NL Agency
Ministry of Economic Affairs, Agriculture and Innovation

MOBILITY: TECHNOLOGY PRIORITIES AND STRATEGIC URBAN PLANNING

Summary - discussion

http://www.iea.org/aboutus/standinggroupsandcommittees/egrd/

or google: IEA-egrd

» *Focus on energy and climate change*

Day 1

- *What is the current status of vehicle efficiencies, and what more can realistically be achieved before 2020?*

- *What are the actions needed to achieve further efficiency gains and who is responsible (e.g. automobile manufacturers, policy makers)?*

- *Comparing new transport options, which have the greatest potential and the least number of barriers to implementation (e.g. financial, policy, R&D or other)?*

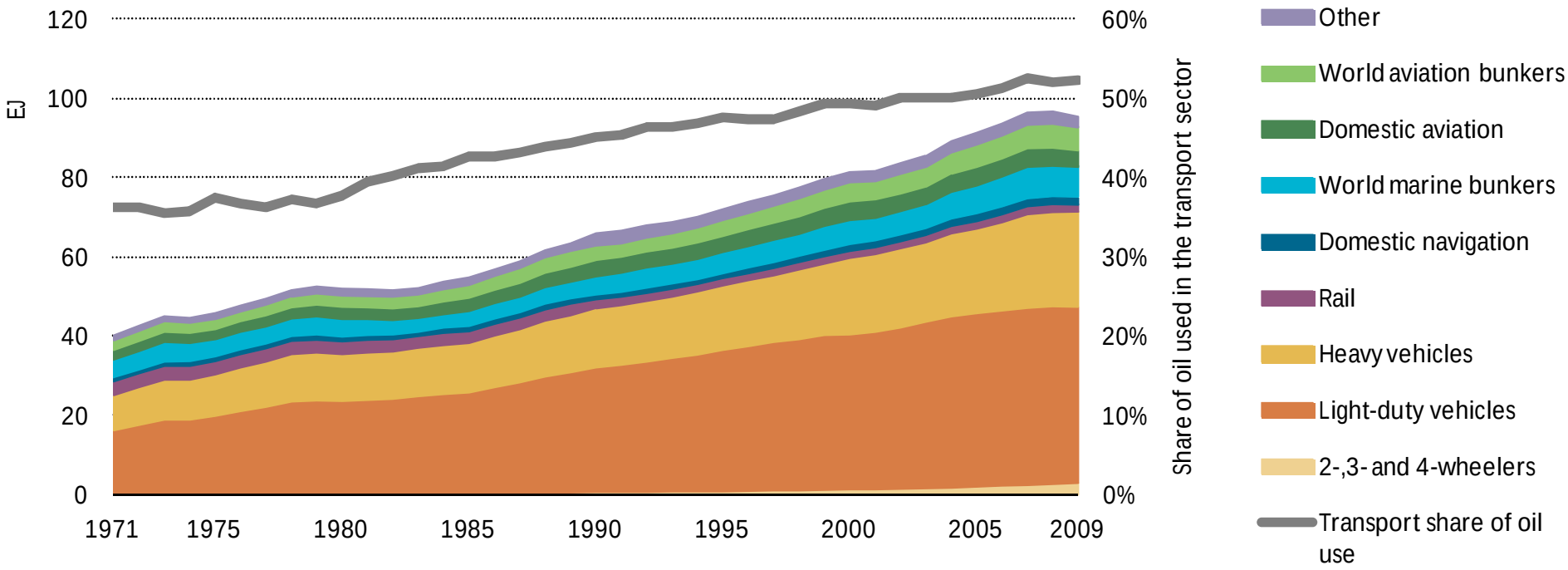
- *What are electricity network issues urban planners and policy makers need to address to implement light rail or hybrid and electric vehicle programmes?*

Day 2

- *Which policies or frameworks have proven to be effective in reducing transport demand?*
- *Urban transport infrastructure has grown organically since the first automobiles. How can we integrate the newer fuels and technologies into urban landscapes?*
- *Are there country- or region-specific advantages to adopting particular transport technologies?*
- *Which financing mechanisms have proven to be successful for new transport programmes?*

Historic trends

World transport energy use has doubled in past 30 years



Light-duty vehicles continue to drive growth, while road freight and air travel also increased rapidly in last decade.

Coverage of transport modes

2-3 wheelers

Light duty vehicles

- internal combustion
- hybrids / plug-in hybrids
- fuel cell vehicles
- electric vehicles

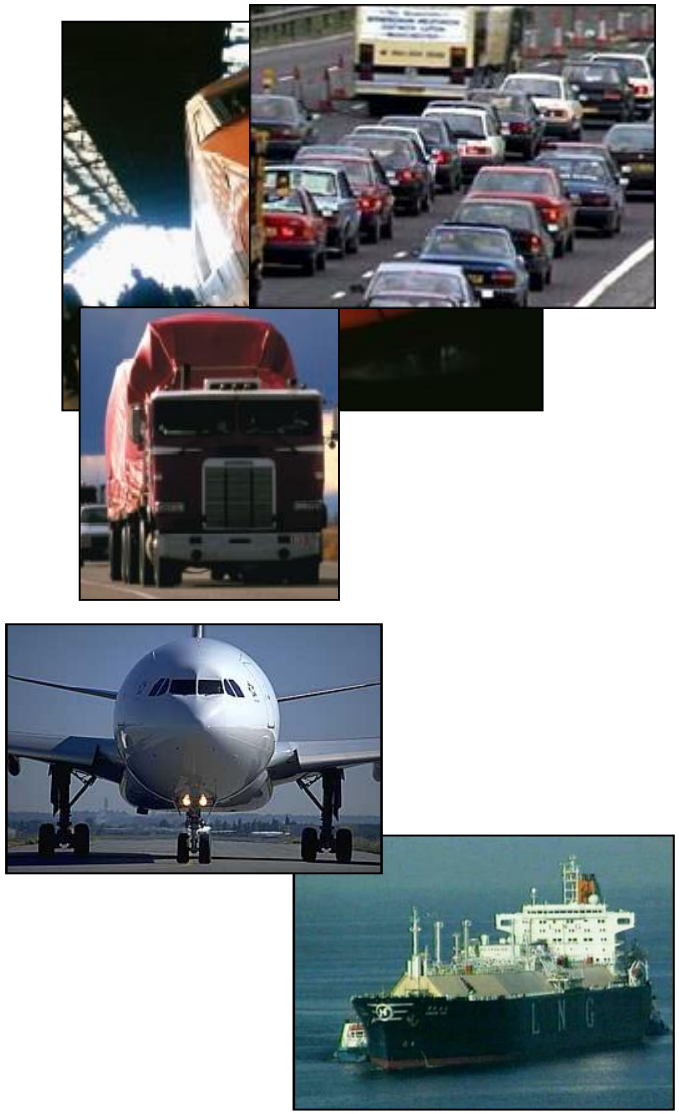
Heavy duty vehicles

- passenger (minibuses, buses, BRT and intercity buses)
- freight (medium and heavy trucks)

Rail

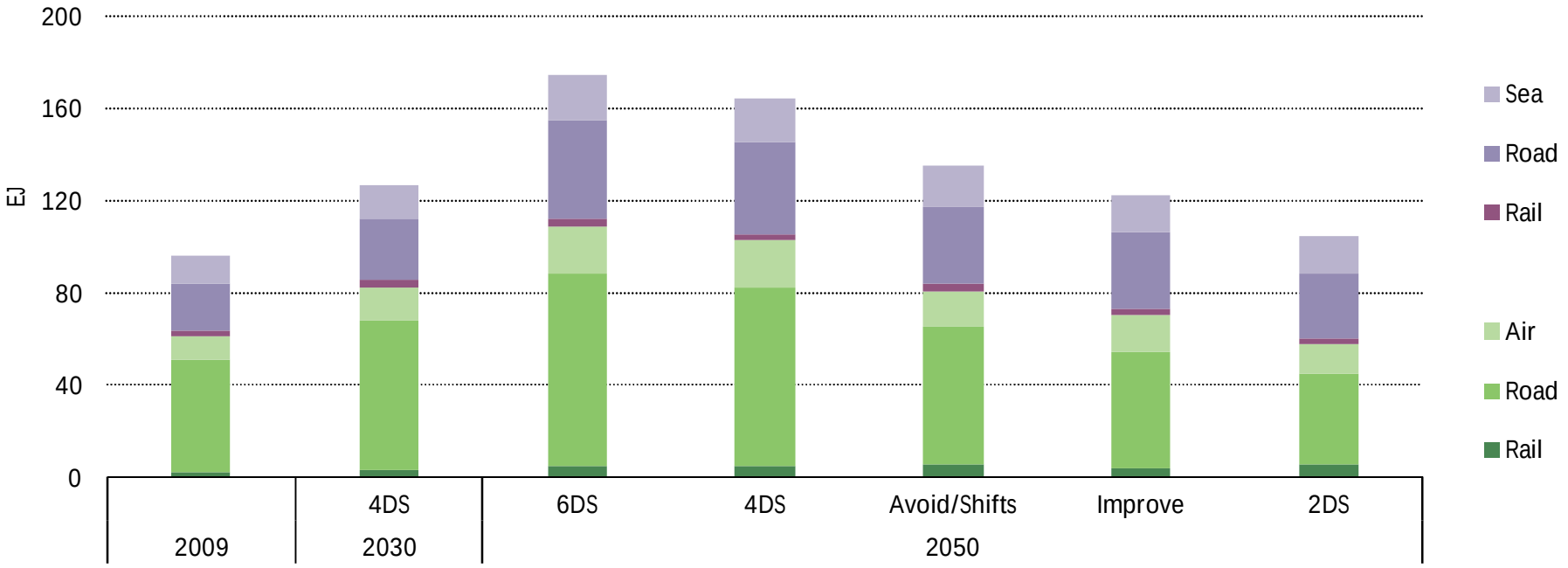
- passenger and freight
- HSR (added in 2012)

Air / Water transport



ETP 2012 transport outlook to 2050

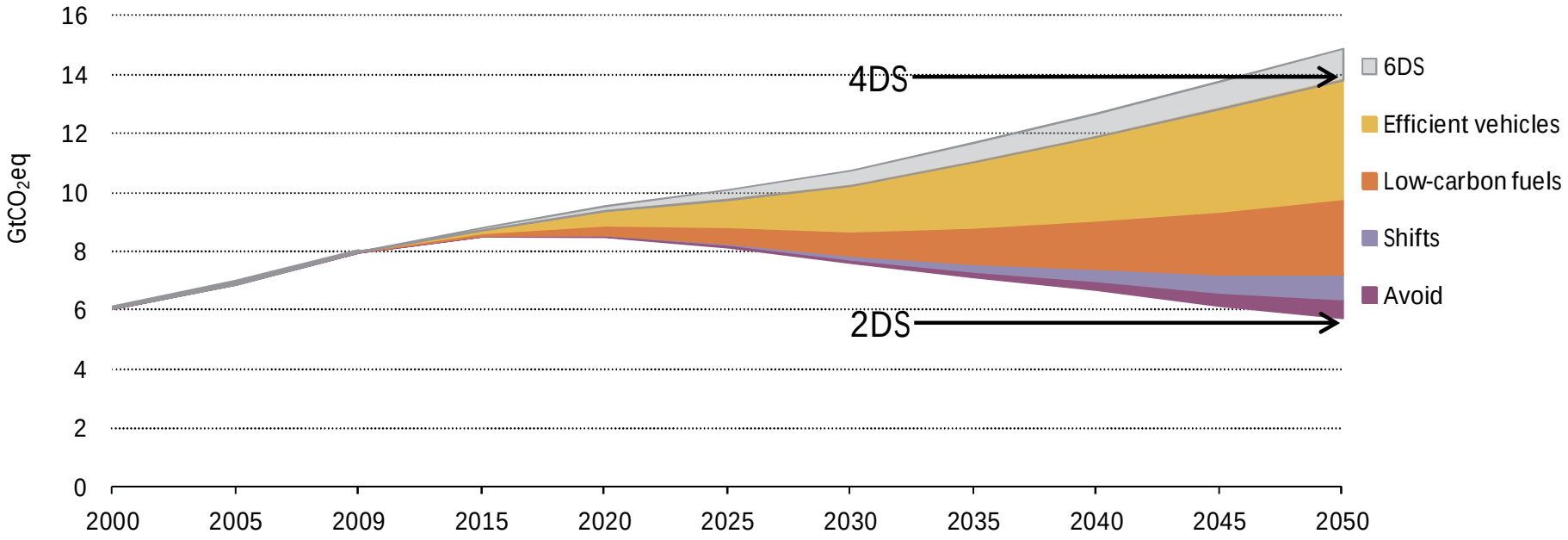
Transport energy use by mode in the ETP scenarios



Energy use could increase as much as 70% by 2050 if no further policies are adopted in support of efficiency, alternative vehicles/fuels and modal shifting.

ETP 2012 transport outlook to 2050

Efficient vehicles and alternative fuels key to achieve 2DS



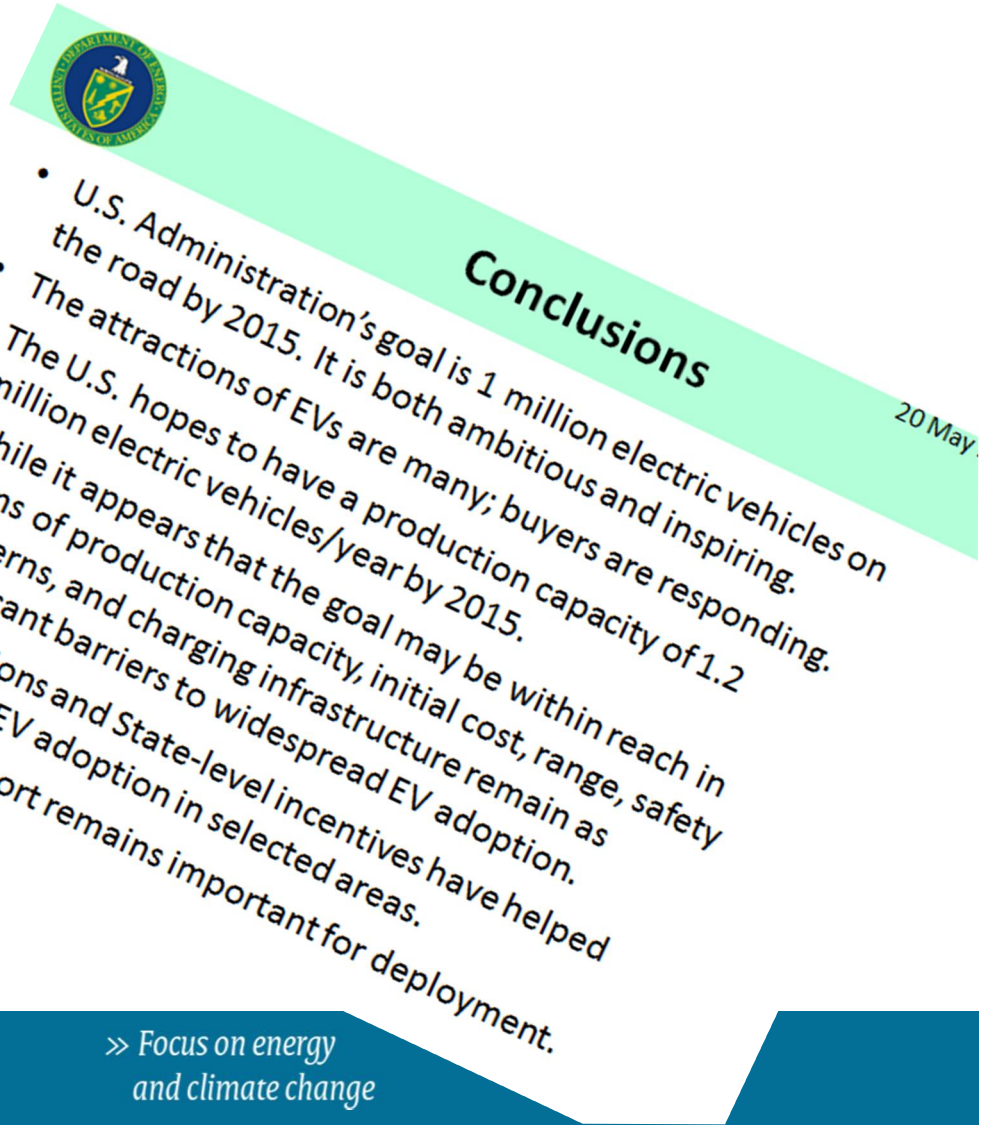
An 'avoid, shift and improve' approach is the most cost effective to reach 2DS objectives

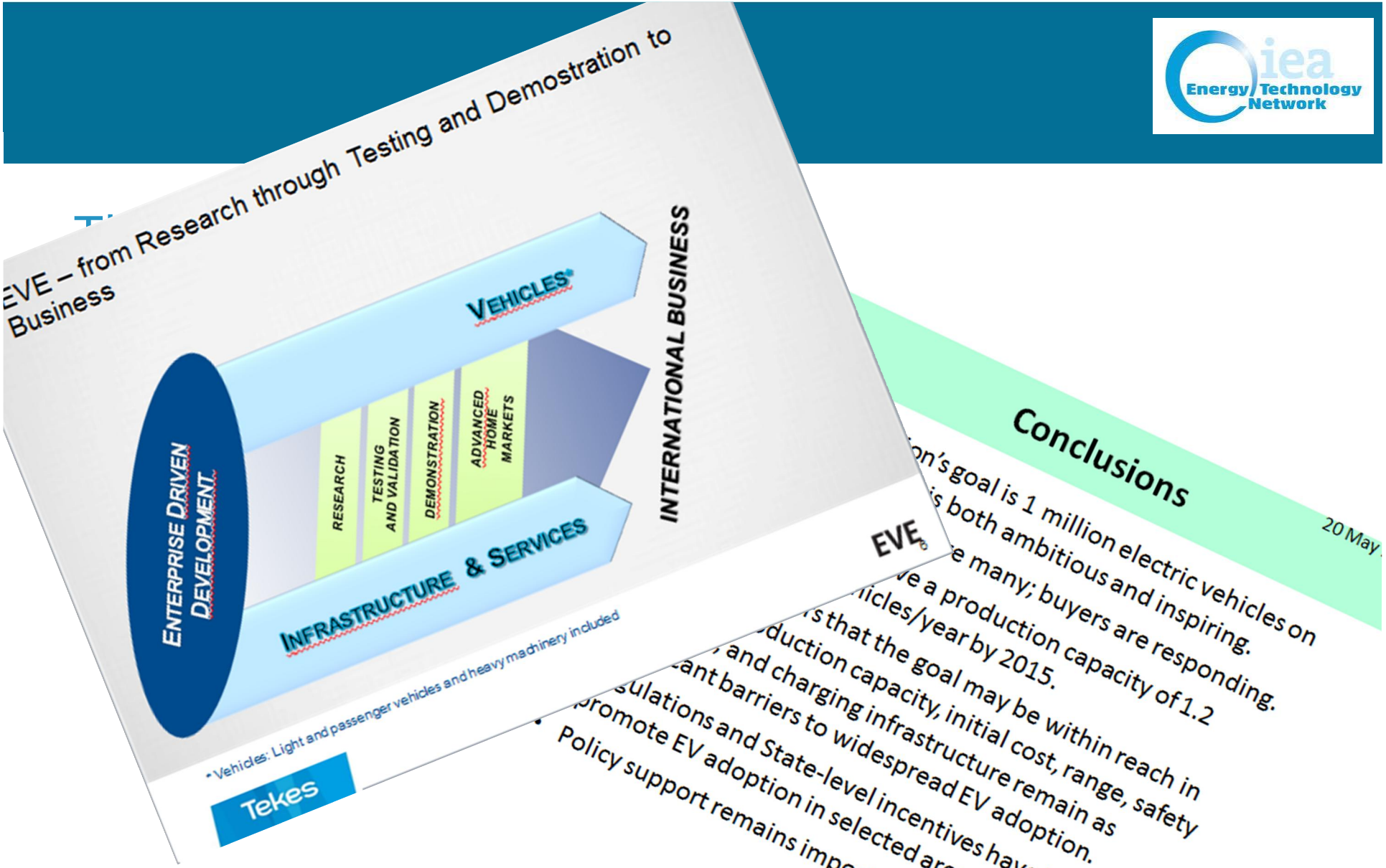
There are ambitions

Because:

- There is too much air pollution
- We want to avoid congestion
- It's getting to expensive
- Safety…

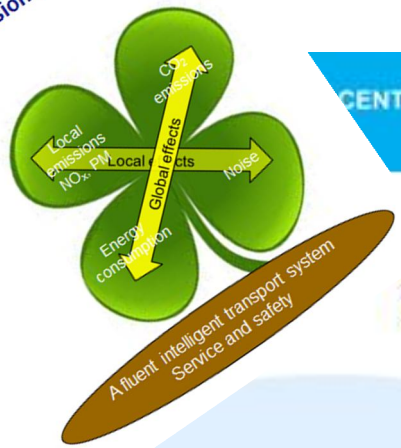
- Etc……





And it's good for business

vito
vision on technology



Elements determining the environmental impacts of traffic

Community structure

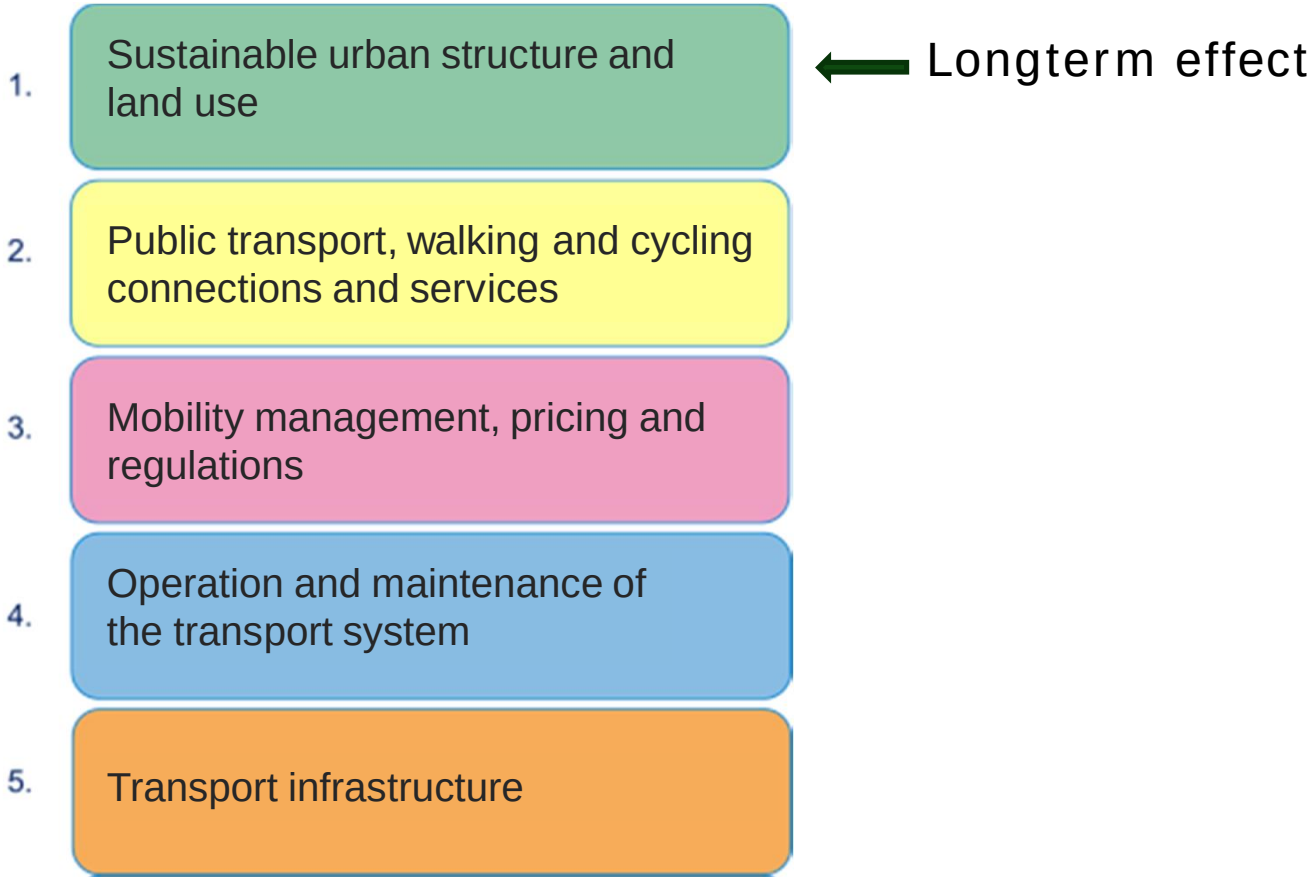
Traffic volumes & choice of transport mode

Energy for transport

Vehicles and user behaviour

Policy orientation — Technology orientation

The transport system is developed by implementing a diverse range of measures set out at different development levels through cooperation between the parties.



Alternative fuels – Well to Wheel

Well to tank

Tank to wheel

Technological Achievements *(that have to be improved)*

Fuel cell:

- Power density
- Reliability
- Lifetime
- Low-temperature performance
- Environmental adaptation

Battery:

- Nickel-metal battery
- Lithium ion battery
- Super capacitor battery

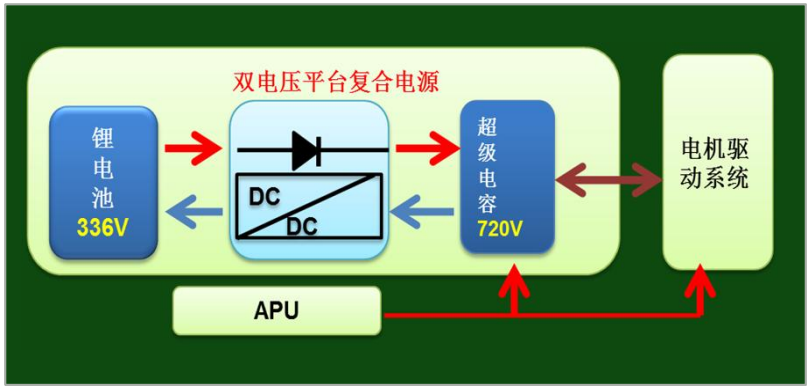
Battery Models for Busses

For electric busses, several options are available to ensure maximum operational time.

Battery swapping

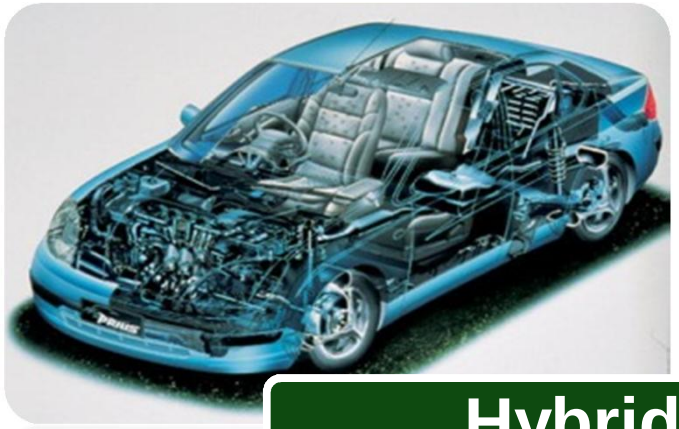
Recharging

Quick-Recharging

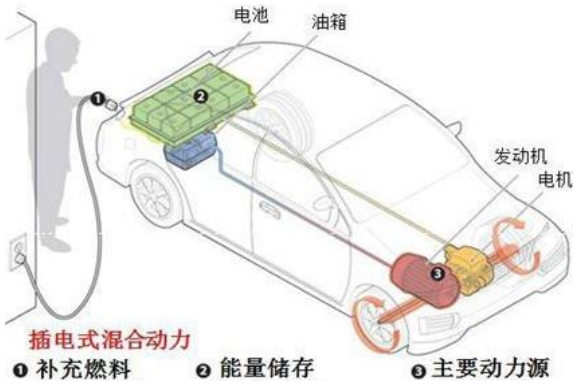


Extended Range

Technological Achievements

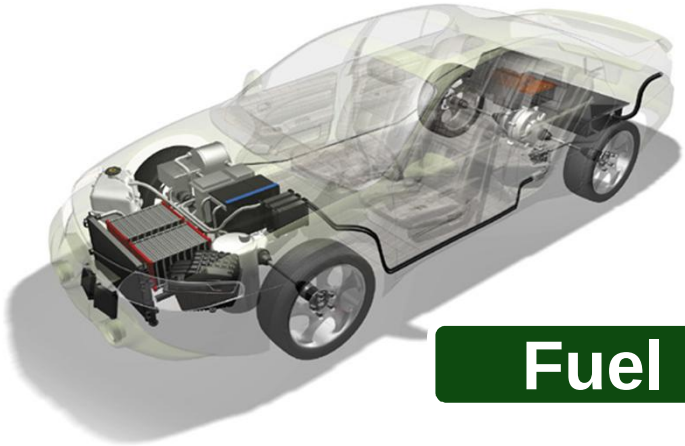


Hybrid



Plug-in Hybrid

Electric Powered



Fuel cell

More small cars needed?

“Unlimited” new options

VTT TECHNICAL RESEARCH CENTRE OF FINLAND

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Role of ICT in transportation services

- **ICT is a key enabler** of energy efficient smart transport services:
- Fast, mobile internet connections
- Smartphone as the universal terminal
- Common platforms enabling combining different services
- The major challenge is **interoperability of systems**
- Services supporting efficient mobility
- **Flexible public transport** (changing modes, real-time route information) & multi-modality
- **Services for smart vehicles** (e.g. driver support, safety, fuel optimization)
- **Intelligent transport management** (e.g. CO_2 optimisation)

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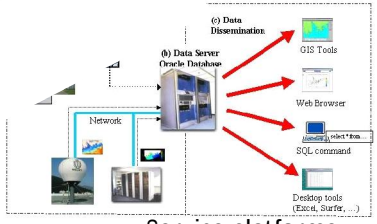
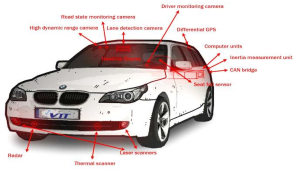
n smart traffic

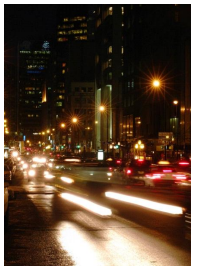
Users



Service platforms

Smart vehicles

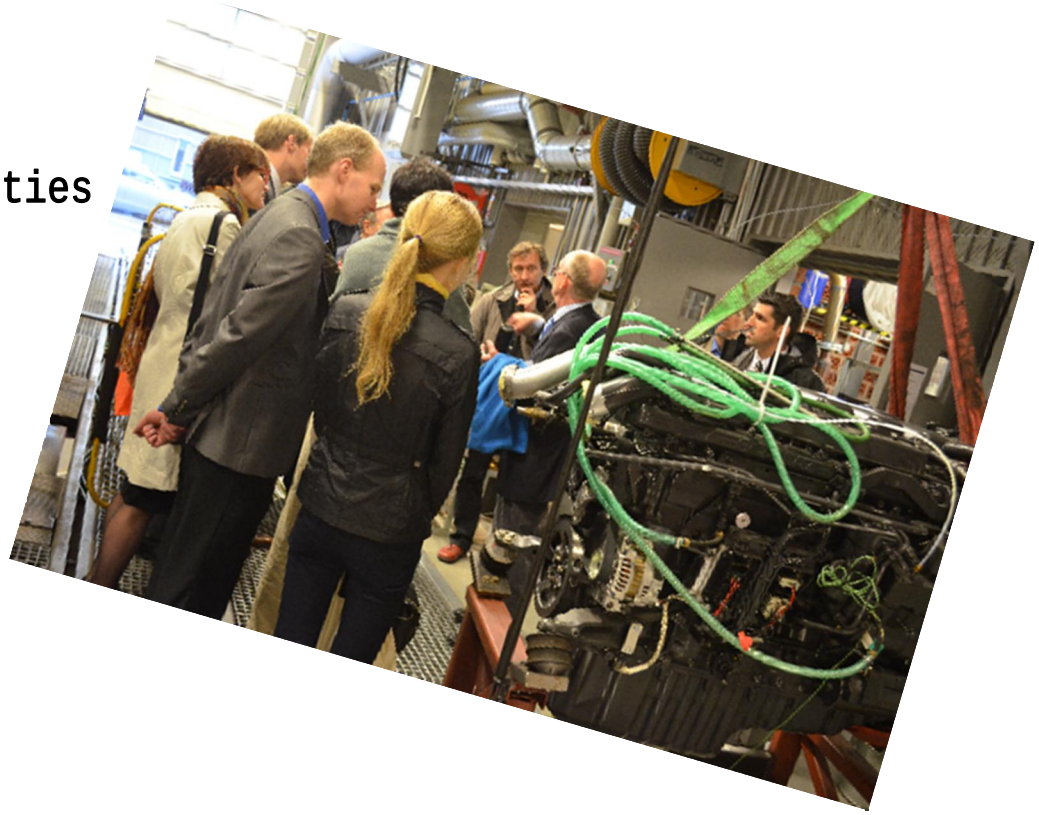




Infrastructure

There are a lot of demonstration projects: Development Strategy of Industrialization of electric vehicle

- Pilot demonstration
- 8.8 billion RMB investment
- 27,432 electric vehicles in 25 cities
  - 9,834 electric cars,
  - 2,513 electric buses,
  - 3,305 hybrid electric cars,
  - 10,495 hybrid electric buses,
  - 52 fuel cell vehicles
  - 174 charging stations
  - 8,107 charging piles.



Are there country- or region-specific advantages to adopting particular transport technologies?

WintEVE – EV's in Winter Conditions

Need
- Testing and demonstration solutions for arctic conditions

Solution
- Testing ecosystem based on collaboration between Arctic Research Center and testing service providers in Lapland

Benefits
- Combination of world class testing environment and experience
- Technology tested in arctic condititions works elsewhere

Users
- EV manufacturers, OEM's
- Suppliers of charging technology and end user services, utilities etc.

www.centria.fi
www.winteve.fi

WintEVE
Winter operability for Electric Vehicles

Tekes

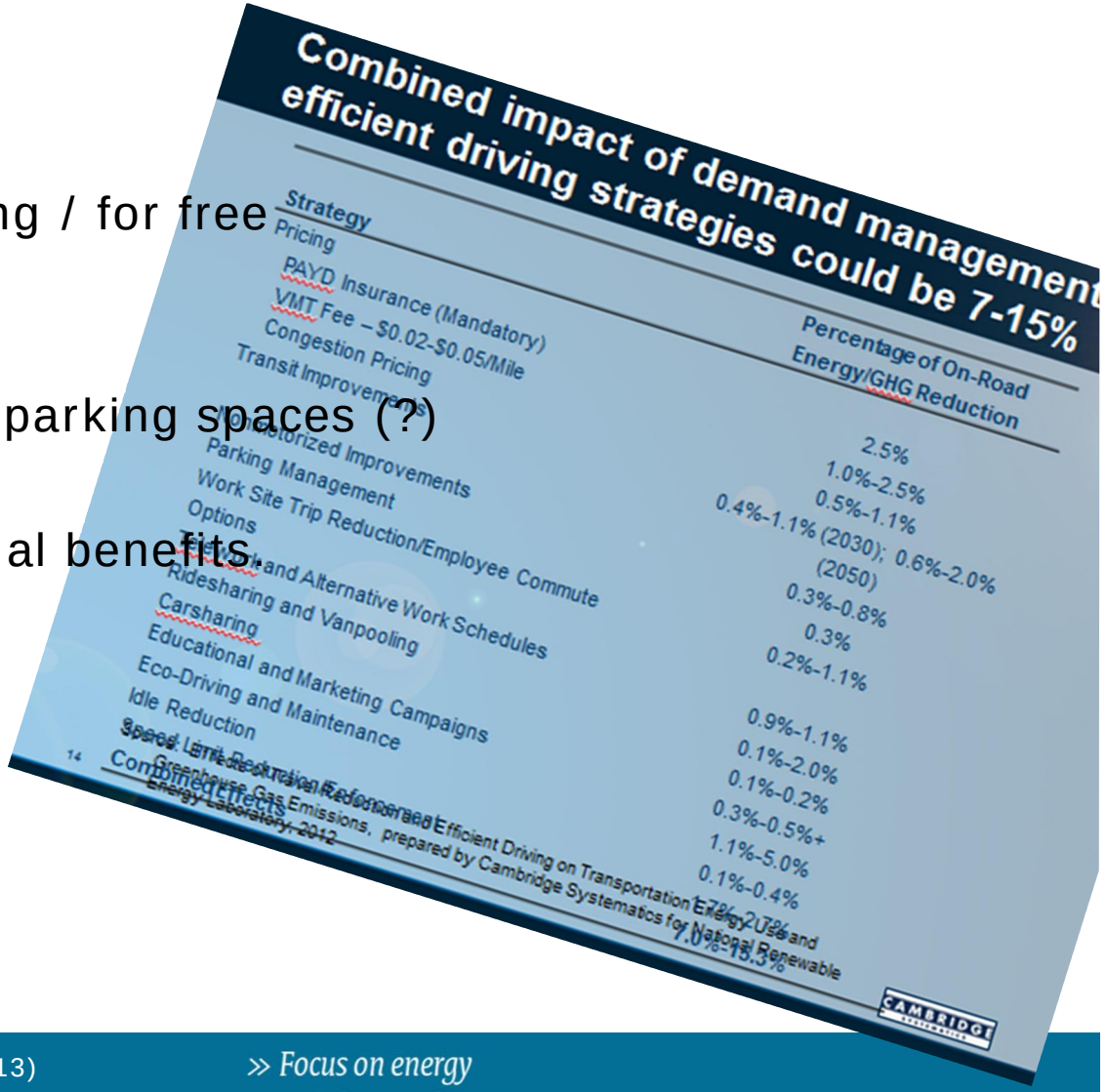
DM 04-2011

EVE

Financial incentives

- Congestion tax
- Reduced cost for e-charging / for free
- Tax reductions
- Purchase subsidy
- Free parking / designated parking spaces (?)

Not clear what has the optimal benefits.



Financial Models

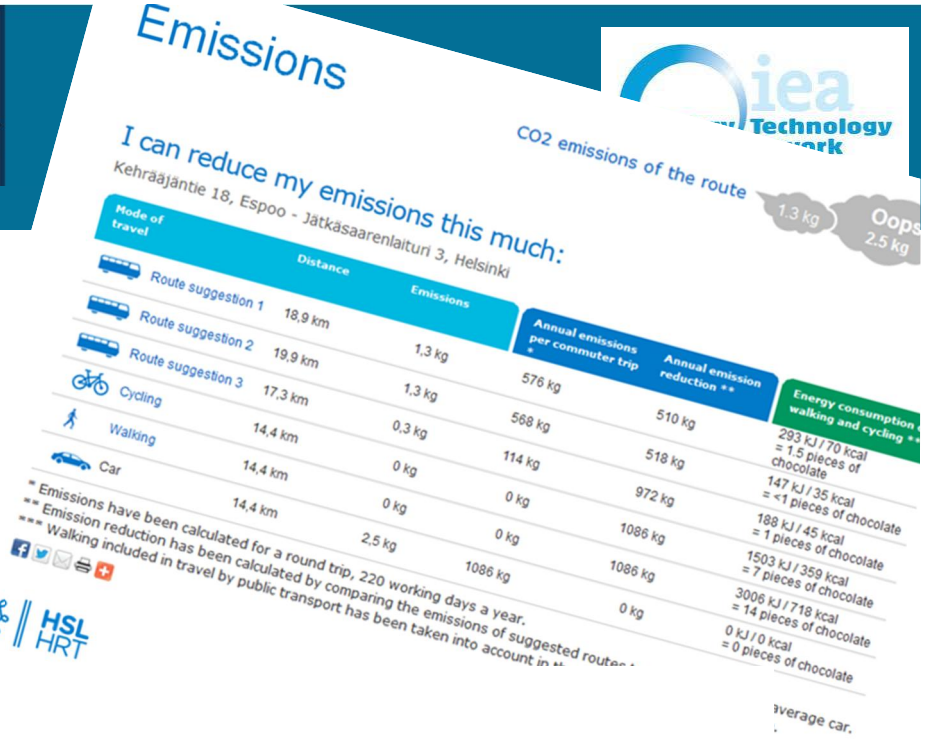
- “google”- “apple” approach
- ----

Logistic solutions

- Logistic solution (Stockholm)
- Start with municipal fleet to go sustainable
- Taxi priority

Model shift

- Don't tell you customer what to do
- Inform the public (good websites' best apps.



But first find the right things to do&

Learn from

- Customer needs & appetite
- Effect on sustainability awareness
- Small scale impact on CO2 reduction
- Coalitions & Cooperation
- Multiple technical solutions
- Innovative funding

Determine

- Customer needs and wishes
- Optimized Customer approach
- Ideal cooperation's
- Scalability characteristics
- Best CO2 cases

Amsterdam elektrisch

Policies

Green procurement – allow only companies with a green fleet.

Give room for demonstration projects.

Policy Frameworks / roadmaps

The U.S. planning context

National (Federal)

- Vehicle and fuel standards and fuel pricing
- Transport planning – procedural requirements, funding, and technical assistance

State

- Transport investment priorities (non-metropolitan)
- Roadway design standards
- Freeway/arterial systems management
- Roadway and fuel pricing

Regional (MPO)

- Transport investment priorities (metropolitan)
- Transit investment
- Freeway/arterial systems management
- Voluntary cooperation on land use, etc.

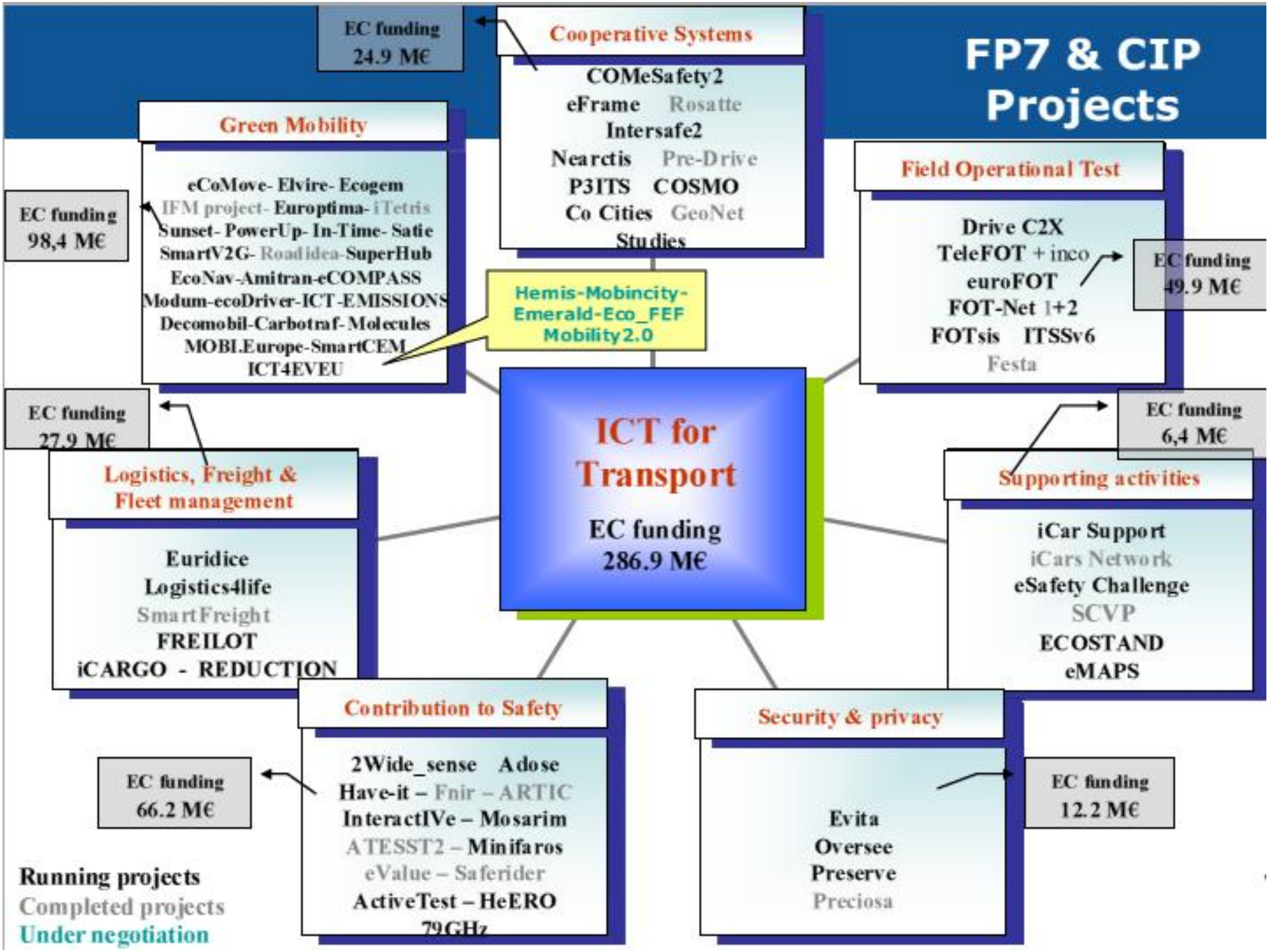
Local (City, County, Town)

- Land use planning
- Local transport investment priorities & design standards
- Bicycle and pedestrian infrastructure

Roadmap to a Single European Transport Area

Towards a competitive and resource efficient transport system

- **To meet the challenges, transport has to:**
  - Use less energy
  - Use cleaner energy
  - Exploit efficiently a multimodal, integrated and 'intelligent' network
- **Curbing mobility is not an option**
- **By 2050 reduce emissions by 60%,** and 20% by 2020 (2008 level)
- **By 2050 move close to zero fatalities** in road transport, halving road casualties by 2020


FP7 & CIP Projects
ICT for Transport
EC funding 286.9 M€
Cooperative Systems
COMeSafety2
eFrame Rosatte
Intersafe2
Nearctis Pre-Drive
P3ITS COSMO
Co Cities GeoNet
Studies
EC funding 24.9 M€
Green Mobility
eCoMove- Elvire- Ecogem
IFM project- Europtima- iTetris
Sunset- PowerUp- In-Time- Satie
SmartV2G- Roadidea-SuperHub
EcoNav-Amitran-eCOMPASS
Modum-ecoDriver-ICT-EMISSIONS
Decomobil-Carbotraf-Molecules
MOBI.Europe-SmartCEM
ICT4EVEU
EC funding 98,4 M€
Hemis-Mobincity-
Emerald-Eco_FEF
Mobility2.0
Field Operational Test
Drive C2X
TeleFOT + inco
euroFOT
FOT-Net 1+2
FOTsis ITSSv6
Festa
EC funding 49.9 M€
Logistics, Freight & Fleet management
Euridice
Logistics4life
SmartFreight
FREILOT
iCARGO - REDUCTION
EC funding 27.9 M€
Supporting activities
iCar Support
iCars Network
eSafety Challenge
SCVP
ECOSTAND
eMAPS
EC funding 6,4 M€
Contribution to Safety
2Wide_sense Adose
Have-it – Fnir – ARTIC
InteractIVe – Mosarim
ATESST2 – Minifaros
eValue – Saferider
ActiveTest – HeERO
79GHz
EC funding 66.2 M€
Security & privacy
Evita
Oversee
Preserve
Preciosa
EC funding 12.2 M€
Running projects
Completed projects
Under negotiation

3. Suggestions to International Cooperation (China)

- Increase the investment in R&D
- support cross-industry technology development.
- Offer purchase allowance and tax reduction
- finance supports to developments of charging facilities and battery recycling systems

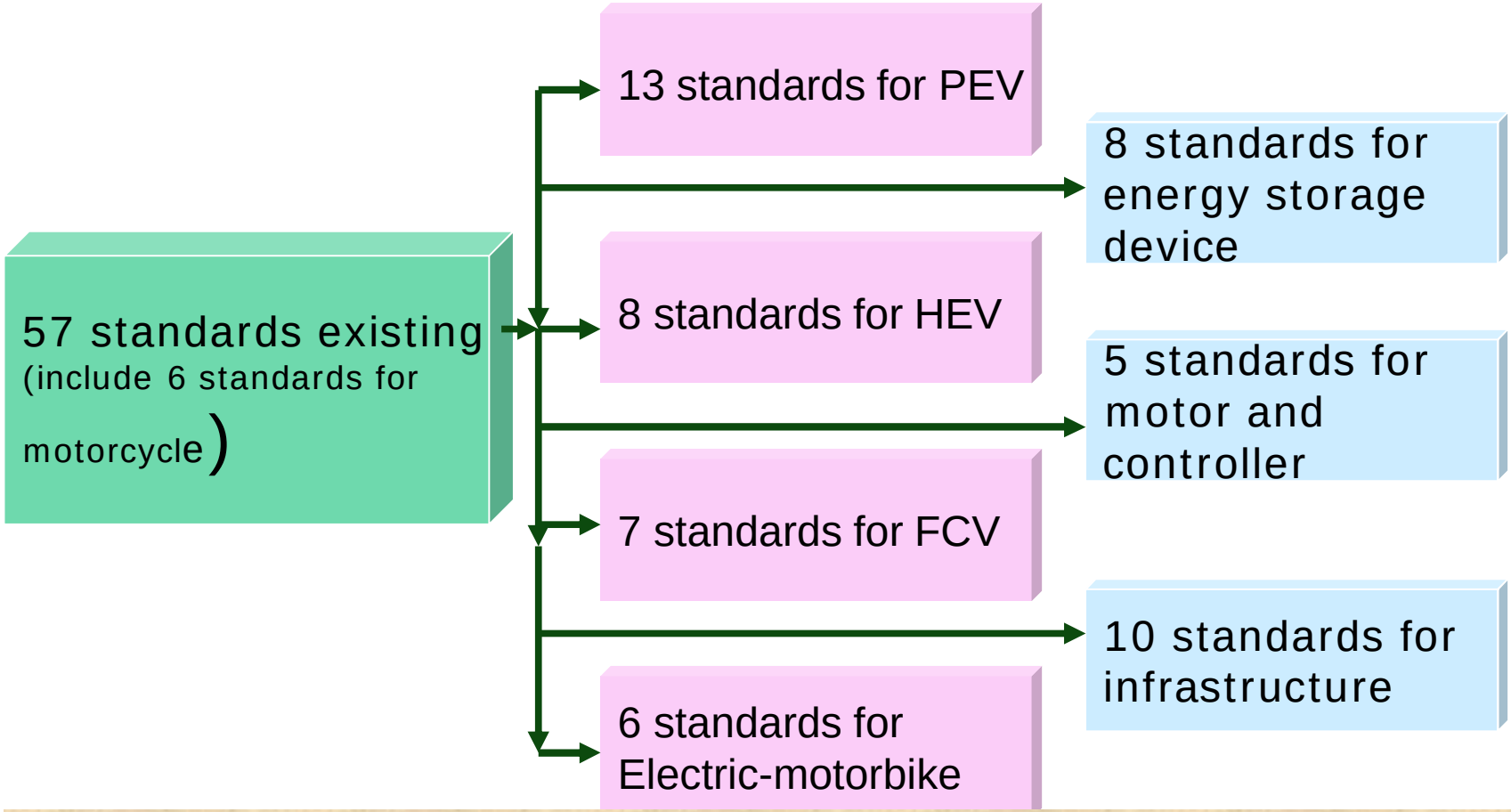
Suggestions

Researches on charging mode, commercial mode and standardization of PEV

Policies to stimulate the use of PEV

- No license control
- No plate number limitation
- Permission to use bus lane, and
- Parking priority

The construction of standard system for electric vehicle



There are 11 standards which have been revised and to be ratified, 14 standards being made or revised, and no standards to be re made. But 45 items of standards are needed in the industry, and the standard system for electric vehicle is the largest in both aspects of coverage and quantity around the world.

Some barriers to further EV charging deployment

Various regional standards for connectors, especially for DC fast charging.

More important than connector type is achieving as much commonization as possible in major portion of the communications protocols

	CHAdeMO (Japan)	GB/T (China)	COMBO1 (US)	COMBO2 (Germany)
Connector				
Vehicle Inlet				
	CAN		PLC	

The Questions

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Additions – remarks?