


KIT  
Karlsruhe Institute of Technology

## Technology Options and emerging technologies for sustainable transport futures

EPTA Conference on sustainable transport 3.11.2010

Jens Schippl, (KIT- ITAS)


INSTITUTE FOR TECHNOLOGY ASSESSMENT AND SYSTEMS ANALYSIS (ITAS)



KIT – University of the State of Baden-Wuerttemberg and  
National Research Center of the Helmholtz Association

www.kit.edu

## New Technologies and concepts are emerging!



The transport system is not static; technical-key drivers for changes are


- 1. Alternative fuels and propulsion technologies** (e.g. BEV, biofuels, hybrids, hydrogen + fuels cells, natural gas) > climate security and energy security
- 2. Information and communication technologies (ICT):** e.g. online information, handy ticketing, tele-working, video-conferencing; smart logistics, “smart trucks” etc. > fuel/CO<sub>2</sub>-reduction up to 25% (Kompfner/Reinhard 2008)

In addition:

- **Innovative businesses concepts** are emerging (car-sharing, “Better Place”)
- More **radical innovations** for technology/infrastructure imaginable (e.g. freight tunnel systems, ariel ropeways, personal air vehicles, road trains).

2 | Jens Schippl, | ITAS | EPTA Conference 03.11.2010

ETAG | European Technology Assessment Group  
ITAS · DBT · FCRI · ISI · IST · ITA · TC · Rathenau



## Information and communication technologies



### Examples:

- Handy tickets
- Tele-working, video-conferencing
- Smart logistics, smart trucking

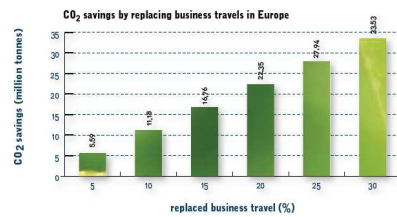
### Expected effects on sustainability

- Modal shift
- Avoidance of trips
- Better load factors

Problem: rebound effects are possible

Source of images:

[www.dashandyticket.de](http://www.dashandyticket.de)  
ETNO and WWF 2008  
<http://www.transport-online.nl/site/transportnieuws/index.php?news=5308>



3 | Jens Schippl, | ITAS | EPTA Conference 03.11.2010

ETAG

European Technology Assessment Group  
ITAS · DBT · FCRI · ISI · IST · ITA · TC · Rathenau



## Emerging business concepts for urban transport



### Bike-sharing:

- Success of recent systems due to advanced technologies (better access +handling)
- “Vélib” Paris: 20.600 bikes at 1.500 docking stations



### Car-sharing:

- System improved by ICT technologies
- Niche market for alternative fuels/propulsions
- New approaches: Car2Go /Daimler; Mu/Peugeot;
- Autolib Paris with 4.000 electric cars and 1.400 rental and recharging stations



### Better Place

- E-Mobility in Israel, Denmark, Australia (others)
- Dense network for recharging/charging batteries
- Idea of leasing the battery



4 | Jens Schippl, | ITAS | EPTA Conference 03.11.2010

ETAG

European Technology Assessment Group  
ITAS · DBT · FCRI · ISI · IST · ITA · TC · Rathenau



## Out of the box: more “visionary” approaches












5 | Jens Schippl, | ITAS | EPTA Conference 03.11.2010



European Technology Assessment Group  
ITAS · DBT · FCRI · ISI · IST · ITA · TC · Rathenau




## Conclusions



- A wide range of **technologies** are emerging > ICT and cleaner fuels as key-drivers
- Technologies are a necessary but not a sufficient requirement for sustainable transport
- Innovative **business models** are discussed as being crucial “enablers” for sustainable transport
- Potentials for **behavioural changes** need to be assessed as well (supply side and demand side)

6 | Jens Schippl, | ITAS | EPTA Conference 03.11.2010



European Technology Assessment Group  
ITAS · DBT · FCRI · ISI · IST · ITA · TC · Rathenau

