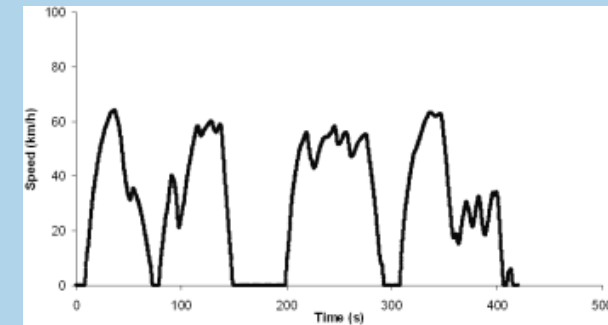
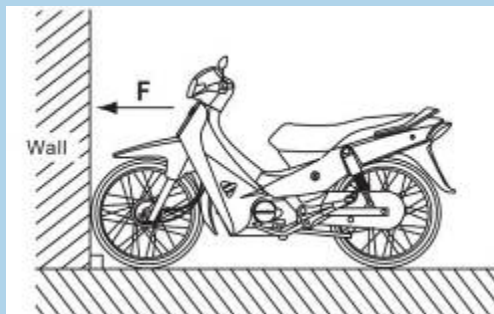


ELECTRIC VEHICLE POLICY AND IMPACTS

Dr. Horizon GITANO
Focus Applied Technologies

Purpose of Policy
Impacts of Policy
CHALLENGES
Examples



Introduction

Focus Applied Technologies develops vehicle and transportation technologies, products and services for the global market

Dynamometers
Data Loggers
EV Battery Testing

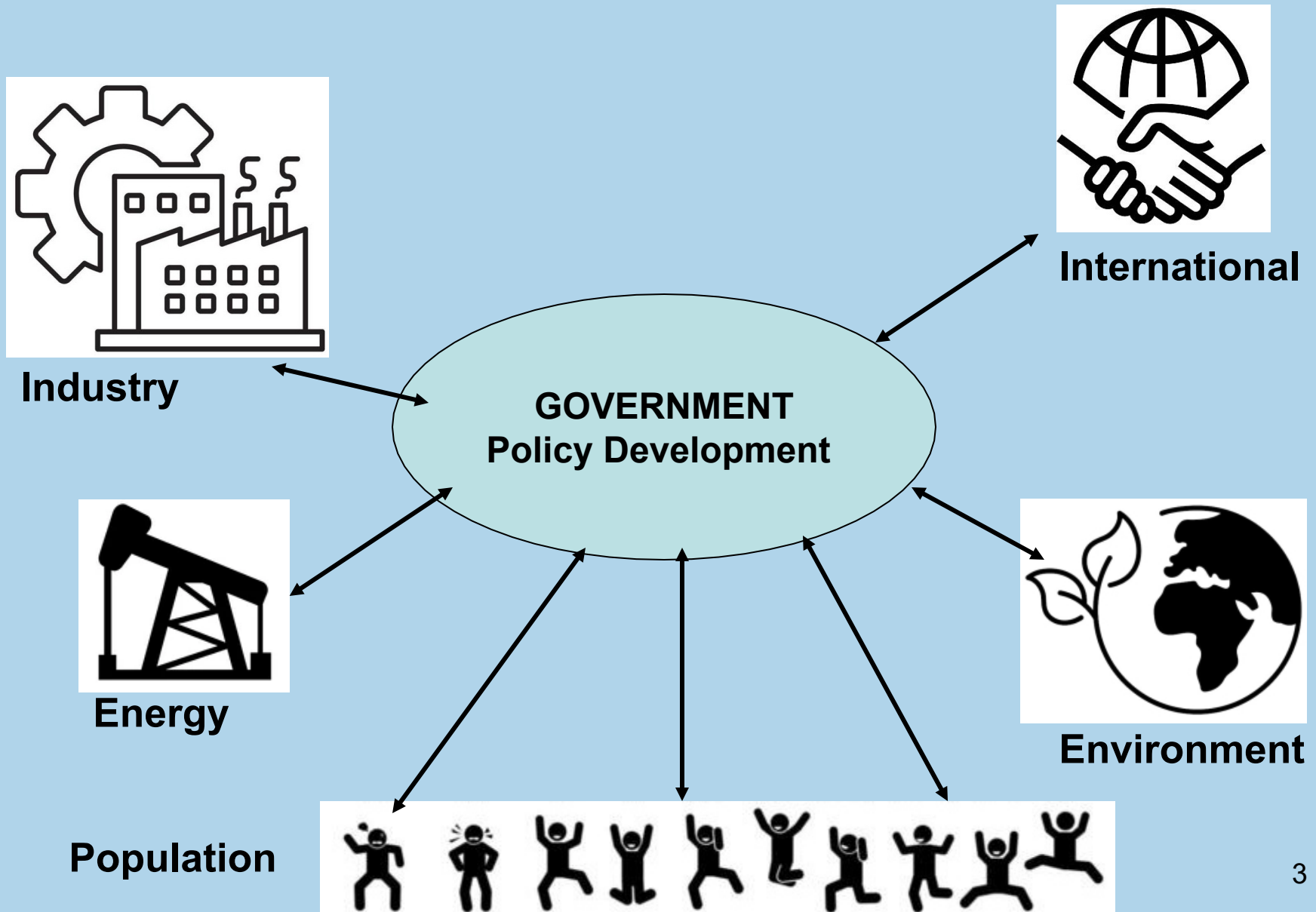


We are involved in testing and standards development at the global level

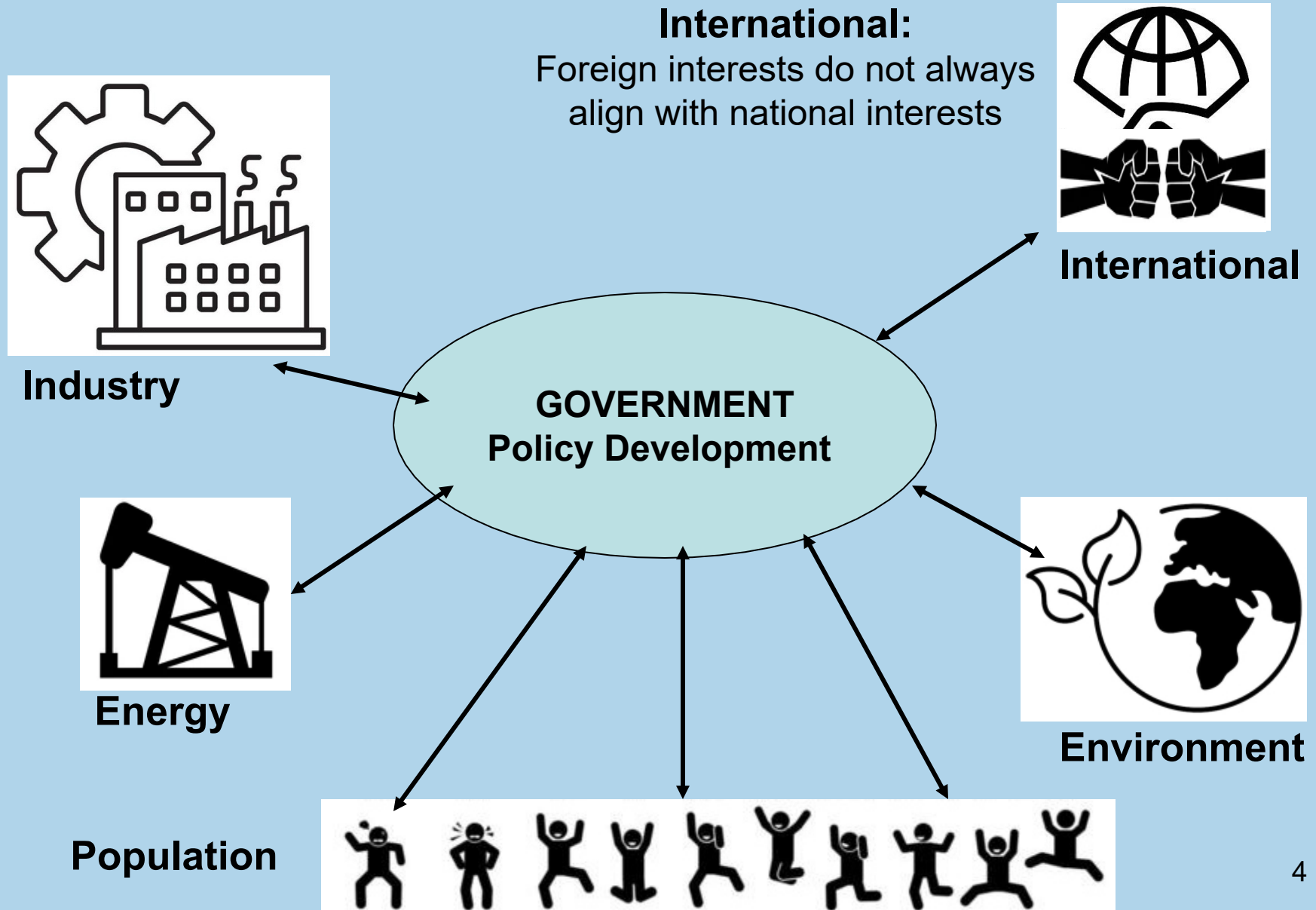
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Policy: Many Different Pressures



Policy: Many Different Pressures



Quality Factors of Electric Vehicles

What do customers care about? Just look at adverts:

Cost
Speed
Range
Power
Charging Time
Carrying Capacity

*Notice there is no mention
Of “Clean” or “Green”*

WHY?

Customers don't care!

ONTARIO

ELECTRIC

1000W

MAX SPEED 35 KPH

UP TO 60 KILOMETERS RIDING DISTANCE

35Ah

60 Volts

MTR-027-M

FOR ONLY P333/Day *6 Months/ No Interest

CHARGING TIME: 6-8 HOURS

UP TO 300 KILOS LOAD CAPACITY

REGULAR PRICE P59,900 CASH / STRAIGHT

3 or 6 months

CALIFORNIA

STANDARDS vs REGULATIONS

STANDARDS: Specific measurable aspects of the product

REGULATIONS: Rules relating to the use of the product

They are “connected”

SPEED (a vehicle performance aspect) related to **ROAD USAGE**
SIZE is related with **INFRASTRUCTURE**

INFRA (road gradients) is related to **STANDARDS** (Hill Climb)

ENERGY ($\frac{1}{2} M V^2$) is related with **SAFETY** (PPE, Operators, ...)

Road Usage **POLICY** relates to **ACCIDENTS**

ACCIDENTS relate to **SAFETY**

Therefore it is mandatory to have close collaboration between the regulators, and implementors, and the standards people

POLICY Challenges

The development of **GOOD** POLICY requires **DATA**:

- Road Usage – Which roads should these vehicles be allowed on?
- Safety Equipment – Are Helmets/Seat Belts/Air Bags to be required?
- Registration – Should individual vehicles be taxed/licensed? Driver licensed?
- Insurance – Required? If so at what “rate” (cc to kW conversion)?
- Finance – How much will we save on petroleum imports for every EV sold?

Challenges:

Poor Statistics on fleet size and usage if they are not currently registered

Accident Stats not tracked No Accident Investigation, No “EV” category

Lack of understanding of **fuel/energy consumption**, kilometers/year

Unregistered/regulated vehicles

Increasing Demand for transportation, Limited Infrastructure

Interconnectivity: One policy change can have **huge knock-on effects**!

Points to Consider when Developing POLICY

1) MANPOWER

To Verification/Enforcement of compliance requires manpower.

Regulations which can not be enforced degrade the legitimate authority of the government

2) BUDGET

Some policies (subsidies, enforcement and verification) require budget.
Others (taxes) produce revenue.

Responsible governments maintain balanced finances, and must include consideration of the individual citizens finances as well

3) KNOWLEDGE

Policy development requires continuous updating on the latest technologies.

POLICY: SINGAPORE

Regulatory:

Uses strict vehicle quotas alongside public housing EV charger rollouts.

Impact:

Achieved the highest adoption rate in Southeast Asia, with EVs accounting for over half of new car sales.

No Vehicle Manufacturing.



REGULATIONS: NEPAL

Regulatory:

Expensive fuel eliminated the need for EV subsidies.

Lack of regulation of 2-wheelers has led to **explosive** growth

Impact:

75% of new cars are EVs

35% jump in 2W sales 2025

MASSIVE CONGESTION in many areas of Kathmandu

YES this is not strictly an EV problem,
But a PROBLEM is a PROBLEM!



REGULATIONS: THAILAND

Regulatory

Targets 30% zero-emission vehicle production by 2030 using subsidies
Heavy tax incentives/subsidies for **local production**

Impact:

EV Sales 25% of new vehicles

Local parts suppliers at disadvantage compared to China, but becoming a major assembler of EVs, mostly for export.

Building 1.5M cars per year!



REGULATIONS: INDONESIA

Regulatory:

Imposes raw mineral export bans (nickel) to force domestic processing and battery manufacturing.

Subsidized E2Ws for a while.

Impact:

Attracted major Chinese and global investments to build a regional EV supply chain, positioning the country as a **battery hub**.

Initial E2W Subsidies spurred sales, which dropped once they were removed.

Domestic E2W were immature and supply not able to keep up



REGULATIONS: INDIA

Regulatory:

Vehicle purchase subsidies

Localization incentives

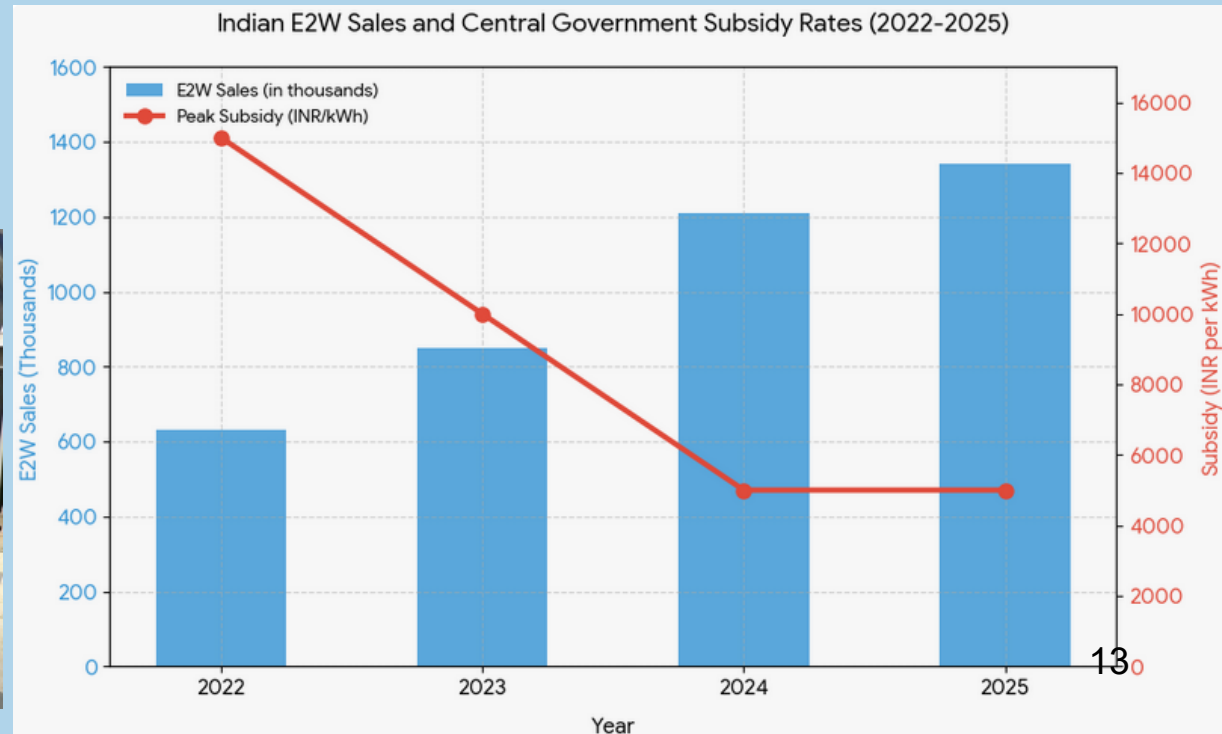
Many are **STATE** driven

Impact:

2M unit sales E2W *per year*

~12% of market

**Over 1000 mfgs of
E2/3 wheelers!**



POLICY: VIETNAM

“Go big or go home”

Regulatory:

Promotes electric motorbikes and city public transit electrification.
Total investment in VINFAST 10B USD

Impact:

Fast adoption of E2W: dense city navigation, proliferation of charging
E4W's are mostly targeting **EXPORT** as 95% of vehicles in VN are 2W



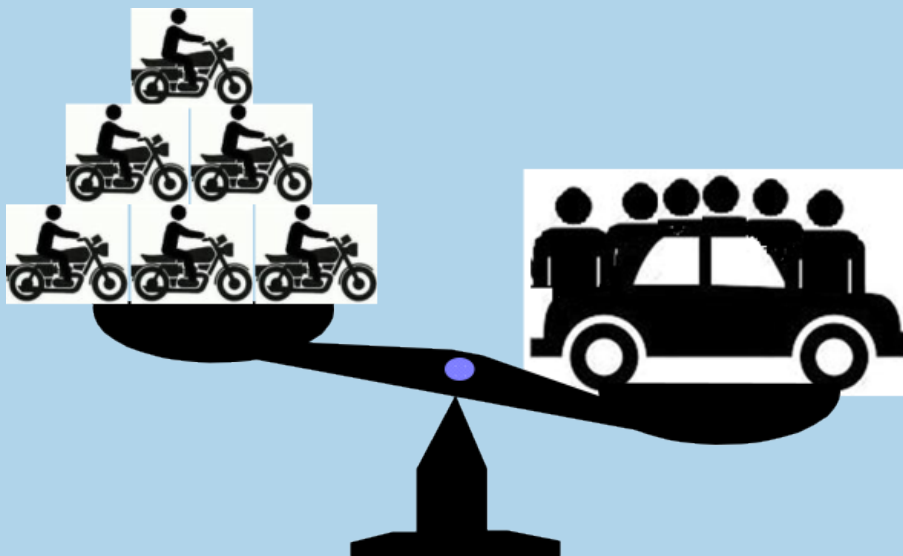
VEHICLE TAX RATIONALIZATION

Vehicle taxes and fees should be **simplified**, and “wholistically” managed to encourage the use of lighter, more efficient vehicles.

This may mean increasing fees on larger, vehicles.

PAKISTAN has a good success story:

A 1-3% tax on Luxury SUVs provided a surplus of funds spent on subsidizing 120,000 E2Ws and 3,200 E3Ws



Insurance Rationalization

Heavy vehicles kill people in lighter vehicles, *so make them pay!*

Lighter, lower speed vehicles, cause less damage to others on the roads.

Larger and faster vehicles should have **much higher** insurance premiums, while smaller and slower vehicles should have their insurance premiums reduced using surplus funds from the larger vehicles.

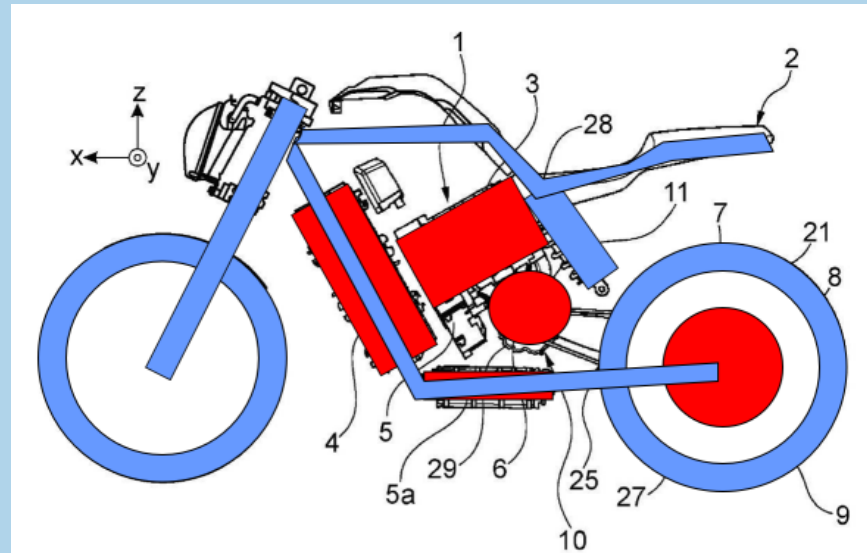
It may even make sense to have free universal basic insurance coverage for 2Ws using funds extracted from the premiums of the faster, heavier vehicles.

Manufacturing Support

Indonesia, Malaysia, Philippines, Thailand, and Vietnam, have various policies to support local manufacturing and assembly of motor vehicles, with good results.

Thailand produces **1,500,000** cars per year!

Each country needs to decide **what can be localized**, and design policy to foster domestic production.



Exclusive 2-Wheeler Infrastructure

Motorcycles can bypass intersections, use short cuts across rivers and freeways, and prevents car-bike accidents.

SAFER

Less expensive then 4W infrastructure

Better Traffic Flow

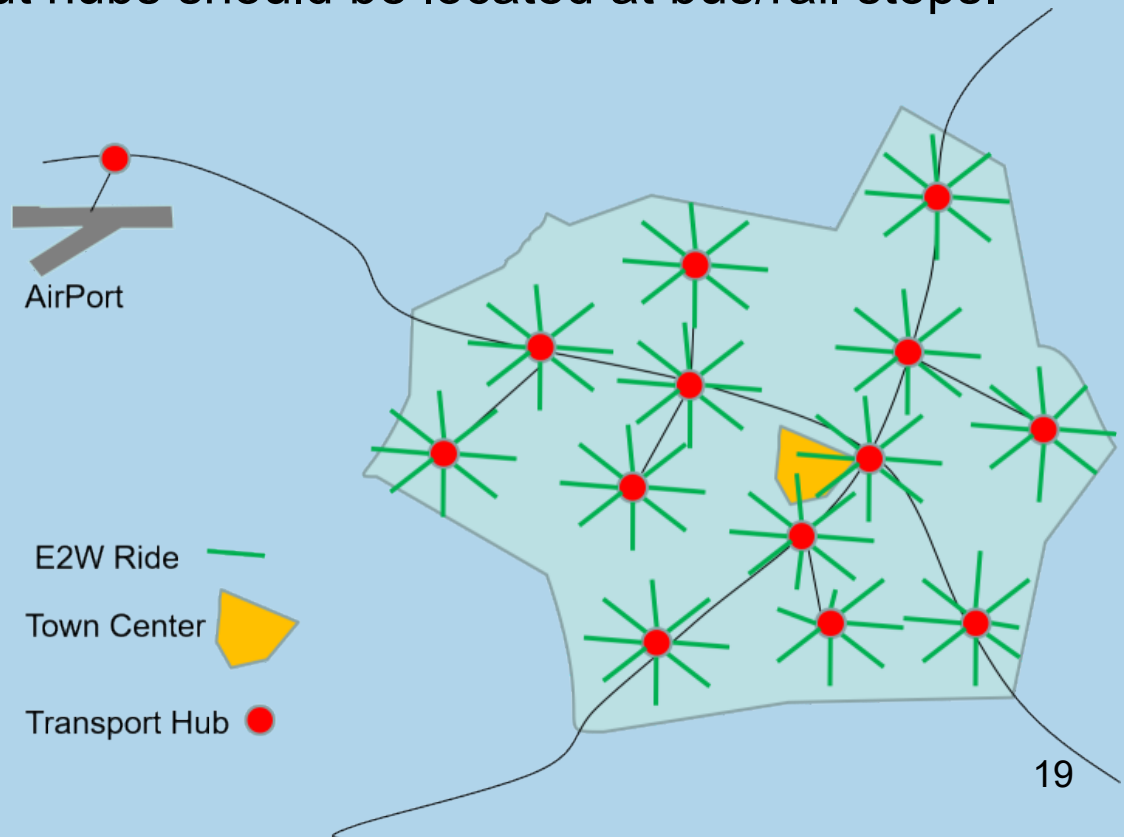


Public Transportation Integration

E2Ws make the perfect last mile link in a Public Transit journey.
E3W and small E4Ws can be good short-haul bus/taxis.

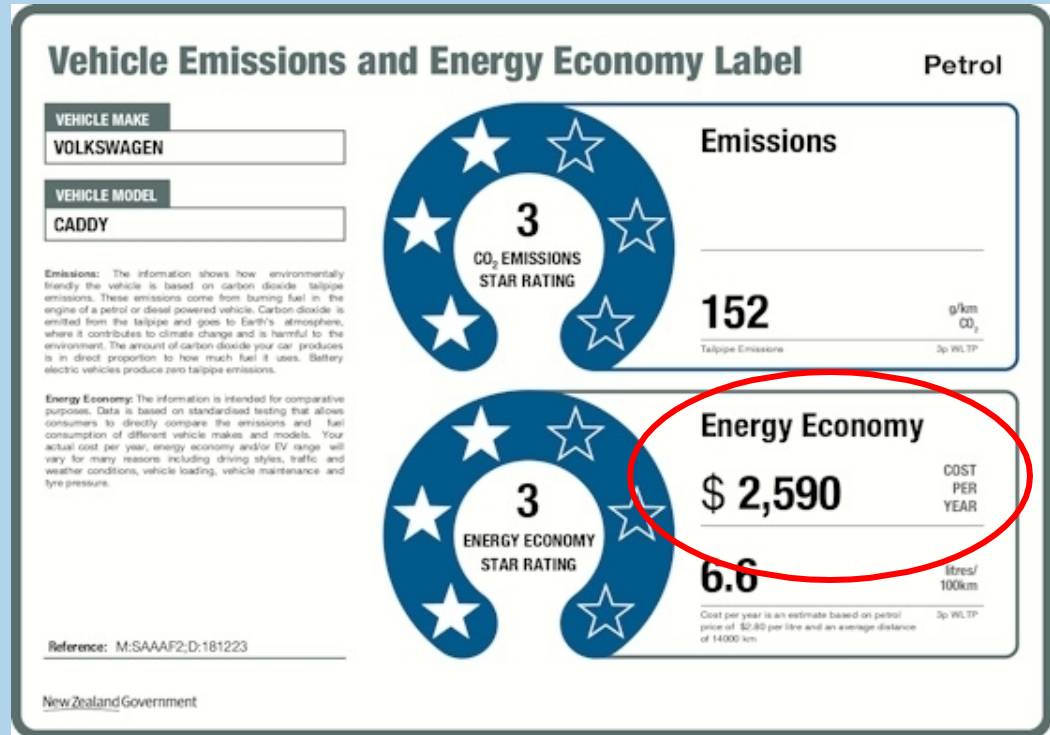
We need an **INTEGRATED** approach to get the most efficient system.

Charging and local taxi/bus hubs should be located at bus/rail stops.



Public Awareness and Education

Vehicle labeling should show the **Total Lifetime Cost** to help consumers evaluate EVs compared to conventional vehicles.



“Share the Road” public awareness campaigns can improve 2/3-wheeler safety. Should be combined with **driver training** for safety and Traffic Flow.

POLICY: Local Requirements

Environments and Vehicle Usage varies by region.



We need to consider the local context of transportation when formulating regulations or policy.

Meanwhile in Pakistan...



FOCUS: *We DO Technology!*

Engine Dynamometers



Chassis Dynamometers



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Smart Valve Technology

Envirofit's SIM/GPS SmartGas Valve, enables families to use their phone to prepay for gas as they cook using mobile money.

