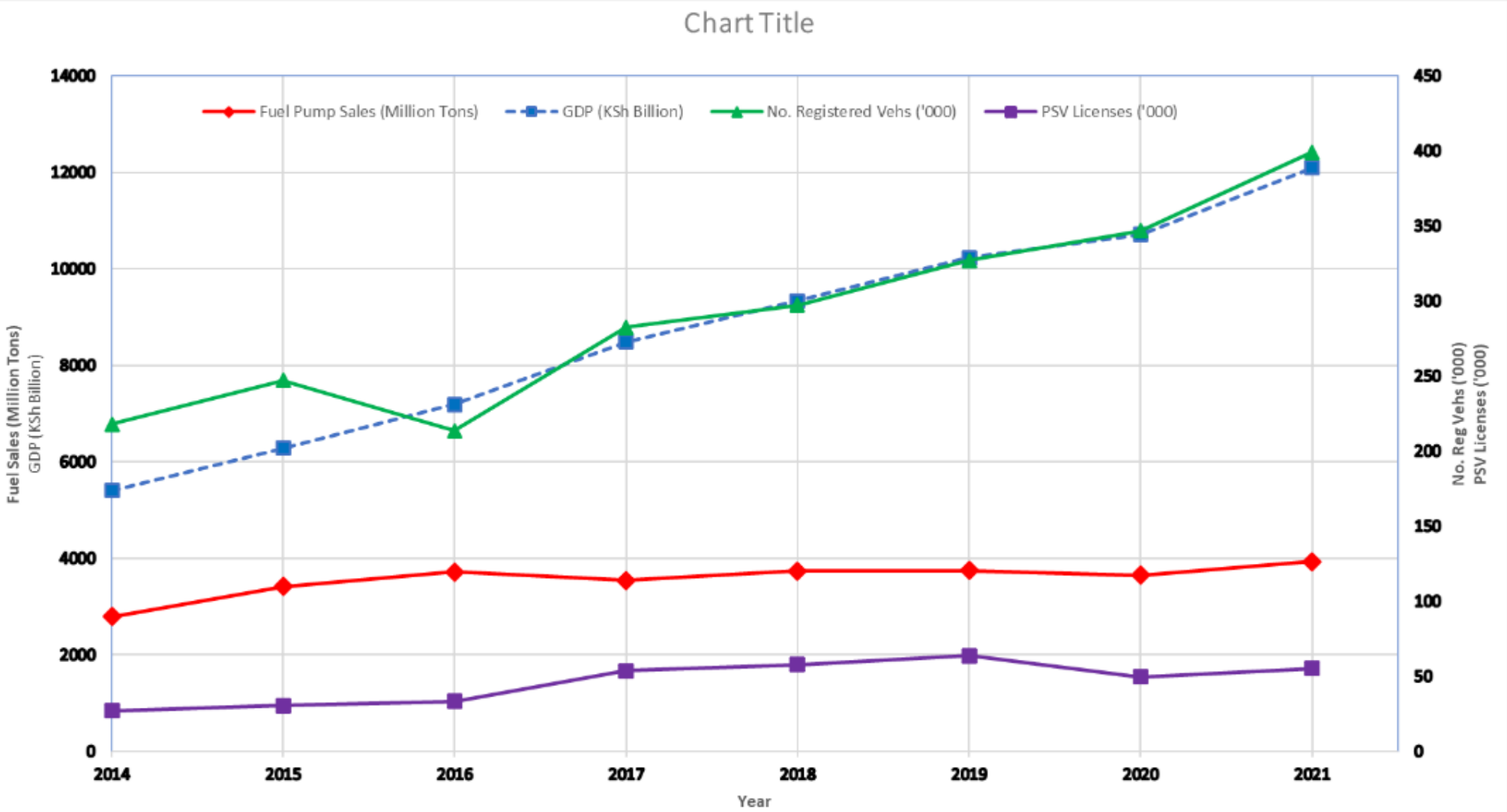
Scenario for econometric modelling

- Vehicle Fleet
- RMFL
- Road Maintenance

Analysis alternatives

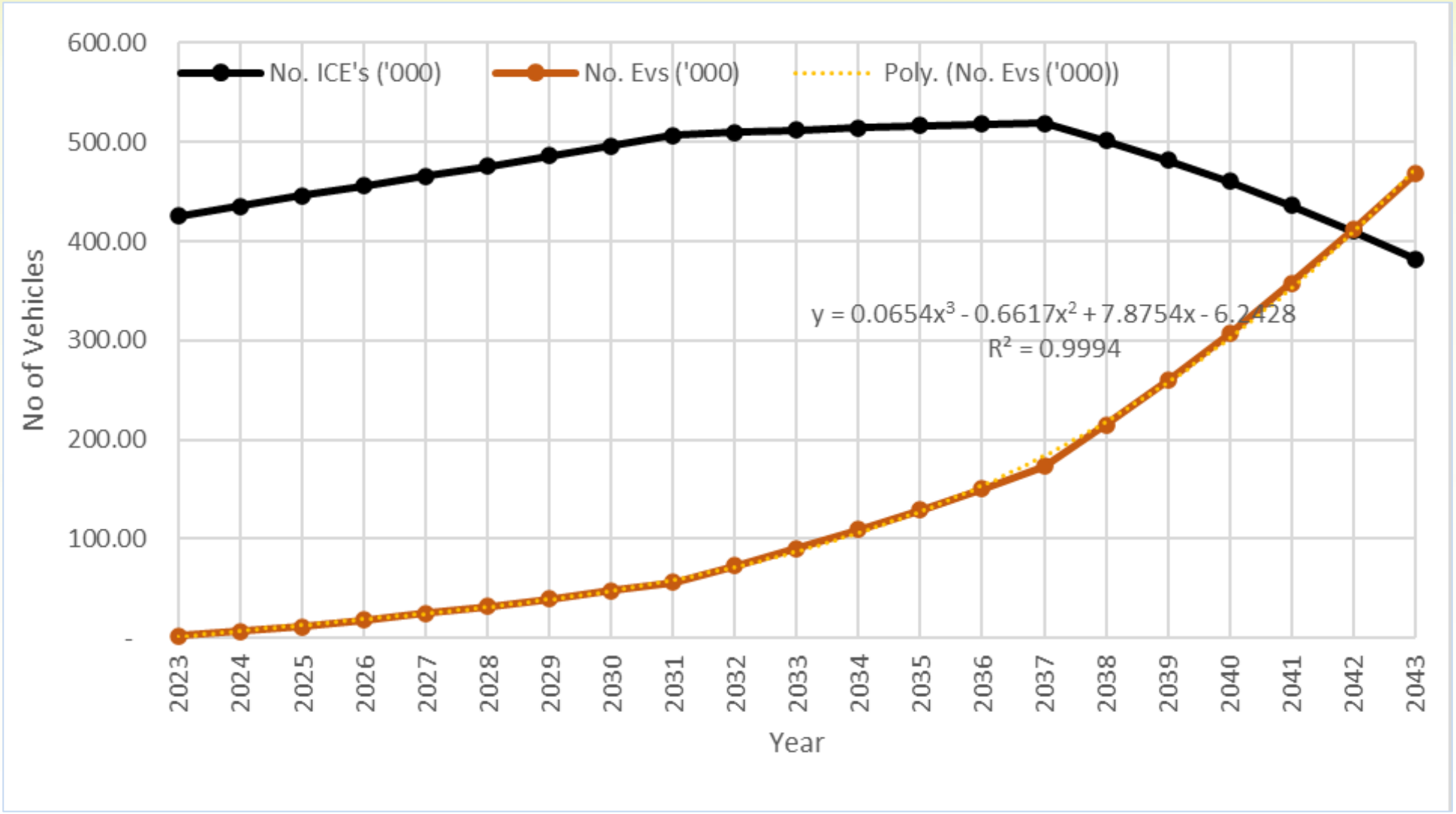
- Base Case
- Alternative 1: 25% Evs
- Alternative 2: 50% EV
- Alternative 3: 75% EVs

Technical and Economic Analysis- The base case scenario

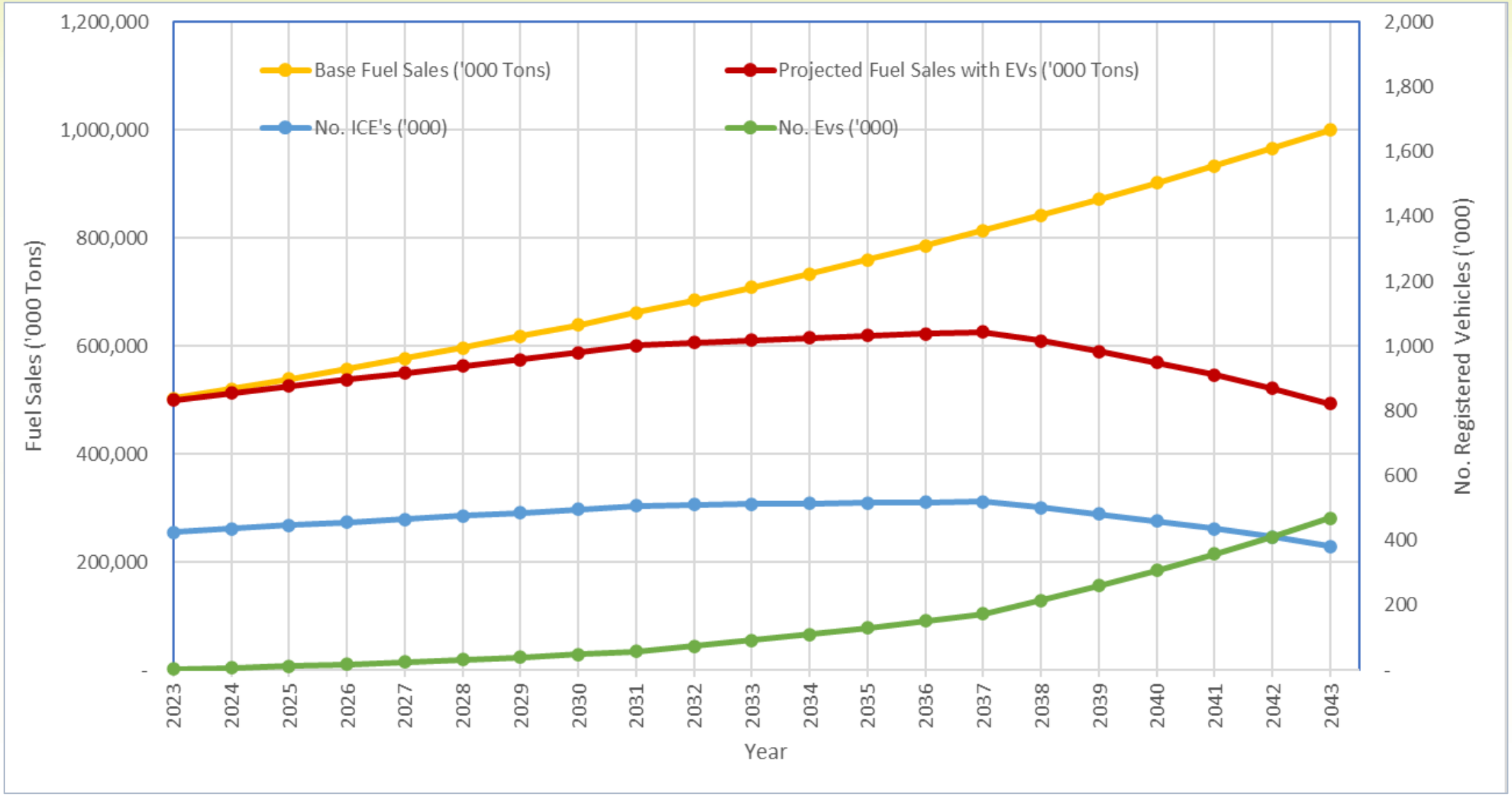


The Base Case for this study represented the current scenario where nearly all vehicles are propelled by internal combustion engines (ICEs) that are principally powered by petroleum-based (i.e. gasoline and diesel) energy.

Technical and Economic Analysis- Projected Number of Registered Vehicles

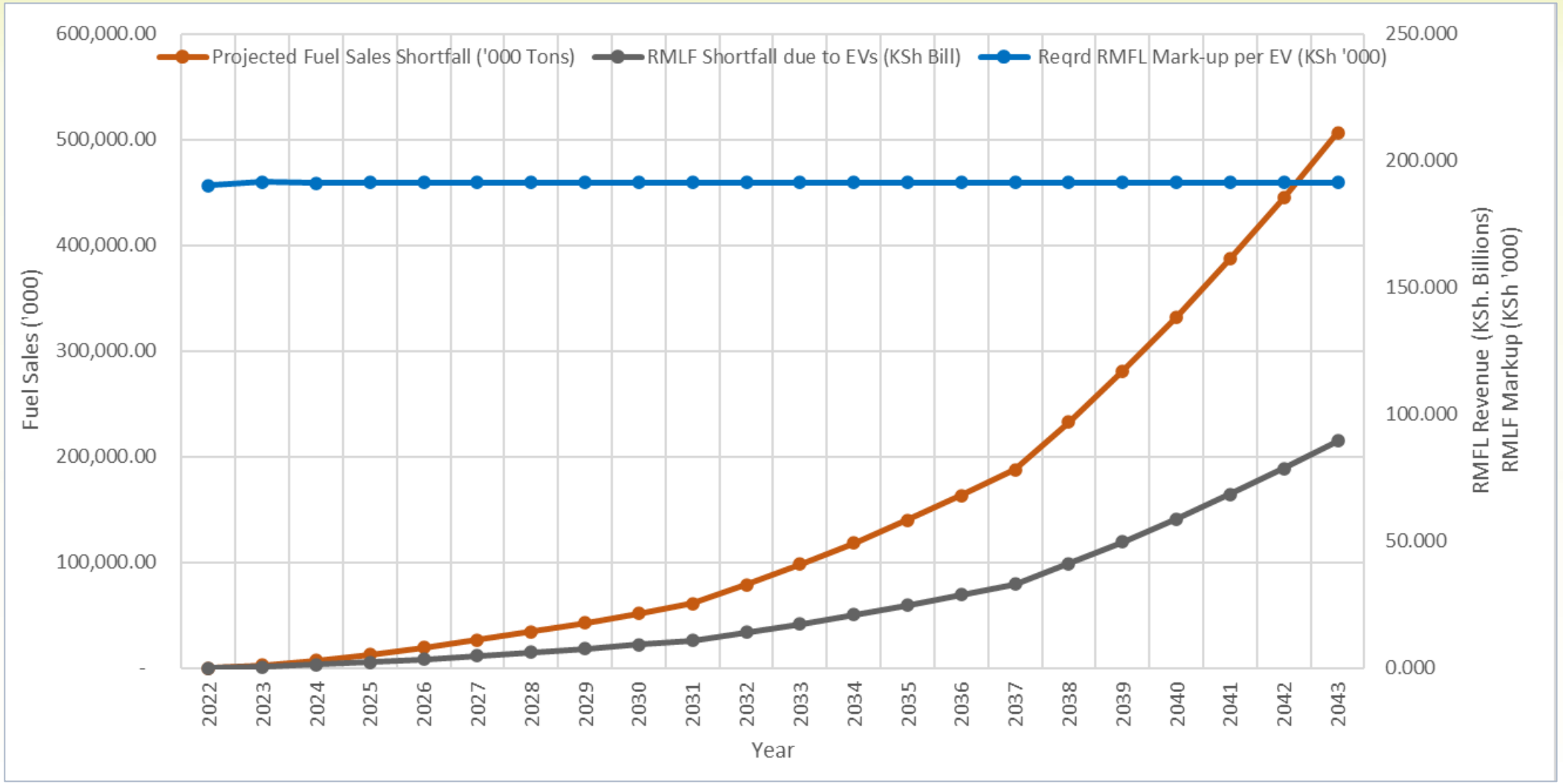


Technical and Economic Analysis - Development of Projections for RML under Different Scenarios (Estimated Future Fuel Sales)



The Base Case represents scenario where we have 100% petroleum-based propulsion. This is for aiding in scenario building analysis and isolate the critical factors regarding the impact of EVs on RML.

Technical and Economic Analysis - Development of Projections for RML under Different Scenarios (Projected RMFL Revenue Shortfall)



Assuming a nominal average travel of 35,000km per vehicle per year, the average annual markup cost per EV required to cover for the deficit was estimated at KSh. 191,335.00, or KSh 5.80 per Kilometre.

Strategic Framework for Sustainability of RML - Projected revenue yield to cover funding gaps. Scenario 1: Pilot VDC 2033

Year	Network maintenance need (Billion Ksh)	Fuel levy collections projections (Billion Ksh)	Projected maintenance funding gap (Billion Ksh)	Proposed stop-gap option	Proposed stop-gap yield (Billion Ksh)
2024 /25	253.5	88.5	165	Deficit	164.3
				EV Power Levy	0.7
2028	367.3	99.5	267.8	Annual road licences + NVRC	7.6
				EV Power Levy	1.8
				Deficit	258.6
2033	451.4	108.1	343.3	Vehicle Distance Charges (Pilot)	10.7
				Annual road licences	7.9
				EV Power Levy	5.2
				Deficit	319.5
2038	482.8	107.8	375	Vehicle Distance Charges (intermediate)	50.8
				Annual road licences	8.3
				EV Power Levy	12.4
				Deficit	303.5
2043	470.9	0.00	470.9	Vehicle Distance Charges (long-term), abolish fuel levy	272.6
				Annual road licences	8.8
				EV Power Levy	26.9
				Deficit	162.6

Strategic Framework for Sustainability of RML - Projected revenue yield to cover funding gaps. Scenario 2: EVs piloted in 2028 with 33.3% rate then proceeded to 66.7% & 100% rate

Year	Network maintenance need (Billion Ksh)	Fuel levy collections projections (Billion Ksh)	Projected maintenance funding gap (Billion Ksh)	Proposed stop-gap option	Proposed stop-gap yield (Billion Ksh)
2024 /25	253.5	88.5	165	Deficit	164.3
				EV Power Levy	0.7
2028	367.3	99.5	267.8	Annual road licences + NVRC	7.6
				Vehicle Distance Charges (Pilot-33.3% EVs)	3.8
				EV Power Levy	1.8
				Deficit	254.6
2033	451.4	54.1	397.3	Vehicle Distance Charges (Pilot 50% reduction of fuel levy & 66.7% EVs)	78.1
				Annual road licences	7.9
				EV Power Levy	5.2
				Deficit	306.1
2038	482.8	0.00	482.8	Vehicle Distance Charges (Intermediate-66.7% for EVs and 100% removal of fuel levy for ICEs)	189.1
				Annual road licences	8.3
				EV Power Levy	12.4
				Deficit	273.0
2043	470.9	0.00	470.9	Vehicle Distance Charges (Longterm-100% for EVs and 100% removal of fuel levy for ICEs)	272.6
				Annual road licences	8.8
				EV Power Levy	26.9
				Deficit	162.6

KEY RECOMMENDATIONS

	Recommendation	Object / Purpose of the Recommendation	Action Required	Timelines
❑	Pilot Vehicle Distance Charging (VDC) as the ultimate road maintenance revenue stream from 2033, at an introductory rate, and subsequently incorporate other vehicle characteristics. Upon successful feasibility and piloting, adjust fuel levy downwards at a given time as a result of the expected projected increase in VDC contributions in future. Fuel Levy to be scrapped completely by 2043.	-To be Most equitable, transparent and sustainable RUC as a replacement of Fuel Levy in the long run.	-New legislation to introduce VDC by 2025 -Fit all vehicles with GPS supported Telematics / OBU -Feasibility study/piloting	2033
❑	Introduce a revenue stream by 2025 from EVs power payments (EV Power Levy) collected at the public charging stations at the prevailing EM tariff, currently being collected by Kenya Power. KRA will be designated as the collecting agency, after which it will distribute to KP & KRB.	-To supplement Fuel Levy in the medium and long-term	-Review of the KRA Act and the Kenya Energy Acts to operationalize collection and management of the revenue stream.	2025
❑	Re-introduce Annual Vehicle Road Licence (AVRL) charges at modest rates from 2028 onwards.	-To supplement Fuel Levy in the medium term	-Review of the traffic act and regulations. -Annual Vehicle inspection	2028

KEY RECOMMENDATIONS

	Recommendation	Object / Purpose of the Recommendation	Action Required	Timelines
❑	Trade in Carbon Credits since encouraging EVs growth will lead to decarbonization. Road transport is one of the major contributors to GHG currently estimated at 15%. The Climate Change Act, 2016 and amendment of 2023 sets the guidelines.	-Ensure that a corresponding benefit is channeled to KRB for road maintenance.	-KRB should register e-mobility as a project with NEMA as a carbon trading project.	2024
❑	Enactment of Acts of Parliament to operationalize new revenue streams for road maintenance, as well as amendment of relevant laws.	-Anchor and operationalize the various new revenue streams into law. -Legal amendments will help channel more funds to road maintenance	-Introduction of bills, as well as review of relevant Acts by National Assembly.	2025

KEY RECOMMENDATIONS

	Recommendation	Purpose of the Recommendation	Action Required	Timelines
❑	Vehicles converting to alternative fuels like LPG, LNG, Biofuels, Hydrogen, among others should be captured.	-This will ensure all vehicles irrespective of propulsion mode contribute revenue for road maintenance.	-To this effect, NTSA should ensure that all such vehicles register all particulars afresh.	2025
❑	Update and link-up KRB with the National Vehicle Registration Database, currently being developed by NTSA.	-The database will be key in ensuring the success of VDC, AVRL, carbon Tax, New Vehicle Registration Fees (NVR) and Axle Load Fines (ALF), among other revenue streams.	-NTSA to update the whole active vehicle fleet with all details. -Linkage to KRB database	2028
❑	Before introducing new revenue streams, feasibility studies and piloting is recommended.	-To objectively assess the viability. -Evaluate the Impact of Finance Arrangements on Transportation System Performance.	-Piloting -Feasibility studies	2028

Discussion Point

- In the near future, fuel levy will cease to be a sustainable source of funding for road maintenance. Road Funds across Africa need to recognize this fact, and explore alternative sources of funding for road maintenance. What is your country doing abput this?

THANK YOU