Low Carbon Transport

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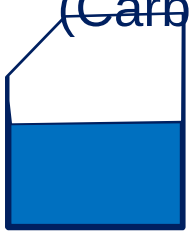
Facts

- 20-30% of GHG from transport sector.
- 80-90% of GHG in transport sector from road transport.
- Automobiles continue to increase.
- Many technologies for LCT including low carbon vehicles are available. However,
  - High cost
  - Limit of application
- What are the key factors for the successful implementation of low carbon transport and smart urban design?

How to reduce Fuel Consumption/CO2 Emission ?

Use alternative Fuel
Such as Bio Fuel
(Carbon Neutral)



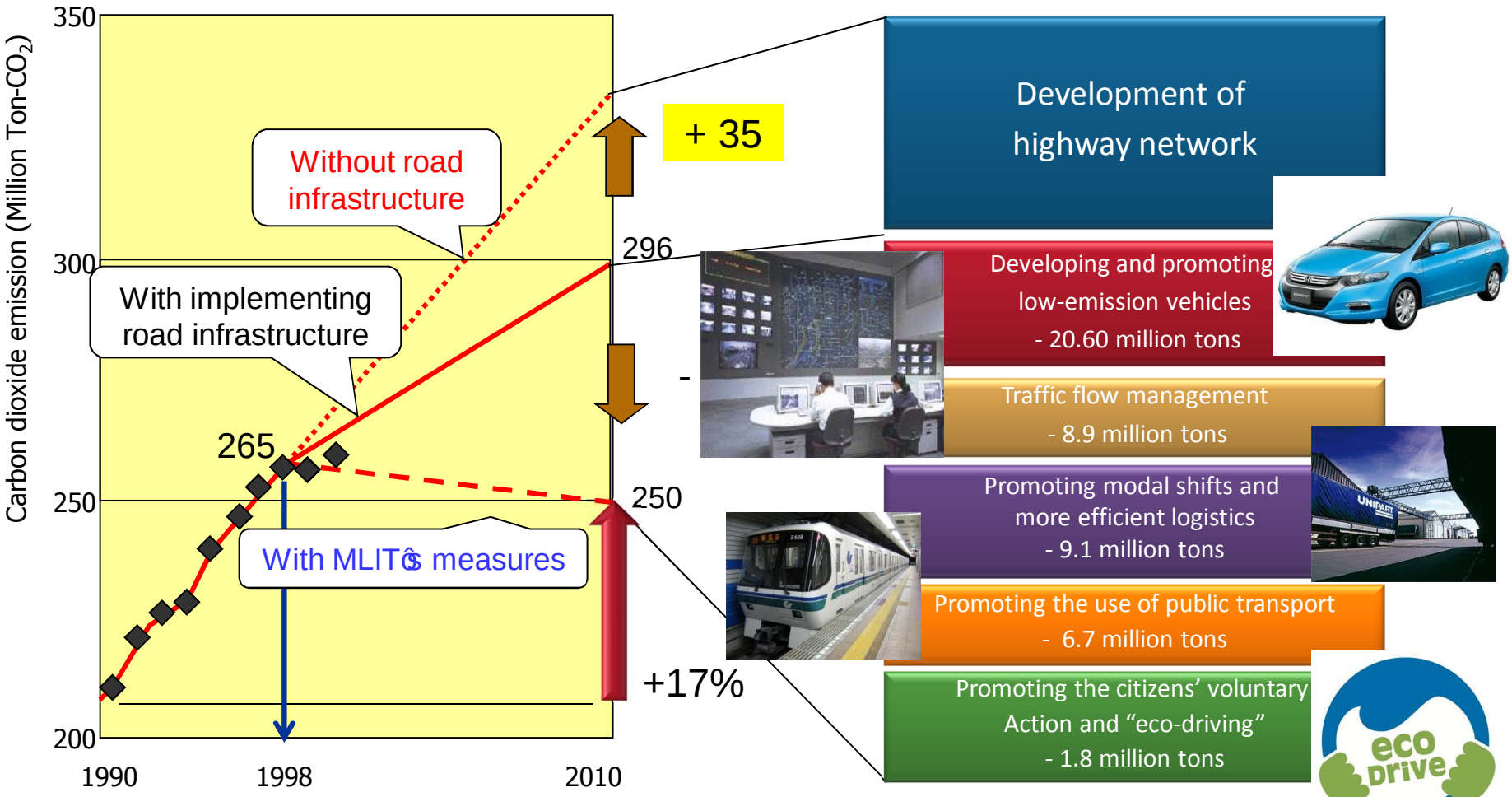
Improve Fuel
Consumption

Shift to Mass Transit

Total
CO2
Emission

Reduce traffic/driving distance

Example of Bottom Up Approach in Japan

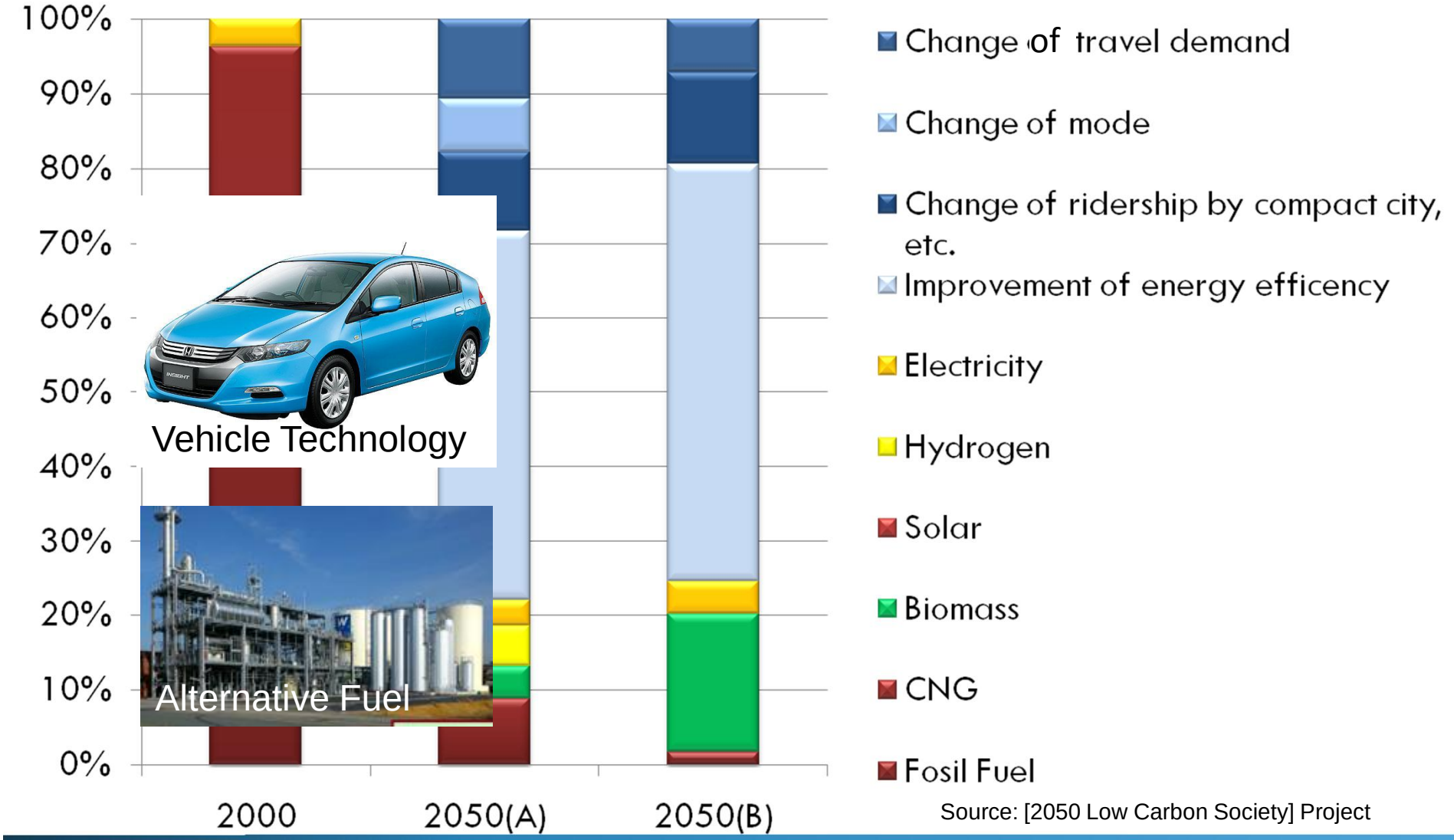


Potential measures

Total amount of CO2 emission on Expressway in Japan was estimated 24 million ton/year.
We estimated 3.5 thousand ton can be reduced by following measures.

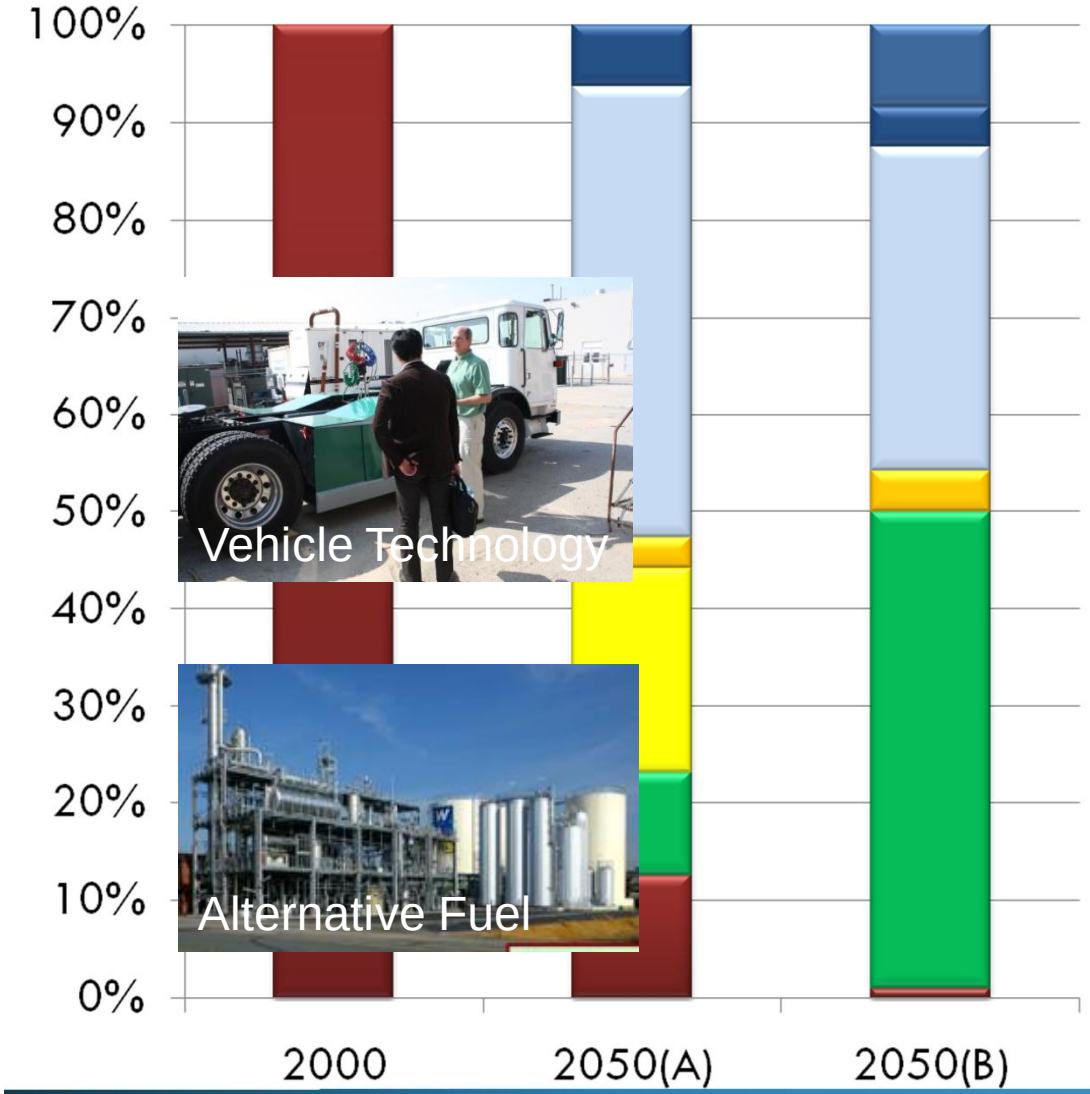
		000 ton	(%)
Eco-driving	Eco-driving by PC	- 680	(- 2.80)
	Speed Limiter for HT	- 509 ~1104	(- 2.12 ~4.33)
Alleviate congestion	ETC at Toll Plaza	- 230	(- 0.96)
	Installing ITS	-100 ~120	(- 0.42 ~0.50)
	Related Road Work	- 17	(- 0.07)
	Related Accident	- 43	(- 0.18)
Effective Use	Traffic Information	- 220	(- 0.92)
	Pricing measure, etc.	- 1050	(- 4.38)

Future energy consumption to cut 70% of CO2 in 2050 (passenger)



Source: [2050 Low Carbon Society] Project

Future energy consumption to cut 70% of CO2 in 2050 (commodity)

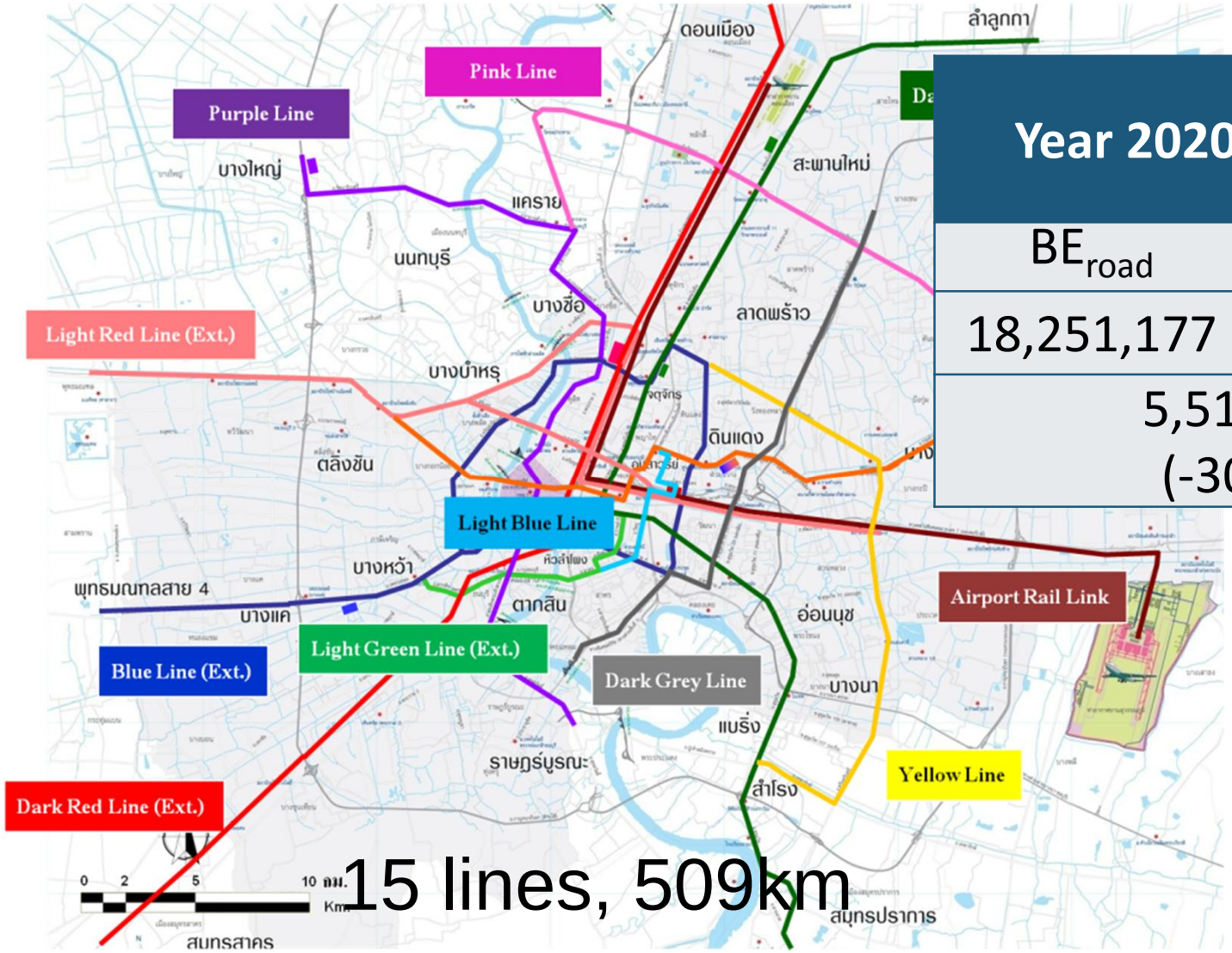


Source: [2050 Low Carbon Society] Project

What is Low Carbon Society?

- Feasibility
- Cost for infrastructure

Shift to Mass Rapid Transit

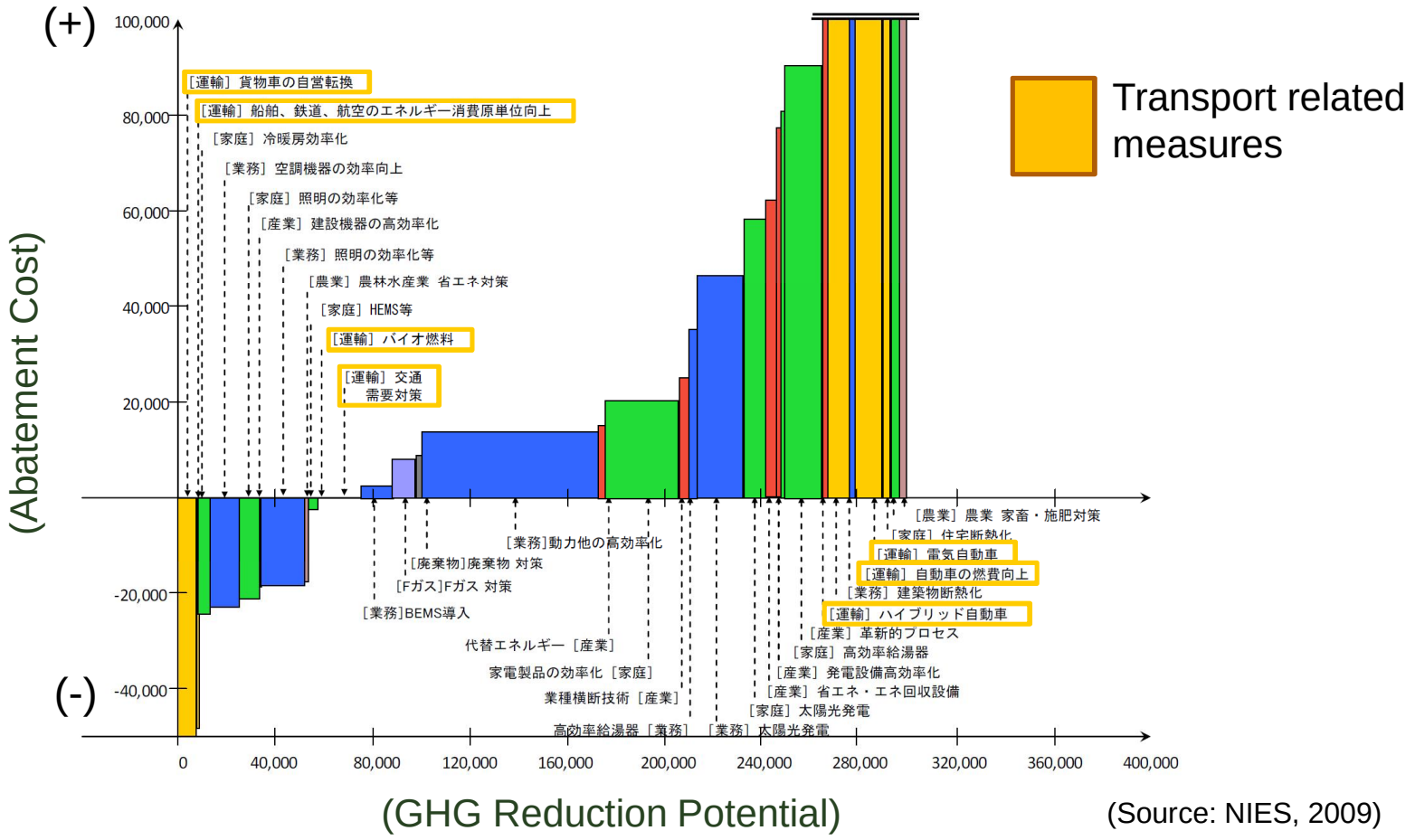


Year 2020 Estimation	
BE_{road}	PE_{road}
18,251,177	12,736,649
5,514,528 (-30.2%)	

million ton/year

Selection of measures

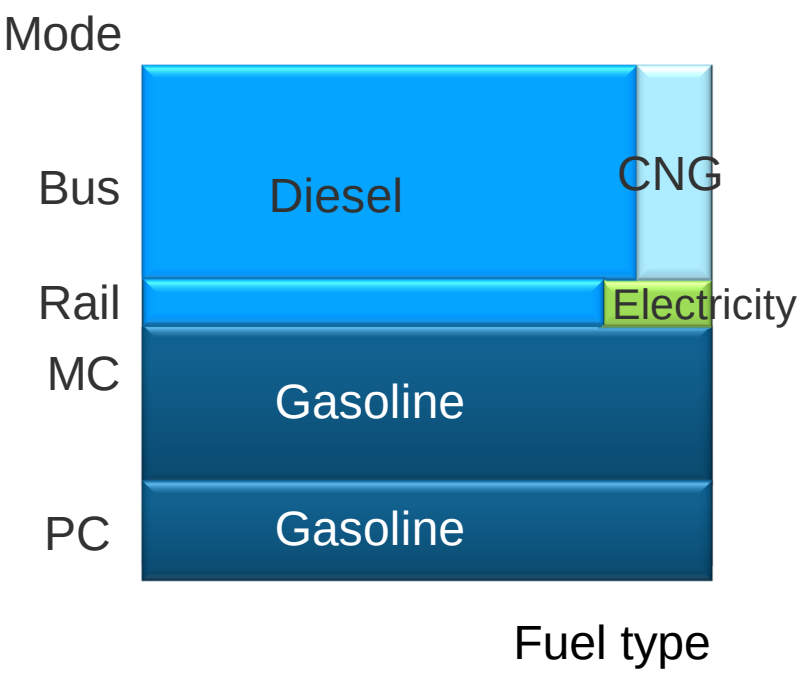
Å Japan's MAC curve by a bottom-up model



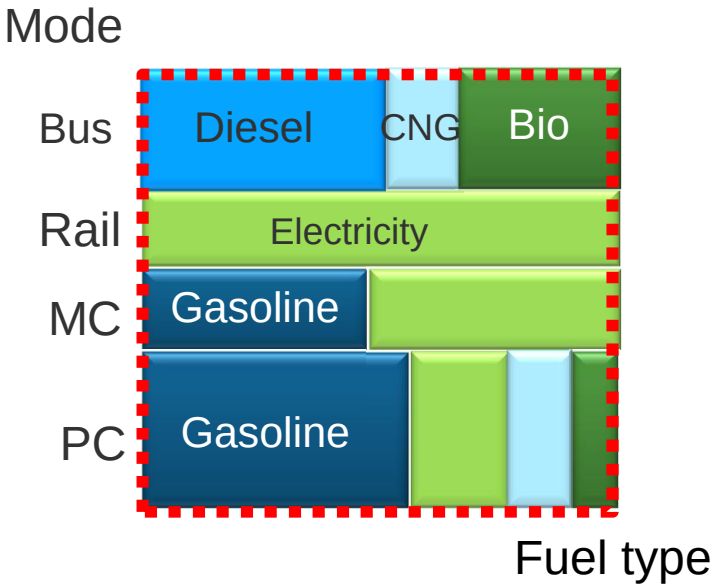
(Source: NIES, 2009)

Unified strategy

- Fossil Fuel Society



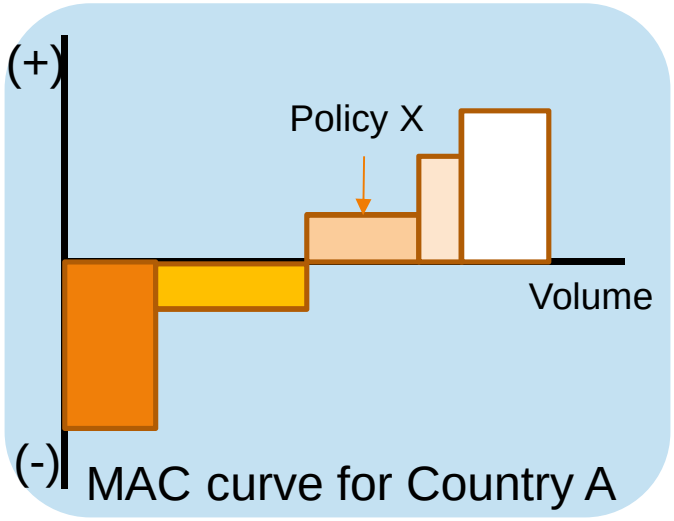
- Low Carbon Society

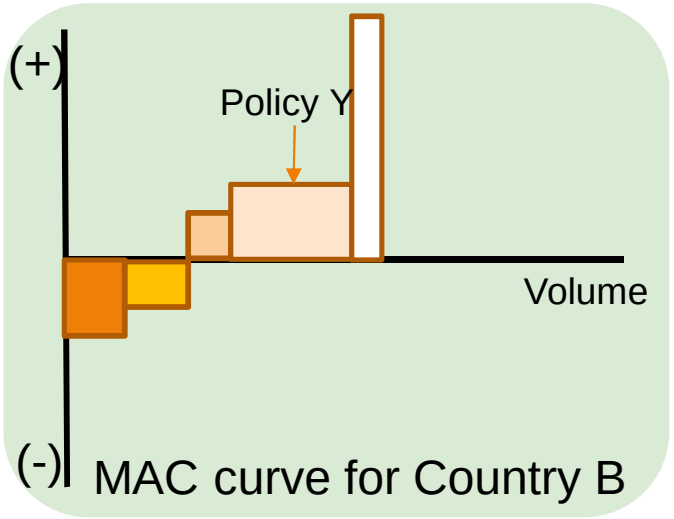


- Comprehensive policy
- Future vision

Selection as APEC

- Unified strategy as APEC
  - How to deal with uniqueness of each countries?





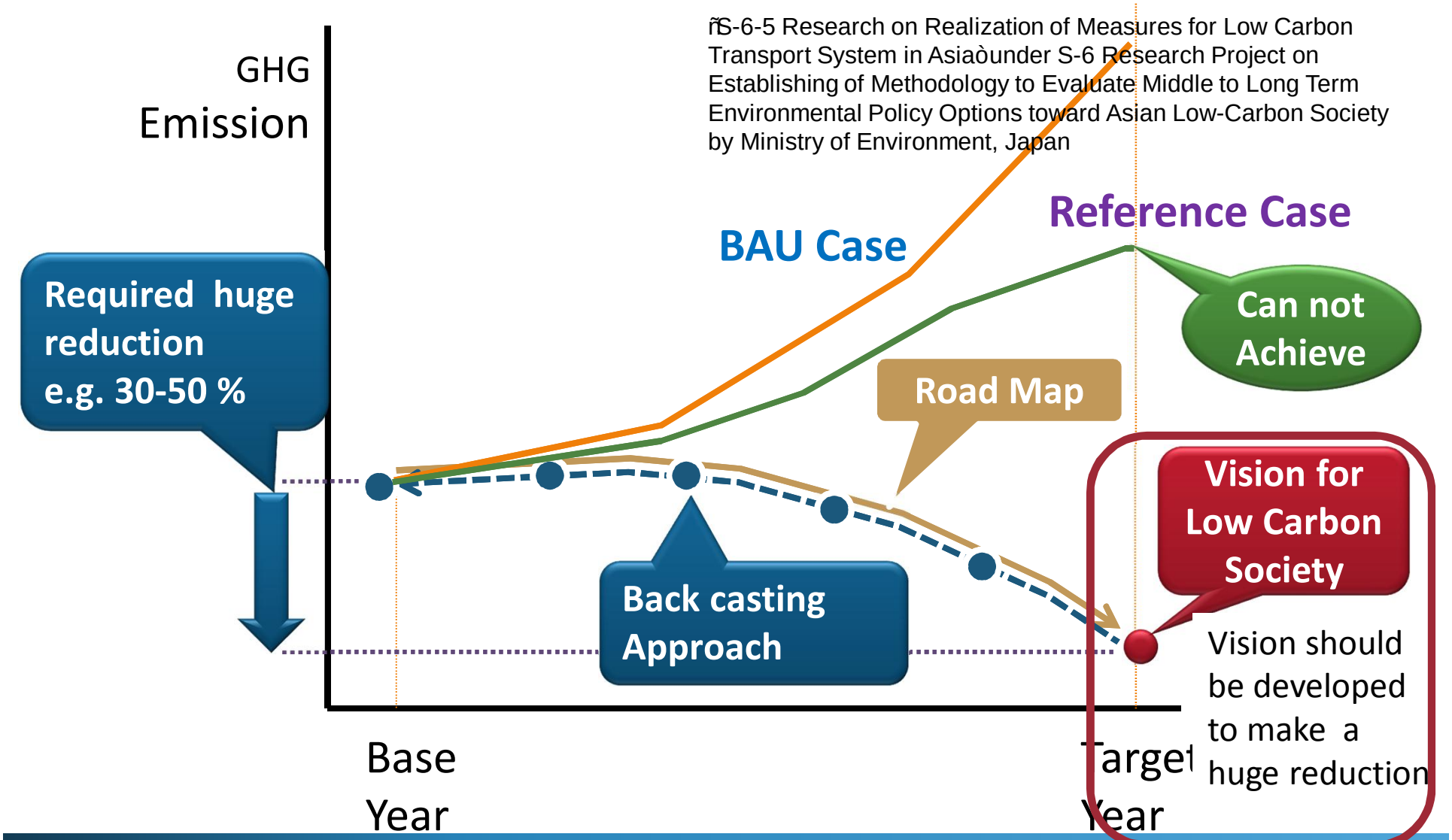
How to increase awareness/implementation?

How are the awareness and implementation of low carbon transport and smart urban designs in developing APEC economies?

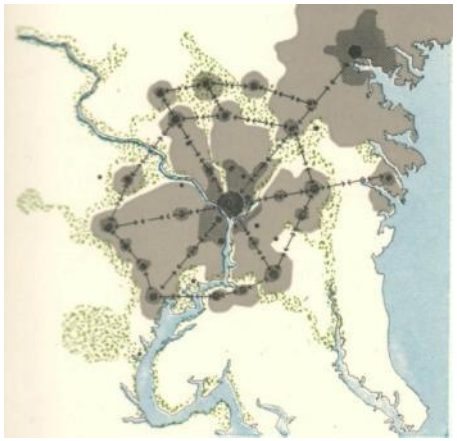
- Invisibility of GHG
- Inactivity of market mechanism
  - Benefit (in monetary term) is small
- Common understanding for LCT/LCS
- Visualization of the policy
  - Future Vision, Load Map

Future vision & road map

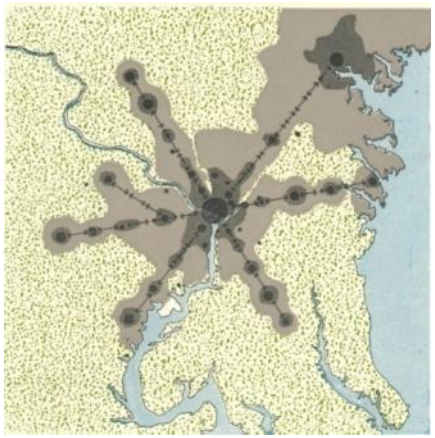
ñS-6-5 Research on Realization of Measures for Low Carbon Transport System in Asiaòunder S-6 Research Project on Establishing of Methodology to Evaluate Middle to Long Term Environmental Policy Options toward Asian Low-Carbon Society by Ministry of Environment, Japan



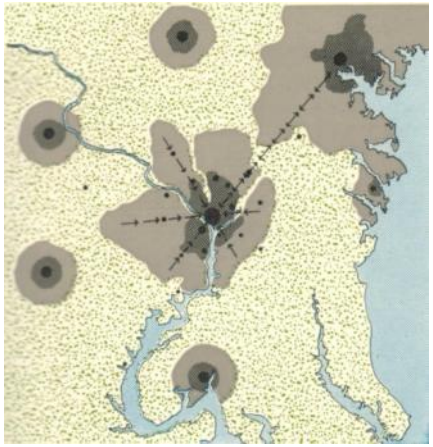
What are the key smart urban design options on existing cities?



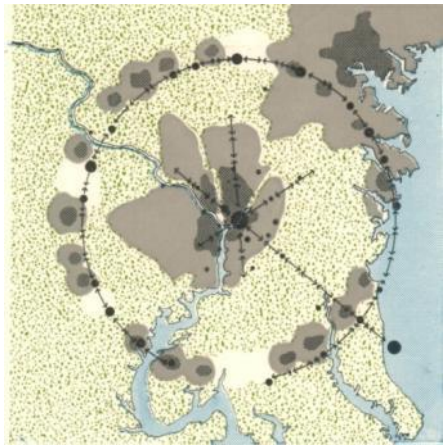
peripheral communities



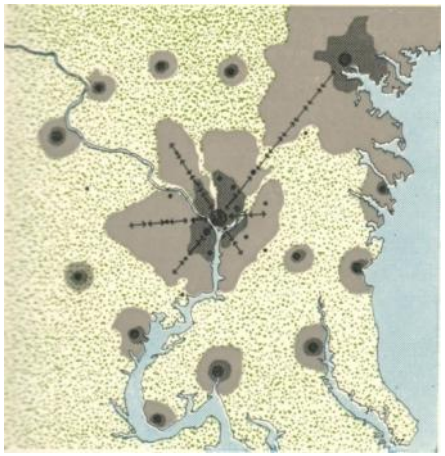
a circumferential ring of towns



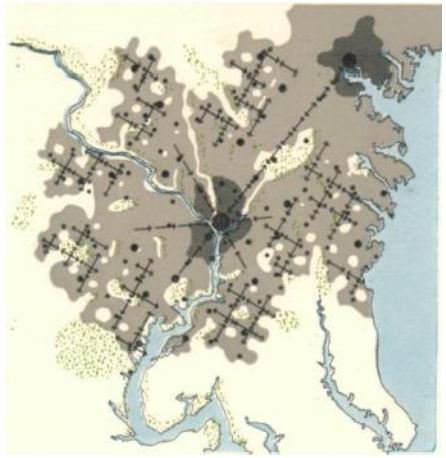
expansion by independent cities



the recommended plan for expansion based on radial corridors

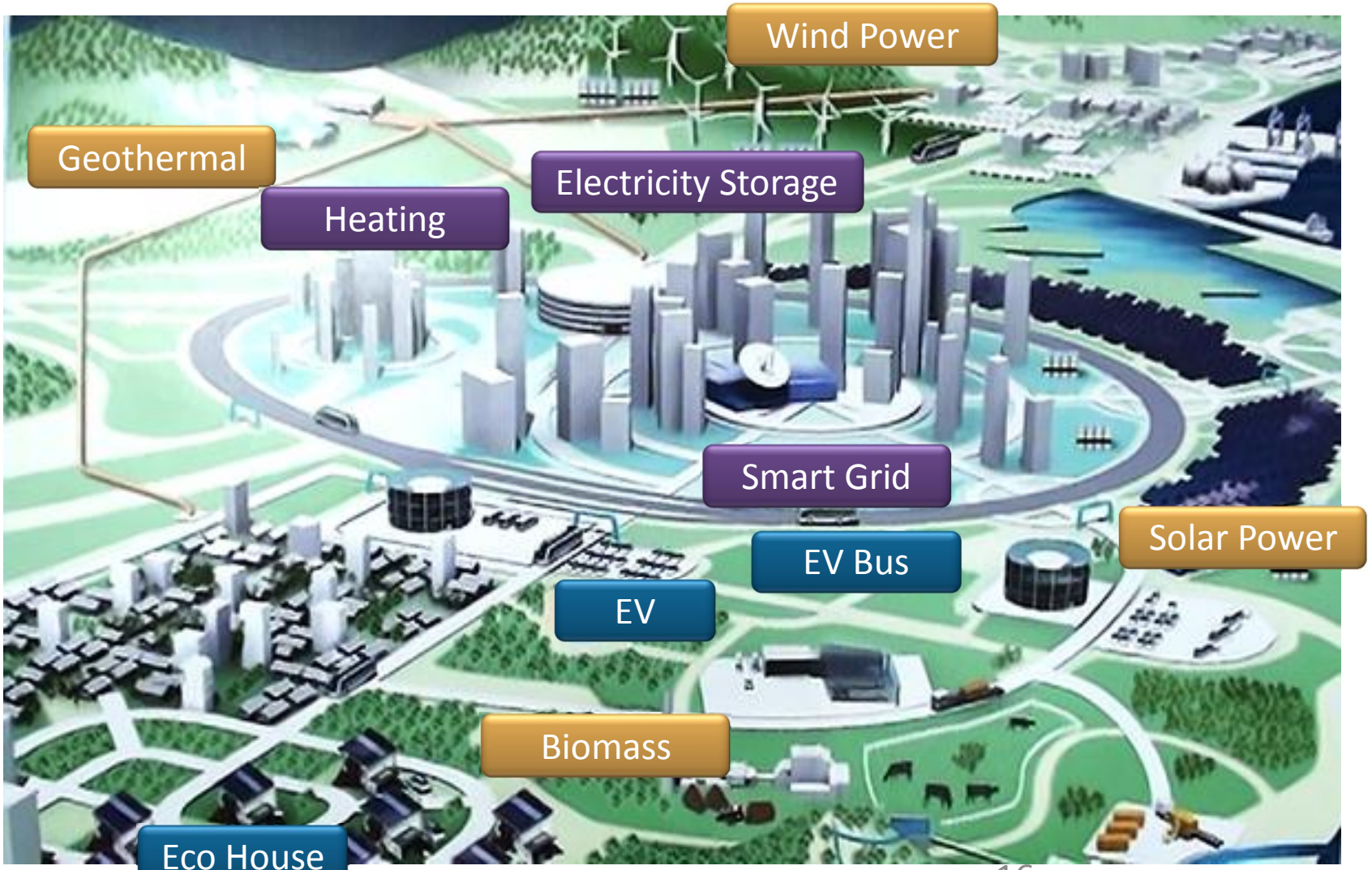


satellite new towns



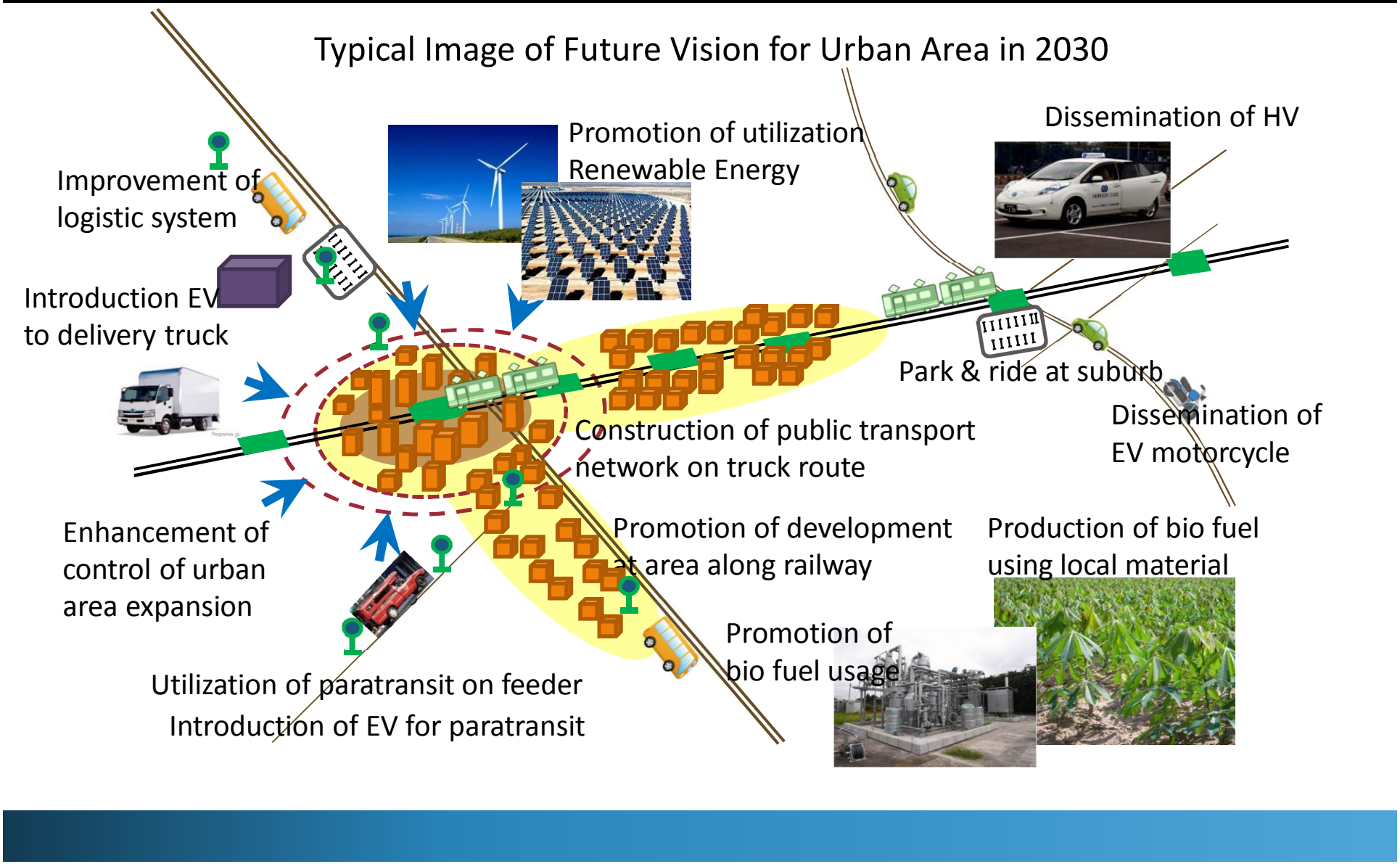
Planned sprawl

Future Vison of Smart City

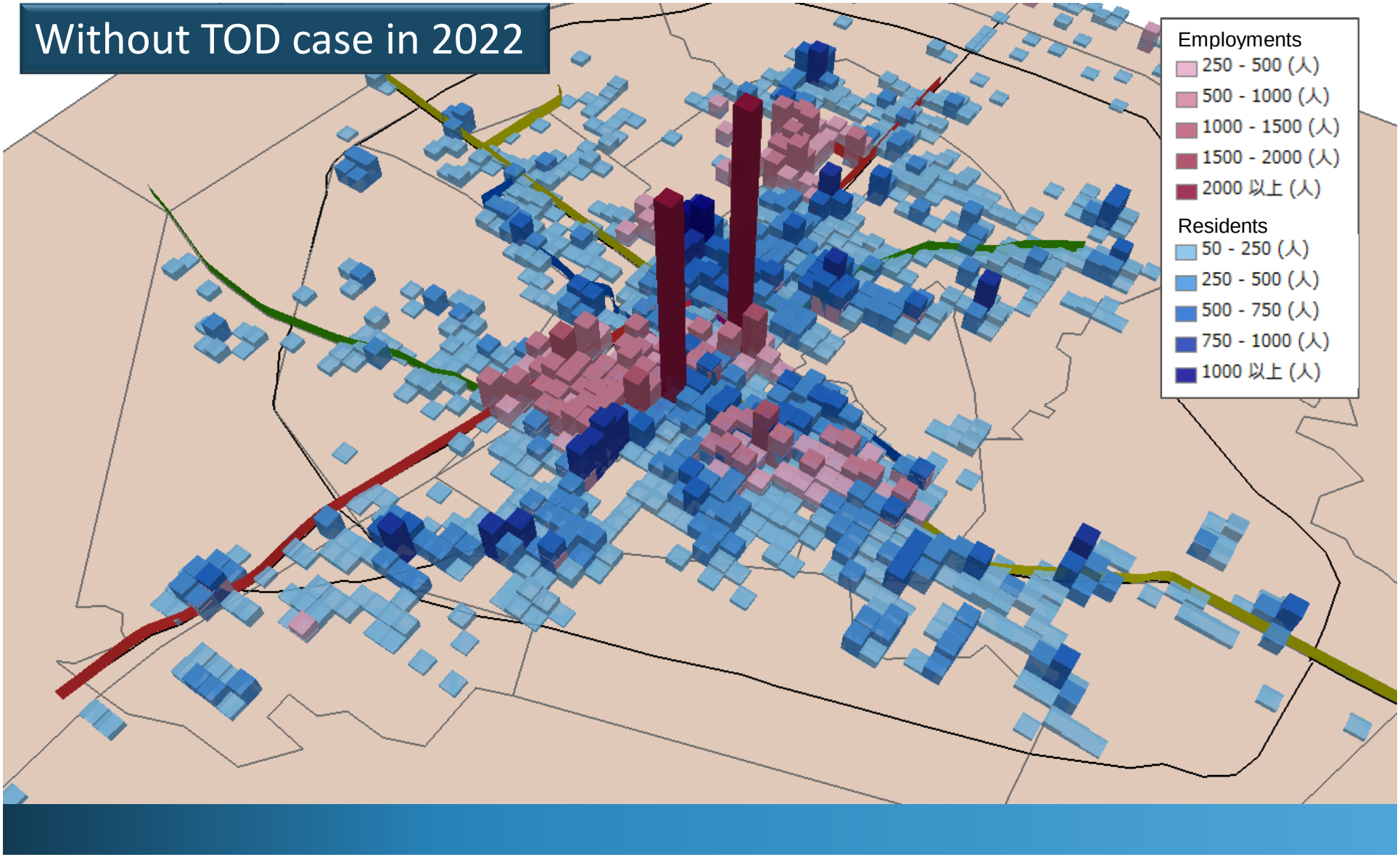


http://e2a.jp/event/100528.shtml

Future Vison for Asia Low Carbon City



Case Study in Khon Kaen



Case Study in Khon Kaen

With TOD case in 2022

IMPROVE

30%

Conversion to Hybrid Vehicle

IMPROVE

50%

Conversion to Electric Vehicle

AVOID

Introduction of TOD

IMPROVE

Production of Bio Ethanol

IMPROVE

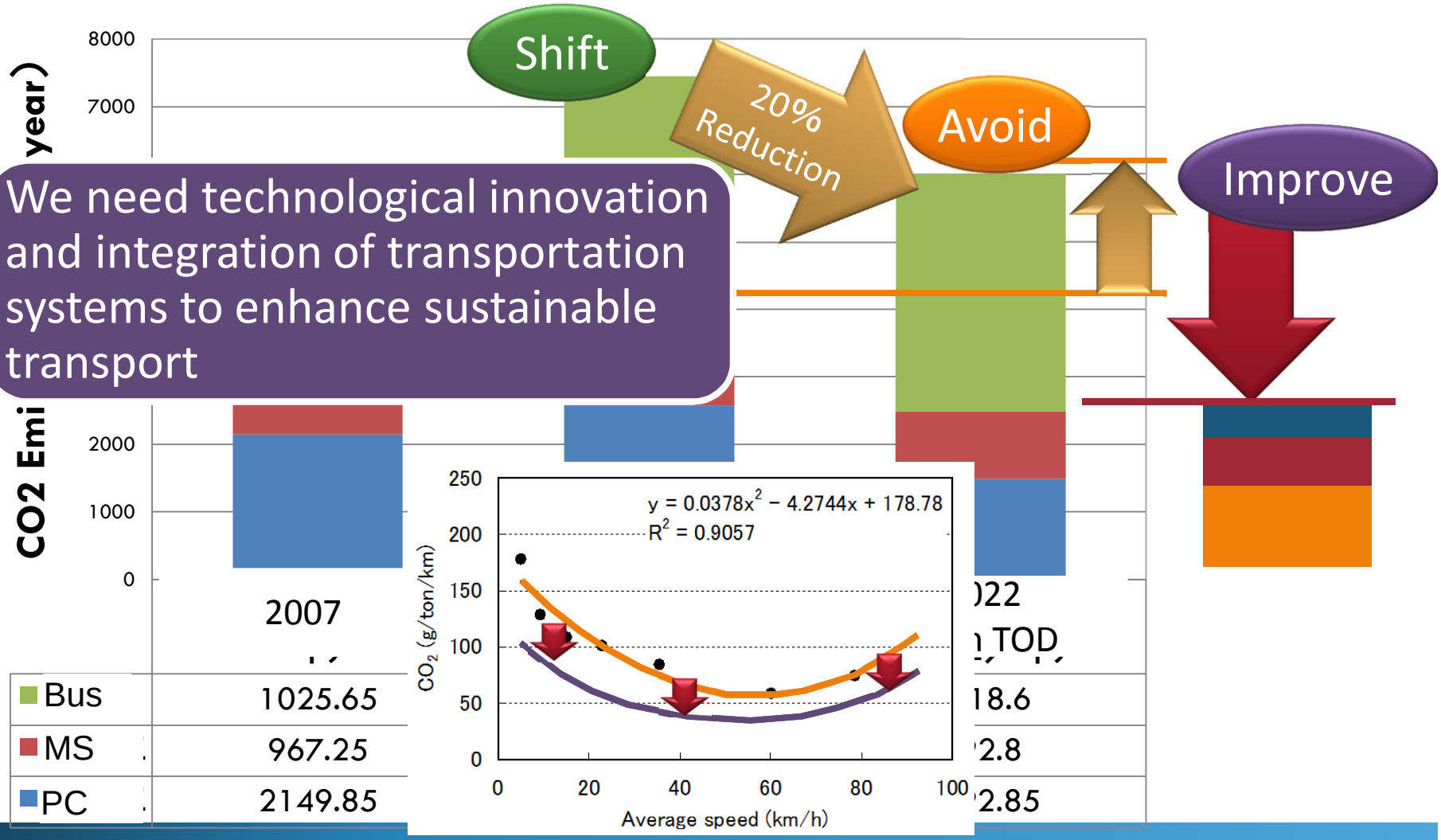
30%

Conversion to EV Motorcycle

SHIFT

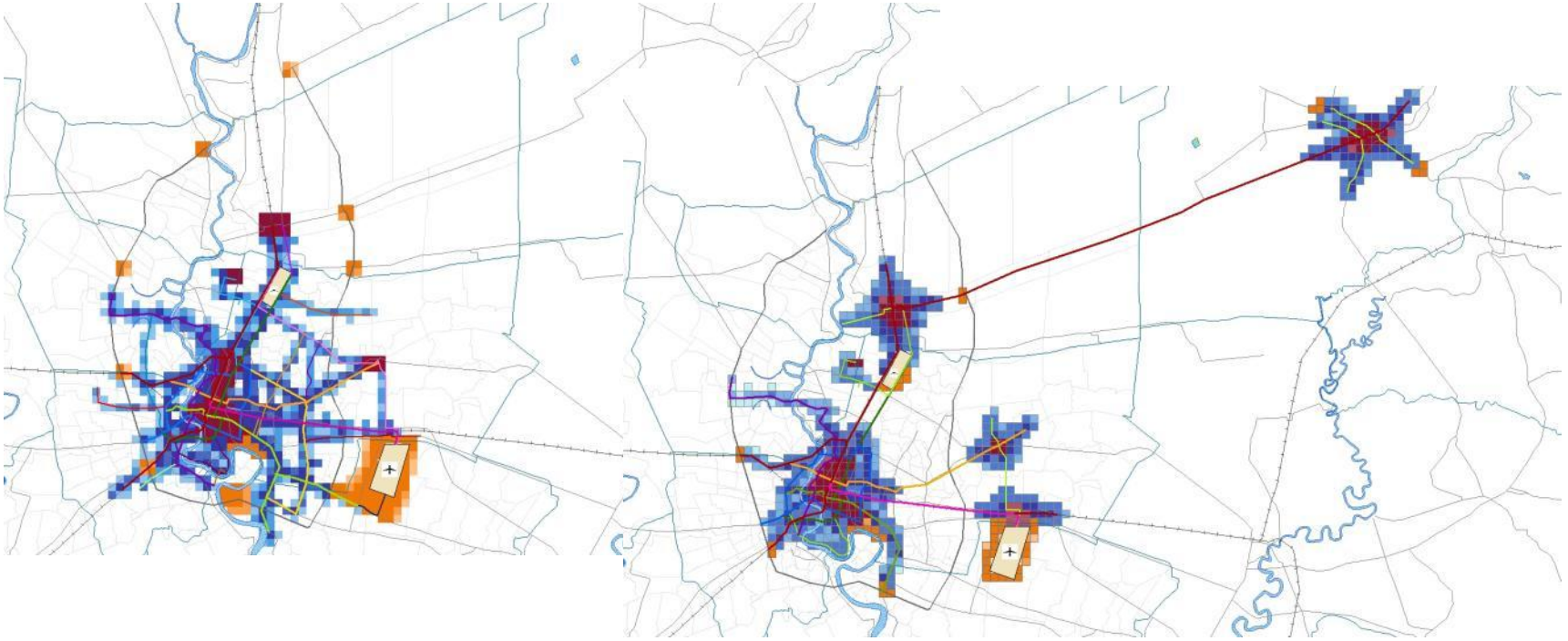
Introduction of Ethanol Bus

Estimated CO2 Emission



How to transform

Urban structure might be also essential to set up future strategy for environmental measures in transport sector.



From ñEvaluation and Realization of Transport-Origin CO2 Reduction Measures in Asian Developing Countriesò under S-6 Research Project on Establishing of Methodology to Evaluate Middle to Long Term Environmental Policy Options toward Asian Low-Carbon Society by Ministry of Environment, Japan

Conclusion

- What are the key initiatives on low carbon transport?
- What are the key smart urban design options on existing cities?
- What are the key factors for the successful implementation of low carbon transport and smart urban design?
  - Social choice & clear vision
  - Coordination between land use and transport