

A silver Mitsubishi Lancer is parked on a dirt path in a wooded area. The car is partially obscured by a large, semi-transparent orange rectangular box that contains the text "Energy Conservation" in a bold, green, sans-serif font. The car's rear window has "LANCER" written on it. The background consists of dense green foliage and trees.

Energy Conservation

MV

Conservation

- Conservation is the management of human use of the biosphere so that it may yield the greatest sustainable benefits to present generation, while maintaining the potential to the aspirations of future generations
- Preservation of the quality of environment
- Ensure continuous yield of useful material, living or nonliving, by establishing a balanced cycle of harvest and renewal

Conservation include

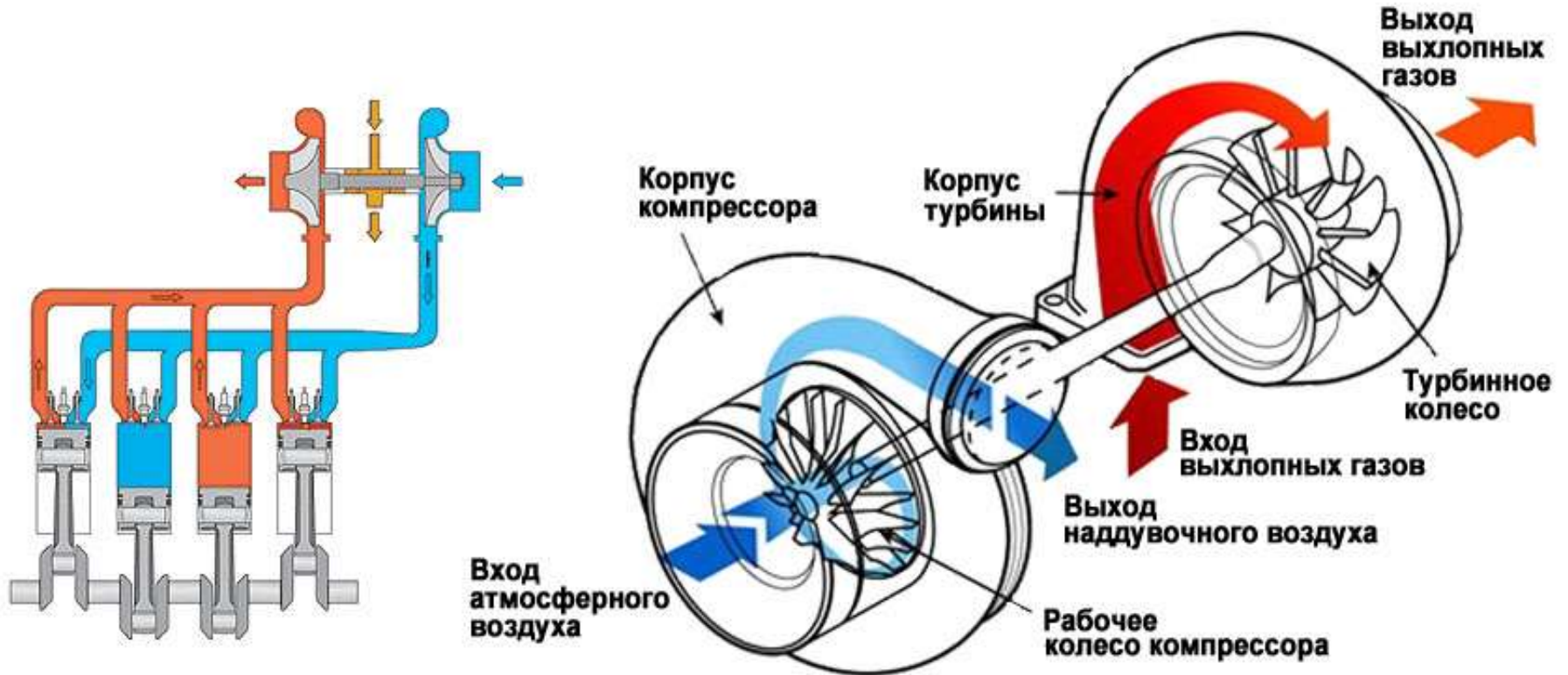
- **Preservation**
- **Maintenance**
- **Sustainable utilization**
- **Restoration**
- **Enhancement of natural environment**

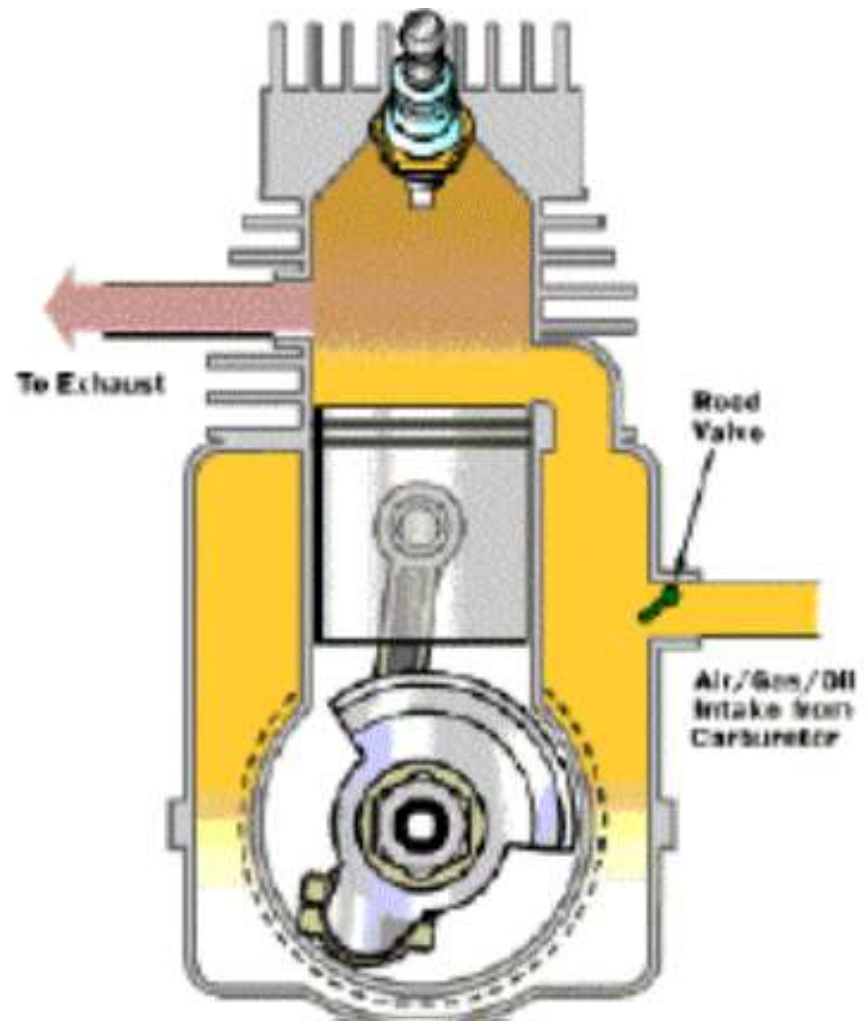


Conservation measures

- Minimize the consumption
- Avoid wastage of energy
- Use energy efficient systems
- More efficient and less polluting use of fossil fuels

Turbo charged engines







Two Stroke

OUTBOARDS



Four Stroke

Wise use of energy resources

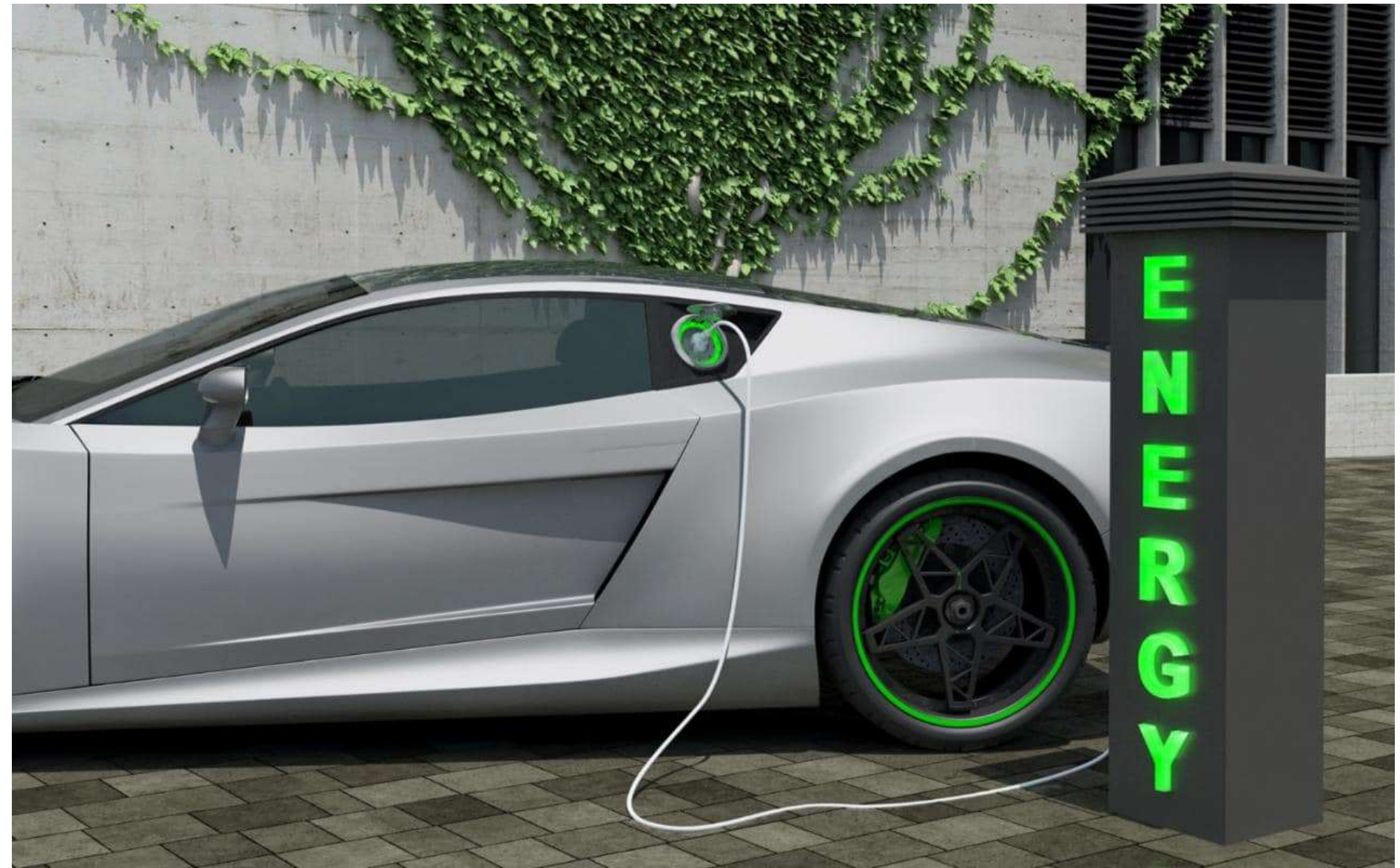
- Learn to avoid unnecessary waste production
- Use High efficiency energy conversion processes
- Substitute with low energy intensity products and processes
- Recycling
- Energy modest lifestyle
- Eco-spirituality
- Frugality

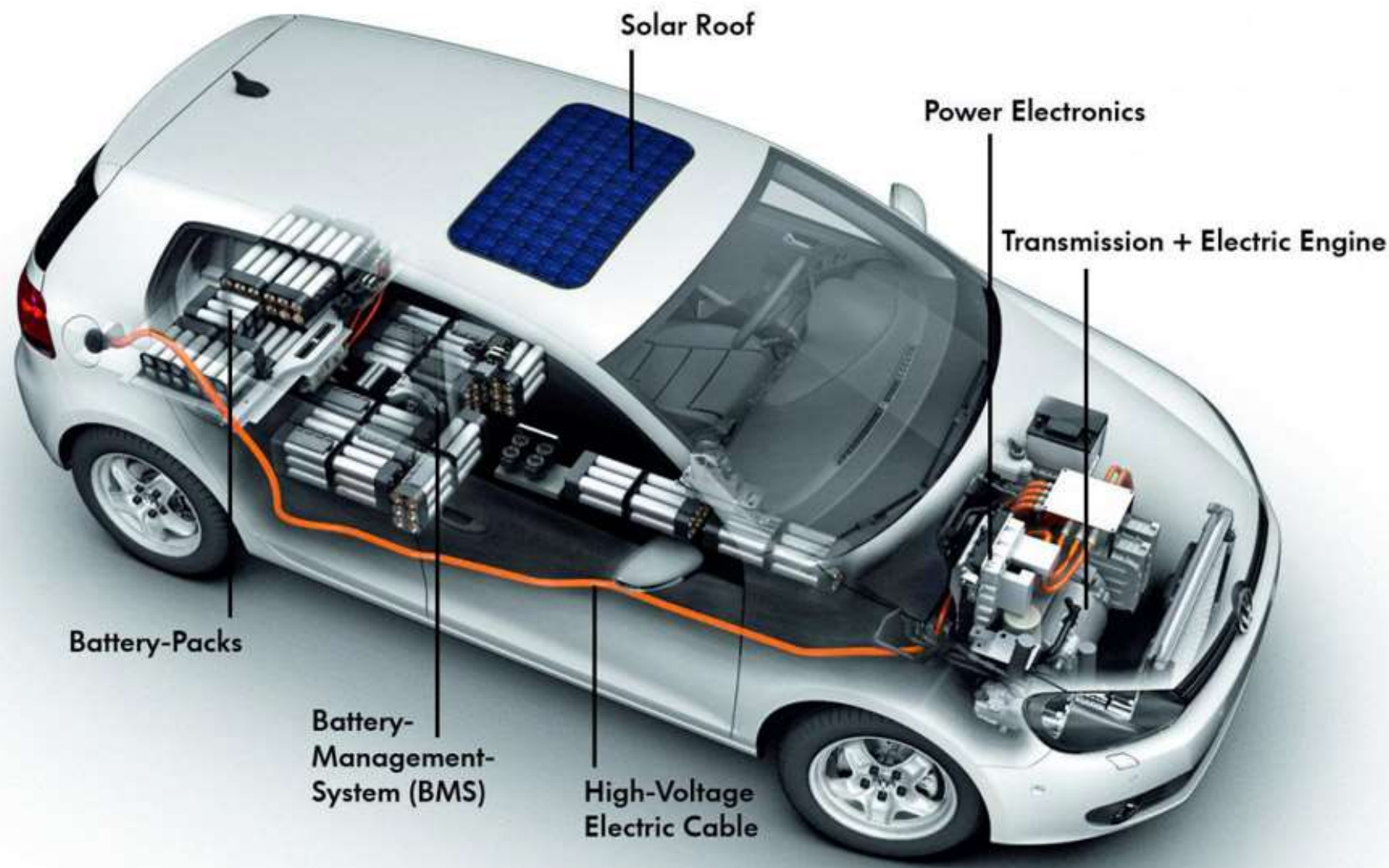


VILLAGE OF
FRUGALITY

Hybrid cars







Solar Roof

Power Electronics

Transmission + Electric Engine

Battery-Packs

Battery-
Management-
System (BMS)

High-Voltage
Electric Cable



Conservation Legislation

- Energy Conservation Act-2001
- Bureau of Energy Efficiency (BEE)

BS-IV

What needs to be done to upgrade from BS-IV

BS-V requires a key fitment in the engine; BS-VI needs one more, but each comes with its set of problems

FOR BS V: DIESEL PARTICULATE FILTER

WHAT: DPF is a cylinder mounted vertically inside the engine compartment. Its function is to remove particulate matter, or soot, from the diesel exhaust. It needs temperatures of 600°C – difficult in Indian conditions

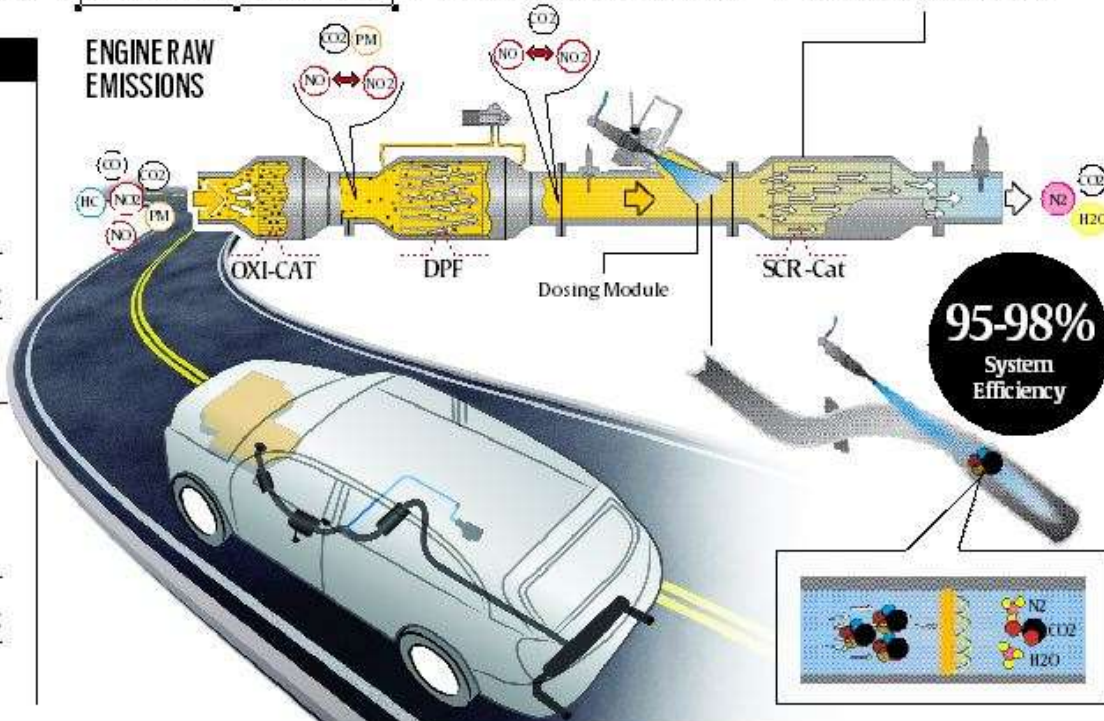
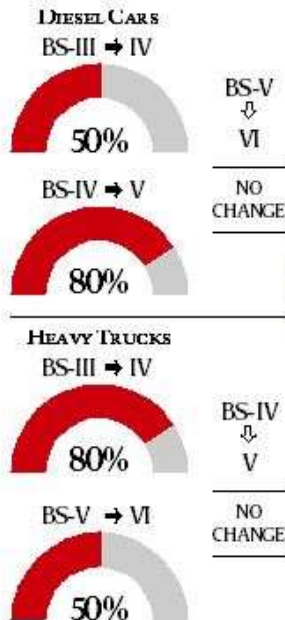
WHY A PROBLEM: Small cars (popular in India) with limited bonnet space would need major re-design to accommodate DPF. Making bonnet bigger may lead to car breaching the sub-4m mark, losing excise benefits

FOR BS VI: SELECTIVE CATALYTIC REDUCTION TECHNOLOGY

WHAT: SCR or selective catalytic reduction module reduces oxides of nitrogen by injecting an aqueous solution (AUS 32) into the system. AUS 32 contains ammonia, for which a separate container needs to be put

WHY A PROBLEM: An anti-defect mechanism is needed to put the vehicle into limp mode if AUS 32 is not re-filled. Separately, infrastructure is needed for countrywide supply of AUS 32.

PARTICULATE CUTS



GLOBAL AUTO FUEL STANDARDS

EU (27 COUNTRIES)
 10 ppm sulphur Euro V gasoline and diesel fuels since 2008-09; moved to Euro VI (sulphur 10 ppm) in 2014.

USA
 Sulphur content in diesel 15 ppm. For gasoline, 80 ppm everywhere except California, where multiple grades of ultra-low sulphur gasoline (limits of 15, 20 and 30 ppm) are in use. But all US refiners (except in California) must keep within an annual average of 30 ppm sulphur in gasoline.

JAPAN
 Moved to 10 ppm sulphur fuels – both diesel and gasoline – in 2008.

CHINA
 Euro IV equivalent fuels in Beijing, Shanghai and Guangzhou; Euro III equivalents elsewhere. In 2013, China announced timeline to implement 10 ppm sulphur standards (China V) for gasoline and diesel. China V cuts sulphur content to 10 ppm, but specifications for aromatics and olefins in gasoline, and cetane number (measure of ignition delay) for diesel is short of BS-IV standards.

RUSSIA
 Sulphur limits in both fuels proposed to be cut to 10 ppm in 2016.

THAILAND
 Sulphur 150 ppm since 2005; planned to be cut to 50 ppm in 2017.

SOURCE: Report of Expert Committee on Auto Fuel Vision & Policy 2025, Govt 2014

Ask for Mileage

- Always stick on to energy efficiency
- Less polluting vehicles



Yamaha

Catalytic converter




EXHAUST GASSES IN

Hydrocarbons (HC)

Carbon Monoxide (CO)

Nitrogen Oxides (NO₂)

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EXHAUST GASSES OUT

Water (H₂O)

Carbon Dioxide (CO₂)

Nitrogen (N)

Psychopaths alter mufflers



Personality disorders



ANTISOCIAL



BORDERLINE



HISTRIONIC



NARCISSISTIC

Anti-social personality disorders

Symptoms

- Aggression, irresponsibility, impulsivity, deceit, lack of regard for other people's emotions, and not caring about the consequences.

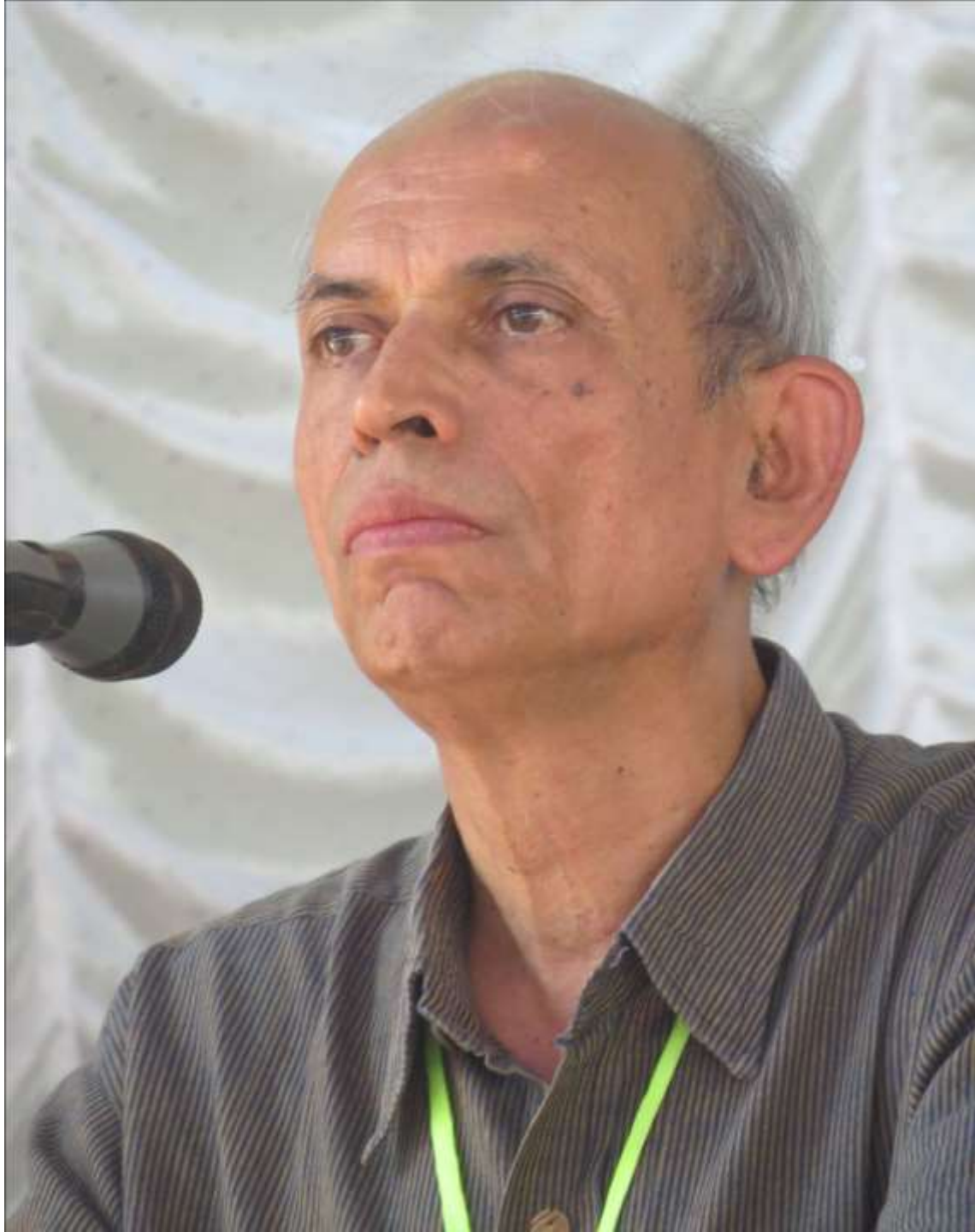


Cluster B- HISTRIONIC

- Colorful, dramatic, extroverted
- Inability to maintain long-lasting relationships
- Attention-seeking
- Seductive behavior



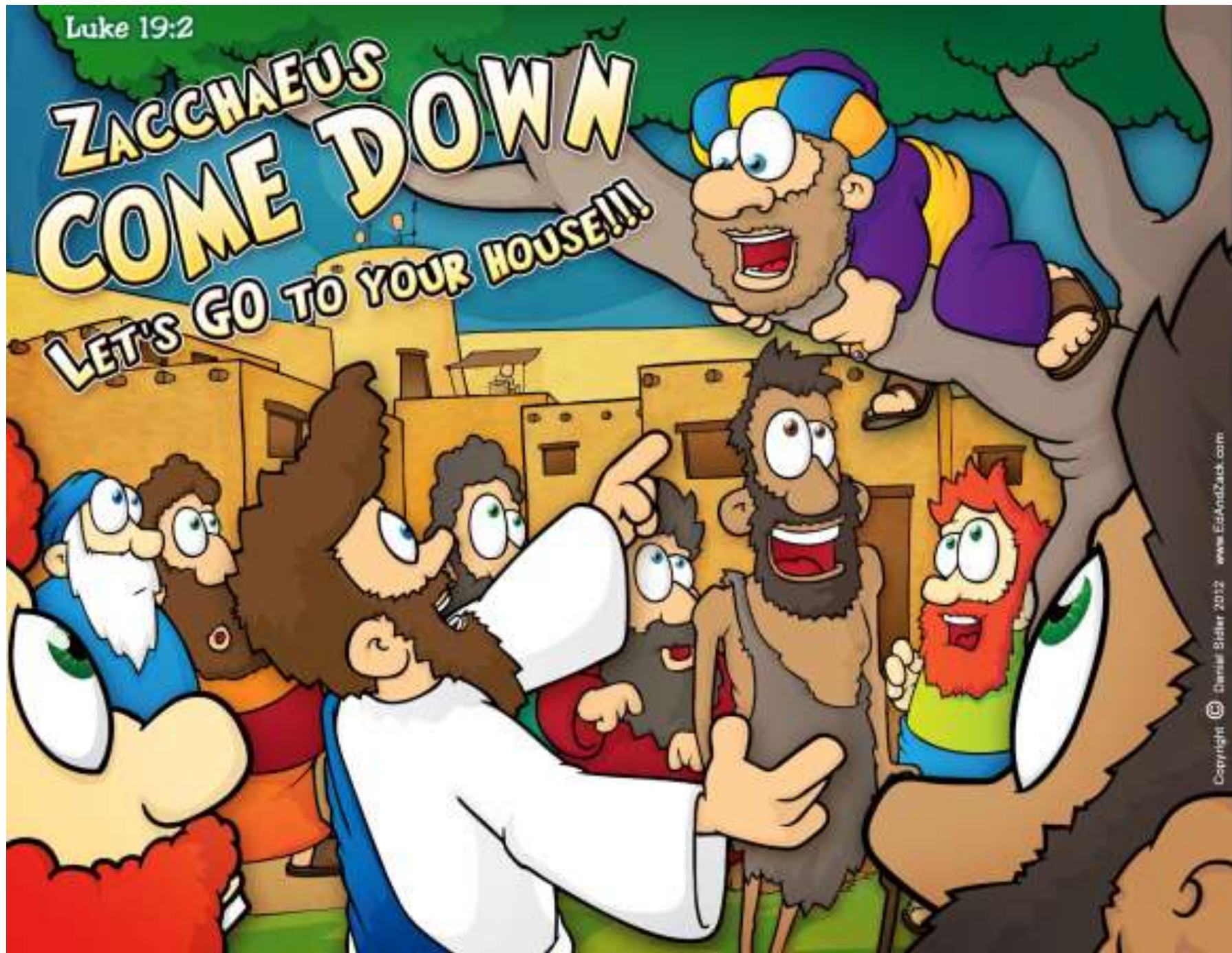




Luke 19:2

ZACCHAEUS COME DOWN

LET'S GO TO YOUR HOUSE!!!



Eco-spirituality



Eco-Spirituality & Science of Oneness

- To illustrate teachings of Chuang Tzu and Lao Tzu as well as Zen, the following is excerpted from [**The Relationship between Science and Spirituality**](#) By Fritjof Capra on Monday February 15th, 2016
- **Ecology and spirituality**
- “We are deeply connected to nature. All living beings are members of ecological communities, bound together in networks of interdependencies. Connectedness, relationship, and interdependence are fundamental concepts of ecology; and also the essence of spiritual experience.”

Fritjof capra

