

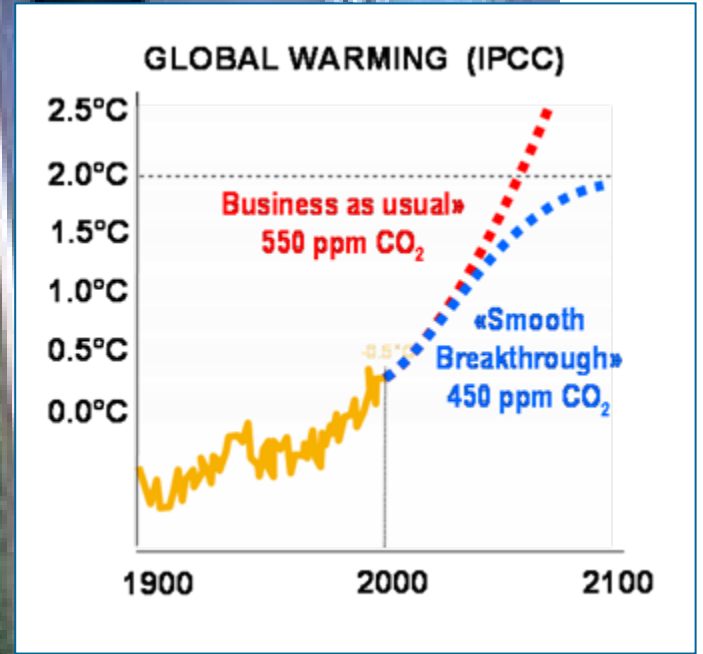
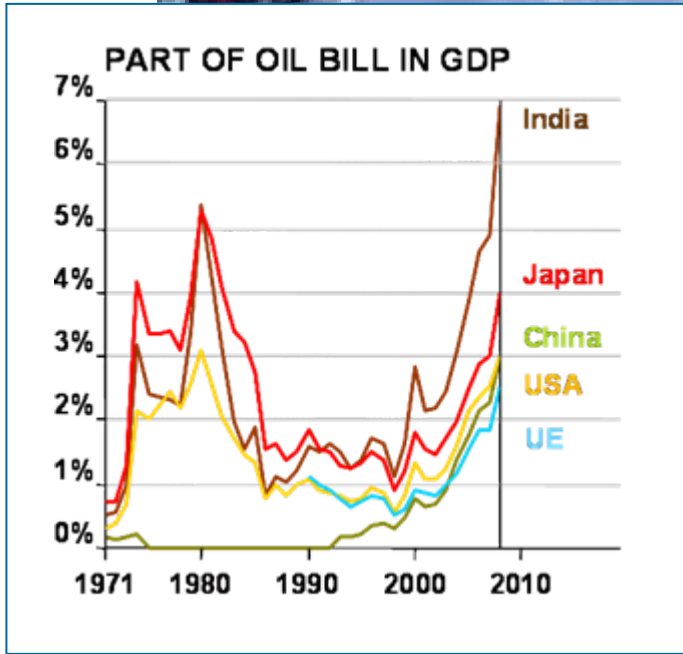
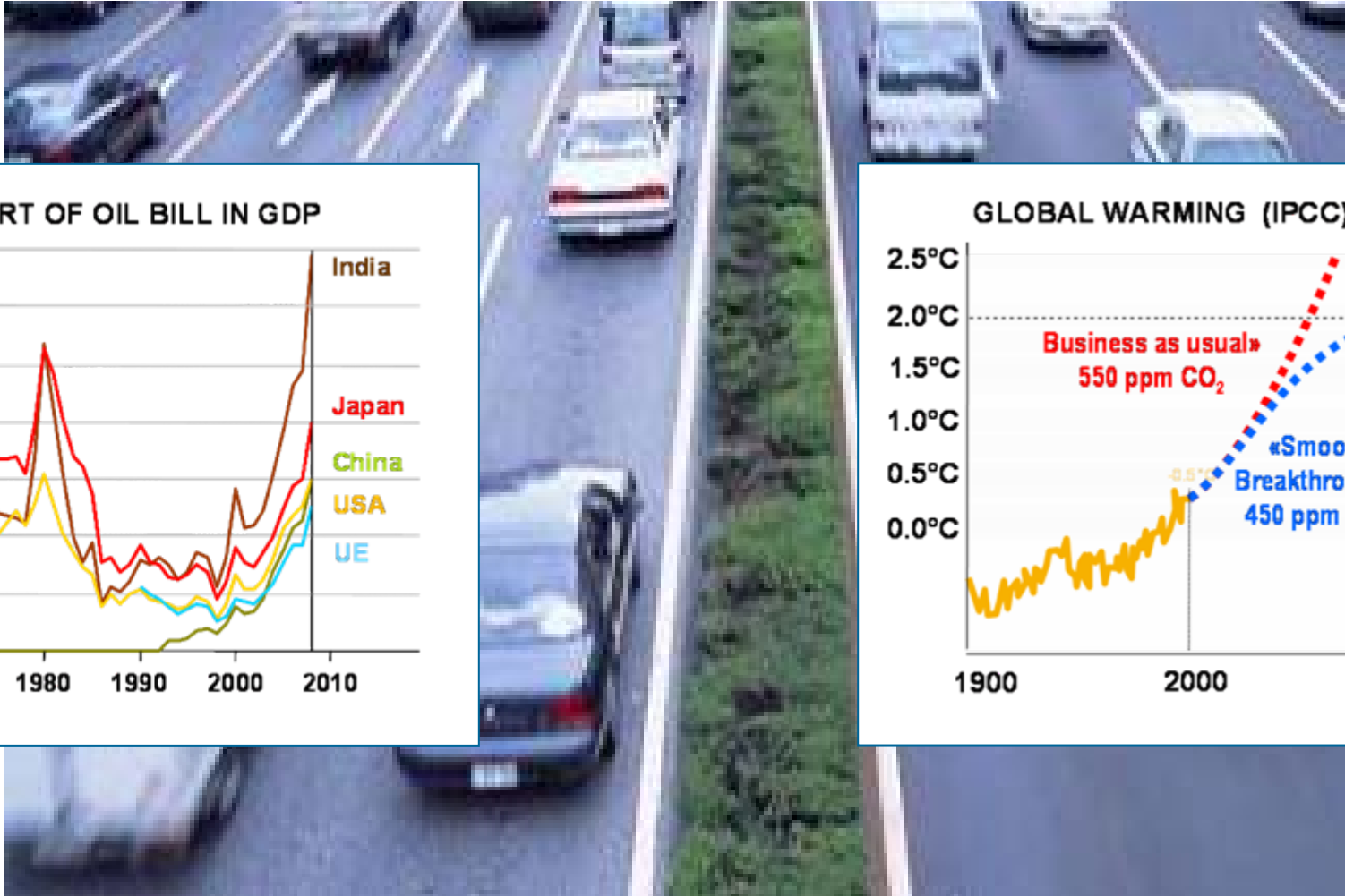
How to ensure sustainable mobility for all ?

Philippe Schulz
Expert Leader – Environment, Energy & Raw Materials



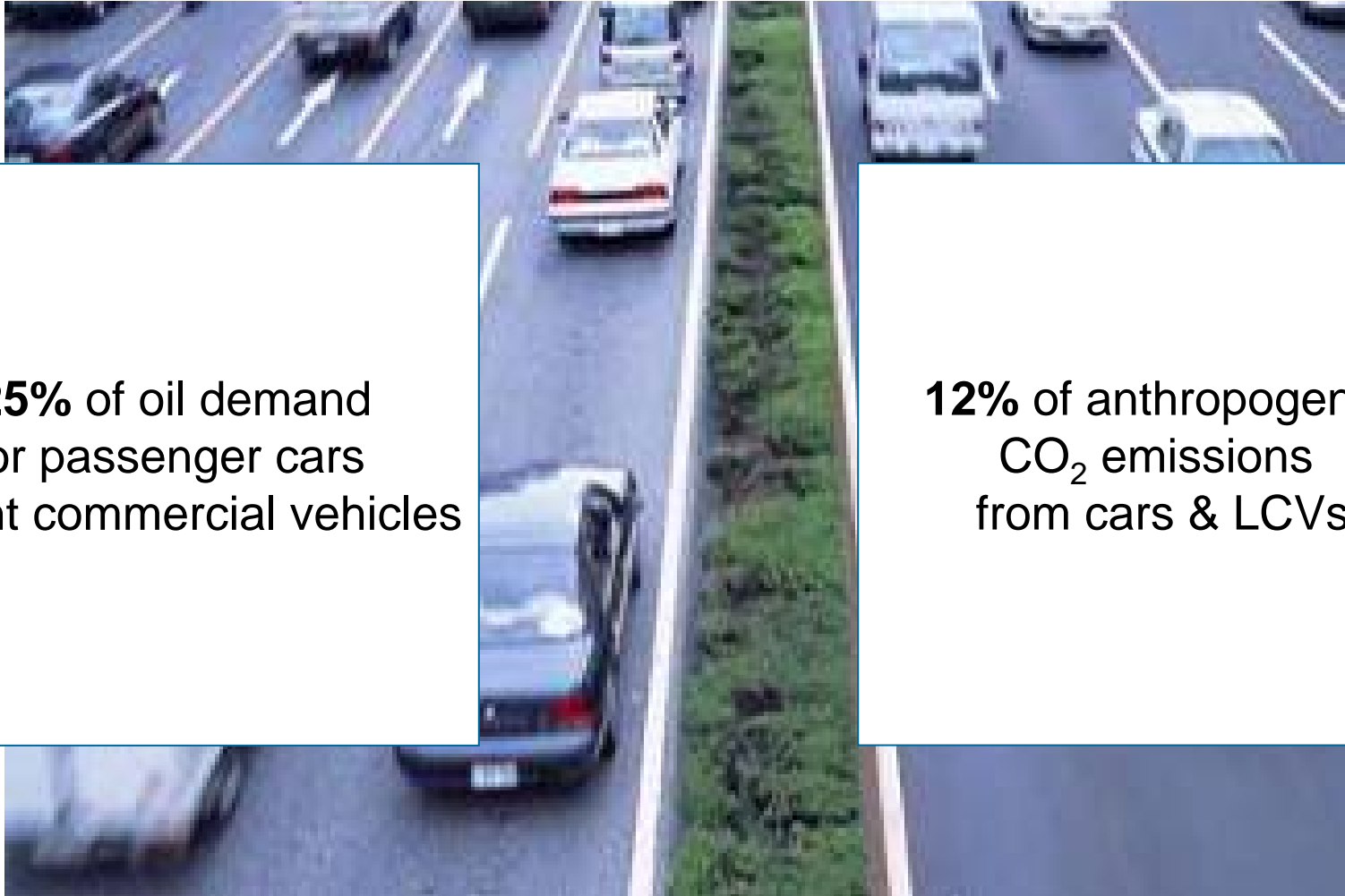
Smart Cities & Prospective – A collaborative approach
Schneider Electric, HIVE – June 4, 2012

Increasing energy consumption = High energy prices & CO₂ emissions



We are part of the problem

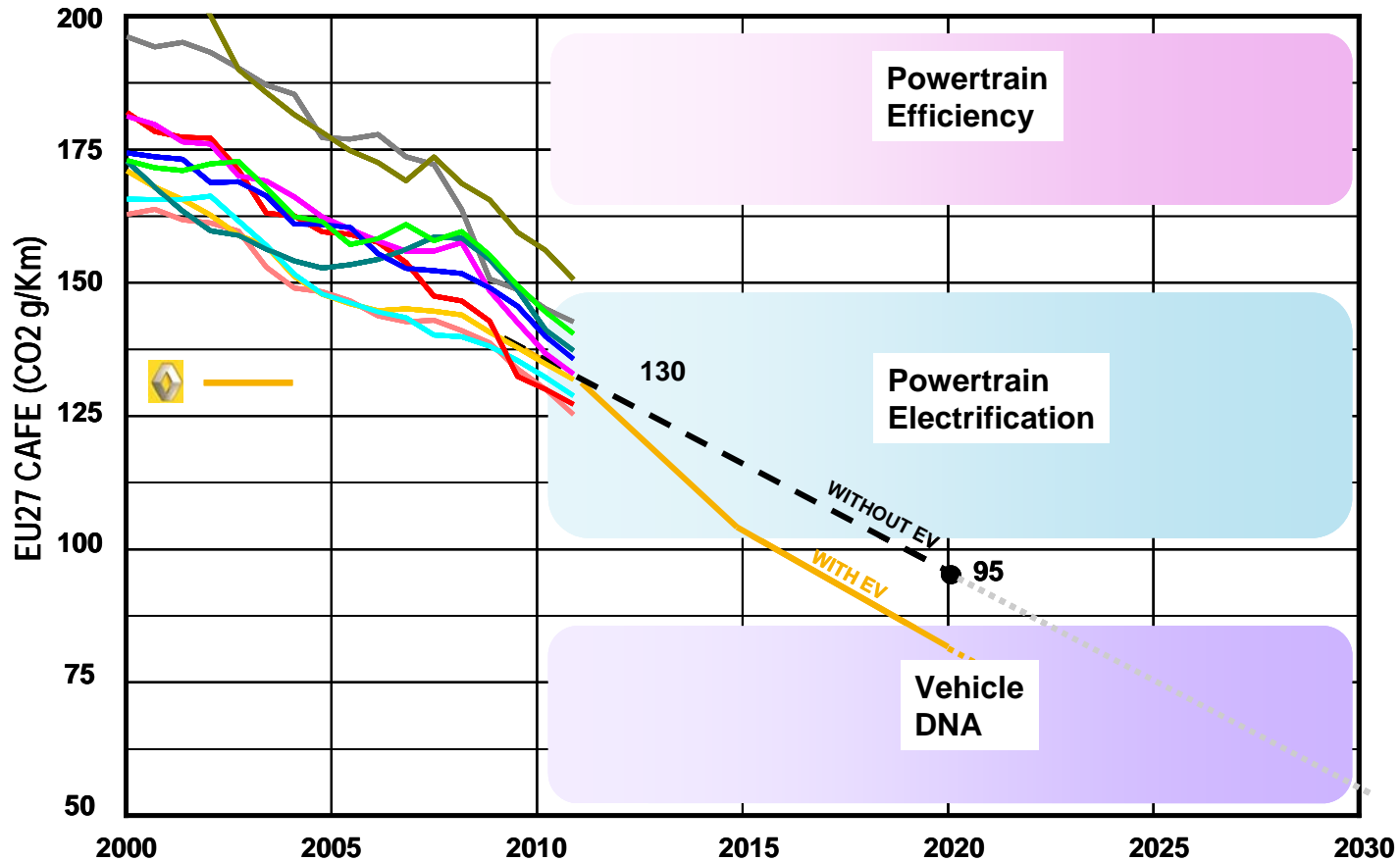
We want to be part of the solution



25% of oil demand
for passenger cars
& light commercial vehicles

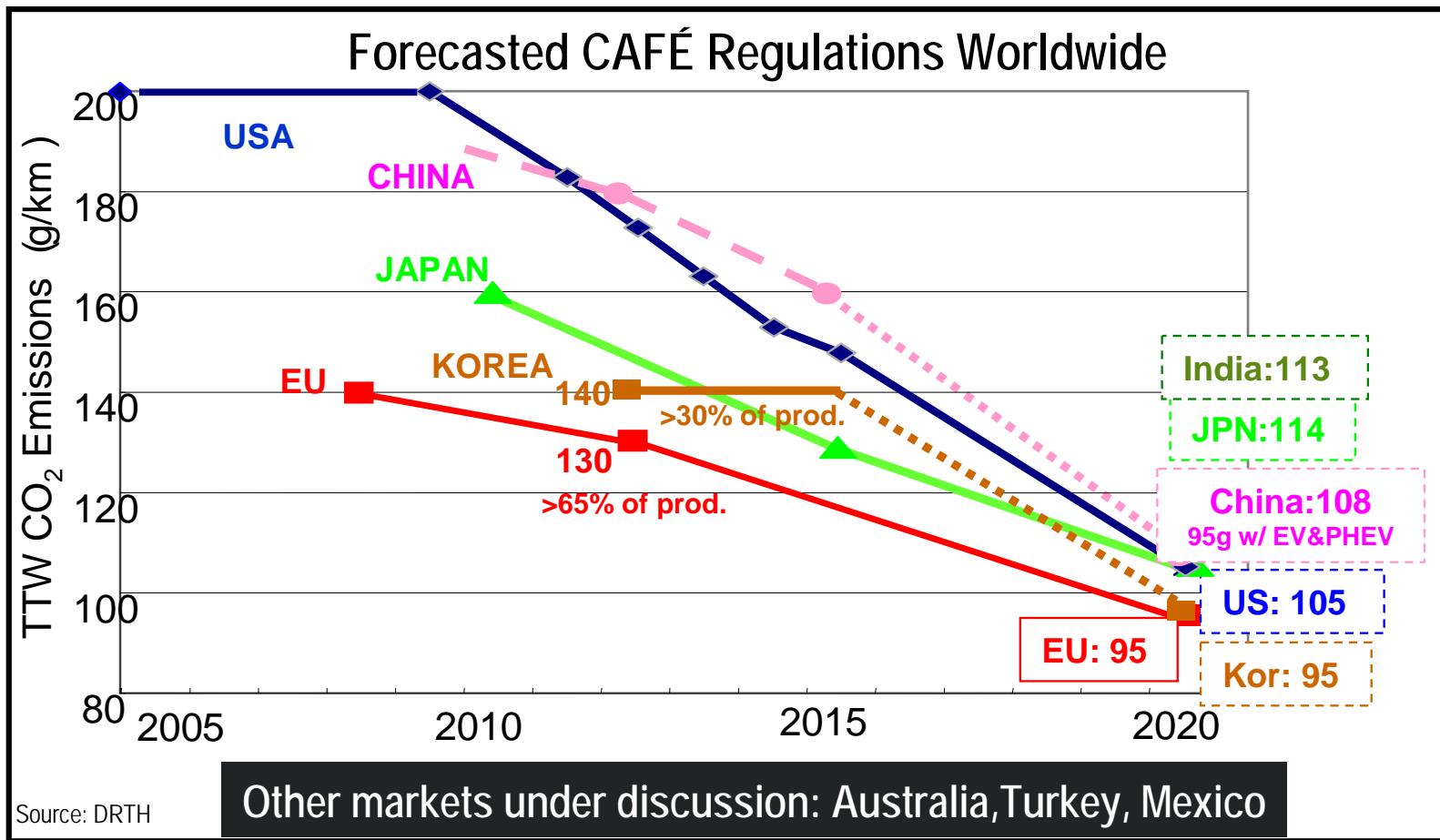
12% of anthropogenic
CO₂ emissions
from cars & LCVs

EU 2020 Corporate Average Fuel Economy regulation seems achievable,but beyond 2020 ?



Powertrain & Energy Prospective are required, market by market

CO₂ & FUEL CONSUMPTION, A GROWING STAKE WORLDWIDE



Source: WEO

World subsidies on fossil fuel :

- - 25% from 2010 to 2011
- Iran + India + China amounts = \$70 billion

Fuel Prices / GDP per capita

(2010-2012 evolution)

FRANCE : + 17 %
IRAN : + 97 %

A broad and innovative vehicle line-up required to answer these challenges

Optimization of ICE vehicles



ENERGY dCi 130
(with stop/start)

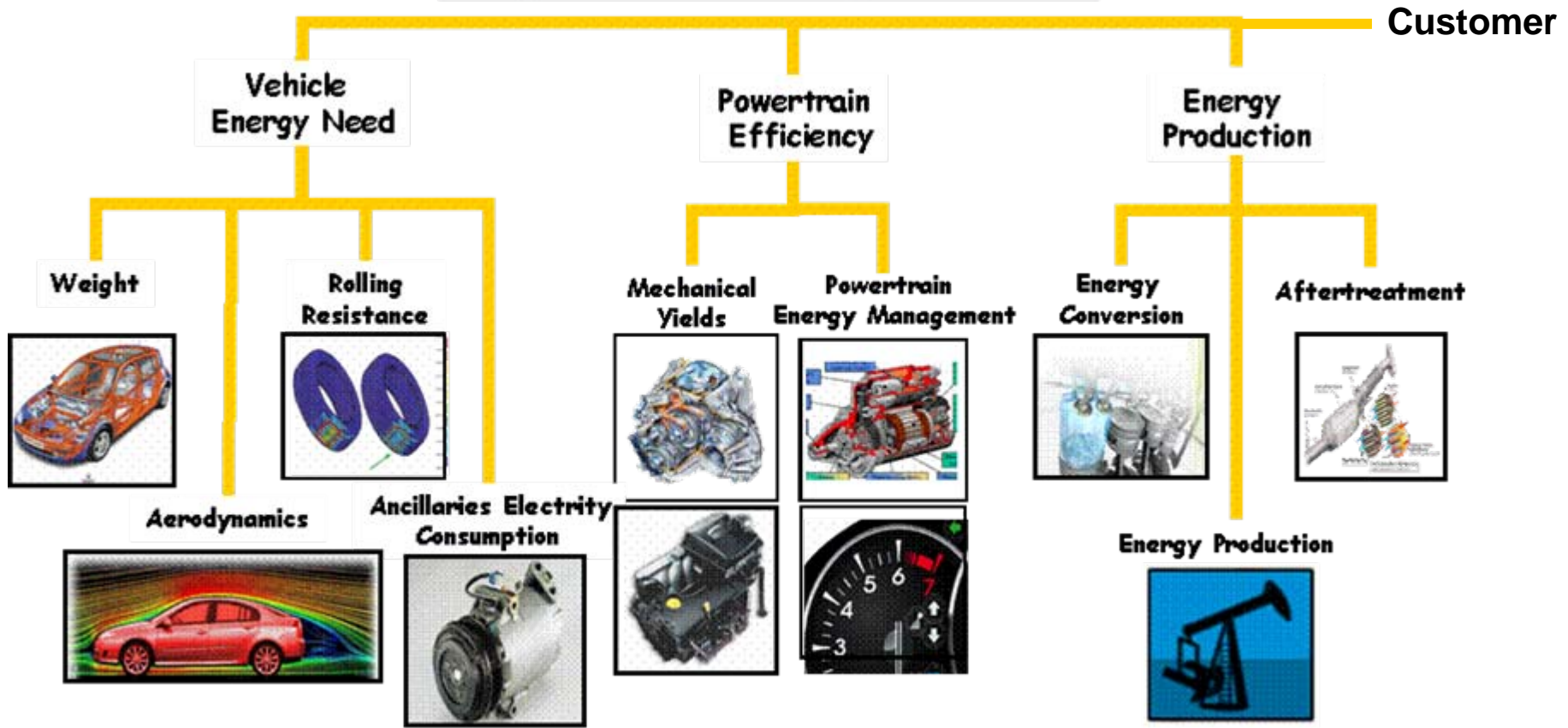
ENERGY TCe 115
(with stop/start)

Affordable Electric Vehicles



MANY LEVERS TO LOWER THE CO₂ EMISSION AND FUEL CONSUMPTION

CO₂ & Fuel Consumption levers



NEDC : 1 CO₂ g/ km ≈ 10 kg or 0,020 SCx or 8 Newton or 30 Watt (elec)

BESIDES TECHNOLOGY, TRAFFIC MANAGEMENT AND MOBILITY OPTIMIZATION ARE IMPORTANT TOOLS TO DECARBONIZE ROAD TRANSPORT

Pro Car Sharing

- Pro usage
- Closed loop

EXAMPLES OF DEVELOPING MOBILITIES



Planned



CAR SHARING

- Share usage
- Share costs



Spontaneous



Open loop



Closed loop



Twizy Mobility

- Private usage
- Open loop



MASS MARKET EV TO ALLOW AFFORDABLE ZERO EMISSION VEHICLES IN USE

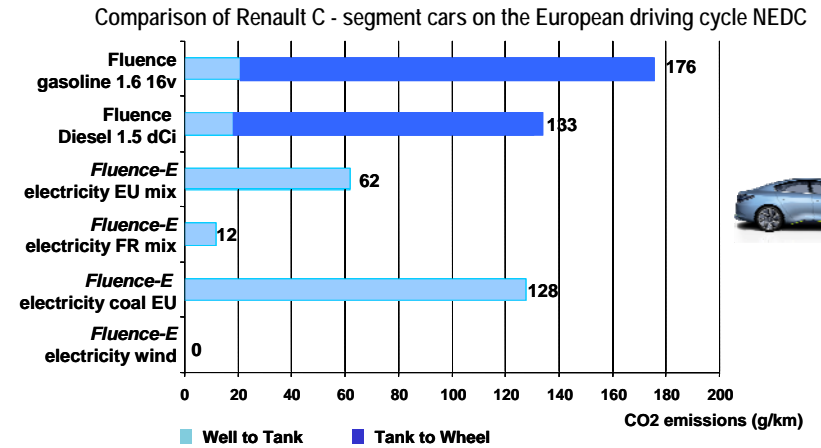


EV TO BE THE SOLUTION FOR A SMARTER CITY ?...

WHY ELECTRIC VEHICLES ?

It is ecological

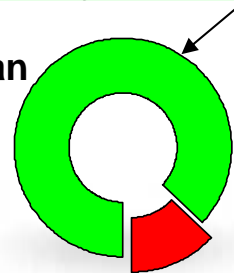
Zero emission in use (CO₂ exhaust emissions, noise)
Based on JRC Eucar Concawe study & internal data



It is compatible with many car uses

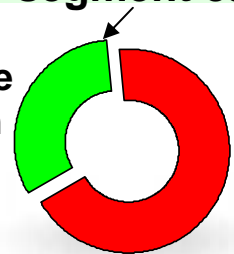
87% of daily trips

Are LESS than 60km/day



32% of B-segment cars

NEVER make more than 150 km



It is already economical

All prices at [http:// www.renault-ze.com](http://www.renault-ze.com)
Original business model with battery leasing
EV Price comparable to Diesel equivalent



RESHAPING MOBILITY REQUIRES TO BE INNOVATIVE AND COLLABORATIVE

INNOVATIVE

Develop new products and services

Example



Twizy : new vehicle concept well adapted not only to individual mobility but also to « on demand » usage



COLLABORATIVE

Integrate existing services (incl. public transportation) and deliver operating platform (Multimodal schemes)

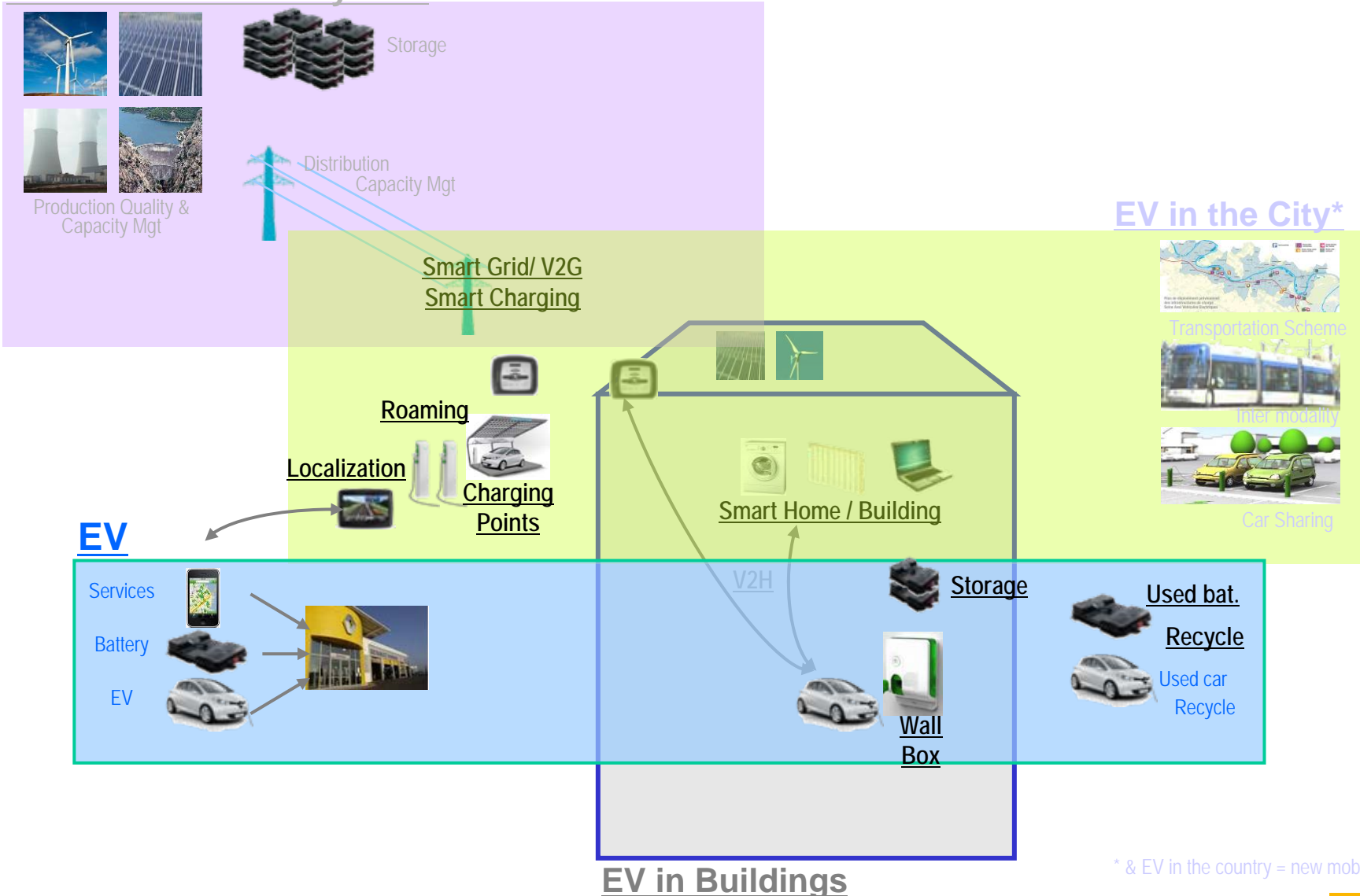
Integrate systems to ease traffic

Example

Drive C2X project : Accelerate cooperative mobility, connecting vehicles and infrastructure for safe, comfortable and green driving

Electric Vehicles fit very well in a new global eco-system

EV and the Electricity Grid




A global Renault-Nissan Alliance industrial strategy

Target : 1,5 million EV on the road by 2016

USA

Smyrna




NISSAN LEAF

Zama

Japan

Oppama



NISSAN LEAF



NISSAN LEAF

Sunderland



ZOE

Flins

Maubeuge



KANGOO Z.E.

Cacia

Valladolid



TWIZY Z.E. CONCEPT

Bursa



FLUENCE Z.E.

 Car production plants

 Battery plants

Prospective tools are a must for Renault in a complex world...



Chaire Modélisation prospective
au service du développement durable

World Automotive Powertrain Outlook 2030



Thank you for your attention

