

www.pwc.in/

Overview of ERMT in SAARC Member States

SEC Webinar

*Strictly Private
and Confidential*

April 2018

pwc

Agenda

1	Introduction	3
2	Country Overview	8

Introduction

The Need of the Hour...

ERMT offers an opportunity to reduce oil imports and reduce the impacts of climate change

Year: 2015 ¹	Net Oil Consumption (Mtoe)	% consumed by Transport sector	Year: 2014 ²	Total GHG emissions (MtoCO ₂ e)	GHG emissions per capita (tCO ₂ e per capita)
Bangladesh	12.58	26%	Afghanistan	33.37	1.02
India	203.3	41%	Bangladesh	167.71	1.05
Nepal	1.15	65%	Bhutan	1.53	1.97
Pakistan	33.18	42%	India	3,079.81	2.38
Sri Lanka	0.004	69%	Maldives	1.42	3.55
			Nepal	37.52	1.32
			Pakistan	333.38	1.80
			Sri Lanka	40.75	1.96

- Growing transport sector in the region to support increasing population, rising urbanization and increasing economy has been constantly exerting pressure on the oil dependence resulting in environmental externalities
- Dependence on petroleum products and the negative environmental impacts including climate change and local air pollution can be minimized by increasing the use of electric vehicles.
- Deployment of electric vehicles in the form of mass transit has an additional advantage of reducing energy consumption per passenger-km in comparison to smaller electric vehicles.

INDC Commitments of SAARC Member States

ERMT implementation would support governments to meet the targets set aside with UNFCCC in the Paris Agreement

Afghanistan

- **Cut emissions by 13.6%** from business-as-usual levels by 2030

Bangladesh

- **Reduce GHG emissions by 5%** by 2030 from business-as-usual levels in power, transport and industry sectors

Bhutan

- **Plans to remain carbon neutral**

India

- **Cut GHG emissions by 33%-35%** of the 2005 levels by 2030

Maldives

- **Cut emissions by 10%** from business-as-usual levels by 2030

Nepal

- **Reduce fossil fuel dependency by 50%** by 2050

Pakistan

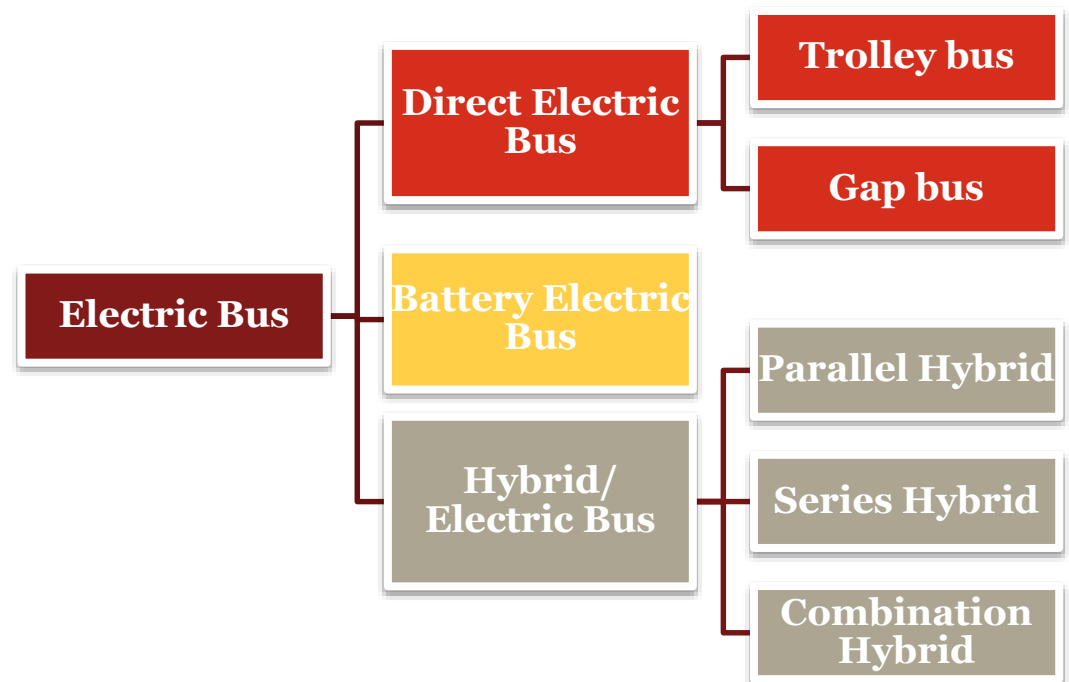
- **Intends to reduce GHG emissions by 20%** from projected 2030 levels.

Sri Lanka

- **Cut GHG emissions by 7%** from business-as-usual levels by 2030

ERMT can be an efficient manner to improve mass transit facilities across SAARC

- ERMT refers to Electric Road Mass Transportation implemented using Electric Buses
- These buses can be either completely **electric or a hybrid.**
- Electric buses generally use battery storage for electricity but can also be powered through overhead lines (trolley bus).
- **Batteries in Electric Buses are their most expensive component** (~50% of the total cost of the bus).
- Among SAARC countries, India currently has the highest stock of Electric Buses.



Types of Electric Buses

Advantages of ERMT

1

Reduce dependence on Oil Imports

2

Decrease local air and noise Pollution

3

Better efficiency leading to less maintenance

4

Decongest City Traffic

5

Encourage Mass Adoption of Electric Vehicles

Country Overview

Afghanistan though currently lacks a ERMT framework, it has potential for battery manufacturing.

- The 2030 Contribution Plan in INDC Targets mentions transport as an key sector with focus on **more efficient vehicles, clean fuels, and alternative fuels**
- Afghanistan is yet to develop policy to initiate and support any electric vehicle / ERMT implementation.
- Large **lithium reserves; potential worth USD 1 trillion**
 - Could become a hub for manufacturing of batteries
 - However, no systemic exploration for mining the same has been carried out. Many of the known locations warrant further investigation¹

Afghanistan is “The Saudi Arabia of lithium.”

- Energy&Capital.com (April 10, 2017)

ADB technical assistance is supporting clean energy use across Central Asian Regional Economic Cooperation countries, and promoting electric vehicles. ***Under this Gayam Motor Works (GMW) is helping ADB design an electric three-wheeler pilot for Afghanistan for public transportation².***

While multiple policies push for Greener Vehicles, ERMT implementation is still awaited in Bangladesh

- Multiple Policies in the country intend for a greener future:

Key Policies	Pointers
Integrated Multi-modal Transport Policy	<ul style="list-style-type: none"> Create a transport system safe, efficient, clean and fair by favoring greener, cleaner vehicles
Bangladesh Climate Change Strategy and Action Plan	<ul style="list-style-type: none"> Reduce the use of fossil fuels followed by substitution

- Low cost electric tuk-tuks (auto-rickshaws) had become popular by 2010
 - However, the government curbed their usage, primarily due to widespread electricity theft.
- In April 2017, China Shanghai Technology had **offered 4,000 electric buses**.
 - The proposal is being currently mulled over by the government.

- Hybrid electric cars are being imported in small quantities
- The Government in the Budget for FY 2017-18 had **proposed reduction in import duty for hybrid vehicles¹**

Key Policies	Current Rate	Proposed Rate
upto 1800 cc Hybrid microbus	45%	25%
> 1800 cc – 2000 cc Hybrid microbus	60%	25%
Hybrid motor cars	30-500%	25-300%
Electric battery operated motor car	20%	25%

Bhutan has small number of EVs with scope for investment in Charging Infrastructure

Key Objectives outlined in National Transport Policy, 2017

Objective	Key Policy Statements
Systematically reduce pollution from vehicles	<ul style="list-style-type: none"> <i>Differential taxes on vehicles, subsidies on electric vehicles will be continued to promote use of fuel-efficient vehicles.</i> Endeavour <i>to improve the supporting infrastructure</i> for electric vehicles such as development of charging stations to create an enabling environment for its effective use.

- 11th Five Year Plan had mentioned that ‘Promotion of electric vehicles will be pursued to address environmental issues and reduce dependency on fossil fuel’
- The EV story started with signing of MoU with Mahindra & Mahindra followed by a pilot project introducing Nissan Lead EV
- The capital city of Thimphu has **91 privately and government owned EVs** (0.12% of the total car stock)
- Government **provides direct subsidies** to buyers in the form of tax rebates (exemption of sales tax & customs duty) on electric vehicles.
- However, penetration of electric buses is nil and opportunities in ERMT need to be evaluated upon

Upcoming era of EVs in India along with implementation of electric buses in various cities...

- The Government targets **at least 6 million EVs** on its roads by 2020.
- Ministry of Urban Development is considering a new scheme, the Green Urban Transport Scheme (GUTS), for EVs for public transport and use of non-fossil fuel for powering vehicles.
- Government of India had unveiled the National Electric Mobility Mission Plan 2020 to accelerate growth of EVs in 2013.
- Along side, Department of Heavy Industries (DHI) launched FAME (Faster Adaptation and Manufacturing of (Hybrid &) Electric Vehicles) in April 2015 to promote electric and hybrid vehicles¹.
- Provided incentives to develop technology platforms and charging infrastructure along with subsidies on the demand side.

Recently Battery Electric Buses were provisioned for upto INR 1 cr. in subsidy under FAME scheme.

- Government currently working on standardization of components in the value chain - **DHI released a draft 'Standardization of protocol for Charging Infrastructure'**
 - *India has total of 234 Community Charging Stations*².

These subsidies has resulted in State Transport Units placing order for Electric Buses

Mumbai Metropolitan Region Development Authority (MMRDA)

- **Launched a fleet of 25 Hybrid buses** on March, 2018.
- These are Tata Starbus Diesel Series Hybrid Electric Buses and can run without requirement of external charging, due to integration of on-board charging.

Himachal Road Transport Corporation

- HRTC has recently started operations of electric bus on Kullu-Manali-Rohtang pass.
- Manufactured by Goldstone Infra and BYD, these buses were **tested at high altitude of 13,000 ft** and an order for 25 buses has been placed.

Navi Mumbai Municipal Transport (NMMT)

- Placed an order with Volvo to **procure 5 Hybrid City Bus**
- Received a subsidy of ₹ 6.1 million (US\$ 100,000) on the total cost of ₹ 23 million (US\$ 375,000) under the FAME scheme

Thane Municipal Transport (TMT)

- TMT has approved the plan to introduce 100 electric buses on PPP model.
- Private operator will purchase **and operate buses for 10 year** on selected routes.

Bangalore Metropolitan Transport Corporation (BMTC)

- Submitted proposal with DHI to **procure 150 electric buses on PPP model**.
- It has proposed set up of an exclusive depot for the electric buses with the required infrastructure consisting of battery rechargeable points and workshops.

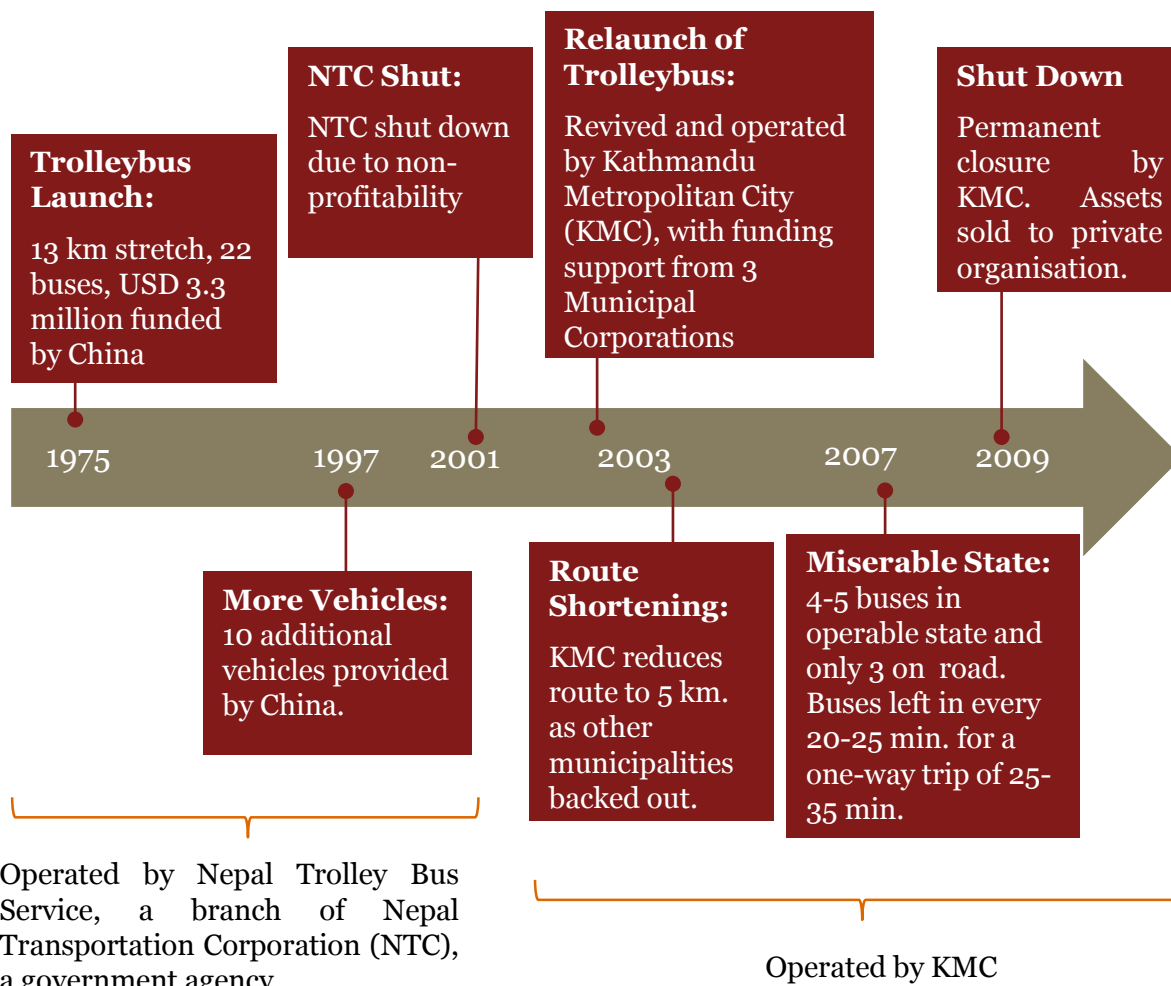
BEST Mumbai

- BEST has placed an **order for retro-fitment** with AV Motors and Impact Automotive Solutions Limited with a grant of ₹ 100 million (US\$ 1.5 million) from the city Municipal Corporation (BMC).

Maldives imposes no duty on Electric Vehicles; awaits ERMT implementation

- Maldives Climate Change Policy Framework describes the country's intent of **Low Emission Development** and;
 - *To achieve a balanced shift towards environmentally friendly transport modes to bring about a sustainable transport and mobility system*
- **No import duty on electric cars** are imposed vis-à-vis 200% on conventional vehicles.
 - The number of vehicle licenses in Malé had drastically reduced, with electric vehicles been highly favoured as part of the country's points-based licensing system
- However, a policy support from the government with definitive roadmap needs to be in place to realize the above mentioned commitments.

Nepal Trolley Bus initiated in 1975, but was shut down in 2009



- Nepal Trolley Bus was launched in 1975 with a grant of 3.3 million USD from China
- ***The major reason for its shut down were high maintenance cost of trolleybuses.***
 - The operations costing trolley system was costing them up to 2 million Nepali Rupees (~28,500 USD) per month in 2003.

Nepal has kept its EV dream alive with plans to procure electric buses...

- ***The country plans to increase the share of EVs up to 20% by 2020 and promote transformation to environment friendly modes of transportation; as suggested in its INDC commitments***
- Electric Vehicles Association of Nepal (EVAN), under its study mentioned feasibility of running 200 electric buses in primary and secondary routes of Kathmandu valley
- In the 2016/17 budget, the government passed the major progressive EV tax reforms
 - Reduction of custom duty to 10% for private, and 1% for public electric vehicles (from existing 40%).
 - No excise duty on import of all types of large electric vehicles used for public transportation was also continued.
- Nepal has been giving **subsidies for electric vehicles since 1999** but lack of charging infrastructure has served as a strong deterrent for the prospective electric vehicle buyers.
- EV Imports from neighbouring countries like India have been existent
- The country has had good success with electric rickshaws, with regions like Bharatpur sub-metropolis having over 300 e-rickshaws.
- ***Kathmandu Metropolitan City has also been planning to procure electric buses on a pilot basis.***

Pakistan is developing policies to support the transition to electric vehicles

- Pakistan Transport Plan Study (PTPS), a comprehensive transportation master plan for Pakistan for the period from 2005-25, suggests the ***initiatives required to counter the environmental adverse effects of transport***
- The Ministry of Science and Technology has taken the initiative for “Engineering Foresight” to gear up auto assemblers and parts makers for new challenges, especially electric vehicles
- As highlighted in the Budget Speech 2017-18, ***proposal for incentivizing fully electric vehicles to promote fuel conservation and arrest environmental degradation*** in line to the Auto Development Policy 2016-17 has been made.
- Currently, following concessionary rate of customs duty and taxes is applicable on the import of Hybrid Electric Vehicles (HEVs)

Engine Capacity	Custom Duty Exemptions
up to 1800 CC	50% of the total applicable duty and taxes,
1801 - 2500 CC	25% concession on total duty and taxes
- During the proposals under Budget FY 2017-18 **reduction in sales tax on local supply of Hybrid Electric Vehicles** as available at import stage were additionally proposed
- Chinese companies like Shefong have recently explored the local EV market, however traction in ERMT is awaited.

Sri Lanka has initiated implementation of ERMT under the NAMA Scheme with a focus on Galle BRT corridor

NAMA PHASE-I

- A pilot project is been carried out with **10 electric buses** with an aim to run electric buses on Bus Priority Lanes.
- Subsidize the cost of transportation modes in Public Investment Program and seeks participation from private sector to modernize its urban transport.
- Involves extensive **capacity building measures** including training the proponents and participants, bus operators and on-ground personnel and raising awareness about benefits of using electric bus technology.

NAMA PHASE-II

- **90 buses to be added** and all buses will be operated under Galle BRT. The funding for this phase will be the difference between amounts pledged by private operators and the total cost for the electric bus.
- However, a minimum of 30% of the total cost will be required to be covered by operators to be eligible to participate in this phase.
- Both phases will provide a year of free charging to all participating private players.

Cost of Phase I and II is expected to be USD 10.62 million and USD 93.86 million respectively.

- Further, the Lanka Electric Vehicle Association (LEVA) with support provided by the Global Environment Facility (GEF) has introduced an **electric minibus to Colombo for passenger transport**
- The country has **good charging infrastructure presence** (both AC and high voltage quick DC Chargers) due to relatively high usage of privately owned electric vehicles (~2072 EVs by 2015)

Summary

A good start with a long road ahead..

✓ Present ✓ Partially Present

	Afghanistan	Bangladesh	Bhutan	India	Maldives	Nepal	Pakistan	Sri Lanka
Oil Import Reduction/ Emission Reduction Plans under Climate Change	✓	✓	✓	✓	✓	✓	✓	✓
Policy/Vision for ERMT/EV			✓	✓		✓		✓
Presence of E-Bus/Plans to procure	✓	✓	✓	✓		✓	✓	✓
Charging Infrastructure Presence		✓	✓	✓				✓
Incentives :								
Procurement			✓	✓		✓	✓	
Import		✓	✓		✓	✓	✓	✓

