



URBAN LÖFVENBERG, SENIOR ADVISOR SUSTAINABLE TRANSPORT SOLUTIONS

# SUSTAINABLE TRANSPORT SOLUTIONS — GLOBAL OUTLOOK AND INDIA PERSPECTIVES

**SCANIA**



# PREMIUM PRODUCTS AND SERVICES



Long-haulage



Construction



Distribution



Special-purpose



City/Surburban



Intercity/Coach



Engines



Network and services



Used vehicles





# THE WORLD OF SCANIA

- Regional Product Centres
- Production units
- Research and Development
- Sales and services

## Production units

1891 Sweden  
1957 Brazil  
1964 Netherlands  
1976 Argentina  
1992 France  
1993 Poland  
2014 Finland  
2015 India

46,000  
employees

Sales and  
services network

1,000  
sales points

1,700  
workshops

More than 95%  
parts availability

Round-the-clock  
assistance

Scania is part of Volkswagen Truck & Bus GmbH

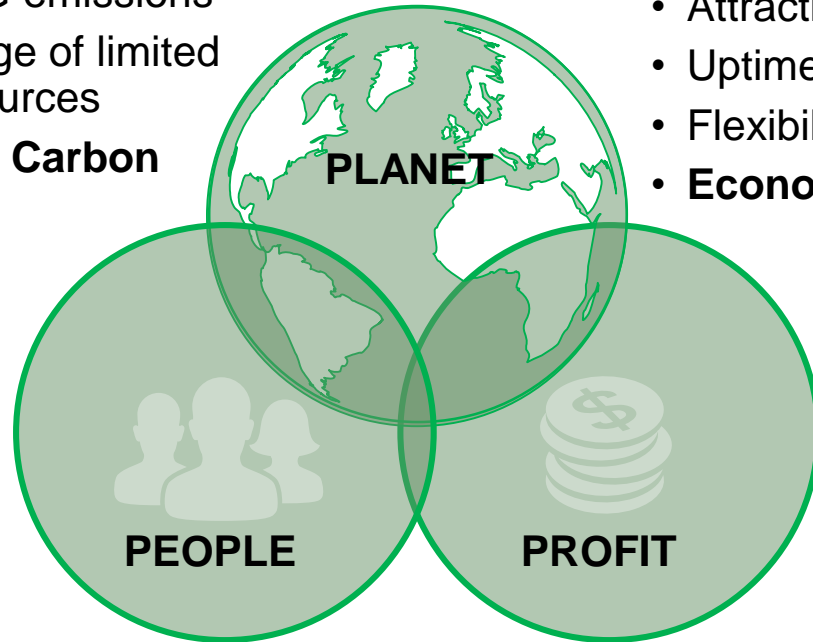




# WHAT IS SUSTAINABILITY?

## AND WHAT IS SUSTAINABLE TRANSPORT?

- GHG emissions
- Usage of limited resources
- **Low Carbon**



- Attractivity
- Uptime
- Flexibility
- **Economical/TCO**

- Safety (driver & surrounding)
- NOx, PM, Noise, Ozone
- Supply chain responsibility
- **Clean**



**Clean  
Low Carbon  
Commercial  
Outcompete diesel**

# A SHIFT IS URGENT

## GREEN TRANSPORT OFTEN DRIVEN BY THE BUS INDUSTRY

CONGESTION &  
URBANIZATION



**MOBILITY x3**

POLLUTION



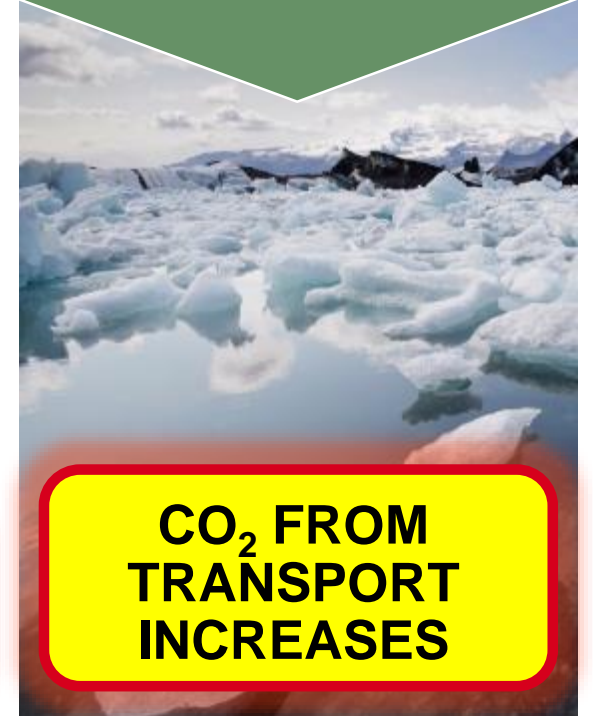
**THE KILLER NO 1**

ENERGY SECURITY



**CURE THE OIL  
ADDICITON**

CLIMATE CHANGE

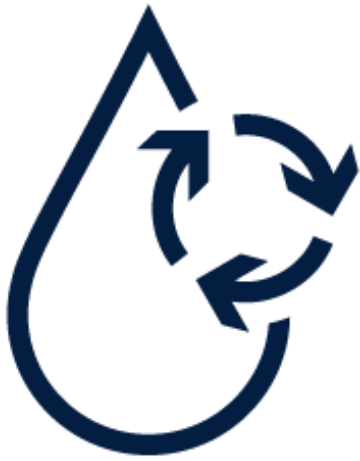


**CO<sub>2</sub> FROM  
TRANSPORT  
INCREASES**



# SOLUTIONS FOR SUSTANABLE TRANSPORT

## NO SILVER BULLETS – BROAD, GREEN TOOLBOX



Alternative fuels  
and electrification



Energy efficiency



Smart and safe  
transport





# HERE AND NOW SUSTAINABLE SOLUTIONS

## EURO 6 – CLEAN AND LOW CARBON



### BIODIESEL & HVO

Low blends to B100  
Diesel engine

**Up to 83 %  
CO<sub>2</sub> reduction**

*All types of  
applications, including  
long-haulage and  
coaches.*



### ETHANOL ED95

World's No. 1 biofuel  
Diesel type engine

**Up to 90 %  
CO<sub>2</sub> reduction**

*Buses, coaches  
waste collectors,  
distribution trucks.*



### BIOGAS & NATURAL GAS

Compressed or liquid  
Otto engine

**Up to 90 %  
CO<sub>2</sub> reduction**

*City/Intercity buses,  
waste collectors,  
distribution trucks.*



### HYBRIDS & ELECTRIFICATION

Diesel hybrids  
Biofuel hybrids  
BEV Field tests

**Up to 98 %  
CO<sub>2</sub> reduction**

*City buses,  
waste collectors,  
distribution trucks.*



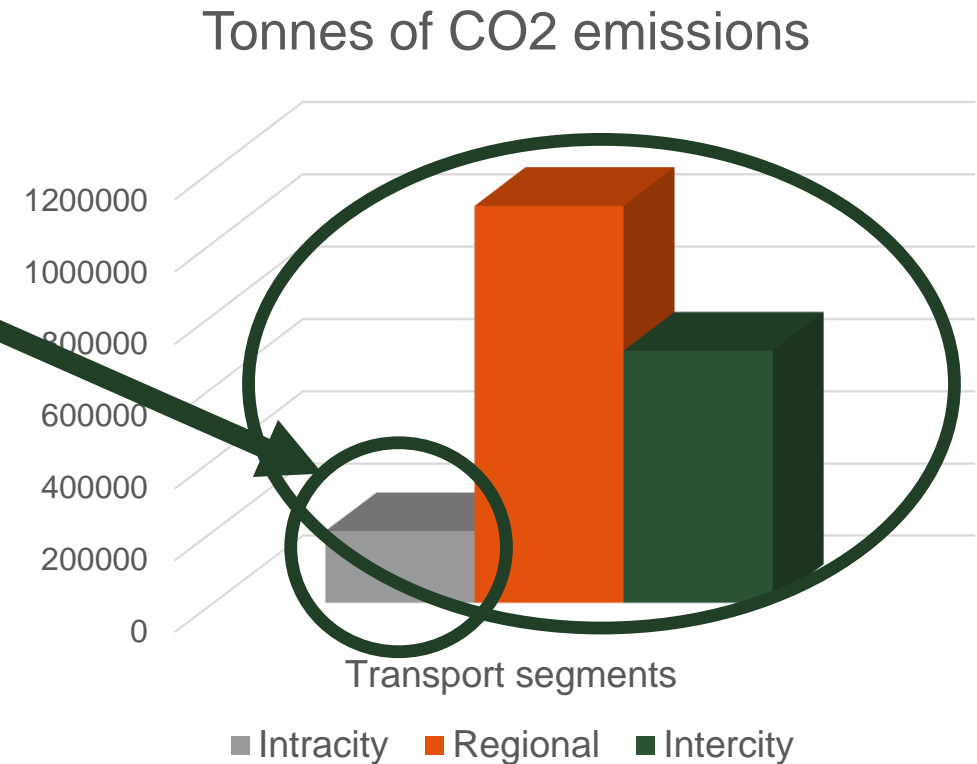
### BUS SYSTEMS

Bus System packages

Buses  
Service and R&M  
Workshops  
Financing  
ITS and FMS systems  
Ticketing systems  
Alternative Fuels

# TRANSPORT'S FUEL USE AND EMISSIONS IN A TYPICAL CITY

- Example of a “million-citizen-city”.
- Bulk of CO<sub>2</sub> emissions and fuel usage are outside city centres.
- Broader focus than only city centres necessary.
- Different solutions and technologies in the different areas & segments, e.g. small city bus to long haulage
- Optimize whole regional transport systems, in order to achieve real and cost efficient decarbonisation.
- Electrification of heavy duty will only apply in limited segments.







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### HYBRIDS & ELECTRIFICATION

Diesel hybrids  
Biofuel hybrids  
BEV Field tests

100% Renewable electricity  
**-98% CO<sub>2</sub>**

Global electricity mix  
**-37% CO<sub>2</sub>**

100% Fossil electricity  
**+31% CO<sub>2</sub>**



### BUS SYSTEMS

Bus System packages

Buses  
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Ticketing systems  
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# LOW CARBON TRANSPORT EXPERIENCE ON ALL CONTINENTS

## BUSES, TRUCKS, BIOFUEL PRODUCTION AND FINANCE



**Norway – bioethanol solution**

SAMFERDSELSDEPARTEMENTET

Borregaard

transnova

STATOIL

SCANIA

ASKO

BIO-ETANOL

**UK – biogas solution**

roadgas

SCANIA

GreenGas

REA



**India – ethanol and biogas**

SCANIA

IVL

Swedfund

BUSINESS SWEDEN

MANAS

AGRO INDUSTRIES & INFRASTRUCTURE LIMITED

**Finland - bioethanol**

NEOT

North European Oil Trade

st1

VTT

Technical Research Centre of Finland

**France – ethanol from waste**

RAISINOR FRANCE

STAF

Carrefour

SCANIA

**South Africa – ethanol and gas**

MOLOPO ENERGY LIMITED

silversandsethanol

SCANIA

Green Bus Initiative

**Colombia - gas**

SCANIA

gasNatural fenosa



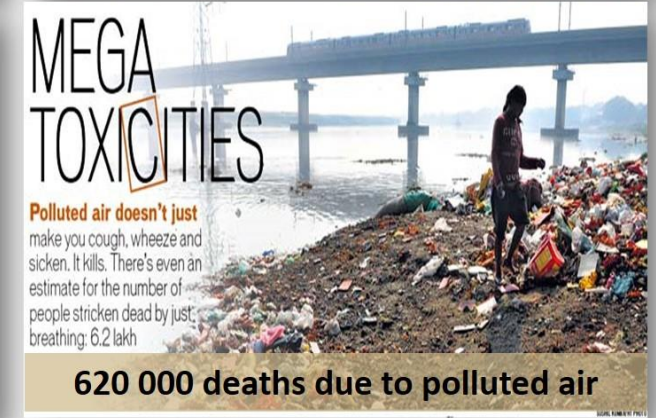
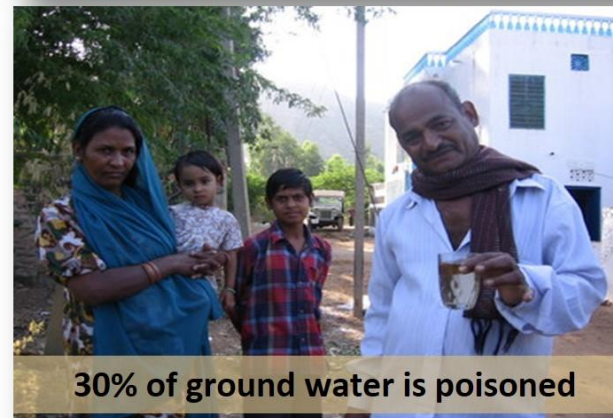
# THE BROKEN WASTE CYCLE – A HUGE CHALLENGE



- One third of all food produced (1,3 billion tonnes) is lost or wasted in the food chain
- 95 % ends up in landfills
- Food waste = water waste



Source: FAO, Food loss and waste facts, 2015



*Example: India*



# WASTE TO FUEL – A WIN-WIN-WIN!



Main sources - Sewage water, Organic solid waste and Landfill gas

95 % of organic waste to landfill



Organic waste → Biogas!



Biomethane fuel



Electricity



Heat



Minimized  
landfill!



Bio-  
fertilizer

- Best business case
- Biogas - the most sustainable diesel replacement.
- Many positive socio-economic values

- Expensive and energy inefficient
- Sun & wind better
- Global shift; electricity → fuel production

- Low value
- Energy inefficient



# LOW CARBON FUEL PROJECT IN INDIA



# SUSTAINABLE TRANSPORT IS NOT DIFFICULT



## Summary:

### There is not one solution

- Low carbon
- Energy efficiency
- Smart and safe transport

### Waste to fuel – a win win win!

### Biogas

- One of the most sustainable diesel replacement
- Many socio-economic values

**Thank you for your attention!**

**IT IS HERE AND NOW!**

