

# **The eV Industry Markets, business models, investment**

**John Wormald**  
*autopOLIS*

**SHIFT10**  
**Cambridge**  
**2 December 2010**

## Alternative propulsion systems

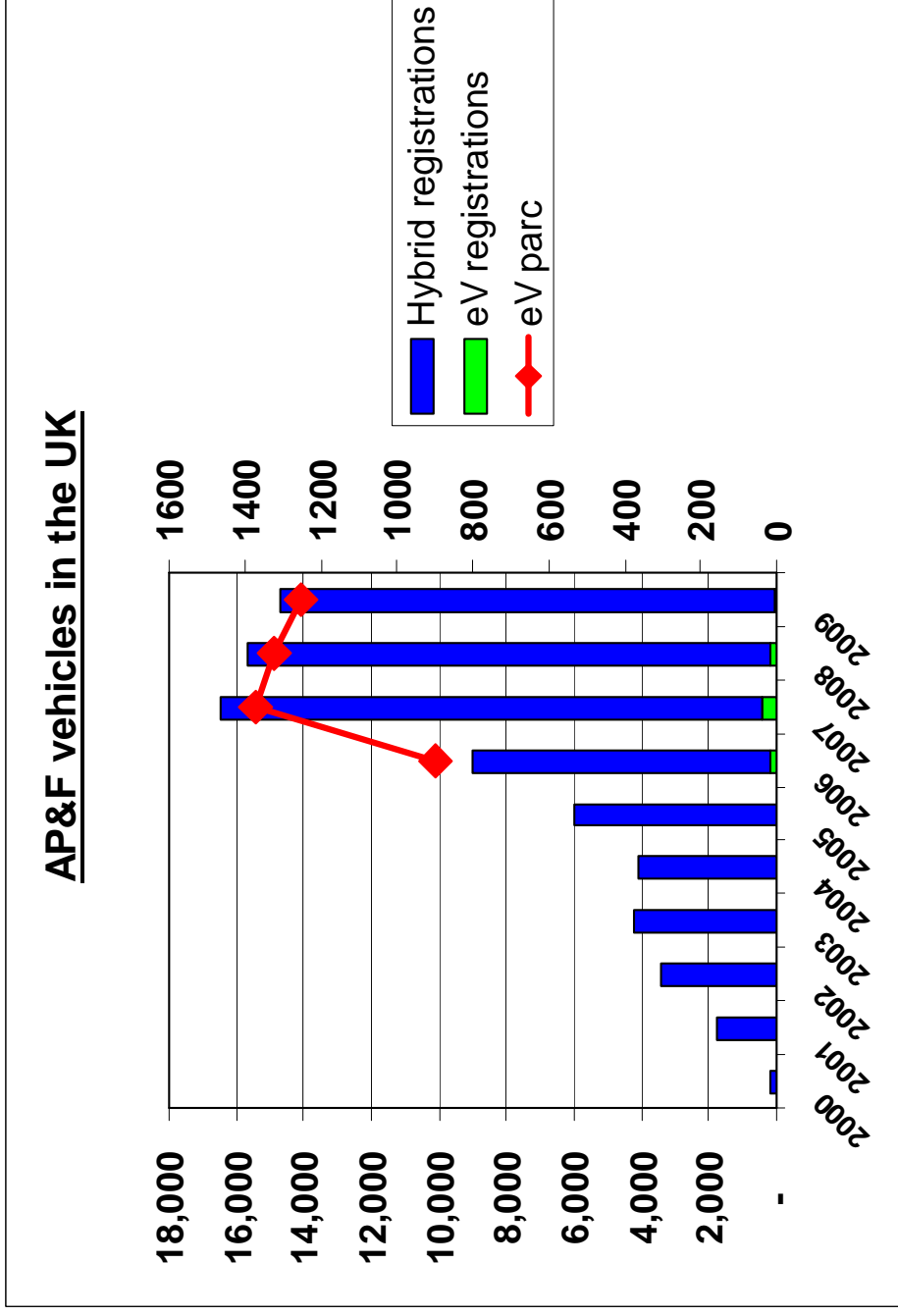
### Conventional

- Improved ICE
- HEV (parallel hybrid)
- Bio-fuels
- CNG

### Novel

- PHEV (series hybrid)
- BEV
- FCV

# The current eV market is negligible and has been falling



# Favourable factors and obstacles

## Advantages – short-term

- Zero tail pipe emissions
- Silence
- Regenerative braking
- Lower energy price

## Potential – long-term

- Match to decarbonised electricity supply
- Role in novel transportation systems

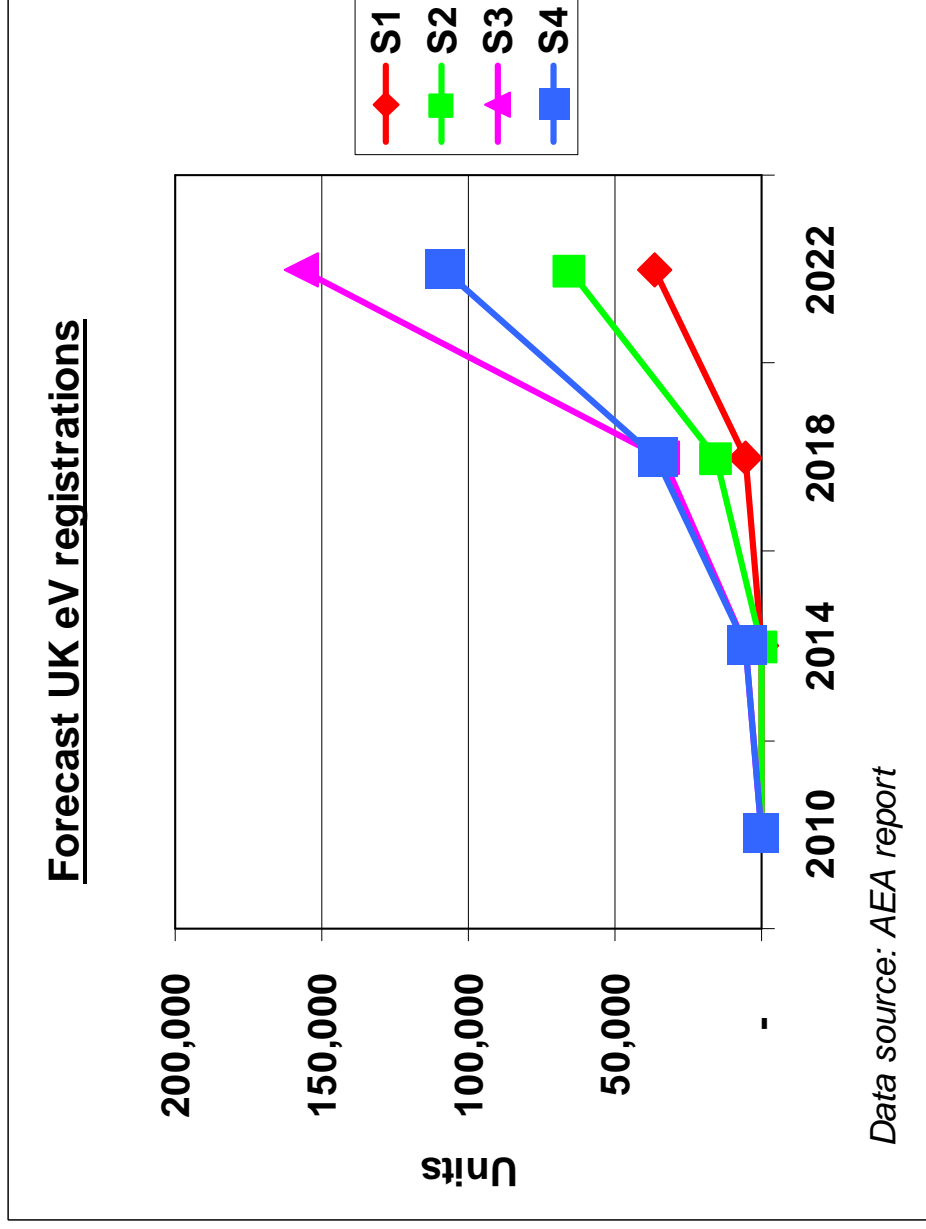
## Disadvantages – short-term

- Very high first cost
- Residual value risk
- Limited range
- Recharging time
- Limited charging point network

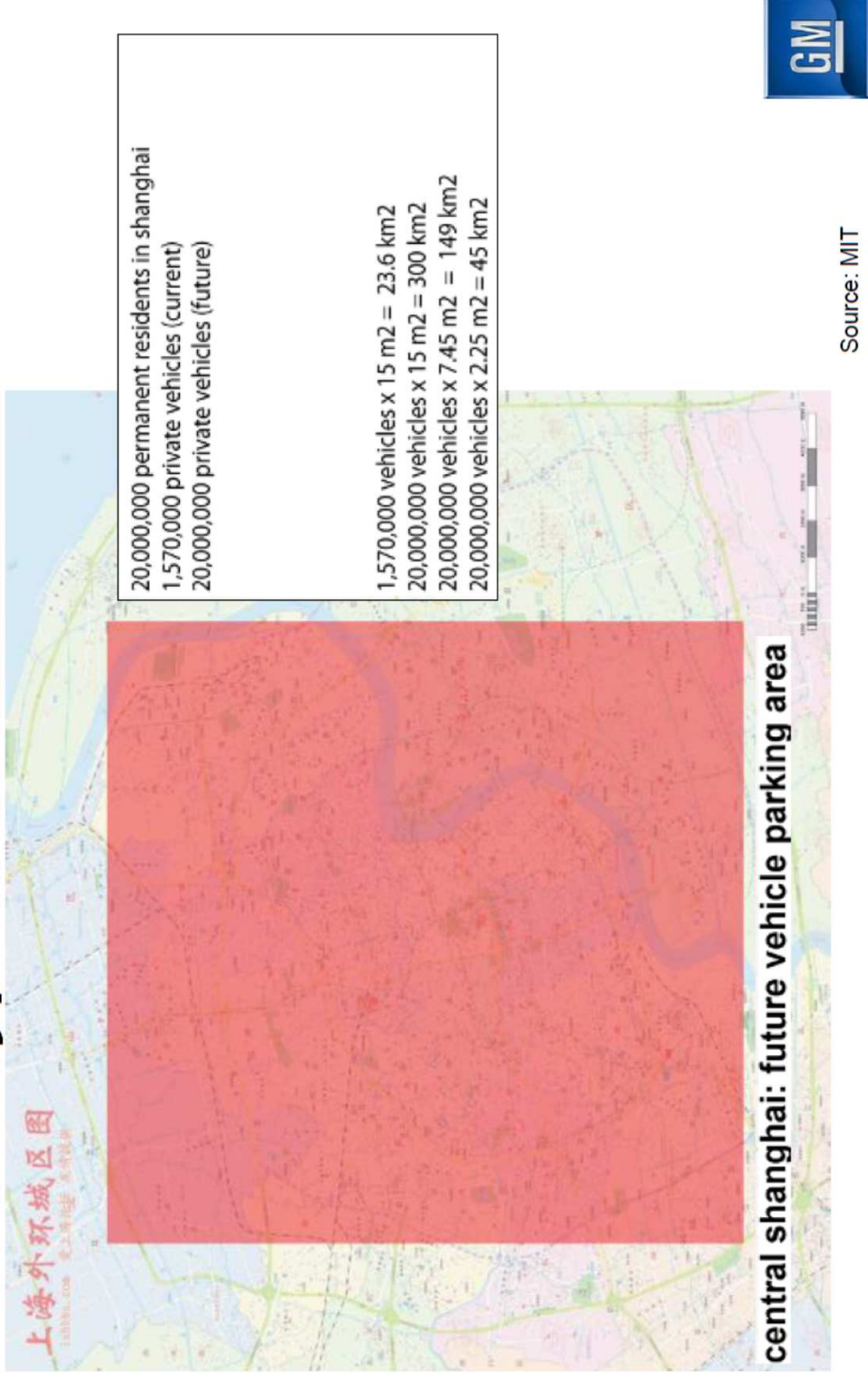
## Risks – long-term

- Electricity cost and taxation

# 5% market penetration by 2022, with heavy subsidies



# Shanghai: With US rates of ownership and typical size automobiles



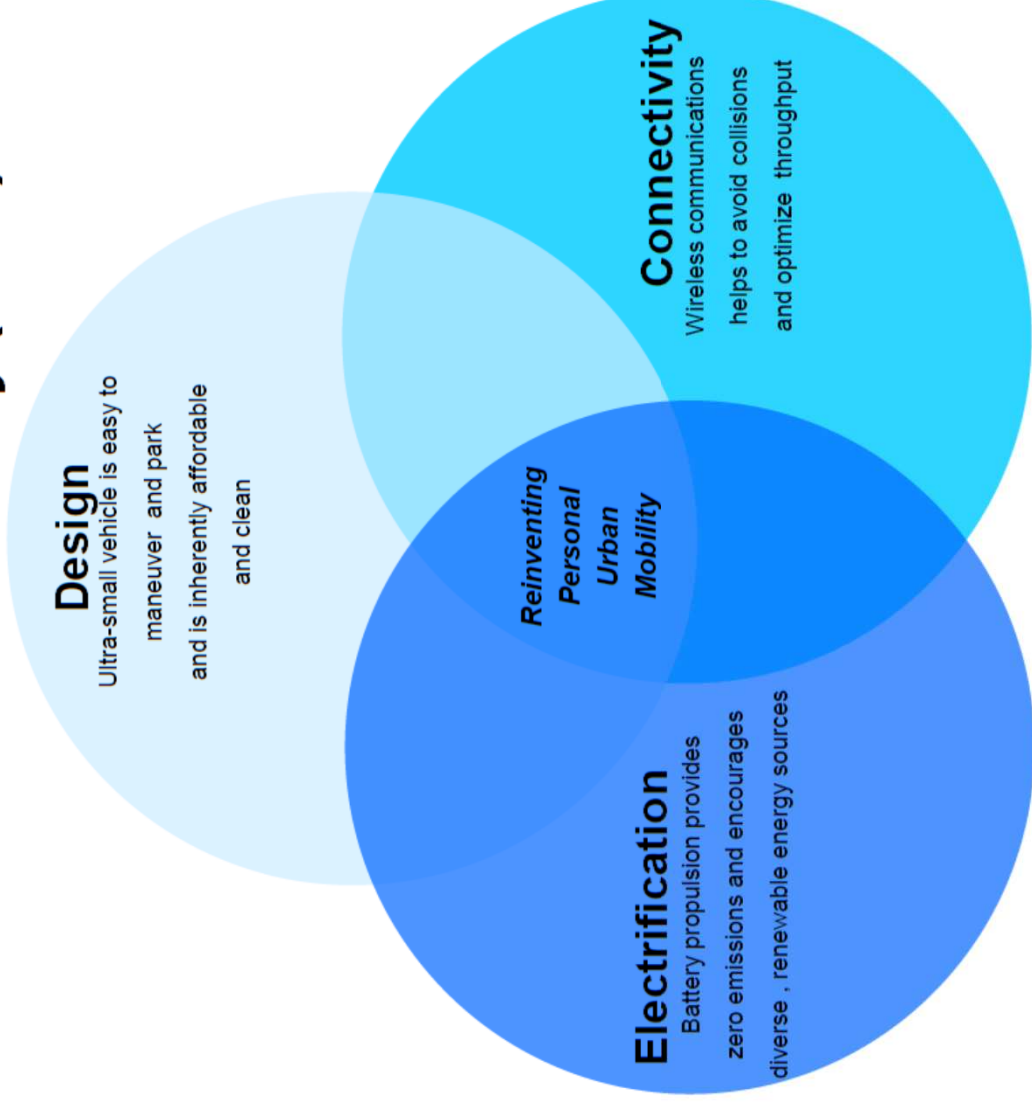
Source: Chris Borroni-Bird, Reinventing Personal Mobility

**autopolis**

**6**

*We begin with an understanding*

# Reinventing the Automobile for Urban Mobility (EN-V)



Source: Chris Borroni-Bird, Reinventing Personal Mobility

**autopolis**

# Integrated living and mobility system



**autopOLIS**

**8**

*We begin with an understanding*



## Which business model, which investments, what potential ?

### Existing industry model

- **VM-led**
- **Product push**
- **Over-competition**
- **Price #1 purchasing criterion**
- **High risk of eV investment failure**
- **No UK competitive advantage**

### New transportation model

- **Integrated into the new habitat**
- **System-led**
- **Solution-based**
- **UK has a real chance**
- **World-wide, long-term potential**
- **Much less immediate competition**