Assessment of National Action Plan for the Reduction of GHG from Transport Sector in Indonesia

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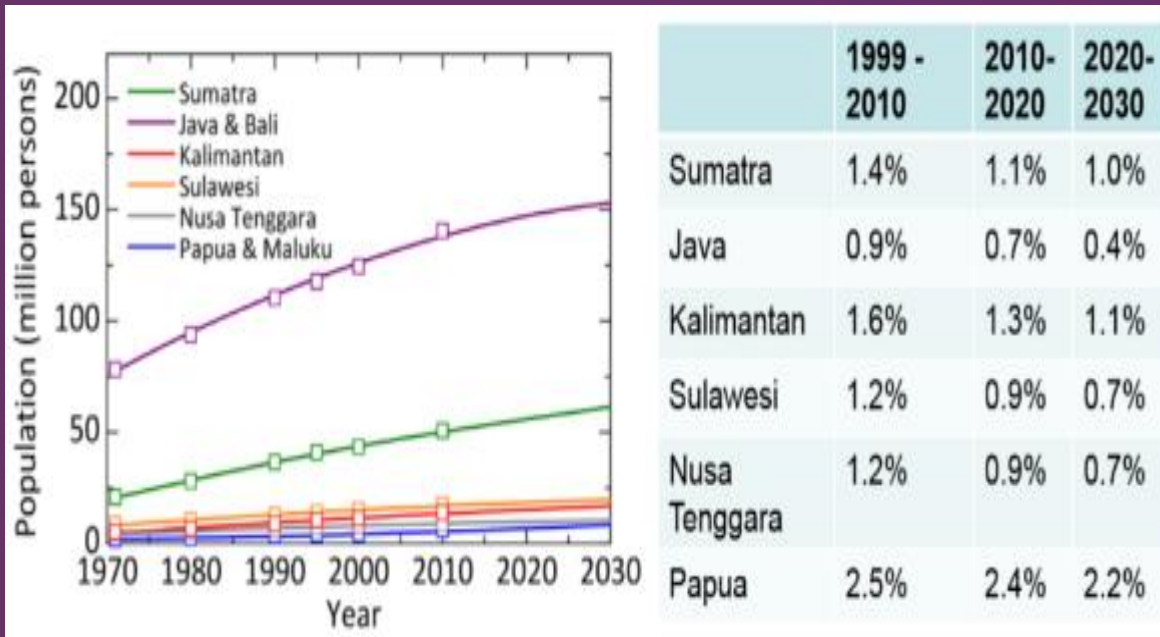
Outline

- Indonesia in a glance

- Indonesia global commitment in reducing GHG emission from transport sector

- Indonesia Transport Challenges: Paradox of high economic growth

- Study LPA: simulating national policy and visioning the future

- Future policy change: fundamental shift to more stringent policy with consistent practice

Indonesia in a glance

- The fourth largest country by population in the world after China, India and USA with 243.740 million people in 2011 and average growth rate of 1.4 percent from 2000-2010, which is 66.13 percent of the people are 15-64 years of age group. Average family size is 4-5 person In 2011, Indonesia reached 72.37 of HDI (BPS, 2013).

	1999 - 2010	2010- 2020	2020- 2030
Sumatra	1.4%	1.1%	1.0%
Java	0.9%	0.7%	0.4%
Kalimantan	1.6%	1.3%	1.1%
Sulawesi	1.2%	0.9%	0.7%
Nusa Tenggara	1.2%	0.9%	0.7%
Papua	2.5%	2.4%	2.2%

+ Indonesia in a glance (cont)

- In 2012, Indonesia is the biggest economy in ASEAN region and 17ᵗʰbiggest in the world by GDP, dominated by household expediture (MGI, 2013, BPS, 2013). Economy grew by average 5.2 percent per year from 2000 to 2010 (MGI, 2012).

- Java is as the economic center contributing 57.63 percent of GDP, which is dominated by secondary and tertiary economic sector.

- Indonesia now has 135 million middle income class or equal to 60 percent of total population with average income of USD 3.850 per capita (BI, 2013). Unemployment rate continue to decrease to 6 percent in 2012 from total 121 million work force (BPS, 2013), with informal sector absorbing 54 percent of total working force.

13 February 2017
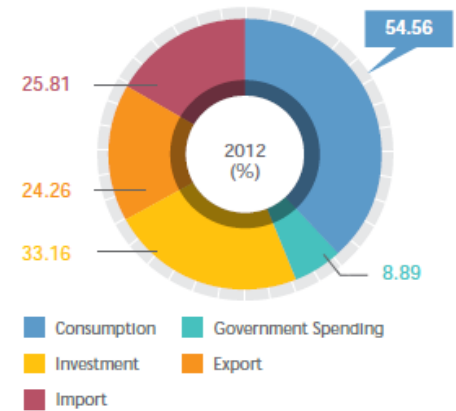
2. Indonesia global commitment in reducing GHG emission from transport sector

- Unilateral reducing GHG emission 26% from BAU scenario by 2020 or 41% with international support

- Presidential Decree No 61 Year 2011 on National Action Plan on GHG Emission Reduction (RAN GRK)

- Transport Ministerial Regulation No 201 Year 2013 on National Action Plan on GHG Emission Reduction in Transport Sector employing AVOID – SHIT – IMPROVE approach

- Recently received USD 14 Million international support from German and UK

3. Indonesia Transport Challenges:
Paradox of High Economic Growth

- Rapid motorization and vehicle ownership
- Diminishing share of public transport
- Urbanization coexist with inefficiency
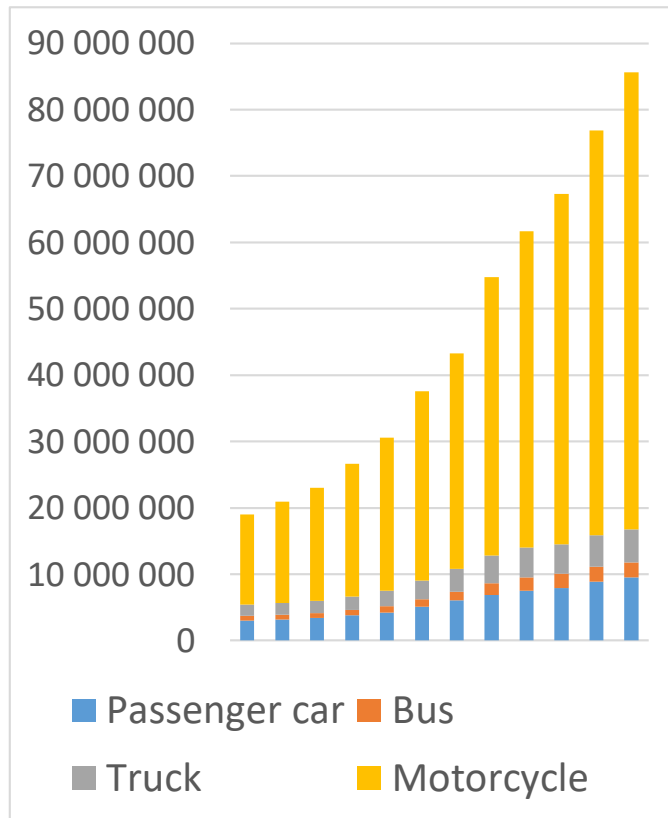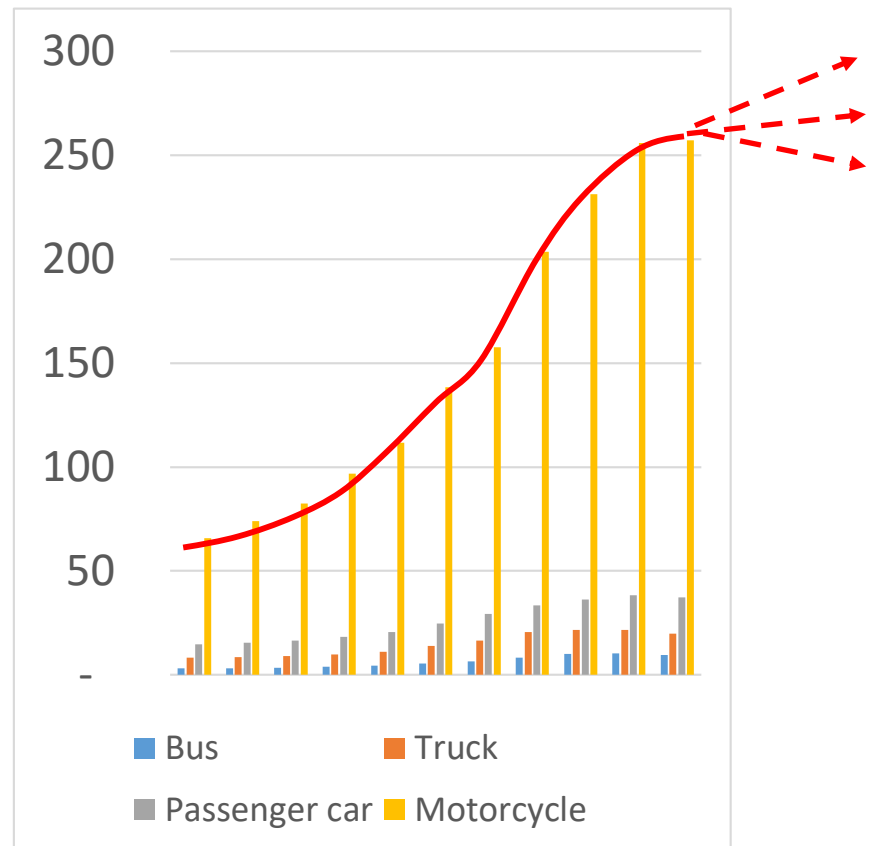- High consumption of energy and fuel subsidy

Rapid Motorization and Vehicle Ownership

Shift from motorcycle to car due to increasing income
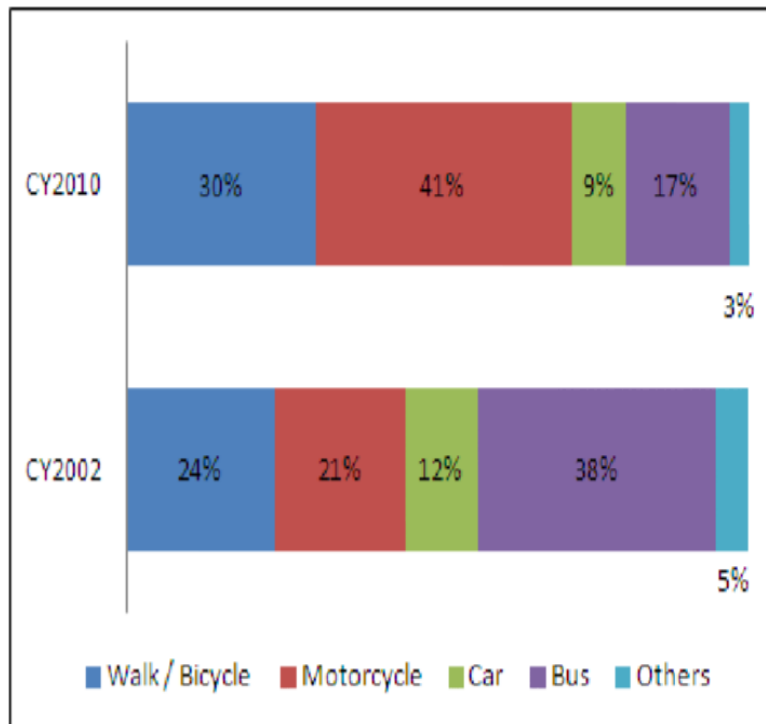
Growth of Vehicle number 2000-2011

Motor Vehicle Ownership 2000-2011

Source: Indonesian Central Statistic Agency, 2013

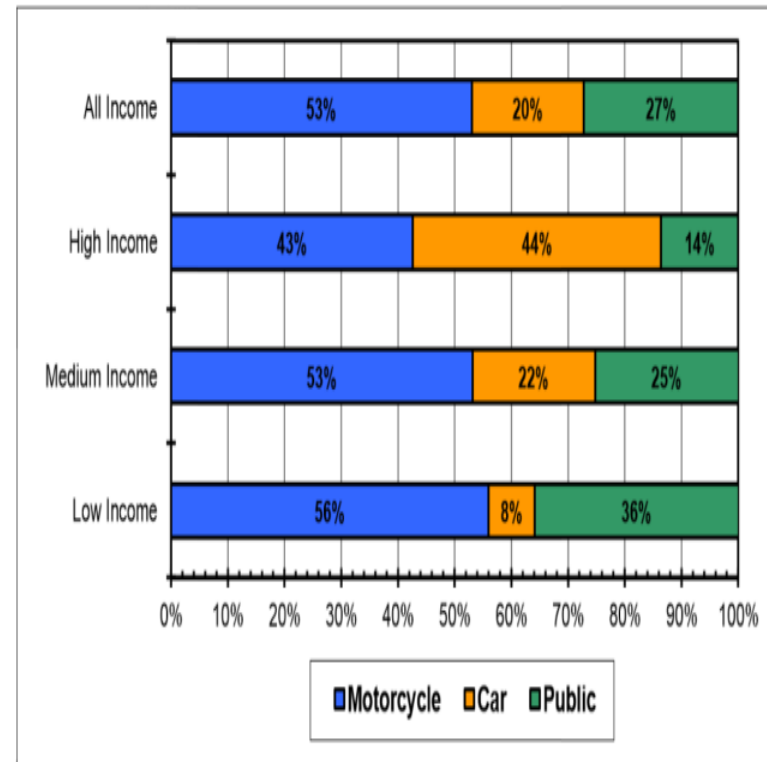# Diminishing Public Transport Share

Dilapidating Public transport share and stigmatized as mode just for poor

Change of Mode Share, 2002 - 2010

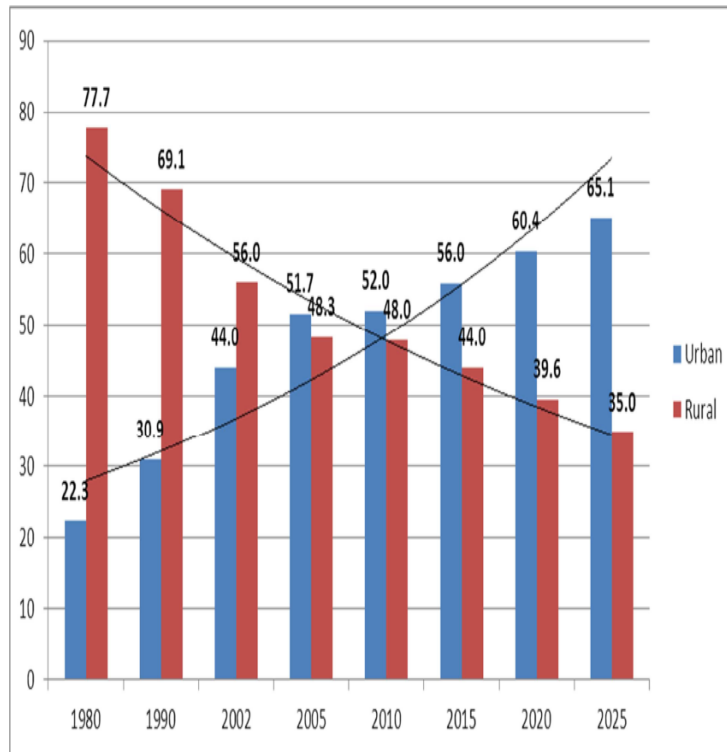Sourse: JUTPI, 2010

Mode Share by Income 2010

Sourse: JAPTrapis 2011

Coexistence of Urbanization and Urban Inefficiency

Urban and Rural Population Trend in Indonesia

Source: Bappenas, BPS, United Nations Population Fund (UNFPA), *Population statistics 2005*.

City	Km/h	City	Km/h
Bandung	14.3	Surabaya	21
Bogor	15.32	Medan	23.4
Depok	21.4	Makassar	24.06
Bekasi	21.86	Semarang	27
Tangerang	22	Palembang	28.54
Bodetabek	20.12	Metro City	24.8

High consumption of energy and fuel subsidy

Fuel Consumption by Sector, 2011

- Industry
- Transportation
- Household
- Comercial
- Other
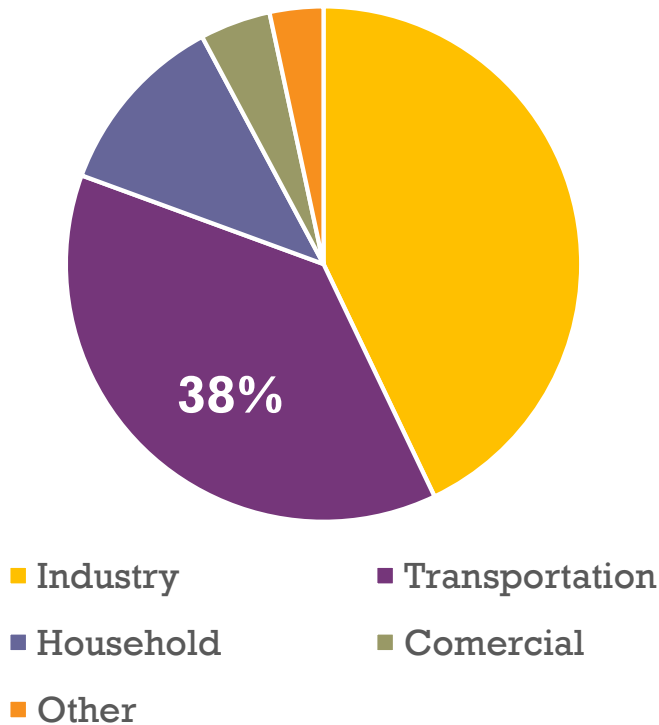
Source: MEMR, 2012

Subsidized Fuel Consumption by Sector 2010

3% 1%

1%

95%

- Land Transport
- Water Transport
- SME
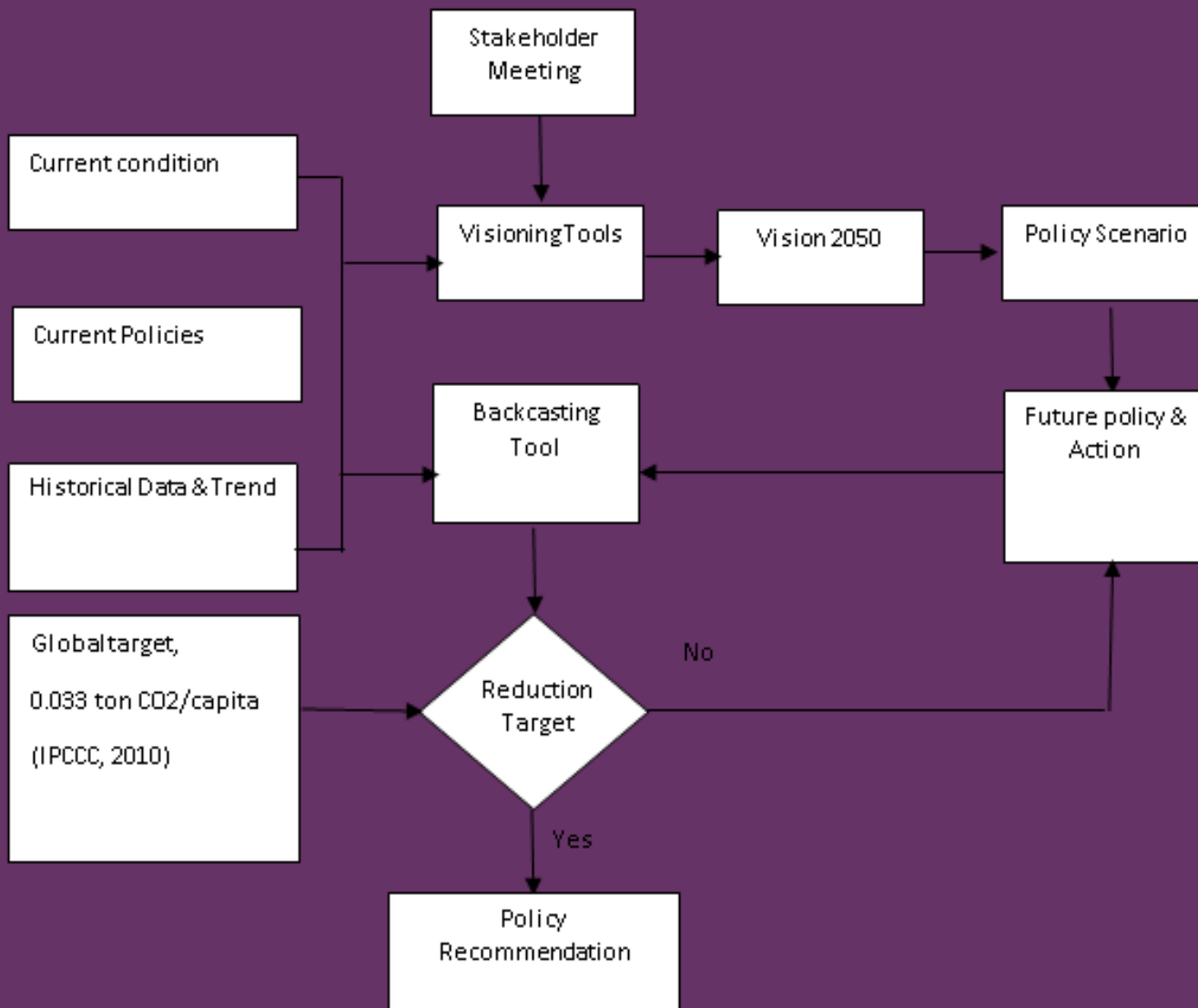- Fishery
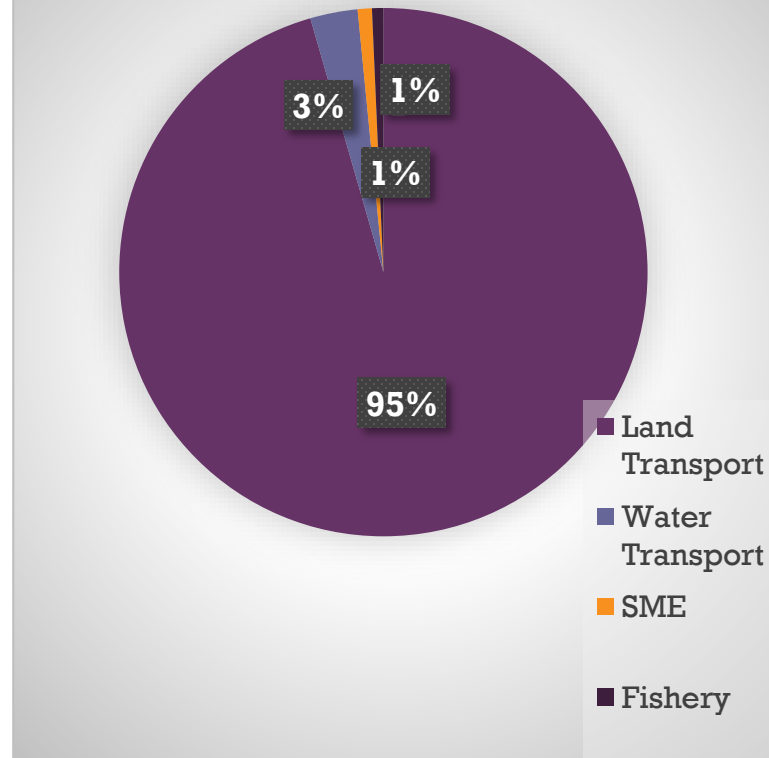
Source:: Reforminer, 2010

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4. Study LPA simulating national action plan and visioning future policy

- Development Policy:
  NLTDP (RPJMN), EMP (MP3EI)
- Mitigation Action Plan:
  NAP-GHG (RAN/RAD GRK)
- Visioning future policy

PERPRES NO. 5 TAHUN 2010

TENTANG
RENCANA PEMBANGUNAN
JANGKA MENENGAH NASIONAL (RPJMN)
TAHUN 2010 - 2014

Main Strategy of
MP3EI

STRENGTHENING NATIONA
HUMAN RESOURCES CAPA
AND SCIENCE & TECHNOL

3

18 February 2017

Methodology used in the development of the action plan

Current condition

Current Policies

Historical Data & Trend

Global target, 0.033 ton CO_2/capita (IPCCC, 2010)

Stakeholder Meeting

Visioning Tools → Vision 2050 → Policy Scenario

Backcasting Tool ← Future policy & Action

Reduction Target — No → Future policy & Action

Yes → Policy Recommendation

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TENTANG
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TAHUN 2010 - 2014

Main Strategy of MP3EI

STRENGTHENING NATIONAL HUMAN RESOURCES CAPA AND SCIENCE & TECHNOL

Possible Impact of RPJMN 2010-2014

Policies	Possible effects
Economic growth 6.3 – 6.8% p.a	- Increase of transport demand and activity
Development of **urban public services infrastructure**.	- Increase urbanization, mobility demand, efficiency, and reduce urban transport pollution
Development of **19,370 km of road,** inter-mode and inter-island infrastructure	- Increase connectivity, demand for based transportation, inter-island people and goods transportation, and sea transport
Enhancement **transportation system and network** in Jakarta, Bandung, Surabaya, and Medan	- More efficient urban transport system - Increase in urban mobility
Implementation of **National Multimode Transportation System**	- Increase of transport efficiency - Reduce transport fuel consumption
Urban **electric railway** transportation development	- Increase in urban public transport trips - More efficient commuting trips
Energy savings and alternative fuel	- Demand for energy efficiency vehicle - Decrease oil fuel consumption and increase alternative fuel utilization

Possible impact of MP3EI 2010-2050

No	Policies		Possible effects
1	Promoting **road infrastructure construction**	-	Increase private vehicle population and demand, and increase road based freight
2	Revitalization of passenger and freight **sea and river based transportation**	-	Increase demand and volume of water based transportation
3	Increasing and betterment of **air transportation**	-	Increase air transportation demand and volume
4	Development of **rail transportation**	-	Increase rail based demand and volume
5	Reduction of **cost for logistic system**	-	Increase freight transport integration and efficiency

Possible Impact of RAN/RAD GRK

No	Policies	Effects
1	Development and implementation of ITS	- Better travel plan and fuel efficiency,
2	Traffic Impact Control	- Reduce congestion and emission
3	Congestion Charging and Road Pricing	- Reduce private car usage, congestion, and fuel consumption
4	Revitalization of public transport system	- Increase of public transport share and reduce private vehicle travel
5	Development of BRT system	- Increase mode share of BRT, and fuel efficiency
6	Development of NMT	- Better NMT share and fuel efficiency
7	Electrification of railway system	- Increase rail passenger and shift from private vehicle
8	Emission standardization, labeling and emission based tax and	- Reduce fuel consumption and emission
9	CNG converter kits	- Reduce fuel consumption and CO_2 emission
10	Eco driving and speed limitation	- Reduce fuel consumption and vehicle emission

Improved RAN GRK Scenario
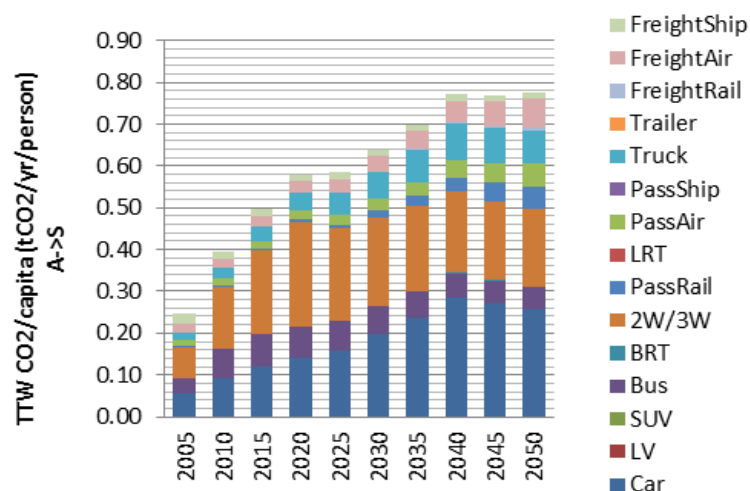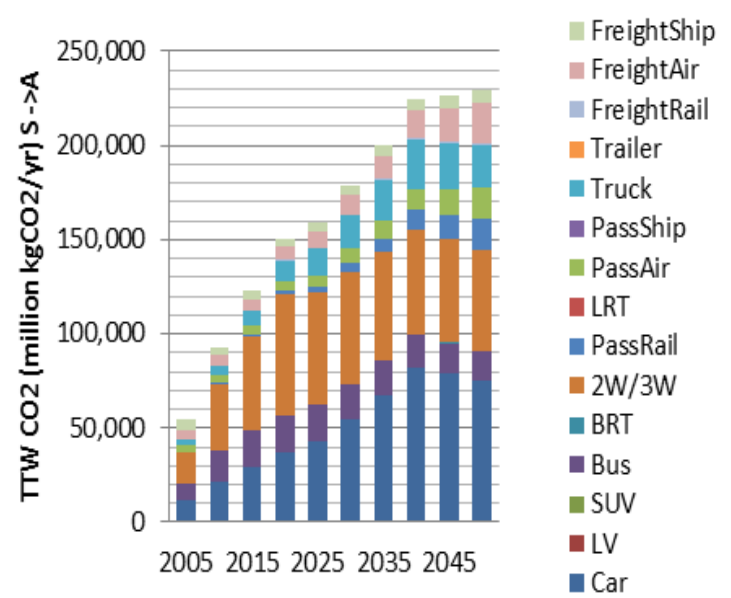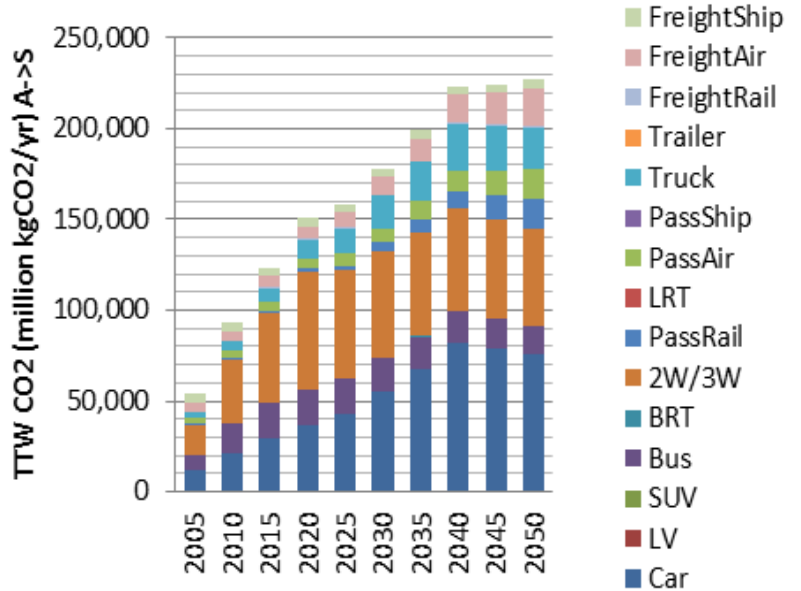
Business as Usual - BAU

- Respecting current policy taken by the government

- Predicting impact of current development and economic policy: RPJMN, MP3EI

- Elaborate scenario for current policies

- Considering dynamic in policy implementation

Improve RAN GRK

- Additional policy beyond RAN GRK

- Introduction of more AVOID policy options

- Advance vehicle technology

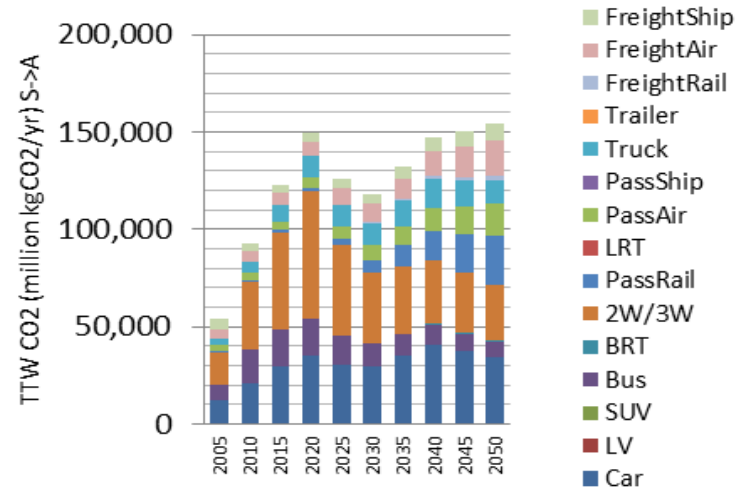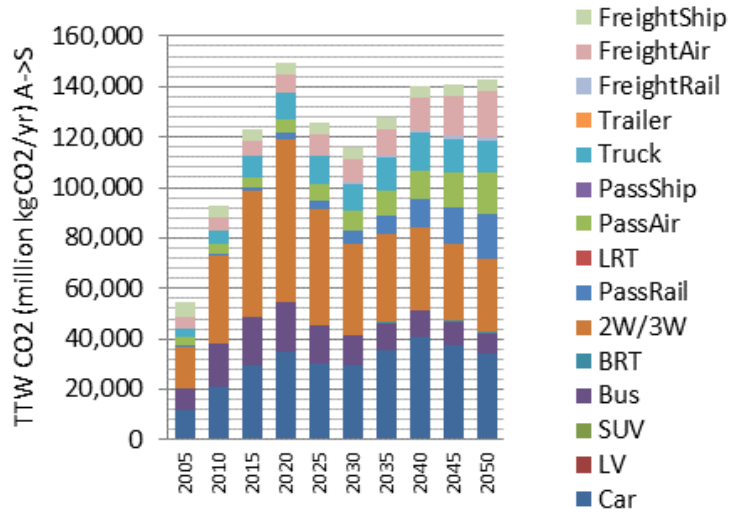- Fuel pricing and alternative fuels
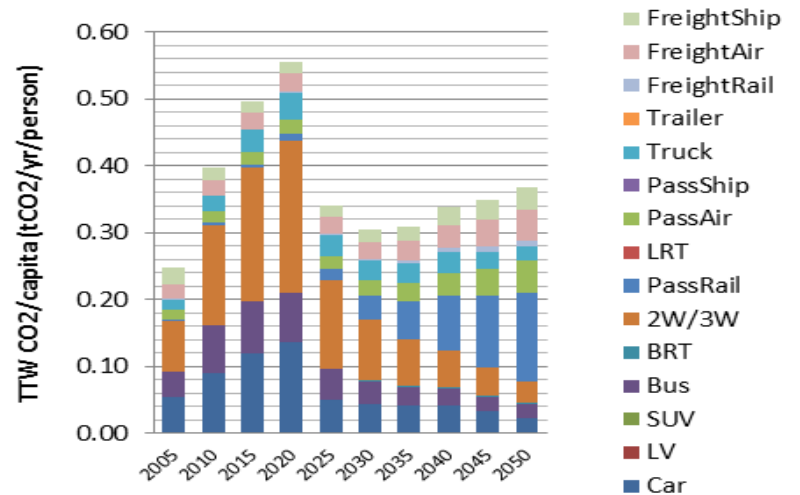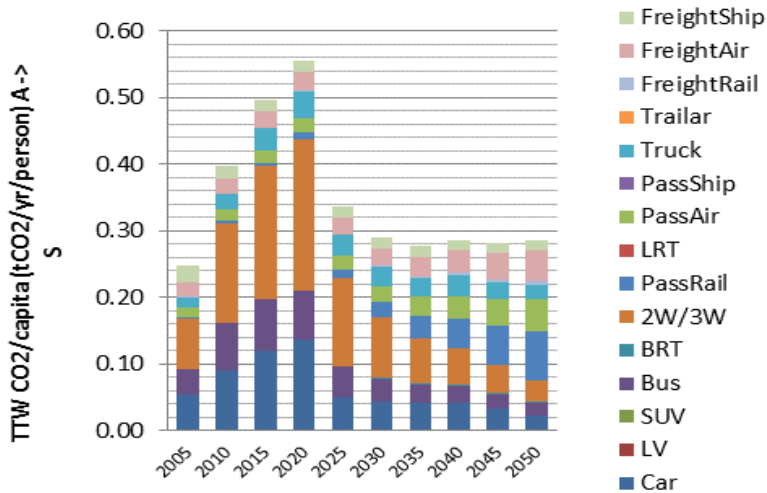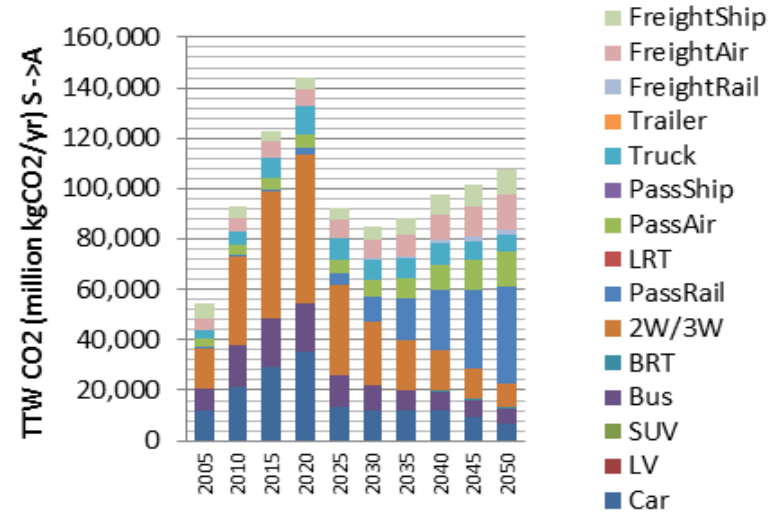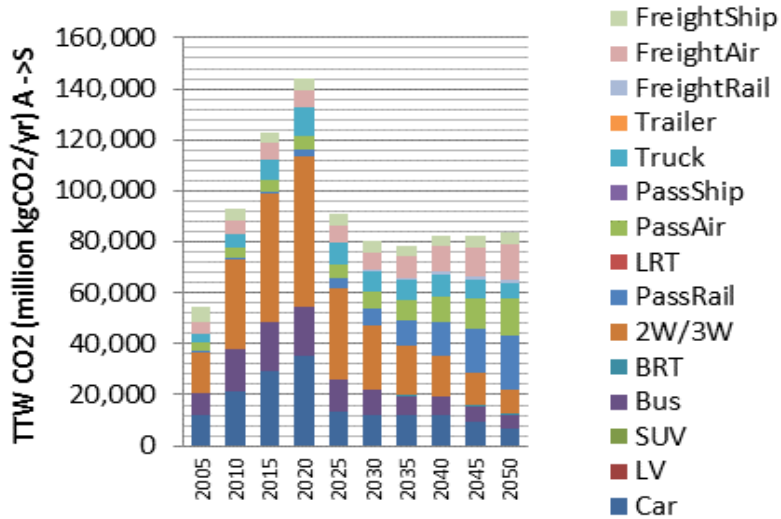
- Road pricing and behavioral change

Scenario II Estimation of total CO2 emission

Scenario III Estimation of total CO2 emission

Scenarios Comparison

	2005	2010	2015	2020	2025	2030	2035	2040	2045	205
BAU(MP3EI) (A->S)	54,484	92,944	123,025	150,744	158,543	178,203	198,983	223,020	224,209	226,9
BAU(MP3EI) (S->A)	54,484	92,944	123,025	150,744	158,650	178,653	199,951	224,737	226,412	229,0
RAN GRK A+S+I (A->S)	54,484	92,944	123,025	151,069	132,990	122,673	135,845	149,527	149,645	151,
RAN GRK A+S+I (S->A)	54,484	92,944	123,025	151,069	133,394	124,975	140,198	156,486	158,719	162,0
RAN GRK IMPROV A+S+I (A->S)	54,484	92,944	123,025	139,068	90,959	74,430	78,664	82,621	82,243	83,5
RAN GRK IMPROV A+S+I (S->A)	54,484	92,944	123,025	139,132	92,017	79,513	88,091	97,630	101,697	107,

TTW CO2 (million kgCO2/yr)
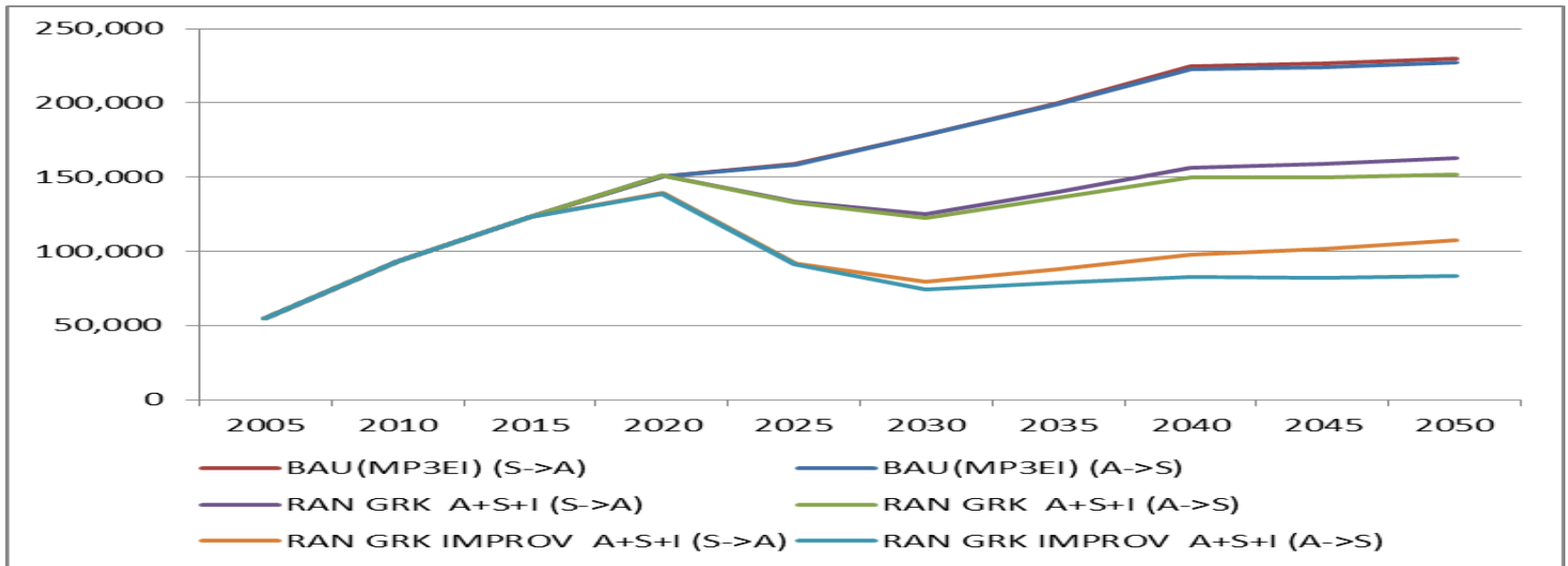
TESTING OF SCENARIO EMISSION PER CAPITA
(Ton eCO2/per Capita-year)

16% by 2025

Business as Usual

RAN GRK

Improved RAN GRK

Chart legend:
- BAU(MP3EI) (S->A)
- BAU(MP3EI) (A->S)
- RAN GRK A+S+I (S->A)
- RAN GRK A+S+I (A->S)
- RAN GRK IMPROV A+S+I (S->A)
- RAN GRK IMPROV A+S+I (A->S)

Radar chart:
- Passenger transport 100% / 75% / 65%
- Freight transport 100% / 77% / 65%
- Energy consumption 100% / 65% / 39%
- TTW CO2 emission 100% / 71% / 47%
- TTW CO2 emission/capita 100% / 71% / 47%

CO- BENEFITS
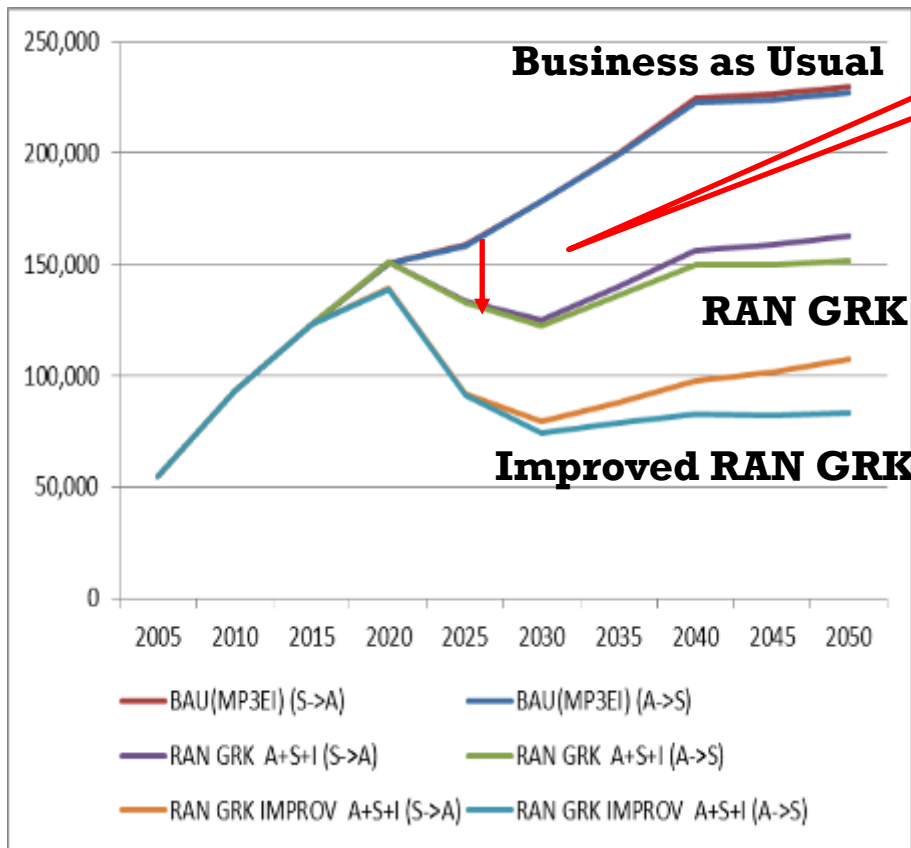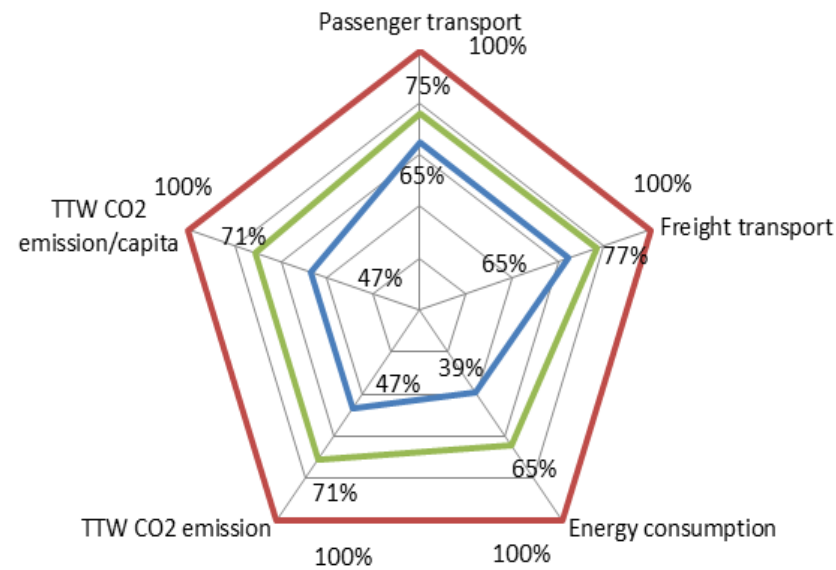
Scenarios Comparison

The analyses for scenario comparisons for total emission are as follow

1. Similar with the emission figure for per capita emission, the results from total emission also show that IMPROVED RAN scenario have better performance compared to RAN GRK .

2. The RAN GRK will reduce the total emission by about 25 Mton CO_2 to about 132 Mton in 2025 compared to BAU. On the other hand, IMPROVED RAN scenario will further reduce total CO_2 emission by about 67 Mton to only 90 Mton by 2025.

3. The significant difference of results between A->S and S->A sequence for all three (BAU, RAN & IMPROVED RAN) can be seen in 2050. Significant difference especially can be seen in IMPROVED RAN scenario where the A->S sequence can reduce the total emission down to 80 Mton (lower that 90 Mton in 2025). At the same time, the S->A sequence cannot even hold the emission causing rebound of total emission to 107 Mton by 2050.

Co – Benefit from policy improvement

- Transport policies devised GHG mitigation, transport **efficiency**, system **competitiveness** and **energy** consumption.

- Policy improvement will create co-benefit in energy consumption (61% reduction) **congestion** relieve (35%).

- Transport competitiveness, energy efficiency and GHG emission reduction **will achieving global commitment** as well as improving the economic and local environmental condition

5. Visioning Future Policy

- Significant improvement is needed to achieve national commitment and meet global target

- Introduction of various "avoid" policies: promotion of TOD, higher fuel pricing,

- Shift to more advance vehicle technology and cleaner fuel options

- Push policy for transport behavioral changes: road and higher fuel pricing.

- Capacity building to manage and safe guard consistent policy implementation

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Combination of transport competitiveness, energy efficiency and GHG emission reduction will help the Indonesian government achieving global climate change commitment as well as improving the economic and local environmental condition