ETP 2014에 기초한 이산화탄소 저감을 위한 수송 부문 에너지 기술 전망

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Energy Technology Perspective of Transportation for CO2 Reduction Based on ETP 2014

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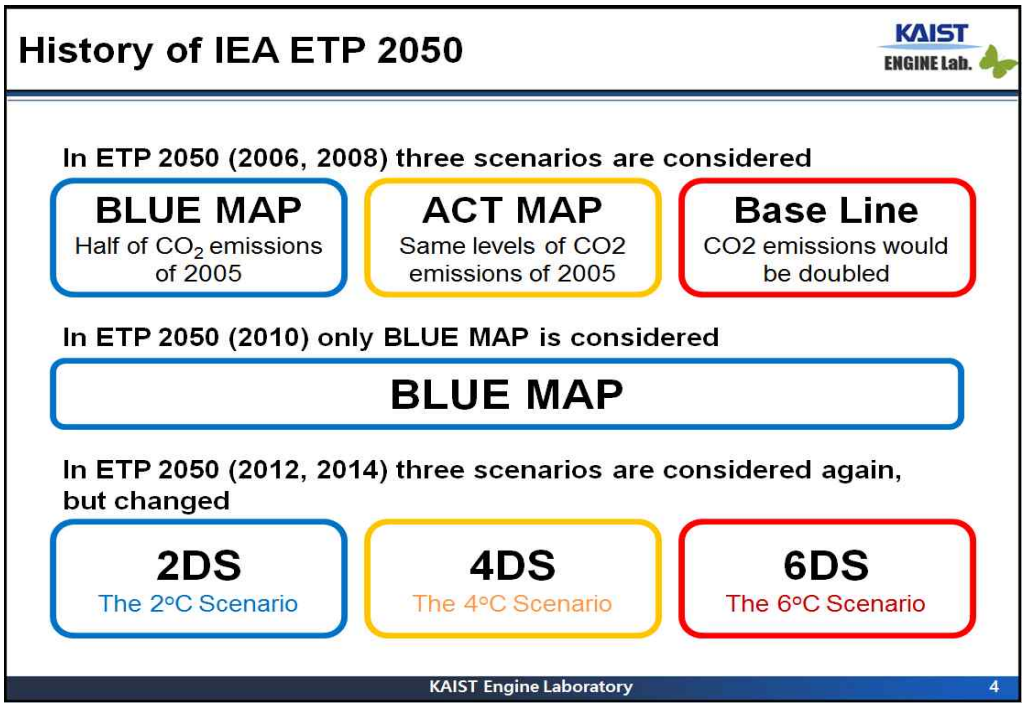
ABSTRACT

Global energy demand has continued to rise due to population increase and economic development. National governments and international bodies try to seek the ways to reduce the demand growth. Energy Technology Perspectives (ETP) have provided the current status of energy system, technology developments and external events that have changed ETP scenario since 2006. The status and prospects for key energy technologies of transport sector are presented. Technology portfolio for the transport sector should be needed to meet very low CO2 targets. The portfolio includes improved fuel economy of current internal combustion engine vehicles, advanced technologies such as electric and fuel-cell vehicles, advanced biofuels and demand-side management.

Key Words : Energy technology, transport, CO2 reduction, energy scenario



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New scenarios

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6DS	▪ Largely an extension of current trends with potentially devastating results ▪ Projecting a long-term temperature rise of 6°C
4DS	▪ Consideration for recent pledges by countries to cut emissions and efforts to improve energy efficiency ▪ Projecting a long-term temperature rise of 4°C
2DS	▪ A vision of a sustainable energy system of reduced GHG ▪ Limiting average global temperature increase to 2°C

- **Two major recent developments to make changes from ETP 2012**
  - Increased availability & Low price of Natural Gas in North-America
  - Reactions to Nuclear power production following Fukushima Daiichi accident
- **Baseline year : 2009 (ETP 2012) → 2011 (ETP 2014)**

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Total primary energy supply

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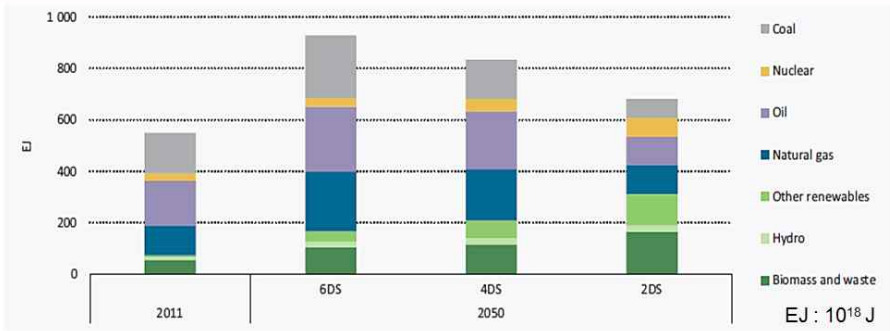

6DS	▪ Almost 70% growth in primary energy supply ▪ Fossil fuels : 3/4 of energy provided
4DS	▪ Over 50% growth in primary energy supply ▪ Fossil fuels : still almost 70% of energy provided
2DS	▪ Slightly over 25% growth in primary energy demand ▪ A concerted effort to reduce current dependency on fossil fuels, primary through energy efficiency, renewables, and nuclear energy

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Contributions to annual emissions reductions between 6DS & 2DS

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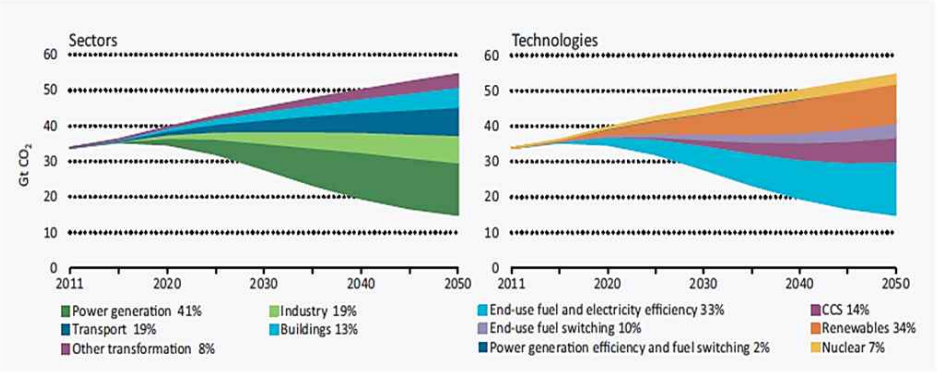

- **Achieving 2DS will require**
  - Contributions from all sectors, particularly in power sector (41%)
  - Application of a portfolio of technologies

Transformed energy system in 2DS in 2050

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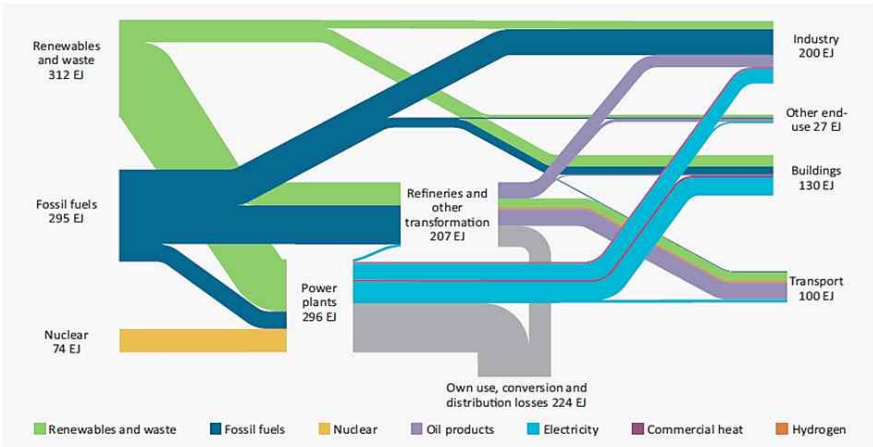

- Despite decreased fossil fuel use by 2050 in 2DS, it remains an important role (over 40%), particularly for direct use in industry, transport, and power sector.
- Increased dependence on CCS, renewables, and nuclear to long-term climate goals

Transport – Scenario results

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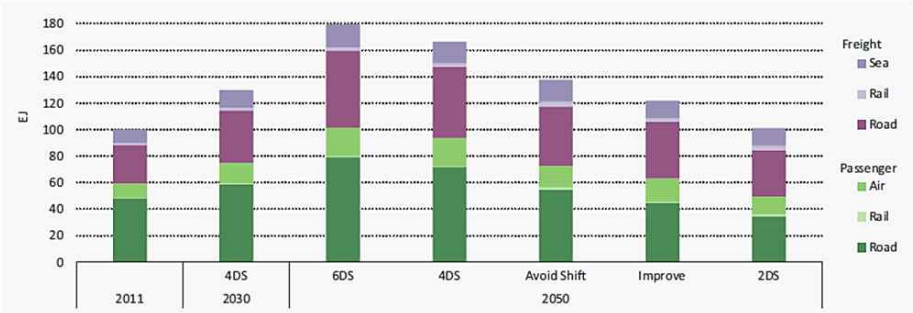
◆ **Global Energy Consumption in Transport by Scenario**



Avoid	● Reducing growth rate in travel demand • City planning, demand management, teleconferencing…
Shift	● Shift some travel to more efficient modes • Transport of goods from trucks to rail, Bus rapid transit…
Improve	● Adoption of new technologies and fuels • Efficient ICE, electric vehicles, fuel-cell vehicles, 2nd-generation biofuels…

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Transport – Needed actions

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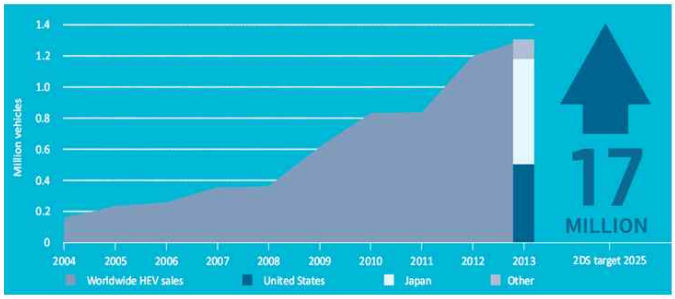
● **Improvement in fuel economy of current ICE vehicles**
- Fuel economy standards for light vehicles : 8 regions (EU, US, Japan, China, Korea…)
- Fuel economy standards for heavy road transport : only 3 regions (US, Japan, China)

● **HEV**
- Sales of HEVs : only 1.3 million (2013)
- A bridge towards massive deployment of EVs and PHEVs

● **EV**
- Sales of EVs : only 0.17 million (2013)
- Batteries should make progress in both cost and distance capacity.

◆ **Global HEV sales**



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