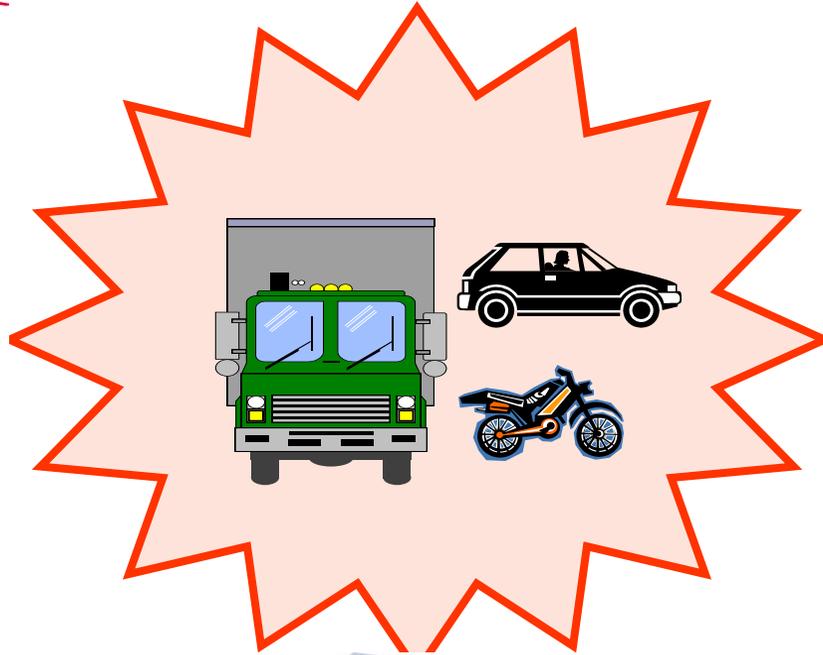
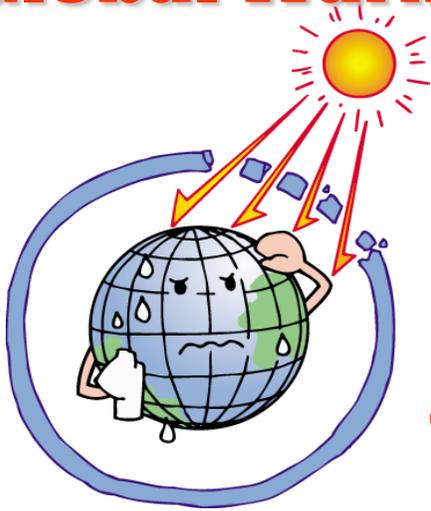


# **Advanced Vehicle Technology**

**2006.12.12 2<sup>nd</sup> EST Regional Forum  
Masahiko Hori  
Japan Automobile Research Institute  
(JARI)**

# Side Effect of Vehicles

## Global Warming



## Air Pollution



## Acid Rain

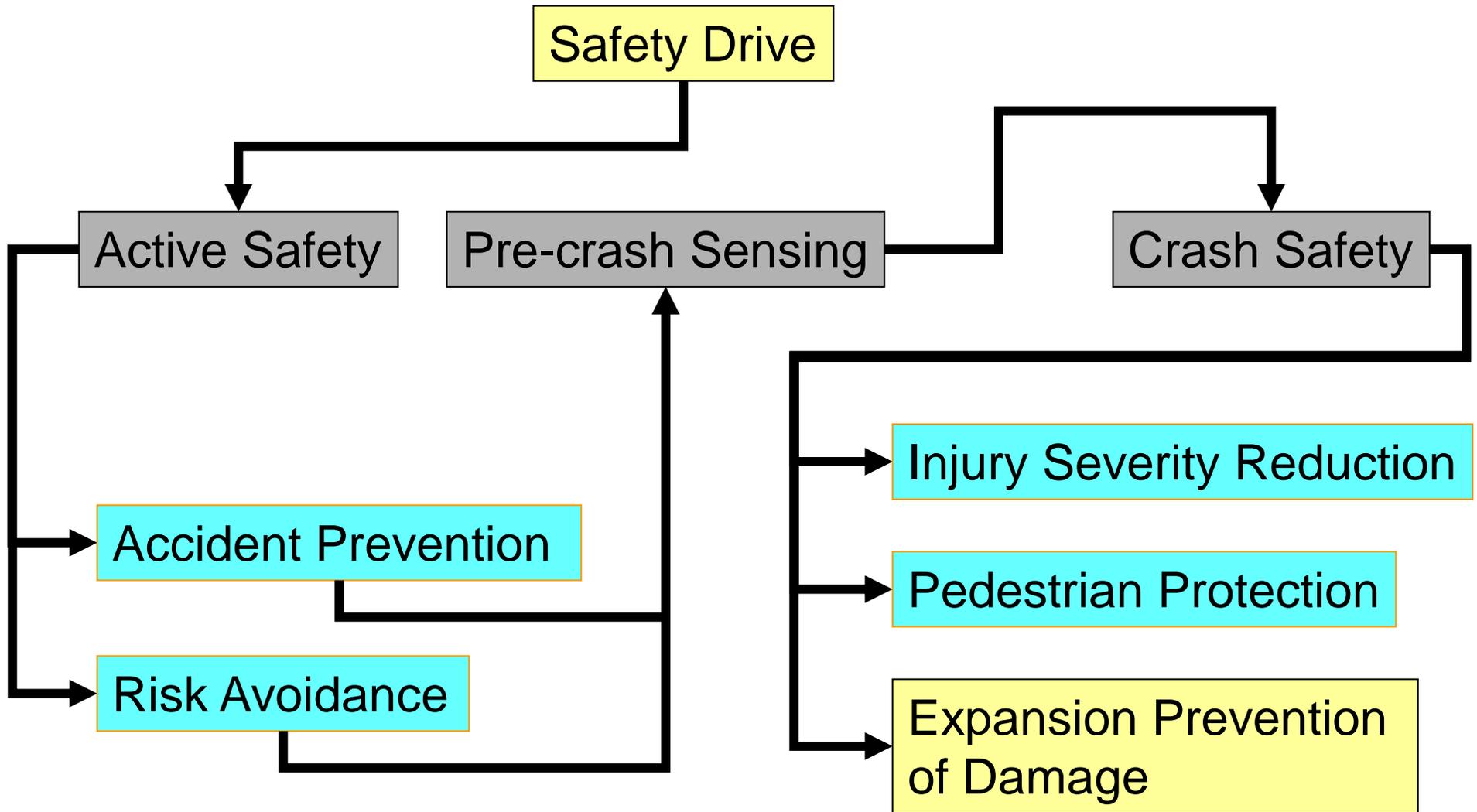
## Safety



## Energy



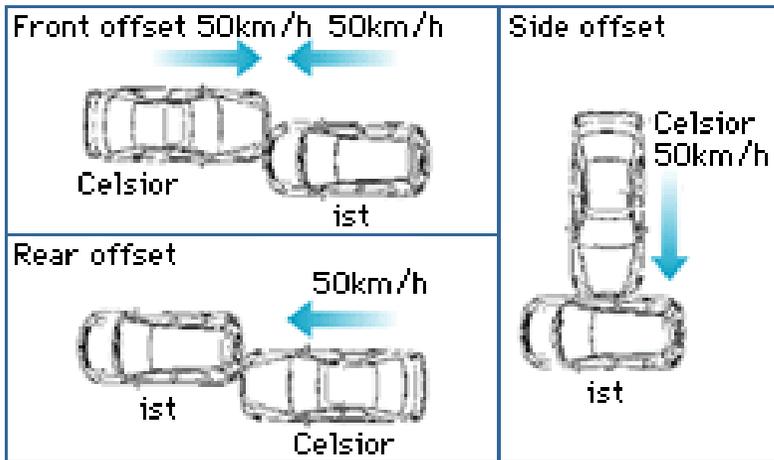
# Safety Measures



Human > System

Human < System

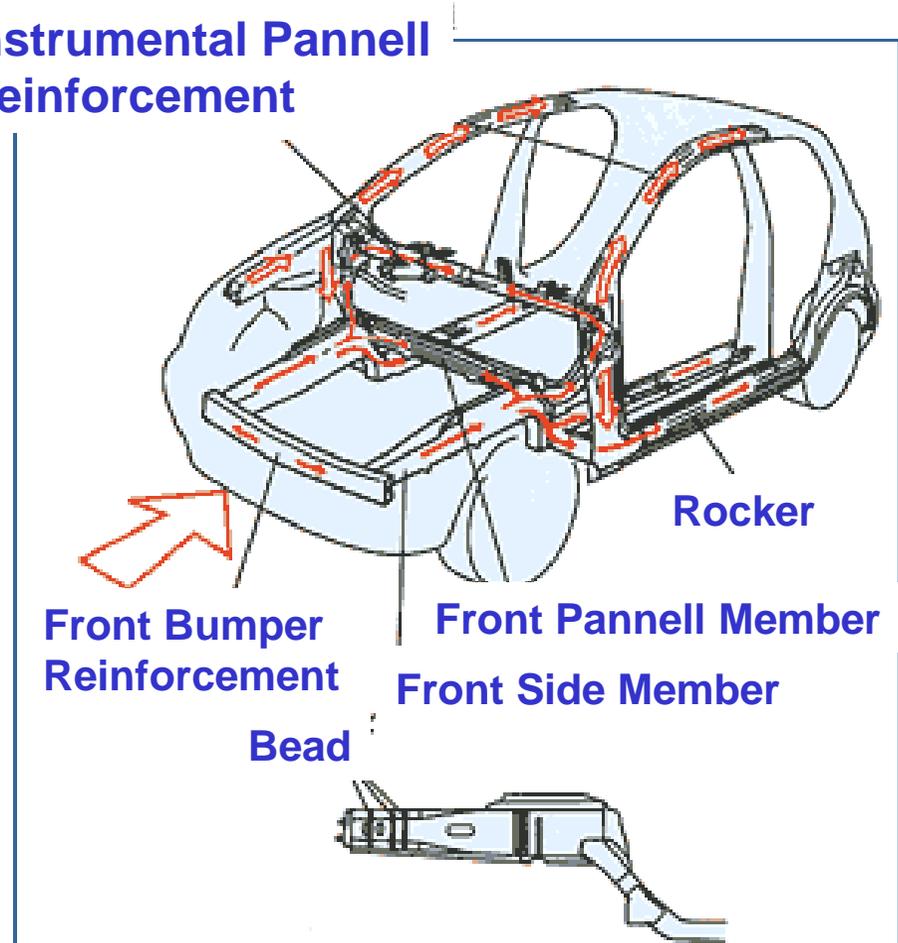
# Crash Safety



**Car to Car 50% front offset impact test at 50km/h.**

## Energy absorbed structure

### Instrumental Pannell Reinforcement



**Absorbed Structure of Front Side Member**

# Occupant and Pedestrian Protection

## Pedestrian Injury Reduction Safety Body



- Impact-absorbing wiper pivots
- Impact-absorbing hood
- Collapsible hood hinges
- Leg-impact-absorbing construction
- Impact-absorbing fender



**Active Headrest**

## Baby Seat



## Child Seat



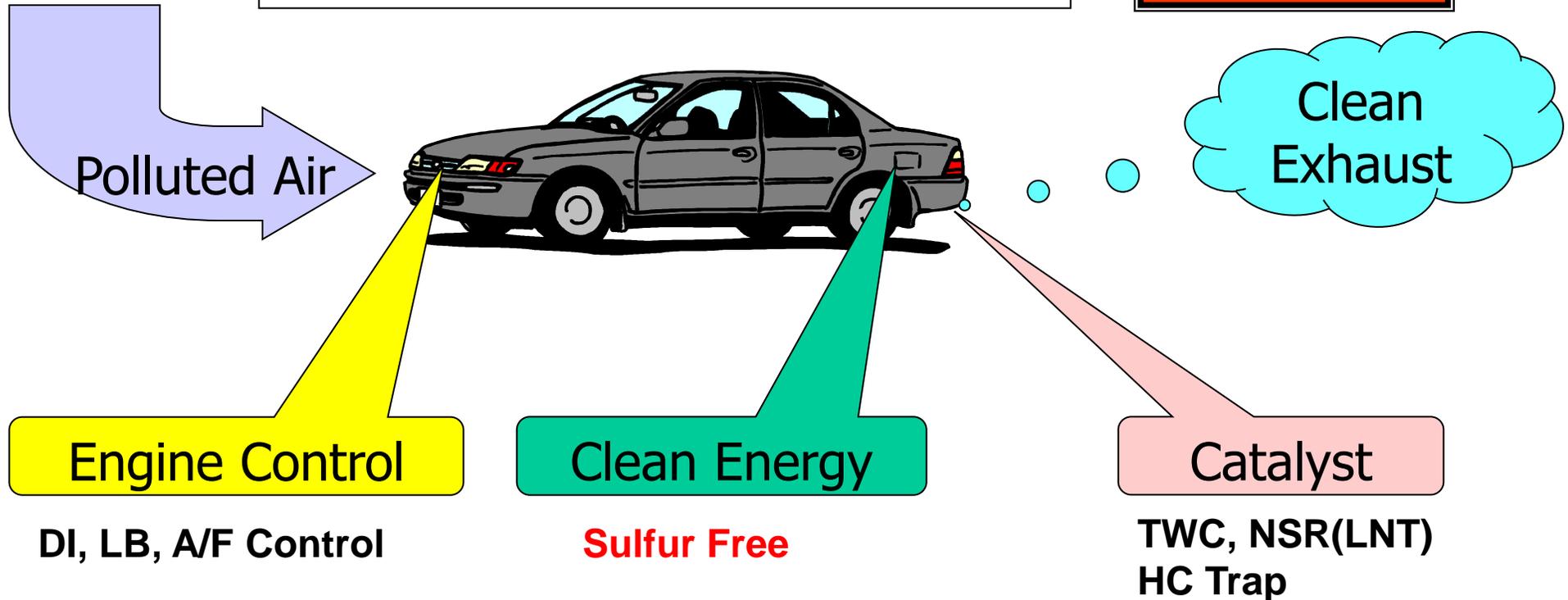
**Supplemental Restraint System**

**SRS Curtain Air Bag System**

# Future Spark Ignition Engine

	=	CO	=	
Intake	>	HC	>	Exhaust
	<	NO <sub>x</sub>	<	

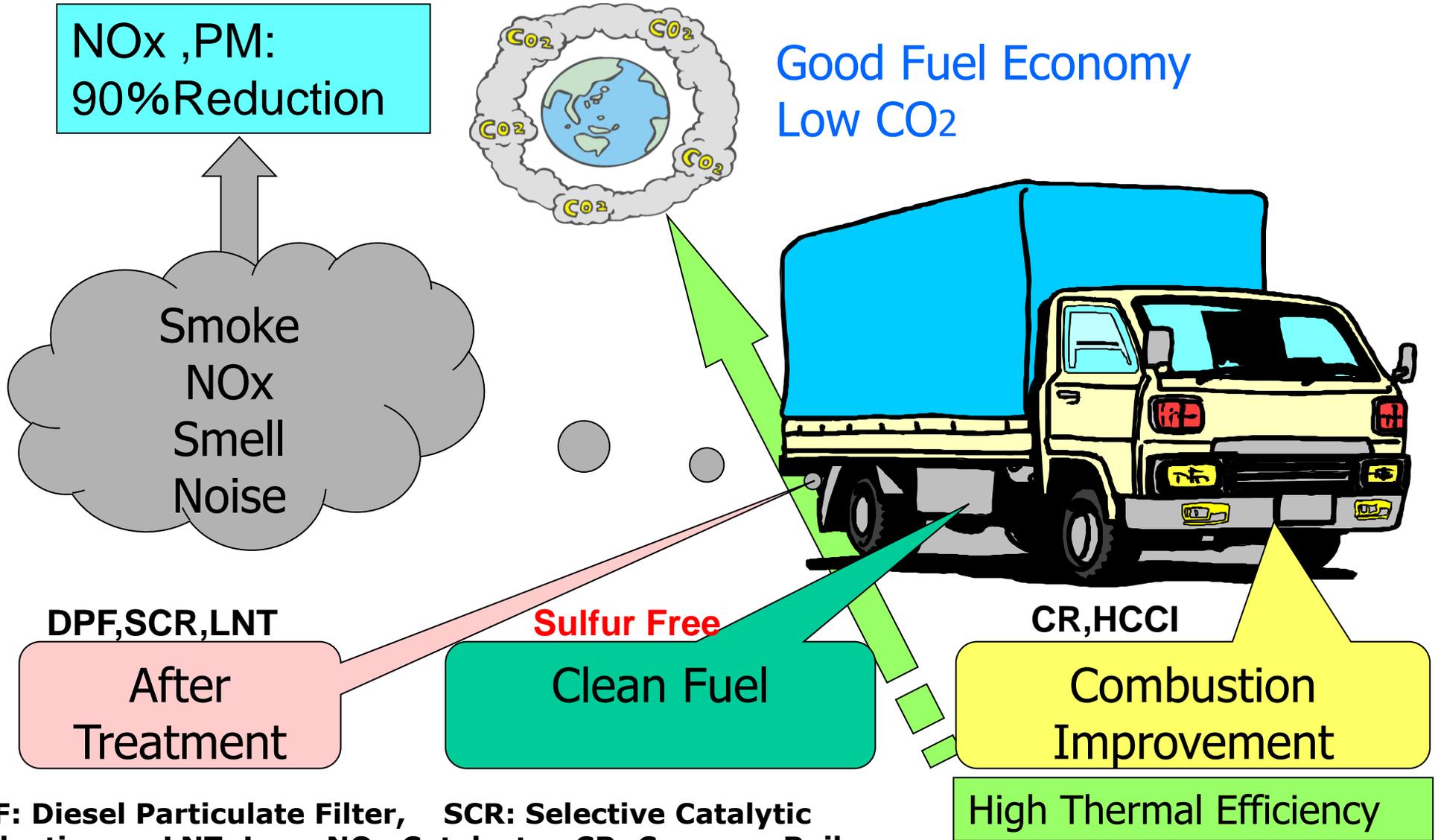
Issue: CO<sub>2</sub>



DI: Direct Injection, LB: Lean Burn, A/F: Air Fuel Ratio

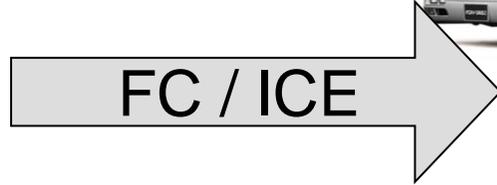
TWC: Three Way Catalyst, NSR: NO<sub>x</sub> Storage Catalyst, LNT: Lean NO<sub>x</sub> Catalyst

# Future Compression Ignition Engine



**DPF: Diesel Particulate Filter, SCR: Selective Catalytic Reduction, LNT: Lean NOx Catalyst, CR: Common Rail, HCCI: Homogeneous Charge Compression Ignition**

# Future Scenario



Hydrogen ?

FC: Fuel Cell  
ICE: Internal combustion Engine  
XTL: Gas (Coal, Biomass) To Liquid

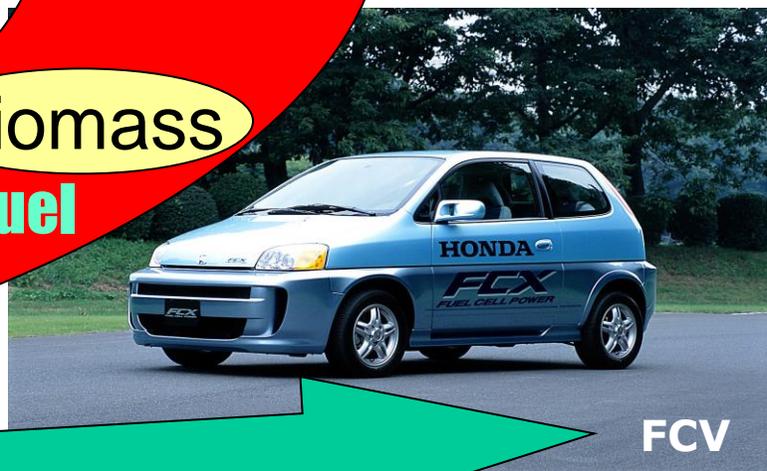
Clean and Renewable Fuel



Biomass

Bridge Fuel

XTL



Fuel Reformation



Today

Tomorrow

