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Published: June 2022

ISBN:

Front Page Illustration: Barry Maitland-Stuart/ Garage East

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Contents

Abbreviations	iii
Acknowledgements	iv
Project Steering Committee	iv
1. Introduction	1
2. Transport Sector Overview	2
3. Prioritization of Vehicle Categories for Electrification	3
4. Policy Measures for E-Mobility Development in Zimbabwe	4
5. Policy Roadmap for Electrification of Vehicles in Zimbabwe	5
5.1 Policy Roadmap	5
5.1.1 Targets	5
5.1.2 Policy Measures Prioritized for Inclusion in the Roadmap	5
5.1.3 Institutions Responsible for the Implementation of Prioritized Policy Measures in the Roadmap	7
5.1.4 Scheduling of Policy Measures	7
5.1.5 Estimation of Resources Needed for Policy Measures	7
5.1.6 Estimation of Benefits from EV Adoption	7
5.2 Policy Roadmap for Various Vehicle Categories	7
5.2.1 EV Targets	7
5.2.2 EV Public Charging Infrastructure Targets	8
5.2.3 EV Policy Roadmap to Achieve the Targets	8
6. Roadmap Timeline	27
7. Impacts of E-Mobility Adoption: Costs and Benefits	30
7.1 Resource Requirement and Cost to Government for EBus Adoption	30
7.1.1 Electricity Requirement for EV Charging	30
7.1.2 EV Budget and Cost to Government	30
7.2 Benefits from EV Adoption	35
7.2.1 Climate Benefits	35
7.2.2 Environmental Benefits	35
7.2.3 Social Benefits	37
7.2.4 Other Benefits	39
8. Conclusion	40



List of Tables

Table 5. I	Proposed EV Sales Target for Zimbabwe until 2035 (%)	6
Table 5.2	Proposed EV Sales Target for Zimbabwe until 2035 (numbers)	3
Table 5.3	Proposed EV Public Charging Points until 2035 (numbers)	3
Table 5.4	Policy Roadmap for E-Mobility in Zimbabwe	
Table 6.1	EV Targets, Demand Side Measures and their Implementation Timelines	27
Table 6.2	Supply Side Measures and their Implementation timelines	28
Table 6.3	E-Mobility Policies in Selected Countries/ Regions	29
Table 7.1	EVs Affordability and Subsidy Requirements	3-
Table 7.2	Proposed Subsidy for EVs	3-
Table 7.3	Financial Impact from Recommended Measures (million USD)	34
Table 7.4	Summary of Environmental Benefits	36
List o	f Figures	
Figure 7.1	Revenue Generation from the Sale of Electricity to EVs	30
Figure 7.2	EVs Affordability and Subsidy Requirements	32
Figure 7.3	EV Capital Subsidy Budget for Various Vehicle Segments	30
Figure 7.4	CO ₂ Emission Reduction (thousand tons)	38
Figure 7.5	BAU vs EV Adoption Scenario; Passenger Transport - PM Emissions (tons)	36
Figure 7.6	BAU vs EV AdoptionScenario; Passenger Transport – NOx Emissions (tons)	37
Figure 7.7	BALLys EV Adoption Scenario: Passenger Transport - SO2 Emissions (tons)	3-

Abbreviations

BAU Business-as-Usual

BEV Battery Electric Vehicle

CKD Completely knocked-down Kits

CTCN Climate Technology Centre and Network

CVR Central Vehicle Registry

DC Direct Current

DISCOM Distribution Company

EMA Environmental Management Agency

EURO Name of European Emission standards

EV Electric Vehicle

GBV Gender Based Violence

GHG Green House Gas

ICE Internal Combustion Engine

ICEV Internal Combustion Engine Vehicle

IEA International Energy Agency

LEDS Low Emission Development Strategy

MIAZ Motor Industry Association of Zimbabwe

NDC Nationally Determined Contribution

NDS National Development Strategy
NGO Non-Governmental Organization
OEM Original Equipment Manufacturer

PHEV Plug-in hybrid electric vehicles

RTO Road Transport Office

R&D Research and Development

SAZ Standards Association of Zimbabwe

TCO Total Cost of Ownership

TOU Time of Use

UNECE United Nations Economic Commission for Europe

USD United States Dollars
VAT Value Added Tax

VID Vehicle Inspection Department

WHO World Health Organization

ZERA Zimbabwe Energy Regulatory Authority

ZEV Zero Emissions Vehicle

ZIMRA Zimbabwe Revenue Authority

ZINARA Zimbabwe National Road Administration



Acknowledgements

The National Policy Roadmap for Electric Mobility in Zimbabwe was developed after the National Electric Mobility Policy and Market Readiness Framework, which consisted of a menu of various policy options to promote e-mobility in Zimbabwe. The Roadmap brings out the most relevant policies in the current context and involved a robust stakeholder consultation process. In developing the Policy Roadmap, key stakeholders consulted were from the four key priority sectors of climate, energy, transport and finance. They ranged from government ministries, non-governmental organisations, private sector, academic and research institutions, development partners, and local community members.

We are grateful for the contributions made by the government ministries, various governmental institutions, NGOs, experts and others who contributed in various ways to the development of the Roadmap.

We are particularly grateful to the Project Steering Committee for providing guidance and support to the project. We are especially thankful to Ms Salome Maheya and M Frank Tinarwo from the Ministry of Energy and Power Development and Ms Virginia Mawere from the Ministry of Transport and Infrastructure Development for their valuable input and support to the project. As in the case of the development of the Policy Framework, Ms Munashe Mukonoweshuro, the project focal point at the Ministry of Environment, Climate, Tourism and Hospitality Industry was the driving force behind the development of the Roadmap as well. She was very supportive throughout the project, provided valuable input, coordinated the project with ministries, organised meetings with key stakeholders, and coordinated input from them. We also thank Shanar Tabrizi and Lisa Sundberg for providing comments as gender experts. The Climate Technology Centre and Network (CTCN) provided funding for the project.

UNEP Copenhagen Centre on Climate Change Mobility for Africa and pManifold consortium

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Ministry of Energy and Power Development
Ministry of Environment, Climate, Tourism and Hospitality Industry
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Motor Industry Association of Zimbabwe
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^{*} In addition, Mr Isaac Chiridza also provided support as the steering committee chair in the initial stage of the project.

1. Introduction

The National Electric Mobility Policy Roadmap serves as an action plan with a focus on the development pathways which will achieve wide-scale electric vehicle (EV) deployment in the context of Zimbabwe. For this, a set of policies were selected from the National Electric Mobility Policy and Market Readiness Framework (hereinafter referred to as Policy Framework) for implementation. Electric mobility roadmap is defined here as an action plan that includes targets and policy measures along with their implementation timelines, institutional responsibilities, and resource requirements. For each vehicle category, a draft roadmap was prepared which included quantified targets and policies. A policy can be a law, regulation, procedure, administrative action, incentive, or even a voluntary practice of government. In the context of e-mobility it can, for example, be an Act that calls for the quantified subsidizing of the electric vehicle purchase or a reduction in customs duty; e.g. 20% of the cost of the vehicle will be provided as a subsidy. Stakeholders were provided with the necessary information to evaluate various policy measures. It included information on costs as well as benefits from various levels of targets in each vehicle category. Benefits included socio-economic and environmental benefits such as GHG reductions, air pollution reduction etc. Each policy and its attributes; level, timeline, resource requirements and institutional responsibility were thereafter discussed by stakeholders and validated.

A brief overview of the transport sector in Zimbabwe and the challenges it faces are given in the next section, followed by a brief description of the process followed to develop the Policy Framework for Zimbabwe. The Electric Mobility Policy Roadmap thereafter includes policies selected from the Policy Framework for various electric vehicle segments, discussed with and validated by key stakeholders.



2. Transport Sector Overview

Zimbabwe's transport sector is a part of the Zimbabwean government's climate policy plan to accelerate mitigation measures through adopting low carbon development pathways. The sector is also expected to contribute to the achievement of Zimbabwe's Nationally Determined Contribution (NDC) commitment to reduce its greenhouse gas emissions by 40% per capita across the economy by 2030.

In 2018, Zimbabwe developed its Transport Master Plan with a prioritized list of short-term, medium-term, and long-term transport sector investments. In 2019 the Government of Zimbabwe launched its first-generation Nationally Determined Contribution (NDC) Implementation Framework to guide the implementation of the NDC. Building on these achievements, Zimbabwe's long-term Low Emission Development Strategy (LEDS) was developed and follows an economy-wide approach over the period 2020-2050, guiding emissions reductions up to the year 2050. This led to the introduction of a low-carbon transport package as part of the nation's Low Emission Development Strategy within the energy sector.

There are several challenges for road transport in Zimbabwe due to (i) the high rate of motorization, with the vehicle fleet doubling every 10 years, (ii) the level of reconditioned cars imported from industrialized countries, and (iii) the contribution of greenhouse gas (GHG) emissions from transport, mainly from direct combustion of fossil fuels and CO₂. Nearly 97% of transport sector GHG emissions come from direct combustion of fossil fuels, the remainder being hydrofluorocarbons emitted from vehicle air conditioners and refrigerated transport. The GHG emissions from energy use (2015) indicate transport as a significant contributor at 22%, with emissions forecast to rise significantly in the Business-As-Usual (BAU) scenario to 2050 as demand for vehicles and transport services increases with economic growth.

In 2020, Zimbabwe developed its National Development Strategy (NDS) 1 (2020-2025), a strategic document which serves as the nation's economic blueprint. Under its Physical and Social Infrastructure pillar, the NDS's highlights Zimbabwe's commitment to introducing a transport policy framework that encourages the use of low carbon transport, such as electric vehicles, and the integration of climate resilience into transport planning and infrastructural development. Under its National Climate Policy, Zimbabwe is also committed to adopting gender-sensitive green technologies, strengthening gender considerations in green programming, and promoting climate-smart technologies that are user-friendly for children, youths, women, people living with disabilities and vulnerable or disadvantaged groups.

3. Prioritization of Vehicle Categories for Electrification

There are a variety of vehicles in use in the transport sector of Zimbabwe including buses, kombis, four-wheeler taxis and personal vehicles, two-wheelers (2W) and three-wheelers (3W). Though, aspiration may be to transition to e-mobility in urban as well as rural areas in all segments, given the economic viability of different modes, limited availability of resources, access to technology, infrastructure requirements for charging and implementation capacity, prioritizing the vehicle segments is important to plan the transition to electric mobility in Zimbabwe. The criteria used to prioritise e-mobility across different vehicle segments broadly included the following 3 categories:

- **Technology costs:** This includes investment (capital expenditure) on electric vehicles (EVs) (or retrofit equipment, in the case of retrofitted EVs), and operational cost of the EVs. Only electricity (fuel) costs were considered in the operational costs for EVs; maintenance costs were not considered in these costs.
- Benefits: The benefits were divided into four categories; economic, social, local pollution reduction, and climate benefits.
- Local context: In this specific criteria in the Zimbabwean context were considered. The key criteria were usage characteristics, supporting ecosystem, research and development requirements, and acceptability to local stakeholders.

Weights were assigned to various criteria and scores were given by stakeholders on various criteria. E-Bus-intracity (which includes both buses and kombis), was ranked first by the stakeholders for electrification, followed by 4W-Taxi, 2W-Personal, 3W and 4W-Personal in that order. This priority order also provides the most benefits and relevance for women who tend to utilize buses to a larger extent. Metered taxis are also a preferred choice for women, whenever affordable, due to the safety of the door-to-door service. An investment in intracity buses and taxis benefits women as a greater proportion of trips by women tend to be short and local.



4. Policy Measures for E-Mobility Development in Zimbabwe

Stakeholders were consulted on barriers to the electrification of vehicles and enabling measures (policies) to overcome the barriers. Policy measures identified based on consultation were categorised as follows and included in the "Zimbabwe's National Electric Mobility Policy and Market Readiness Framework" (hereinafter referred to as "Policy Framework").

- 1) Economic and financial measures: These include measures to address the economic and financial viability of EVs and access to available and affordable finance to buy an EV or retrofit an ICE vehicle
- 2) Policy, regulatory and institutional measures: These measures are needed to address existing policies or regulations, that may be unfavourable to the adoption of EVs, as well as policies/regulations that can facilitate EVs penetration and positive societal impact.
- **3) Technical and infrastructural measures:** The introduction of new technologies often requires skilled personnel as well as infrastructure, and these measures help address these requirements.
- 4) Awareness/information and promotional measures: A lack of awareness and proper information often leads to apprehension about new technology. In most cases, stakeholders are not even aware of steps being taken to promote the technology in the country. These measures cater to this need for EV technology in this roadmap.
- 5) Measures to address market barriers: The vehicle value chain was specifically analysed to bring out barriers to EV penetration and measures to address them. Market barriers are a mix of barriers due to prevailing market conditions. Market measures, therefore, include a variety of measures to address the same.

5. Policy Roadmap for Electrification of Vehicles in Zimbabwe

5.1 Policy Roadmap

The following components were considered for the Roadmap;

5.1.1 Targets

Ambition for the deployment of EVs is reflected in the targets. In the Roadmap, each target is defined in terms of costs and benefits so that stakeholders can make an informed choice. For each vehicle category, various levels of targets, along with their resource requirements and benefits over a period of time, were presented to stakeholders. The basis for selecting various levels of targets was also provided. It included relevance in the context of national policies, regional and global targets etc.

5.1.2 Policy Measures Prioritized for Inclusion in the Roadmap

Various policy measures from the Policy Framework document were broken down into several components and alternates for various measures presented to the stakeholders for various categories of vehicles. The alternate m measures presented to stakeholders were based on experiences in the region, or global examples, particularly from developing countries. Several rounds of consultations were held with the stakeholders and the roadmap reflects their inputs in terms of the need for various measures and their preferred level. For example, there are several possible measures included in the Economic and Financial category in the Policy Framework document; reduce import duty, provide cash subsidy, provide tax benefit, provide depreciation benefit (for businesses) and so on. Here, in the roadmap, only the measures that are prioritized by stakeholders have been included for various vehicle categories. Resources needed for implementation of a policy vary with level; import duty reduction for example can be at any level from 0 to 100%. The inputs on levels were also given by the stakeholders and included in the roadmap. In addition, gender considerations have been mainstreamed throughout the proposed measures to ensure broad and efficient uptake of technology and equal access to benefits. The recommended measures in the roadmap fall into the following categories.

1) Targets and EV mandates:

- a. EV targets: Targets are indicative of political commitment and therefore important to drive EV adoption. Targets are also the basis for the action plan for implementation and estimation as well as allocation of resources. Targets also motivate stakeholders, provide them direction, and help join forces and cooperate in achieving the common objective represented by targets.
- **b. EV mandates (for Government and private sector):** EV mandates for various stakeholders follow the targets and are a part of the strategy to achieve the targets.
- 2) Economic and financial measures: These include various incentives and other financial support measures to make EVs competitive. The upfront price of EVs is high which becomes a significant barrier



in the decision to purchase an EV despite low operating costs. Environmental and other benefits of EVs (savings from fuel imports) are not considered in the decision-making to buy or sell an EV. These benefits, therefore, need to be accounted for through other measures by the government.

- **a.** Financial incentives for users: These include incentives to the users i.e. for demand creation including subsidy and tax concessions for end-users
- **b. Financial incentives for OEMs:** These include incentives for OEMs in terms of tax holidays/concessions linked to the percentage of EV production and others
- **c.** Lowering the operational cost of EVs: These include the measures related to access to finance, reducing/allowing competitive electricity tariff and other measures such as concession in parking and toll fees and others.
- **d. Disincentives for ICEVs:** These measures increase the relative cost of ICEVs, VAT increase or through pollution tax for example.

The overall purpose of the financial support is therefore to lower the EV buying price to achieve price parity with ICE vehicles and make EV purchases attractive for end-users. Several possible financial measures have been considered and a combination of preferred incentives can be used to achieve price parity with ICE vehicles. These measures include a variety of subsidies and tax exemptions for EVs and additional taxes (dis-incentive) on ICEs and are covered in Table 5.4.

- 3) Technical measures: These include establishing quality and safety standards for the EVs to ensure that both imported EVs and their components as well as those manufactured in the country are of desired quality. Similarly, standards for charging equipment and guidelines for establishing and using charging infrastructure also fall in this category. It also includes battery usage and recycling guidelines and vehicle scrappage guidelines to ensure inefficient, polluting and unsafe vehicles are scrapped well in time.
- 4) Awareness raising and EV promotional measures:
 - **a.** Awareness raising: Awareness raising is often needed whenever a new technology is introduced. This is to alleviate apprehensions about the technology and inform about its benefits as well as incentive schemes; and
 - **b. EV** promotional measures: These include incentives and other concessions provided to early users of the technology to disseminate it in the country.
- 5) Research & development, pilots, and capacity building: User requirements and unique eco-system that requires making changes/adjustments in the application of technology in a country. In the case of EVs, it can for example simply be the type of buses that are suitable for the terrain, which may require changes in design. R&D can help localization also, resulting in an increased share of local production and employment generation. Pilots are needed to familiarize stakeholders with EVs and their operations. Pilots enhance visibility and hence help promote technologies. Capacity building includes skill development required to maintain and repair the EVs.
- 6) Grid management: EVs use electricity and therefore closely interact with the grid. Widespread use, therefore, requires planning for grid strengthening and expansion, including additional power production. Once EVs have been established, these can provide a regular source of revenue to the electricity producers. EVs can help use off-peak power, absorb renewable electricity and even

provide power to the grid (through the vehicle to grid technology). All this requires policy measures for efficient grid management.

5.1.3 Institutions Responsible for the Implementation of Prioritized Policy Measures in the Roadmap

Institutions and other actors required to implement the prioritized policy measures were identified in consultation with the stakeholders and included in the Roadmap.

5.1.4 Scheduling of Policy Measures

Scheduling of a policy measure includes the timeline for implementation of the measure along with its level. For example, a subsidy could be decreased over a period of time. Inputs were obtained from stakeholders on the proposals for scheduling of policy measures and included in the roadmap.

5.1.5 Estimation of Resources Needed for Policy Measures

Costs to implement policy measures were estimated. However, the estimates primarily cover the cost of significant measures, for which data was available. Financial measures primarily seek to influence stakeholders' behaviour directly and it was possible to generate scenarios for that and include them in the Roadmap.

5.1.6 Estimation of Benefits from EV Adoption

Economic, climate, environmental, social and other benefits from EV adoption (with given targets) were estimated. It covers the estimation of the total required electricity for charging EVs, the air pollution reduction, GHG emission reduction, fuel savings; and overall savings possible through emission reduction and the fuel savings for given EV targets.

5.2 Policy Roadmap for Various Vehicle Categories

5.2.1 EV Targets

The proposed targets for EV adoption as a percentage of total sales of vehicles in each category and absolute numbers are indicated in Tables 5.1 and 5.2 respectively.



Table 5.1 Proposed EV Sales Target for Zimbabwe until 2035 (%)

Vehicle Category	Base Year (2020)	Short Term (2022-2025)	Medium Term (2026-2030)	Long Term (2031-2035)
Two-Wheeler	0.0%	20.0%	70.0%	100.0%
Three-Wheeler	0.0%	30.0%	70.0%	100.0%
Four-Wheeler Personal	0.0%	5.0%	30.0%	60.0%
Four-Wheeler Taxi	0.0%	10.0%	35.0%	65.0%
Bus (Intercity)	0.0%	5.0%	20.0%	30.0%
Bus (Intracity)	0.0%	15.0%	70.0%	90.0%
Overall sales target (%)	0.0%	6.0%	33.1%	62.3%
Overall EV mix (%)	0.0%	1.1%	6.8%	17.9%

Table 5.2 Proposed EV Sales Target for Zimbabwe until 2035 (numbers)

Vehicle Category	Base Year (2020)	Short Term (2022-2025)	Medium Term (2026-2030)	Long Term (2031-2035)
Two-Wheeler	0	1,016	4,446	8,227
Three-Wheeler	0	132	417	715
Four-Wheeler Personal	0	12,577	88,296	222,667
Four-Wheeler Taxi	0	628	2,752	6,134
Bus (Intercity)	0	164	806	1,574
Bus (Intracity)	0	2,444	13,705	24,586
Total Sales	0	16,961	110,423	263,903

5.2.2 EV Public Charging Infrastructure Targets

Deploying public charging stations/charging points is essential for EV adoption and building public confidence in EVs. For the indicated EV targets, Zimbabwe Government can consider deploying slow as well as fast chargers. The number of charging points required for EVs is indicated in Table 5.3.

Table 5.3 Proposed EV Public Charging Points until 2035 (numbers)

Charger Type	Base Year (2020)	Short Term (2022-2025)	Medium Term (2026-2030)	Long Term (2031-2035)
Slow Chargers	0	798	5,115	11,898
Fast Chargers	0	1,622	10,385	24,152

5.2.3 EV Policy Roadmap to Achieve the Targets

The Policy Roadmap is presented in Table 5.4. It should be noted that only targets and a few policies are specific to different vehicle categories. All other policies are common to all vehicle categories. Policies can be fine-tuned during the implementation stage depending on the specific requirements of a vehicle category.

Table 5.4 Police	Policy Roadmap for E-Mobility in Zimbabwe	babwe		
Policy	Description of policy measures	Policy details	Responsible	Remarks
measures	and rationale		institutions and	
			focal point	
1. (a) Targets	Targets for EVs penetration in new	Targets for EV sales across different	 Office of the 	Synergy with national policies:
	sales across different vehicle	vehicle categories as a % of total	President and	The targets have synergy with
	segments (2W, 3W, 4W, Bus, and	sales:	Cabinet	national policies as included in;
	Kombi) and time frame:		 Government of 	
		E-2 Wheelers (E-2W): 70% by 2030	Zimbabwe	 National Development
	To drive EV adoption through strategic	E-3 Wheelers (E-3W):70% by 2030	 Ministry of 	Strategy (NDS) 1
	targets.	E-4 Wheelers (E-4W)-Personal: 30% by	Transport and	 Revised Nationally
		2030	Infrastructure	Determined Contributions
	Targets are indicative of political	E-4 Wheelers-Taxi: 35% by 2030	Development	(NDC)
	commitment and therefore important to	E-Bus- intracity: 20% by 2030	 Ministry of 	National Transport Master
	drive EV adoption.	E-Bus- intercity: 70% by 2030	Environment,	Plan (2018)
			Climate, Tourism	Zizel e le con l'accionina l'a
		Desirable ¹ : Gender-disaggregated	and Hospitality	Zimbabwe Low Emissions
		targets:	Industry	Development Strategy
		 Usage of EVs: 40% of those with 	Ministry of Energy	 National Renewable Energy
		access to EVs by 2030 are women	and Power	Policy (2019)
		 Sale of EVs: E-4 Wheelers (E-4W)- 	Development	
		Personal: 30% purchased by women	Standards	Example: Global
		by 2030	Association of	India 2030 targets: 70%
			Zimbabwe (SAZ)	commercial cars, 30% private
			Ministry of	cars, 40% buses, 80% two-
			Industry and	wheeler (2W) and three-wheeler
			Commerce	(3W).
				Evample: Bogional
				Dwondo toracte for 2020:
				Material of 2007.
				Motorcycles- 30%; cars (including
				Jeeps)- 8%; buses- 20%; taxis
				and mini/ microbuses- 25%.
	Targets for public charging	Public charging points:		Example: Global
	Intrastructure (AC and DC) across	• 17,920 charging points by 2030		Colina: Already the country with
	different venicle segments (zw. sw.	(Numbers of chargers are		
	4W, Bus, and Kombi) and time	calculated based on the number of		stations in the world — over 1.2
	trame: To drive EVs adoption and	cnargers needed for the EV targets		to add around 600 000 more
	meer Evs talgets			

1 The "Desirable" policies and targets in this table have been added based on inputs from the gender expert. These policies can be discussed and decided by stakeholders at the time of taking a decision on moving forward with the policy roadmap and enacting relevant policies.



		Combination of fast and slow	Example: Regional
		chargers:	South Africa: The public charging
		o 33% Fast (DC) chargers	stations per EV ratio at the end of
		o 67% Slow (AC) chargers	2020 for the Netherlands was 0.22,
			indicating there were 2.2 public
		Desirable: Public charging points	chargers per 10 EVs there
		infrastructure:	
		50% of stakeholders consulted about	
		the design and placement of charging	
		points are women	
1. (b) EV	EV Mandate for local OEMs: To boost	EV mandate can be developed for local	Example: Global
Mandates	indigenous manufacturing/assembly of	automotive OEMs to assemble/	China: China imposed a mandate
	EVs and development of local supply	manufacture EVs (as a minimum % of	on automakers requiring that
	chain for EVs, and increase the	total vehicle production/sales).	electric vehicles (EVs) make up
	visibility of EVs in the market	Incentives can be linked to the	40% of all sales by 2030.
		mandate.	
		One mechanism to drive this can be	
		Fuel Efficiency Standards, which	
		specify average g/km CO2 across local OEM production portfolios.	
		-	

EV Mandates for Govt. agencies: 10	Various government departments and		Example: Global
induce demand in the EV market,	agencies can be mandated to		Recognising the importance of
boost EV uptake by increasing their	procure/lease EVs (in place of ICEs) for		reducing carbon emissions in the
visibility	their employees to commute. The share		transportation sector, eight major
6	of EVs can be gradually increased to		nations - Canada China France
	100% in 3.5 work. This can drive the		Longe Monthly Supply the
	first demand for EVe and also enhance		Linited Kingdom, ond the Heited
	their deliand for EVS and also dimand		Omited Kingdom, and the Omited
	their visibility.		States - signed a Government
			Fleet Declaration in November
	This can be started with pool vehicles		2016.
	and Public Service Commission buses		
	which are used to committe		Octob 0100 0100 0100 0000 0000 00000 00000 00000 00000 0000
			Callada: Starting III the 2019-2020
			IIscal year, 73% of flew light-duty
			administrative fleet venicle
			purchases will be zero-emission
			vehicles (ZEVs) or hybrid, with the
			objective that the government's
			administrative fleet comprises at
			least 80% ZEVs by 2030 Priority
			is to be given to purchasing ZEVs.
			-
Government-driven EVs aggregation	Aggregation of EV demand and	 Ministry of 	
and bulk procurement: To induce	stimulating local supply:	Transport and	
demand through improving the visibility	An appropriate government agency can	Infrastructure	
of FVs on-road	aggregate FV demands (from various	Development	
	aggicagnic Landing (none condition	Minipate ()	
	government departments, neer	· ivillisti y Oi	
	operators, corporate, and otners) and	Industry and	
	do bulk procurement of EVs.	Commerce	
		 Local 	
	Preference can be associated with EVs	Government(s)	
	with a higher share of local supplies to	 Individual 	
	stimulate local production.	government	
		departments	
		• Proclirement	
		Authority of	
		ZIIIDabwe (PRAZ)	



2. (a) Financial	Capital subsidy on purchase of EVs ² :	Features (proposed):	Minist	Ministry of Finance	Example: Regional
incentives for	To lower the EV buying price. Several	 Applicable to new EVs that meet 	and E	and Economic	India: FAME II Purchase subsidy
nsers	possible financial incentives have been	quality and safety standards	Develo	Development	20 % for 2W, 3W, 4W and 40% for
	listed here, including incentives to	 The capital subsidy should be 	 Banks and 	and	buses.
	enable lower-income individuals to	linked to battery size and vehicle	financiers	iers	
	access EVs.	performance	 ZIMRA 	_	Example: Global
		 Maximum subsidy per EV needs to 			USA: The Clean Vehicle Rebate
		be capped and there can be a cap			Project (CVRP) in California was
		on the maximum number of EVs			expanded in April 2016 to include
		that will be given subsidy also			an additional \$2,500 rebate (on top
		capped as per budget			of other CVRP rebates available to
		 The subsidy proposed as a % of 			all qualifying state residents) for
		the new EV price:			those with household incomes less
					than or equal to 300 per cent of
		E-2 W: 20% from 2022-25; 10% from			the federal poverty level.
		2026-30; no subsidy after 2030			
		E-3 W: 40% from 2022-25; 10% from			
		2026-30; no subsidy after 2030			
		E-4 W- Personal: 20% from 2022-25;			
		15% from 2026-30; No subsidy after			
		2030			
		E-4 W- Taxi: 20% from 2022-25; No			
		subsidy after 2025			
		E-Bus- Intracity: 40% from 2022-25;			
		25% from 2026-30; 15% from 2031-35			
		E-Bus- intercity: 40% from 2022-25;			
		25% from 2026-30; 20% from 2031-35			
		(The proposed subsidy is close to the			
		current battery pack price, taking cost			
		as 200 USD/kW and average battery			
		size considered. The subsidy can be			

combination of direct subsidy, and customs, VAT and registration charges reductions. From TCO analysis it emerges that 2W and 3W segments have already achieved TCO parity and are close to achieving capital cost parity. 4W segments (private and taxi) are likely to achieve parity in the short term and buses (both Intracity and Intercity) are likely to achieve parity in the medium 2 Used EVs may need lower subsidies, which could be given through lower VAT reduction and registration charges. Capital subsidy can also be given through custom duty exemption or a to long term. Complete knocked down (CKD) kits could also be extended the subsidy to encourage local assembly (and hence employment).



		Some vehicle segments like Intercity e-Buses will need higher incentives over and above VAT exemption and capital subsidy in the initial years. Alternatively, it can be achieved through custom duty reduction.			
	Other financial incentives for EVs: To make EV purchases attractive for endusers	Other possible incentives to support initial market development and stimulate EV adoption include; Exemption of vehicle registration charges on EVs: This can be done for both new and pre-owned EVs for the 2022-30 period. Exemption from repeat taxes: EVs can be exempt from repeat taxes including registration renewal and licensing both on new and pre-owned EVs for the 2022-2030 period. It can be reviewed periodically (in 2025 for example), and a decision can be taken to continue or revoke based on the level of adoption. Finally, it can be brought at par with ICEVs. Support for retrofitted EVs: Support similar as given to pre-owned EVs can be extended to retrofitted EVs (from ICEs). The exemption can be reviewed periodically and revoked after the objective has been achieved.	Ministry of Finance and Economic Development Ministry of Transport and Infrastructure Development ZIMRA CVR	f Finance omic ent f f and ture ient	
2. (b) Financial Incentives for OEMs:	Fiscal incentives for EVs production setup: To encourage indigenous manufacturing of EVs, sub-systems and components and develop the EV market in the country. The overall objective is to lower EV supply costs and generate employment.	Encouraging local assembly and manufacturing of EVs, sub-systems and components through attractive fiscal incentives. This can be achieved through a combination of subsidized land allocation/electricity subsidy/ capital subsidy/ interest subsidy/ tax subsidy etc. It can include the incentive for the mining industry for raw materials used in EVs also.	Min of Finance and Economic Development Ministry of Energy and Power Development ZIMRA Ministry of Industry and	ance omic eent f Energy sr eent f	Example Regional Rwanda: Electric vehicles, spare parts, batteries, and charging station equipment will all be exempted from import and excise duties. All of these would also be treated as zero-rated VAT products and

Exemption of import duties on EV Reducing import duties on EV Fisheries, where the target sub-systems and raw materials in the reviewed every 5 years and continued till reserve to an expenditule and carefully interestive and continued till reserve to an experiment of EV supply-chain and establishment can be set for different EV vehicles of EV supply-chain and establishment and production. Manufacturers can be required to reaptile subsidy for all types of public for forgatile subsidy for all types of public for degree spiral cost to set up public chargers (intra-city and interesting) and various and reliated services (intra-city and interesting) and various and reliated services (intra-city and cost to set up public chargers (intra-city and interesting) and cost to set up public chargers (intra-city and interesting) and various and reliated services (intra-city and interesting stations in the purpose is to chargers; 50% of cost for 2025, 50% of cost				•	Commerce Ministry of Lands,	will also be exempt from withholding tax.
Exemption of import duties on EV sub-systems and raw materials sub-systems and raw materials materials (life cells), sub-systems (EV particles, on-board and off-board continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) of EV supply-chain continued till the local ecosystem (expense) continued till the local ecosystem (` _	Agriculture, Fisheries, Water	Example: Global
Exemption of import duties on EV and Mining Development and raw materials butteries or board duties on EVs raw materials are raw materials (like cells), sub-systems (EV butteries, on-board and off-board chargers, motors etc.), and OKD kits. It can be reviewed every 5 years and continued till the local ecosystem is development and continued till the local ecosystem is continued till the local ecosystem is developed. Increased localization: To induce can be reviewed every 5 years and continued till the local ecosystem is developed. Gradually increasing localization targets and production. Manufacturers can be increase local assembly and production. Manufacturers can be increased localization to avail of various fiscal incentives from the Government. Capital subsidy for all types of public Private, public, and utility companies charging stations and event of production. Manufacturers can be increased localization to charging stations and related services and Economic Development and given capital subsidy for all types of public chargers (intra-city and inter-city). Capital subsidy for all types of public chargers (intra-city and inter-city) and inter-city. Capital subsidy for all types of public chargers (intra-city and inter-city) and inter-city. Capital subsidy for all types of public chargers, 52% for 2026-2030, no subsidy after city. A charging stations A chargers, 52% for 2026-2030, no subsidy after city. Battery Swapping stations charger subsides can be combined and extended to battery swapping stations.					and Rural Development	China: Each new EV (NEV) can receive between 1 and 3.4 credits
Exemption of import duties on EV and whiling and Mining and sub-systems and raw materials materials (like cells), sub-systems (EV sub-systems and raw materials (like cells), sub-systems (EV batter) and Economic chargers, motors etc.), and CKD kits. It can be reviewed every 5 years and continued till the local ecosystem is continued till the local ecosystem is developed. Increased localization: To induce an be reviewed every 5 years and continued till the local ecosystem is developed. Increased localization: To induce and be reviewed every 5 years and continued till the local ecosystem is developed. Capital subsidy for all types of public and utility companies and related services the Government. Capital subsidy for all types of public private, public, and utility companies the capital cost to set up public chargers; 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Carb be encouraged to set up EV public and tillity companies and related services and Economic public chargers; 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Carb be encouraged to set up EV public and tillity companies and production with a subsidy is proposed for public chargers; 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. DC chargers; 55% for 2026-2030; no subsidy after 2031-2025; 25% for 2026-2030; no subsidy after 2031-2035; 25%				•	Ministry of Mines	depending on its characteristics.
Exemption of import duties on EV materials unaterials and raw materials between the sub-systems and raw materials between the sub-systems and raw materials (like cells), sub-systems (EV batter). The can be reviewed every 5 years and chargers, and OKD kits. It can be reviewed every 5 years and continued till the local ecosystem is continued till the local ecosystem is cardually increasing localization targets of EV supply-chain and establishment and establishment and production. Manufacturers can be set for different EV vehicle segments to encourage local assembly of incentivized to increase localization to sequents to encourage local assembly and production. Manufacturers can be incentivized to increase localization to avail of various fiscal incentives from the Government. Capital subsidy for all types of public and production. Manufacturers can be encouraged to set up EV public chargers to can be encouraged to set up EV public chargers. 50% of cost for 2026-2030; no subsidy after chargers. 1203. AC chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after chargers. 120% of continued and extended to battlery swapping stations.					and Mining	The OEMs can achieve the target in several ways. From June 2020
sub-systems and raw materials batteries, on-board and off-board chargers, no-board and off-board chargers, motors etc.), and CKD kits. It can be reviewed every 5 years and continued till the local ecosystem is developed. Increased localization: To induce continued till the local ecosystem is developed. Increased localization and establishment of EV supply-chain and establishment and establishment and establishment and establishment and production. Manufacturers can be incentived to increase localization to segments to encourage local assembly increase localization to avail of various fiscal incentives from the continued the capital subsidy for all types of public and utility companies charging stations. The purpose is to charging stations and related services charging stations and rela		Exemption of import duties on EV	Reducing import duties on EVs raw	•	Ministry of Finance	"fuel-efficient passenger vehicle"
batteries, on-board and off-board chargers, motors etc.), and CKD kits. It Increased localization: To induce local market growth and establishment can be reviewed every by ears and continued till the local ecosystem is developed. Gradually increasing localization targets and Economic segments to encourage local assembly and becomentative to increase localization to a production. Manufacturers can be incentivized to increase localization to an production. Manufacturers can be incentivized to increase localization to avail of various fiscal incentives from charging stations: Capital subsidy for all types of public private, public, and given capital subsidies. Capital subsidy for all types of public chargers from and given capital subsidies. Capital subsidy for all types of public chargers from a private, public, and conomic charging stations. Capital subsidy for all types of public chargers from and given capital subsidies. Charging stations Charging stations The following subsidies. AC chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations		sub-systems and raw materials	materials (like cells), sub-systems (EV	. 10	and Economic	bonuses can count towards the
can be reviewed every 5 years and continued till the local ecosystem is developed. Increased localization: To induce local market growth and establishment can be set for different EV vehicle of EV supply-chain are establishment and bearded incentive and the contract of EV supply-chain and establishment and bearded incentive and the contraction and the capital subsidy for all types of public and utility companies charging stations. The purpose is to charging stations and related services and elated services can be encouraged to set up EV public lower the capital cost to set up public chargers; 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations Battery swapping stations			batteries, on-board and off-board	_	Development	calculation of corporate NEV
can be reviewed every 5 years and confinued till the local ecosystem is developed. Increased localization: To induce local market growth and establishment can be set for different EV vehicle of EV supply-chain and production. Manufacturers can be incertivized to increase localization to avail of various fiscal incertives from the Government. Capital subsidy for all types of public charging stations: The purpose is to lower the capital cost to set up public charging stations and given capital subsidy is proposed for public charging stations. The public chargers (intra-city and intercity and intercity). Capital subsidy for all types of public charging stations are can be encouraged to set up EV public charging stations. The purpose is to charging stations and given capital subsidy is proposed for charging stations. AC chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations	_		chargers, motors etc.), and CKD kits. It	•	ZIMRA	credits.
Increased localization: To induce Gradually increasing localization targets Ministry of Finance			can be reviewed every 5 years and continued till the local ecosystem is	•	MIAZ	
Increased localization: To induce Increased localization: To induce Incal market growth and establishment can be set for different EV vehicle and Economic segments to encourage local assembly Incentivized to increase localization to avail of various fiscal incentives from the Government. Capital subsidy for all types of public and production. Manufacturers can be incentivized to increase localization to avail of various fiscal incentives from the Commerce charging stations. The purpose is to can be encouraged to set up EV public charging stations and given capital subsidy is proposed for public charging stations and given capital subsidy is proposed for public chargers; 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations Increase localization to avail types of public chargers; 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations can be combined and extended to battery swapping stations Increase localization to availation of commerce and Economic Commerce and Economic Commerce and given capital subsidises and Economic Commerce and given capital subsidy is proposed for Ministry of Finance capital cost to set up public chargers; 50% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations	_		developed.			
of EV supply-chain of EV supply-chain of EV supply-chain of EV supply-chain and production. Manufacturers can be incentivized to increase localization to avail of various fiscal incentives from the Government. Capital subsidy for all types of public charging stations: The purpose is to lower the capital cost to set up public charging stations charging stations the Government. The Government. I charging stations: The purpose is to charging stations and related services and Economic charging stations and given capital subsidy is proposed for public chargers fintra-city and interpublic chargers fintra-city and interpublic chargers: 50% of cost for 2021-2025; AC chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations Battery Swapping stations Can be combined and extended to beautiful and urban): Battery swapping stations Battery swapping stations		Increased localization: To induce	Gradually increasing localization targets		Ministry of Finance	
charging stations The following subsidy is proposed for public chargers; 50% of cost for 2021- 2025; 25% for 2026-2030; no subsidy after 2030. DC chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations can be combined and extended to battery swapping stations		of EV supply-chain	segments to encourage local assembly	-	Development	
Capital subsidy for all types of public charges to charging stations: The purpose is to charging stations. The purpose is to charging stations and related services and given capital subsides. The purpose is to charging stations and related services and given capital subsidies. The following subsidy is proposed for public chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Charging stations	_		and production. Manufacturers can be	•	Ministry of	
avail of various fiscal incentives from the Government. Capital subsidy for all types of public charging stations: The purpose is to charging stations at the capital subsidies chargers to set up public chargers for can be encouraged to set up EV public chargers to charging stations and given capital subsidies. Charging stations are the capital subsidies chargers to set up EV public chargers to charge stations and given capital subsidies. Charging stations are the capital subsidies and Evenomic charging stations and given capital subsidies. Charging stations and related services and genoment and given capital subsidies. Charging stations Charging stations Ministry of Finance and given capital subsidies. Charging stations Ministry of Finance and given capital subsidies. Charging stations Ministry of Finance and given capital subsidies. Charging stations Ministry of Finance and given capital subsidies. Charging stations Ministry of Finance and given capital subsidies. Charging stations Ministry of Finance and given capital subsidies. Charging stations Charging stations AC chargers: 50% of cost for 2021-2025; 2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations Battery Swapping stations Chargers			incentivized to increase localization to	_	Industry and	
Capital subsidy for all types of public charging stations: The Government. Capital subsidy for all types of public charging stations and related services and given capital subsidies. Charging stations Charging stations Charging stations Charging stations Charging stations Charging stations The following subsidy is proposed for public chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations Can be encouraged to set up EV public and Exponent Almistry of Finance and Economic Development Charging stations Almistry of Finance and Economic Development Almistry of Local Government and Cathy: Battery Swapping stations (rural and urban): Battery and charger subsidies can be combined and extended to battery swapping stations			avail of various fiscal incentives from		Commerce	
charging stations: The purpose is to charging stations and related services and given capital subsidies. charging stations: The purpose is to charging stations and related services and given capital subsidies. charging stations The following subsidy is proposed for public chargers (intra-city and intercity) charging stations The following subsidy is proposed for public chargers: 50% of cost for 2021- 2025; 25% for 2026-2030; no subsidy after 2030. DC chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations Battery Swapping stations Can be encouraged to set up EV public and Economic and Ec			the Government.		į.	
charging stations: The purpose is to can be encouraged to set up EV public charging stations and related services and given capital subsidies. charging stations and related services and given capital subsidies. The following subsidy is proposed for public chargers (intra-city and intercity): AC chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. DC chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations (rural and urban): Battery swapping stations	Financial	Capital subsidy for all types of public	Private, public, and utility companies	•	Ministry of Finance	Example Regional
charging stations and related services and given capital subsidies. charging stations and given capital subsidies. Public Works Control Co	tives for	charging stations: The purpose is to	can be encouraged to set up EV public		and Economic	Rwanda: Rent free land for
charging stations charging stations charging stations charging stations The following subsidy is proposed for public chargers (intra-city and interacity): AC chargers: 50% of cost for 2021-2025; 2025; 25% for 2026-2030; no subsidy after 2030. DC chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations (rural and urban): Battery and charger subsidies can be combined and extended to battery swapping stations	c and	lower the capital cost to set up public	charging stations and related services	_	Development	charging stations on land owned
The following subsidy is proposed for public chargers (intra-city and intercity): AC chargers: 50% of cost for 2021-2025; 25% for 2026-2030; no subsidy after 2030. DC chargers: 75% for 2021-2025; 25% for 2026-2030; no subsidy after 2030. Battery Swapping stations (rural and urban): Battery and charger subsidies can be combined and extended to battery swapping stations	Charging	charging stations	and given capital subsidies.	•	ZIMRA	by the government
chargers (intra-city and inter- chargers: 50% of cost for 2021- 25% for 2026-2030; no subsidy (030. rargers: 75% for 2021-2025; or 2026-2030; no subsidy after ry Swapping stations (rural and): Battery and charger subsidies e combined and extended to	structure:		The following subsidy is proposed for	•	Ministry of Local	
Public Works 25% for 2026-2030; no subsidy 3030. rargers: 75% for 2021-2025; or 2026-2030; no subsidy after ry Swapping stations (rural and): Battery and charger subsidies e combined and extended to y swapping stations			public chargers (intra-city and inter-		Government and	Example: Global
largers: 50% of cost for 2021-25% for 2026-2030; no subsidy (030. rargers: 75% for 2021-2025; or 2026-2030; no subsidy after by Swapping stations (rural and 5): Battery and charger subsidies 5 combined and extended to 7 swapping stations	_		city):	_	Public Works	India (Maharashtra State)):
25% for 2026-2030; no subsidy (030.) targers: 75% for 2021-2025; or 2026-2030; no subsidy after (or 2026-2030); no subsidy after (or 2026-2030); swapping stations (rural and (or 2026-2030); swapping stations			AC chargers: 50% of cost for 2021-			Commercial public EV charging
largers: 75% for 2021-2025; or 2026-2030; no subsidy after or Swapping stations (rural and): Battery and charger subsidies e combined and extended to y swapping stations			2025; 25% for 2026-2030; no subsidy			stations for 2-wheelers, 3-
nargers: 75% for 2021-2025; or 2026-2030; no subsidy after ry Swapping stations (rural and): Battery and charger subsidies e combined and extended to y swapping stations			after 2030.			wheelers, cars and buses are
or 2026-2030; no subsidy after ry Swapping stations (rural and): Battery and charger subsidies 9 combined and extended to y swapping stations			DC chargers: 75% for 2021-2025;			eligible for a 25% capital subsidy
ry Swapping stations (rural and): Battery and charger subsidies secombined and extended to y swapping stations			25% for 2026-2030; no subsidy after			on equipment/machinery (limited
	_		2000. Dottom: 6:::::::::::::::::::::::::::::::::::			up to live I million (\$13000
			battery swapping stations (rural and			approx.) per station) for the first
			urban): battery and charger substdies			Zou commercial public EV
			battery swapping stations			Criarying stations At all India levels, the FAME II
	_					



		(As an alternative to capital subsidy, EV chargers can be exempt from custom duty and/or VAT)			subsidy scheme for the installation of charging stations has a budget of INR 1 billion.
	Low-cost land allotment on a long	Land can be made available at low cost	•	Government of	
	lease for public charging: To enable	/ on a long lease for the establishment	17	Zimbabwe	
	lower capital investment through	of public charging infrastructure.	•	Ministry of Lands,	
	leveraging existing and potential land			Agriculture,	
			_	Fisheries, Water	
				and Kural	
				Development	
			•	Individual city/local	
	acitudistaile somes et souitescel	Downer distribution nominal in the	.0 -	authorities	
	incentives to power distribution	rower distribution companies can be	•	Millistry of Filliance	
	companies to own and set up EV	allowed to capitalise on the cost of		and Economic	
	charging stations:	setting up and running public charging	_	Development	
		stations.	•	ZIMRA	
			•	ZERA	
		Note: Both men and women end-users			
		are to be consulted during the design			
		and identification of the location for			
		charging infrastructure.			
2. (d) Lowering	Access to finance and lower cost of	The finance could be made easily	•	Ministry of Finance	Example: Global
operational	finance to EV users: To make EV	accessible and at low-interest rates for	10	and Economic	India: Potential financing
costs of EVs to	purchases attractive and help bring	EVs from banks and other financial	_	Development	measures identified are, priority-
users	parity with ICEV counterparts.	institutions, both for individuals and	•	Banks and	sector lending and interest-rate
		commercial fleets.	_	financiers	subsidy and partnerships between
					OEMs and financial institutions by
		Efforts to increase women's access to			providing product guarantees and
		finance for the purchase of private EVs			warranties.
		can include low-interest loans, soft			
		loans, grants, loan guarantees or			
		saving- and loan groups.			
	Reduced electricity prices for EVs	Reduced electricity prices for	•	Ministry of Finance	Example: Global
	usage: To reduce the operational cost	charging EVS can be provided unrough	.0 1	and Economic	hwanda: Electricity tariiis ior
	of electric vehicles	public charging stations. Prices can		Development	charging stations will be capped at
		also be differentiated based on time of	•	ZIMRA	the industrial tariff. This means
		use with cheaper off-peak prices.	•	Ministry of Energy	that charge point operators will be
				and Power	billed at close to 10 cents/kWh
				Development	instead of close to 20 cents/kWh
		Lower cost of smart EV Charging at home and work: Home and workplace	•	ZERA	Example: Global

		charging could be encouraged by incentivising private users to set up smart chargers at home and workplace.			Commercial incentives on the deployment of E charging stations up to 30% (up to
					\$30,000)
					 Residential incentive on
					single-family residential
					station installation up to 30%
					costs (up to \$1,000).
	Priority to EVs for EVs and other	Differential reduced pricing for EVs	•	Ministry of Finance	Example: Global
	incentives: To enable end-users and	parking and road tolls: Free parking	(0 1	and Economic	Ireland: reduced tolls by more than
	make EVs an attractive alternative to	for EVs in Metro cities could be		Development	50% for BEVS from July 2018 to
	ICEV counterparts and promote	allowed. In addition, road toll fees for	•	ZIMRA	2022. Ministry of Transport
	renewable energy integration in EV use	EVs could be reduced by 20%. The	•	Ministry of Local	announced the incentive to attract
		support could be tied to a target (e.g.		Government and	more drivers to EVs (PHEVs,
		until EVs annual registrations reach	_	Public Works	BEVs), and is administered by
		25% of the total), or to a period (until	•	Local Authorities	ransport Infrastructure Ireland
		End-Users can be incentivised to adopt	•	Ministry of Finance	
		solar rooftons for improved electricity	- ((and Economic	
		access and promote the use of	ے د	Development	
		access and promote the use of	_		
		renewable energy. Local Electricity Diotain Company (DISCOM) on	•	Ministry of Energy	
		Distribution Company (DiscON) carl	(O L	and Power	
		support bottl smart charging and solar	_ '	Development	
		roonops unough an megrated and	•	ZIMRA	
		attractive financing mechanism.	•	ZERA	
			•	ZETDC	
2. (e) Dis-	Tax increase on ICEVs: A	VAT increase on ICEVs from the current	•	Ministry of Finance	Example: Global
incentives for	lead to increased cost of ICEVs (both	(across vehicle seaments) can be	ــ د.	and Economic Development	their use
	purchase and operational costs) and	considered.	•	Ministry of	
Rationale:	discourage their use. This will help		_	Fransport and	EU: European Union has decided
Discourage	achieve EV price parity (both TCO and	Increased taxes on petrol and diesel:	_	Infrastructure	to phase out ICEs
ICEVs use	purchase price) with ICEVs	The following increment in fuel taxes		Development	
		can be considered:	•	Ministry of Energy	
			(0)	and Power	
		 Custom duty increase by 1% every vear until 2030 		Development	
		- Carbon tax increase by 5% every year			
		until 2030			



3. Technical	EVs and Charging Infrastructure	Vehicle classification system revision	•	Ministry of	Example: Regional
Measures	Standards and Guidelines: To	to differentiate EVs:		Transport and	Rwanda: Green license plate
	distinguish the EVs and improve their	The existing vehicle classification	_	Infrastructure	introduced for EVs
	record-keeping and further	system may need to be revised to	_	Development	
	transactions	differentiate between passenger and	•	ZIMRA	Example: Global
		freight transport and distinguish	•	CVR	India: Currently, EVs are
		commercial versus private use to rightly	•	VID	registered like other ICE vehicles
		fit different types of EVs (and any other			at Regional Transport Offices
		future vehicle technology).			(RTO) but the zero-emission
					vehicles are issued with green
		Classification of EVs to be based on			plates (both private and
		battery energy capacity (kWh) and			commercial vehicles). The battery
		traction motor size (KW) as opposed to			capacity and other specifications
		engine capacity (cc) for ICEVs.			are registered as part of the registration process.
	EV quality and safety standards: To	EV quality and safety standards and	•	Ministry of	Example: Regional
	ensure EVs, their batteries and other	guidelines: These should be		Transport and	Kenya: Kenya Bureau of
	components, and charging equipment	formulated both for new and pre-	_	Infrastructure	Standards (KEBS) adopted EV
	meet quality and safety standards	owned EVs for imports and local		Development	standards in 2019. Up until now, a
	across the country.	production. International standards	•	ZINARA	total of 24 standards have been
		from UNECE, ICE and others can be	•	Central Vehicle	developed and adopted, covering
		appropriately adapted to define the	_	Registry (CVR)	specifications and testing
		standards. The standards can be	•	Vehicle	procedures for safety aspects as
		formulated for different types of EVs	_	nspectorate	well as performance and power
		(new, pre-owned and retrofits),		Department	consumption elements
		advanced EV battery technologies,	•	Ministry of	
		charging technologies, EVs and		Environment,	Example: Global
		chargers' inter-connection and their		Climate, Tourism	China: EV Manufacturers are
		inter-operability, chargers and grid	10	and Hospitality	mandated to comply with the
		interconnection and communication,	_	Industry	design, development, production,
		security against theft and end-	•	EMA	after-sale services, and other
		consumer communications including	•	Standards	capabilities of EVs and EVs should
		Venicie to Load/Home/Grid standards.	_	Association of	satisty all technical standards and
		The national standard can be	17 2	Zimbabwe (SAZ)	pass satety inspections before
		developed also for home and work	•	Ministry of Mines	
		charging and battery swapping.	· -	and Milling Development	Example: Regional
			•	Ministry of	Egypt: A mobile phone and
		Desirable: Gender considerations in	_	Industry and	internet-based initiative named
		Ev and Ev intrastructure standards:		Commerce	Harass Map has been using
		One or the women's main obstacles in public transport is accessibility and the	•	Ministry of Local	modern tecnnology to map the incidence of sexual harassment on
		public transport is accessibility and the		,	incidence of sexua

urban public transport in Cairo. Sexual harassment is often a taboo subject among transport sector planners, and women may not have the social space to complain. This initiative, which allows women to report anonymously via free mobile texting, has identified hot spots for sexual harassment around public transport stations.	Example: Global China: The Chinese government has put the responsibility of battery recycling on the OEMs. The mandate also states that automakers set up a national network of service stations where car owners can discard or exchange old batteries. Rules further obligate battery makers to standardize their products to facilitate end-of-life recovery
Government and Public Works Women's Democracy Network Zimbabwe UN Women Ministry of Women Affairs, Small and Medium Enterprise Development	
risk of harassment. Specific measures to increase women's access to EVs could include consideration to: • Choice of, and access to and from, pick-up and drop-off stops and at charging stations • Safety and lighting at pick-up and drop-off stops and at charging stations • Women-only sections on buses (e.g. during peak hours) • Reserved seats for women, pregnant women and passengers with children • Public awareness campaigns to address sexual harassment in transport including through gender champions • Training of drivers and police on women's security needs when using transport • Gender-sensitive choice of travel routes and time schedules (medical care facilities, schools, shopping	Guidelines covering collection, storage, transportation, re-use and recycling of used/waste batteries from EVs can be developed. Lithium-lon Batteries (LIBs) from EVs need to be collected. Battery value for reuse in the market can be defined to create a secondary market. Vehicles scrappage and battery recycling facilities need to be set up. Capital subsidy for setting up the facilities could be provided.
	Battery re-use and recycle guidelines: To ensure afterlife waste- management of battery, material recovery and reuse for the sustainable supply chain of EV batteries Vehicles scrappage and battery recycling facilities: To ensure afterlife waste-management Vehicle, material recovery and reuse for the sustainable supply chain of EVs



mission standards d and enforced. lards for petrol, standards (for petrol, complying with defined standards (e.g. Euro VI r Euro VI vehicle e adopted and licles: These can be 5 years of life if they do and emission tests. tax can be levied on an 15 years old. cles: These can be 0 years of life if they do and emission tests. tax can be levied for an 15 years old. cles: These can be 0 years old. cles: These can be con every of life if they do and emission tests. tax can be levied for an 20 years. uld include: centive on EV en ICEV scrapped EMs to set up nitres and recycling	Rwanda: Enforcement of existing emission standards to discourage the purchase of polluting vehicles	Example: Global Europe: Europe has launched Euro6 standards in 2017 to shift to stricter emission norms and reduce pollution	Example: Global India: According to the new policy, commercial vehicles of >15 years and passenger vehicles of >20 years will have to be mandatorily scrapped if they do not pass the fitness and emission tests
Strict vehicle en and enforcemen Stricter vehicle e could be adopte diesel, and gas Strict fossil fuel standards for vehicle emission fuel standards can be enforced. Vehicle scrappa Guidelines for ve be formulated. Commercial ver scrapped after 1 not pass fitness fands more than the passenger vehicles more than the passenger vehicles more than the passenger vehicles older the Other policies con Additional green vehicles older than the purchase when the pur	Strict vehicle emission standards and enforcement: Stricter vehicle emission standards could be adopted and enforced.	Strict fuel standards for petrol, diesel, and gas Strict fossil fuel standards (for petrol, diesel, and gas) complying with defined vehicle emission standards (e.g. Euro VI fuel standards for Euro VI vehicle standards) can be adopted and enforced.	Vehicle scrappage guidelines: Guidelines for vehicle scrappage can be formulated. Commercial vehicles: These can be scrapped after 15 years of life if they do not pass fitness and emission tests. Additional green tax can be levied on vehicles more than 15 years old. Passenger vehicles: These can be scrapped after 20 years of life if they do not pass fitness and emission tests. Additional green tax can be levied for vehicles older than 20 years. Other policies could include: Additional incentive on EV purchase when ICEV scrapped Mandating OEMs to set up collection centres and recycling facilities
Emission and tuel standards: To Phase-out low-performing ICEs from the system Disposal, reuse and recycle: To phase out old, non-performing and polluting ICEs from the national fleet	Emission and tuel standards: 10 Phase-out low-performing ICEs from the system		Disposal, reuse and recycle: To phase out old, non-performing and polluting ICEs from the national fleet

4. (a) Awareness	Conducting EV mass awareness programs: To raise awareness and	Awareness campaigns and training programs for end-users:	•	Automotive Industry	Example: Global Delhi, India: Mass awareness
raising	help reduce apprehension about EV)		association	campaign was launched (31st
	adoption	Public awareness programs on EVs to	•	EV enthusiasts	March 2021) by the government to
		create awareness about EVs and their		and interest	sensitize residents about the
		benefits, and available support from the		groups	benefits of switching to EVs to the
		government and local ecosystem can	•	Ministry of Energy	environment as well as to make
		be conducted. Special consideration		and Power	them aware of the incentives and
		can be taken to reach both men and		Development	infrastructure being developed
		women through the choice of	•	Ministry of	under Delhi's EV policy
		marketing channels, tone,		Transport and	
		representation in the development of		Infrastructure	
		ads, representation in the material		Development	
		itself, and targeted communication on	•	Ministry of	
		potential gender-differentiated drivers		Environment,	
		and needs concerning health, safety,		Climate, Tourism	
		the environment etc.		and Hospitality	
				Industry	
		The existing automotive dealer network	•	Development	
		can be used to provide pilots and EV		Partners	
		experiences to potential users.	•	Media	
/L/ Other 1				Minister	
4. (b) Other EV	Convenience and ease in	Ease in registration, transfers,	•	MINISTRY OT	Example: Regional
promotional	registration and transactions: To	permits and licensing of EVs:		Transport and	Rwanda: Green license plate to
measures	enable ease in the process of	A single-window clearance system can		Infrastructure	allow preferential parking for EVs
	registration and accessing the public	be established for vehicle registration,		Development	and free entry into any future
	infrastructure facilities	licensing, permits, and transfers	•	ZIMRA	congestion zones. Establish
		(aligned with the suggested new vehicle	•	CVR	restricted zones where only green
		classification system) of EVs.	•	VID	vehicles can have access
		Provision of preferential parking			Example: Global
		access:			Denmark: A few parking spaces
		Preferential / reserved parking can be			along with charging facilities are
		provided for EVs in the parking spaces.			reserved for EVs in various parking
		A charging facility can be provided in			slots in Copenhagen.
		the parking spaces reserved for EVs.			
	Easy access to EV charging in new	Revision of building codes and city	•	Ministry of	Example: Global
		development codes to incorporate		Transport and	India: The department of town and
	provide and improve accessibility to EV	EV charging infrastructure:		Infrastructure	country planning under the
	charging	Building codes and city development		Development	ministry has issued guidelines to
		codes can be revised for mandatory	•	Ministry of Energy	provide for electric vehicle
		Installation of EV charging		and Power	cnarging infrastructure. Urban and



		infrastructure, specifying a minimum number of chargers in the buildings/parking and other urban spaces.	Development Ministry of Local Government and Public Works Local Authorities ZERA	Regional Development Plan Formulation and Implementation Guidelines, 2014. The guidelines on charging infrastructure mandate provisions in various buildings
				France: Residential- to pre-equip up to 75% of parking bays for any new/renewed MUD building with at least conducts for future charging infrastructure. Commercial: to pre-equip up to 10% of parking bays for any new/renewed office/commercial building with at least conducts for future charging infrastructure.
	Netrolling ICEVS Into EVS: 10 phase out old, non-performing and polluting ICEs from the national fleet and re-use the existing ICE fleet.	nerrontung of ICEVS to EVS should be considered. Standards can be formulated for this to ensure safety.	Ministry or Transport and Infrastructure Development Ministry of Finance and Economic Development Ministry of Environment, Climate, Tourism	Kenya: Renya is attempting the conversion of CE buses to E-Buses Another developing country's example India: India has come up with many small-scale start-ups which are now experimenting and have
			and Hospitality Industry, Ministry of Energy and Power Development Ministry of Industry and commerce	some successful retro fitment for small passenger transport vehicles such as 3 Wheelers, 2 Wheelers and small commercial utility vehicles such as tempo travellers etc.
5. Research & Development and capacity	R&D, Pilots, Capacity Building: To develop and build necessary skills,	National R&D Centres on EVs in collaboration with Industry and Academia:	Ministry of Transport and Infrastructure	Example: Global India: Under the make in India initiative, the government has
Bulbilling	adopting and training medianism or adopting and operating EVs. It will also help develop required human	Top national academic institutes can be provided grants to build centres of	Ministry of Women	research and development (R&D) cost for developing indigenous

resource developrindustry. Pilots wi technolo cons, as for effect reduce a	resources and technological developments in the automotive industry. Pilots will help understand the technology, including its pros and cons, as well as system requirements for effective operation. It will also help reduce apprehension about EVs.	excellence to conduct research and development on various aspects of EVs and broader e-mobility, and low carbon transportation and energy. This could be done in active collaboration with the industry. Both men and women are encouraged to engage in R&D activities to ensure various perspectives are taken into consideration in the research. Fiscal incentives can be provided to the industry for R&D investments in EVs, and investments in local EV start-ups.	Affairs, Community, Small and Medium Enterprises Development Ministry of Environment, Climate, Tourism and Hospitality Industry, Ministry of Energy and Power Development Partners Ministry of Higher and Tertiary Education, Innovation, Science and Technology Development	low-cost electric technology that will help power 2W, 3W and commercial vehicles operating in public spaces
		EV Pilots and Deployment: An E-Mobility Accelerator could be established with participation from the government to actively coordinate with academia and industry with a focus on running pilots, developing different use cases viability and their scaleup. It will also facilitate fundraising from various development agencies.	Ministry of Transport and Infrastructure Development Ministry of Finance and Economic Development Ministry of Environment, Climate, Tourism and Hospitality Industry, Ministry of Energy	Example: Regional Rwanda: The government is planning to pilot the use of electric buses, while in Uganda, Kiira Motors wants to manufacture solar-powered buses Example: Global India: India has funded e-Bus pilots in several cities with more than one million population, that include Ahmedabad, Pune, Kolkata, Bangalore, and others.



	EVs Training and Capacity Building:		and Power	Example: Global
	l echnical Universities/ Institutes can be		Development	India: Several governments, semi-
	encouraged to develop degree and	•	Ministry of Higher	government organisations and
	vocational courses in EVs and broader		and Tertiary	institutions are providing special
	e-mobility.		Education,	training programs on e-mobility
			Innovations,	(short-term and long-term training
	EV boot camps can be conducted for		Science and	programs). E.g., Automotive Skill
	existing/new automotive OEMs and		Technology	Development Council (ASDC),
	suppliers to assist them to shift to EVs		Development	Bureau of Energy Efficiency (BEE),
	production and supplies.	•	Ministry of Women	Automotive Research Association
	:		Affairs,	of India (ARAI) etc.
	A national EV Skills agency could be		Community, Small	
	established to focus on the		and Medium	Example: Regional
	development of EV/automotive skills for		Enterprises	Zambia: The Ministry of
	various stakeholders, including men		Development	Communications and Transport
	and women, across the EV value chain	•	Private Sector	established several measures in
	in close association with industry and			the 2002 Transport Policy to
	academia.			facilitate the removal of existing
				gender barriers by integrating the
	Targets could be set for the share of			transport needs of women into the
	women trained and employed in the EV			mainstream of transport policy and
	transport sector. Measures to increase			planning, including:
	female participation could include) }
	overseeing staffing policies on public			• making an inventory of
	transport and public utilities			+ topoport and communication
				transport and communication
				used by gender;
	Strengthen EV repairs and services			 facilitating research to establish
	across the nation: Training and			the modes of transport used in
	certification skill programs can be			different rural localities.
	initiated by OEMs (in partnership with			especially by women and
	local institutions) to build local			inetitute appropriate
	expertise to assemble, innovate, repair			intervention measures:
	& services and retrofit FVs. Suitable			יייי יייי יייי יייי יייי יייי יייי יייי יייי
	quidelines can be formulated for this			 facilitating and providing soft
				loans and other incentives
				such as tax holidays to rural
				transport operators to increase
				access to transport for rural
				women, especially those with
				disabilities.
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6. Grid	Charging integration for grid	Guidelines/ standards for grid and	 Ministry of Energy 	Example: Regional
management	stability: To ensure the adoption of	chargers interconnectivity and	and Power	Kenya: Kenya Bureau of
	standard practices for EV charging,	communications for overall grid	Development	Standards (KEBS) adopted EV
	interoperability across the country, and	stability and safety:	ZERA	standards in 2019. Up until now, a
	grid safety.		 Standards 	total of 24 standards have been
		Guidelines for grid and chargers	Association of	developed and adopted, covering
		interconnectivity for both private and	Zimbabwe	specifications and testing
		public chargers and charging stations	Ministry of Finance	procedures for safety aspects as
		should be developed. This will help hew		consumption elements
		existing connections for setting up EV		
		Charding	- Aulviiz	Example: Global
				India: India has developed its EV
				standards (IS) including the
				specifications of charging
				protocols pre-requisites for setting
				up charging infrastructure.
	Time-of-use (TOU) tariff system: To	TOU tariff system for grid load		Example: Global
	optimise the power utilisation and	management:		India: Different states have issued
	revenue generation from power			different tariffs for domestic and
	distribution for EV charging	TOU tariff can be introduced for EV		commercial charging. Typically,
		charging based on peak and off-peak		higher charging tariffs for EV
		power. This can be initiated with		charging range from Rs. 4 to Rs
		commercial EV charging stations, and		7.7
		later extended to home/work charging		
		as well alter smart meters are installed.		
		Desirable: Potential gender-		
		differentiated TOU could be evaluated		
		to avoid unfair pricing policies.		
				::
	Improving grid access in urban and	Improvement of grid infrastructure		Synergy with National Policies
	rural areas: To provide and improve	and power quality for EV charging:		 Energy Policy (2012)
	access to electricity and improve			 Renewable Energy Policy
	reliability and reduce dependency on	 Grid can be expanded to include off- 		(2019)
	imports and conventional sources of	grid power with smart renewable		 Rural Energy Master Plan
	power.	integration to improve power		System Development Plan
		availability and use of off-peak power		(2017)
		for EV charging. This can go well with		Notional Climata Ballow (2017)
		the target to provide power for all		National Cilinate Folicy (2017)



	both in rural and urban areas.	
	 Investment, including from the 	
	private sector can be channelled for	
	power generation since EV Charging	
	can provide sustainable demand for	
	power	
	 Decentralised renewable power, 	
	including solar mini-grids can be	
	encouraged where feasible and	
	integrated with the grid to provide	
	power for charging (including for	
	charging swap batteries).	
	 Electricity tariffs may need to be 	
	reviewed for healthy and faster	
	power sector development.	

6. Roadmap Timeline

Proposed demand-side measures along with their timelines of implementation are given in Table 6.1 and proposed supply-side measures with a timeline for implementation are given in Table 6.1. These measures are expected to help achieve the proposed EV targets.

Table 6.1 EV Targets, Demand Side Measures and their Implementation Timelines

Components	Short Term (2022-2025)				Medium Term (2026-2030)				
	2022	2023	2024	2025	2026	2027	2028	2029	2030
EV Targets	See Table 5.1 and Table 5.2								
EV Chargers Targets	See Table 5.3								
Demand Side Measures									
EV Fiscal Measures									
1. Capital subsidy on EVs	Capital su	bsidy @ 20)-40%		Capital su	ubsidy³ @ 1	0-20%		
2. Concessional taxes on EVs									
- VAT	Reduce V	AT on EVs	to 4.5%						
- Vehicle registration charges	EVs exem	pted until :	2030						
3. Capital subsidy on chargers	Capital subsidy for slow chargers (SC) @ 50% and fast chargers (FC) @ 75% Capital subsidy for SC @ 25% and					and FC @	25%		
EV Non-Fiscal Measures									
1. Ease the registration process	Yes								
2. Support the EV retrofit program	Yes								
3. Free parking	Yes								
4. Preferential access (streets, tourist places, etc.)	Yes								
5. Bank financing and accelerated depreciation	Include EV financing into the bank's priority sector lending portfolio. Allow accelerated depreciation on new EVs								
6. Amendment of building and city development codes to provide charging facilities	Yes								
ICEV Fiscal dis-Incentive Measures									
1. Tax increase on ICEVs									
- VAT increase on ICEVs	Increase VAT on ICEVs to 19.5%								
- Fuel tax increase- custom duty	The yearly increase in customs duty on diesel and gasoline by 1%								
- Fuel tax increase- green tax	The yearly increase in green tax on diesel and gasoline by 5%								
ICEV Non-Fiscal dis-Incentive Measures									
Pollution test and certification	Mandatory periodic pollution test for all ICEVs								

³ This subsidy will be extended to only few vehicle segments and not all. Refer Figure 7.2 for detail.



Table 6.2 Supply Side Measures and their Implementation timelines

Composite	Short Term (2022-2025)					Medium	Term (20	26-2030	
Components	2022	2023	2024	2025	2026	2027	2028	2029	2030
Supply Side Measures									
EV Fiscal Measures									
1. Reduce import duties on EV subsystems	Applicable								
EV Non-Fiscal Measures									
1. Vehicle emission norms	Develop v enforce	Develop vehicle emission standards and enforce Enforce emission norms							
2. Fuel emission norms	Develop fu enforce	evelop fuel emission standards and force Enforce emission norms							
3. Revision of vehicle classification system to include EVs	Develop	Develop Enforce							
4. EV and charging infrastructure standards	Develop	Develop Enforce							
5. EV mandates to OEM/dealers and Government offices	Set up yea	Set up yearly production and adoption targets							
6. Charging infrastructure development									
- Low-cost land allotment for public charging	Applicable								
- Incentivise power distribution companies	Encourage	Encourage power distribution companies to set up public charging infrastructure							
7. EV grid management	Expansion	of grid an	d off-grid ir	ıfrastructu	re and pov	wer quality			
8. Tariff revision	Revise EV	tariff (year	ly) and allov	v TOU tar	iff				
9. EV pilots	Focus on intracity public transportation with 50 e-Buses								
10. EV retrofit allowance	Applicable)							
11. EV repair and maintenance (R&M)	Strengthe	n R&M cap	pacity for E\	/s across	the countr	у			
12. Scrappage and disposal measures									
- Battery recycling	Develop standards and enforce								
- Vehicle scrappage policy	Develop standards and enforce								
13. Awareness and skill development									
- EV training centres (national/ regional COE ⁴)	Setup EVs training and capacity-building ecosystem			Develop and conduct training programs					
- EV boot camps for OEMs & suppliers	Yes								
- EV awareness program for Government agencies	Yes								

 $^{^4}$ Regional Centre for Excellance – RCOE

Many of the proposed EV policies have been implemented in several countries. E-mobility policies in selected countries/regions are given in Table 6.3.

Table 6.3 E-Mobility Policies in Selected Countries/ Regions

,								
Parameters	China	European Union	Japan	US	India			
Demand Side								
Fiscal Incentives								
Vehicle Segment-wise Subsidy	√	✓	√	√	√			
Registration Fees / Charges	√	√	√	√	√			
Tax exemption / concession	√	√	√	√	✓			
Charging Infrastructure	√	√	√	√	√			
Non-Fiscal Measures								
Building code/bylaws	√	√		√	✓			
Supply Side								
Fiscal Incentives (Subsidies/ tax / fees)								
EV Manufacturers	√	√	√					
Battery Manufacturers	√	√	√	√	√			
Charger Manufacturer	√	√	√	√	√			
Land related incentives	√	√	√	√	√			
Non-Fiscal Measures								
ZEV Mandates	√	√		√	✓			
Electricity Tariff and regulations	√	√	√	√	√			
Fuel Economy standards	√	√	√	√	√			
Battery Recycling and Re-use	√	√	√	√	✓			
Capacity Building and Skill Development	√	√	✓	✓	✓			



7. Impacts of E-Mobility Adoption: Costs and Benefits

7.1 Resource Requirement and Cost to Government for E-Bus Adoption

Based on the policy measures and targets for EV adoption, the budget and electricity requirements have been estimated. The cost implications to the government for EV adoption are in terms of the capital subsidy provided for vehicle purchase and chargers installations, and expenditure on public awareness programs. The net financial impact of recommended measures is assessed in Table 7.3.

7.1.1 Electricity Requirement for EV Charging

The estimated overall electricity consumption from 2022 to 2030 is about 4,853 million units which are expected to generate additional revenue of about 31.3 million USD from electricity sales (of which 1.9 million will come through taxes). The revenue generated by different vehicle segments is shown below in Figure 7.1.

Figure 7.1 Revenue Generation from the Sale of Electricity to EVs

7.1.2 EV Budget and Cost to Government

The rationale for EV Subsidy

The capital subsidy requirement was calculated considering the current total cost of ownership (TCO) of various vehicles. Table 7.1 shows the current status of TCO advantage/ disadvantage of EVs for various vehicle segments and related subsidy requirements.

Table 7.1 EVs Affordability and Subsidy Requirements













EV Segments	Two Wheeler	Three Wheeler	Four Wheeler - Personal	Four Wheeler - Taxi	Bus – Intercity	Bus - Intracity
% TCO advantage over ICEVs	16%	55%	-8%	11%	-69%	-6%
% higher cost over ICEVs without incentives	32%	53%	33%	33%	185%	51%
Proposed Subsidy (%)	20%	40%	20%	20%	40%	40%
Proposed Subsidy (USD/unit)	580	1,795	10,292	10,292	138,577	40.508
Duty + VAT (USD/unit)	802	1,328	15,482	15,482	104,363	30,489

Proposed subsidies are indicated in Table 7.2. The government would need to support the bus segment due to very high purchase costs even after 2031 All other vehicle segments are to be supported until 2030 through subsidies.

Table 7.2 Proposed Subsidy for EVs













EV Segments	Two Wheeler	Three Wheeler	Four Wheeler - Personal	Four Wheeler - Taxi	Bus – Intercity	Bus - Intracity
Proposed Subsidy (% of total vehicle cost)	20%	40%	20%	20%	40%	40%
Proposed incentive (USD/unit)	580	1,795	10,292	10,292	138,577	40.508



The declining subsidy requirement for various segments is shown in Figure 7.2.

Gradually Reducing EV subsidy over years (2022 - 2035) 45% 40% 35% 30% 25% 20% 15% 10% 5% 0% 2026-2030 2022-2025 2031-2035 Three Wheeler ■ Four-Wheeler Personal Two Wheeler Four-Wheeler Taxi Bus (Intercity) Bus (Intracity)

Figure 7.2 EVs Affordability and Subsidy Requirements

It should be noted that:

- The proposed capital subsidy is similar to exempting custom duty for 2-Wheeler, 3-Wheeler and 4Wheelers (personal and taxi).
- Intracity and intercity bus segments need greater than custom duty exemption to meet proposed subsidies.

This could be in the form of VAT deductions over and above custom duty deductions

EV Budget and Cost to Government

The overall EV budget is estimated to be 119.8 million USD for the short term (2022-2025) and 246.9 million USD for the medium term (2026 to 2030).

The cumulative budget proposed for fiscal incentives for EV promotion from 2022 to 2030 is less than 1% of the GDP of the Government of Zimbabwe for the year 2022. The overall impact of the proposed measures on revenues is positive even after providing the subsidies.

The capital subsidy budget as per the vehicle segments is provided in Figure 7.3.

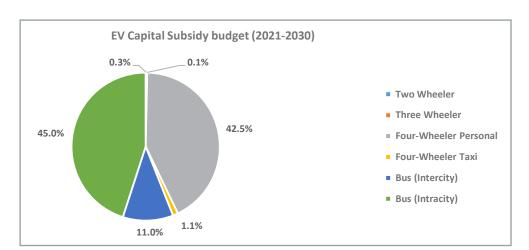


Figure 7.3 EV Capital Subsidy Budget for Various Vehicle Segments

In addition to the program budget, there are cost implications in terms of revenue collection due to changes recommended in the vehicle and fuel tax structures. The net impact on revenue collection (after considering losses due to tax rebates to EVs and gains due to tax increases on ICEVs) is estimated at 313 million USD in short term (2022-2025) and 1,730 million USD for the medium term (2026 to 2030). The details are given in Table 7.3.



Table 7.3 Financial Impact from Recommended Measures (million USD)

S.No	Description	Short Term impact (2022-2025)	Medium Term impact (2026-2030)	Total impact (2021-2030)
A.	EV Promotion Budget			
1.	EV Capital Subsidy	109.6	225.2	334.8
	Two-Wheeler	0.4	0.5	0.9
	Three-Wheeler	0.2	0.1	0.2
	Four-Wheeler Personal	39.3	103.0	142.3
	Four-Wheeler Taxi	3.8	-	3.8
	Bus (Intercity)	11.2	25.7	36.9
	Bus (Intracity)	54.7	95.9	150.6
2.	EV Chargers Subsidy	4.5	10.0	14.5
	Slow Chargers	0.3	0.9	1.2
	Fast Chargers	4.3	9.1	13.4
3.	Public Awareness Program	5.7	11.8	17.5
Total EV	Promotion Budget (A)	119.8	246.9	366.7
B.	Impact on Tax Revenue Due to Change in V	ehicle Taxes		
1.	Additional tax revenue from an increase in taxes on the sale of ICEVs	-	715.0	715
2.	Loss in revenue from a decrease in taxes on the sale of EVs	(72.6)	(471.8)	(544.4)
	act on vehicle tax revenue due to change in vehicle cture (B)	(72.6)	243.2	170.6
C.	Impact on Tax Revenue Due To Change In	uel Taxes		
1.	Additional tax revenue on the sale of gasoline	232.6	894.5	1,127.0
2.	Additional tax revenue on the sale of diesel	152.7	592.1	744.8
Net imp	act on fuel tax revenue due to change in fuel tax e (C)	385.3	1,486.5	1,871.8
	act on tax revenue due to changes in both vehicle tax structure (B+C)	312.7	1,729.7	2,042.5
D.	The overall cost to the Govt ⁵	(192.4)	(718.6)	(911.1)

Overall cost to government includes, EV Budget plus the amount of lossess occurred due to tax reductions as per the policy roadmap (Table 5.4).

7.2 Benefits from EV Adoption

7.2.1 Climate Benefits

As per the base case scenario, the current (2022) composition of vehicle stock is responsible for producing 9,032,432 tons of $\rm CO_2$ emissions. For the target year 2030, total $\rm CO_2$ emissions are estimated to reach 11,814,071 tons by 2030 (an increase by ~43% from 2020 levels) as per the BAU scenario while in the EV adoption scenario, the $\rm CO_2$ emissions are estimated to be 11,264,609 tons by 2030 (increase by ~38% from 2020 levels). It is therefore estimated to reduce $\rm CO_2$ emission by ~4.7% by 2030 under the EV adoption scenario as given in Figure 7.4.

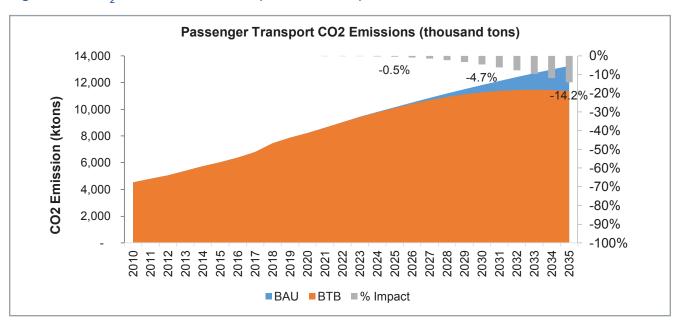


Figure 7.4 CO, Emission Reduction (thousand tons)

7.2.2 Environmental Benefits

Zimbabwe imports most of its vehicles and has a limited indigenous manufacturing capacity. Most of the imported vehicles are pre-owned and the average age is more than eleven years. Implementing stricter emission norms in the BAU scenario will reduce particulate matter (PM) emissions by ~20% by 2030 (BAU) compared to the emissions in the base year 2020. Adoption of EVs will further reduce PM emissions by ~1.6%; NOx emissions by ~6.6% and SO2 emissions by ~-9.5% by 2030 if the targets are achieved. The reduction in air pollutants could help save ~ 5 million USDs over a period till 2030.

A summary of the environmental benefits is given in Table 7.4, and Figures 7.5, 7.6 and 7.7 indicate reductions in local pollutants over a period of time.

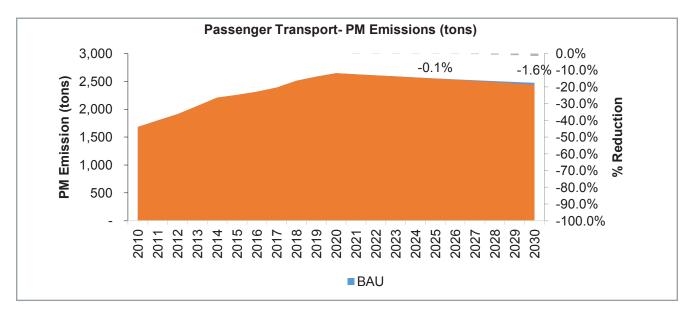
⁶ Assumptions for estimating pollutants emission – Euro 1 norms were applicable for the year 2010 to 2014; Euro 2 norms are applicable for the year 2015 to 2020; Euro 4 and above norms will be implemented by the Zimbabwe government from year 2021-2030 and Euro 5 from year 2031 onwards. For estimation purpose, it is assumed that this norm will be applicable till 2035



Table 7.4 Summary of Environmental Benefits

	Environmental Benefits	Unit	Short Term 2022-25	Medium Term 2026-30	Total 2021-2030
a)	Reduction in GHG Emission	Tons	1,24,629	14,58,591	15,83,220
	Two-Wheeler	Tons	912	6,573	7,485
	Three-Wheeler	Tons	286	1,742	2,028
	Four-Wheeler Personal	Tons	80,120	7,70,428	8,50,549
	Four-Wheeler Taxi	Tons	11,604	81,238	92,842
	Bus - Intercity	Tons	6,016	76,178	82,193
	Bus - Intracity	Tons	25,692	5,22,432	5,48,123
b)	Reduction in Pollutants emissions (PM, NOx, Sox)				
	PM emissions	Tons	8	98	106
	NOx emissions	Tons	1,084	9,383	10,466
	SOx emissions	Tons	5	42	47

Figure 7.5 BAU vs EV Adoption Scenario; Passenger Transport – PM Emissions (tons)



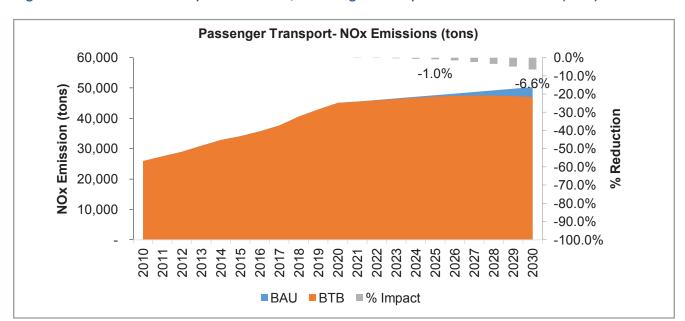
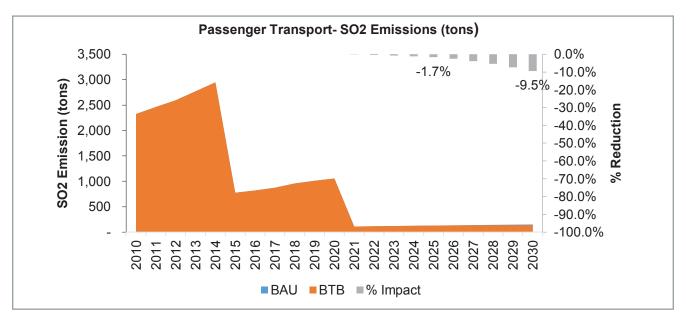


Figure 7.6 BAU vs EV AdoptionScenario; Passenger Transport - NOx Emissions (tons)





7.2.3 Social Benefits

Evidence from epidemiological and toxicological studies indicates that transport-related air pollution affects several health outcomes. Such pollution contributes to an increased risk of death, particularly from cardiopulmonary causes, and it increases the risk of non-allergic respiratory symptoms and



disease.⁷ The ICCT study⁸ links vehicle tailpipe emissions to ~361,000 global premature deaths from ambient PM2.5 and ozone worldwide in 2010 and ~385,000 in 2015, equivalent to 11.7% of global ambient PM2.5 and ozone premature deaths in 2010 and 11.4% in 2015. The EVs have zero tailpipe emissions⁹ providing direct health benefits in the region.

In terms of societal benefits, the introduction of EV two-wheeler and three-wheeler will provide micro-mobility benefits to the relatively poor segments.

Mobility is not gender-neutral, and women and men have different needs, experiences and mobility patterns. ¹⁰ There is solid evidence that including gender considerations when designing transport policies has the potential for achieving a positive social impact on women. There are five key factors affecting women's mobility:

- Violence against women
- Lack of affordability
- Lack of accessibility
- Time poverty
- Gender inequality and restrictive social norms

Policies that consider these key factors address current existing inequalities between men and women in terms of access to transportation, but also enable new infrastructure measures to avoid the aggravation of further inequalities. Gender-based violence (GBV) and harassment in public spaces is a violation of the fundamental human rights of women, and the suggested measures aimed at reducing or ending GBV in public transportation are in line with the strong commitment of the Government of Zimbabwe regarding ending gender-based harassment and violence. Gender-responsive policy measures for EVs and associated infrastructure in Zimbabwe have the potential for a positive impact on both men's and women's mobility, access to work and subsequent economic empowerment. New EV transport investments lead to green jobs with opportunities to facilitate women's inclusion in the mobility value chain.

By following the gender-specific measures to ensure women's representation in the e-mobility value chain- from R&D, pilots and consultations to decision-making and employment- there is a higher likelihood of 1) addressing gender-differentiated user requirements and attitudes towards the technology, and 2) facilitating greater acceptance and uptake of the technology by a broader population.

WHO, 2005. Health effects of transport-related air pollution. https://www.euro.who.int/en/data-and-evidence/evidence-informed-policy-making/publications/hen-summaries-of-network-members-reports/what-are-the-effects-on-health-of-transport-related-air-pollution.

⁸ ICCT. A global snapshot of the air pollution-related health impacts of transportation sector emissions in 2010 and 2015. https://theicct.org/publications/health-impacts-transport-emissions-2010-2015.

⁹ Emissions may be produced by the source of electrical power, such as a power plant

¹⁰ Bauhardt, C (1999). Kawgan-Kagan (2017). Gendered Sustainable Urban Mobility – A gender or preferences for shared e-mobility using a quantitative sociological approach

¹¹ https://www.undp.org/sites/g/files/zskgke326/files/migration/zw/UNDP ZW Gov High Level Political Forum.pdf

7.2.4 Other Benefits

The global electric car market has been experiencing rapid growth for more than a decade now and reached 10 million vehicles in 2020, which was a 43% increase over 2019 and represented a 1% stock share. About 3 million new electric cars were registered globally in 2020. Two third of the stock was that of battery electric vehicles (BEVs). Several governments supported electric cars through fiscal and other incentives and electric cars are slowly becoming competitive in some countries (IEA, 2021). Zimbabwe's automotive industry can benefit from the exponentially growing global market. It provides an opportunity for the country to promote e-mobility and utilize it for leveraging a good industry ecosystem for manufacturing and supply of items related to EVs. The fuel savings from switching to EVs were estimated at 1,238 million litres, leading to a foreign exchange savings of about 411 million USD (at March 2022 rates).



8. Conclusion

The Electric Mobility Policy Roadmap for Zimbabwe has been developed with the active involvement of several stakeholders from the government and private sector in Zimbabwe. Several presentations were made to the steering committee and stakeholder ministries to get input and guidance. Their involvement and inputs have helped in assessing the priorities of Zimbabwe for transition to EVs.

During the development of the Policy Framework for e-mobility, intracity-public transport was prioritized by stakeholders as the potential segment to kick start the transition to e-mobility in Zimbabwe. The suggested measures in the Policy Roadmap for 2022-2030 will help the government in realising various e-mobility targets including EV adoption for public transportation. In the case of low-hanging fruits such as two and three-wheelers, the transition to e-mobility may be relatively easy due to their overall economics and small numbers at present.

The proposed demand-side measures including subsidies, tax incentives and other non-financial measures prioritising EV use will help make EVs an attractive option for end-users. Other proposed measures include awareness raising and capacity building of the relevant stakeholders.

Supply-side measures will help the development of the EV supply chain. The measures include fiscal incentives and EV mandates for OEMs, dealers and governmental agencies. Other suggested measures include the development of standards for EVs to ensure safety; the development of guidelines for charging infrastructure, vehicle and battery scrappage; favourable taxes; and electricity pricing reforms in favour of EVs.

EV adoption targets 2022-2030 are estimated to cost about 367 million USD of which more than 50% is a subsidy to the buses, primarily due to their high cost and the need to keep public transportation costs low. This is followed by incentives for private cars at 142 million USD due to their high numbers, other promotion and awareness costs at 17 million USD and Charger subsidy at 14 million USD. However, these costs can be neutralized by taxes on ICEVs to disincentivise their use. The proposed measures in fact can help earn the government additional revenue besides meeting all the above costs. EV adoption will also reduce GHG emissions (assuming decarbonization of electricity in future) and thus contribute to meeting the national targets for GHG emission reduction. Reduction in air pollution will provide social benefits, including reduced expenditure on health.



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