

Market and technology trends of automotive future in Germany

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Challenges

Strategies

Driving forces and unsolved problems



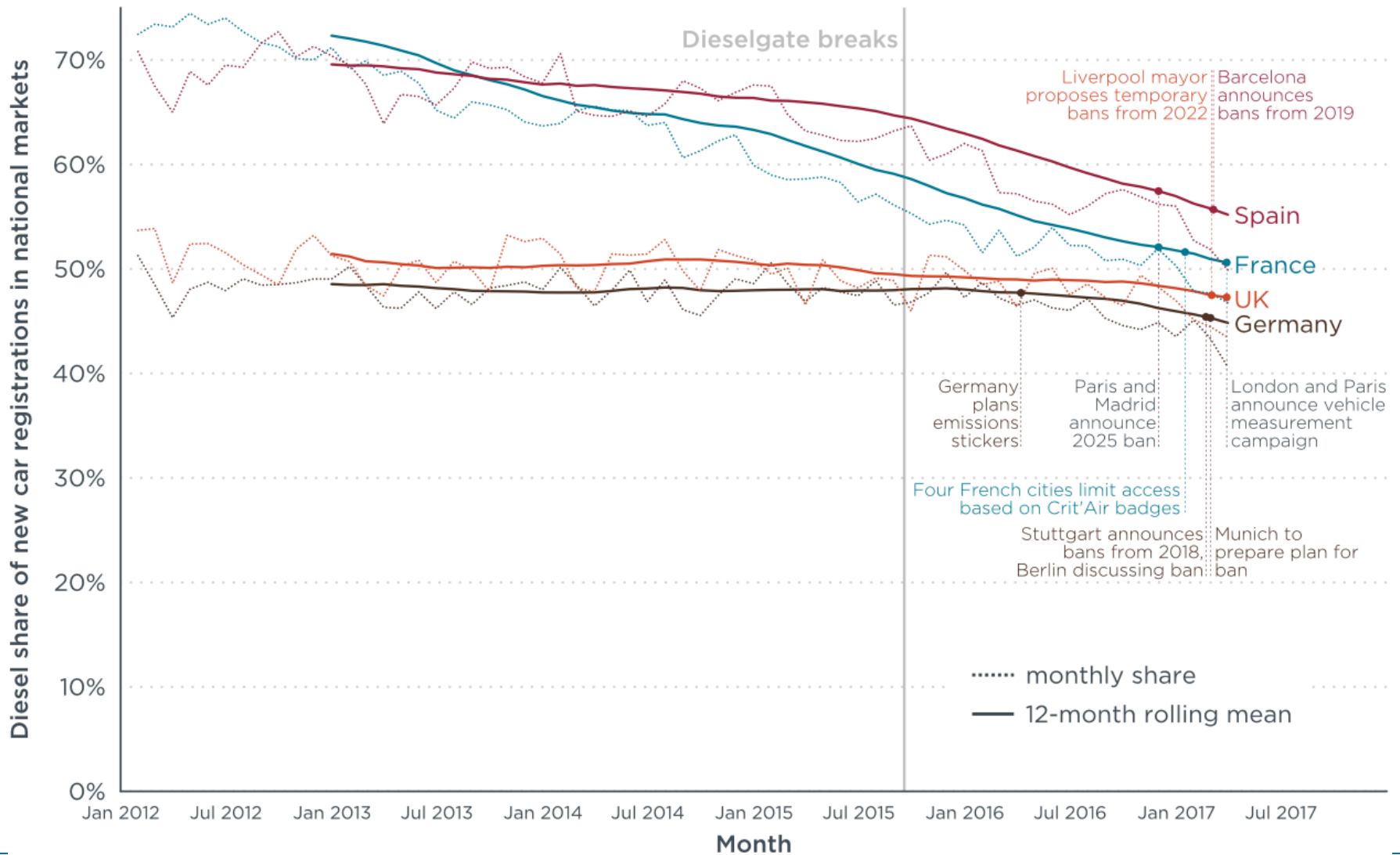
Challenges



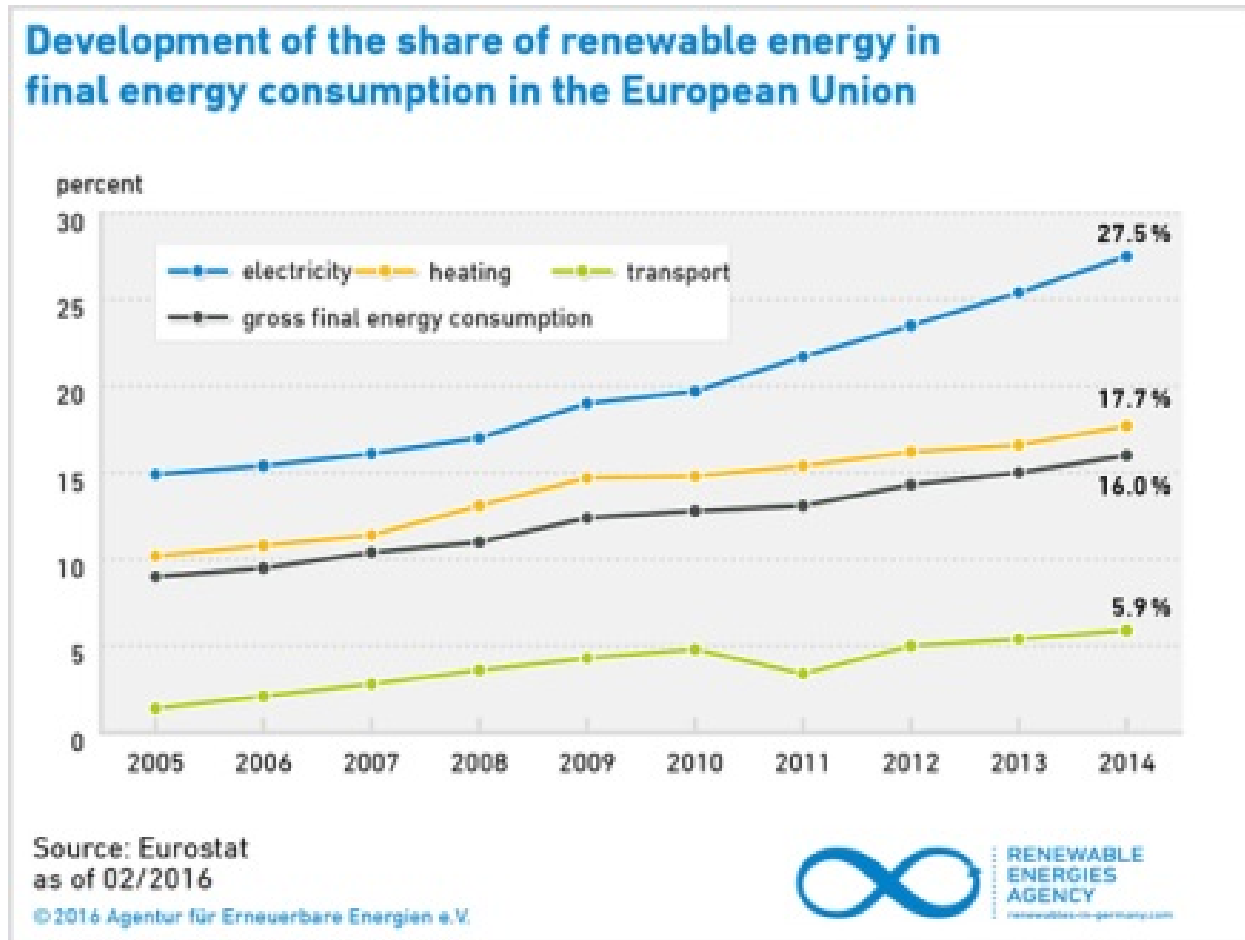
German automotive industry: trends

Currently: Dieseldate

(Source: <http://www.theicct.org/blogs/staff/cities-driving-diesel-out-european-car-market>)



Behind: No progress in decarbonisation:



Autonomous driving: (CS) car comes to the customer



Quelle: <http://autonomos.inf.fu-berlin.de/>



Automobile socialisation is changing:

Young urban with more distance to the car:

- Modal split-share of car driving is decreasing (not only) in Germany: 18-24 aged between 2002 und 2008 from 65 to 57 % (bike and PT are the winner)
- Younger don't buy cars : 2009 only 7 % of buyers of new cars are under 30 while 17 % in 1999
- Digital divices and mobile phones (also city tours) are taking the place in terms of social prestige, cars are facing ‚less emotions‘ and ‚more objectification‘



Strategies



Electrification



Withdrawal from internal combustion engine:

- **2040: France**
- **2030: India**
- **2025: Netherlands, Norway**
- **2025: European metropolitan regions like Paris, Helsinki, Milano...**

- **from 2018: increasing zero-emission quota in China**



German automotive industry: trends

But: E-Mobility is more than substitution of IC-engine

→ Combined e-mobility



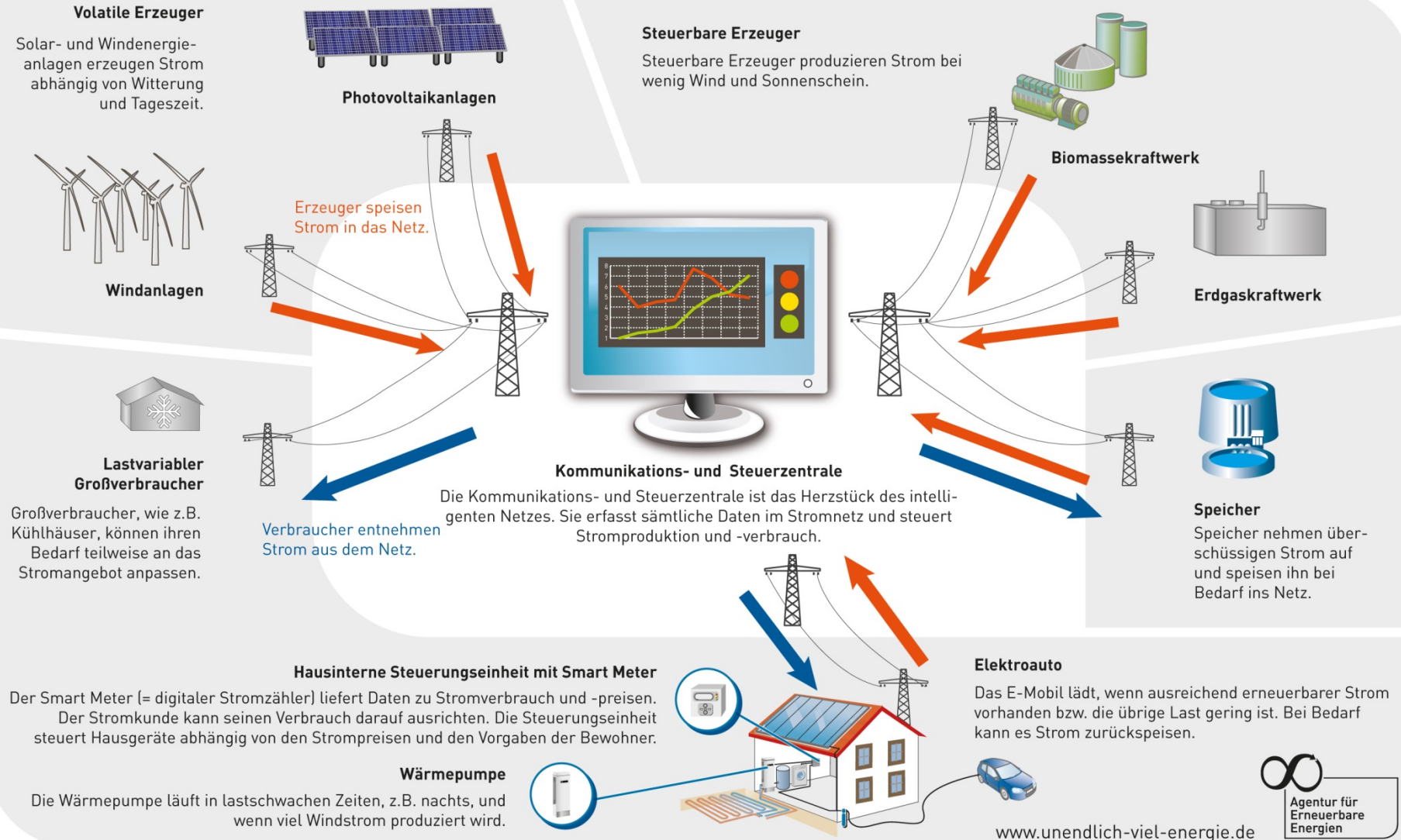
Combined e-mobility means: EVs=triple cross-linked

- To other means of transport: EVs as part of an integrated intermodal transport service (incl. PHEV for enabling weekend trips and longer drives)
- To ICT: EVs are available at public transport hubs and beyond and can (already today) be located and reserved via smartphones
- To electricity grid: EVs are maintained in fleet management and become optional flexible storage for fluctuating renewable energies



German automotive industry: trends

Das intelligente Stromnetz



German automotive industry: trends



Boom of innovative mobility services:

- *New services:* Car2Go from Daimler, drive now from BMW (2/3 of the user between 18 und 36 years old!, like mobile phone: 29 Ct. per minute all inclusive), Multicity from Citroen, Ford2go... Quicar from VW ..., Opel... Audi: premium car sharing
- Also: blablacar, clever shuttle, allygator...



New Player:

- *Digital companies:* Apple, Google, Uber, Tesla...
- *Start ups:* Streetscooter and SONO and...
- *New Units of OEMs:* moovel, project I, MOIA ...



German automotive industry: trends

Quelle: <https://www.streetscooter.eu/mediacenter>



German automotive industry: trends

Increasing structuration
of activities in local practices

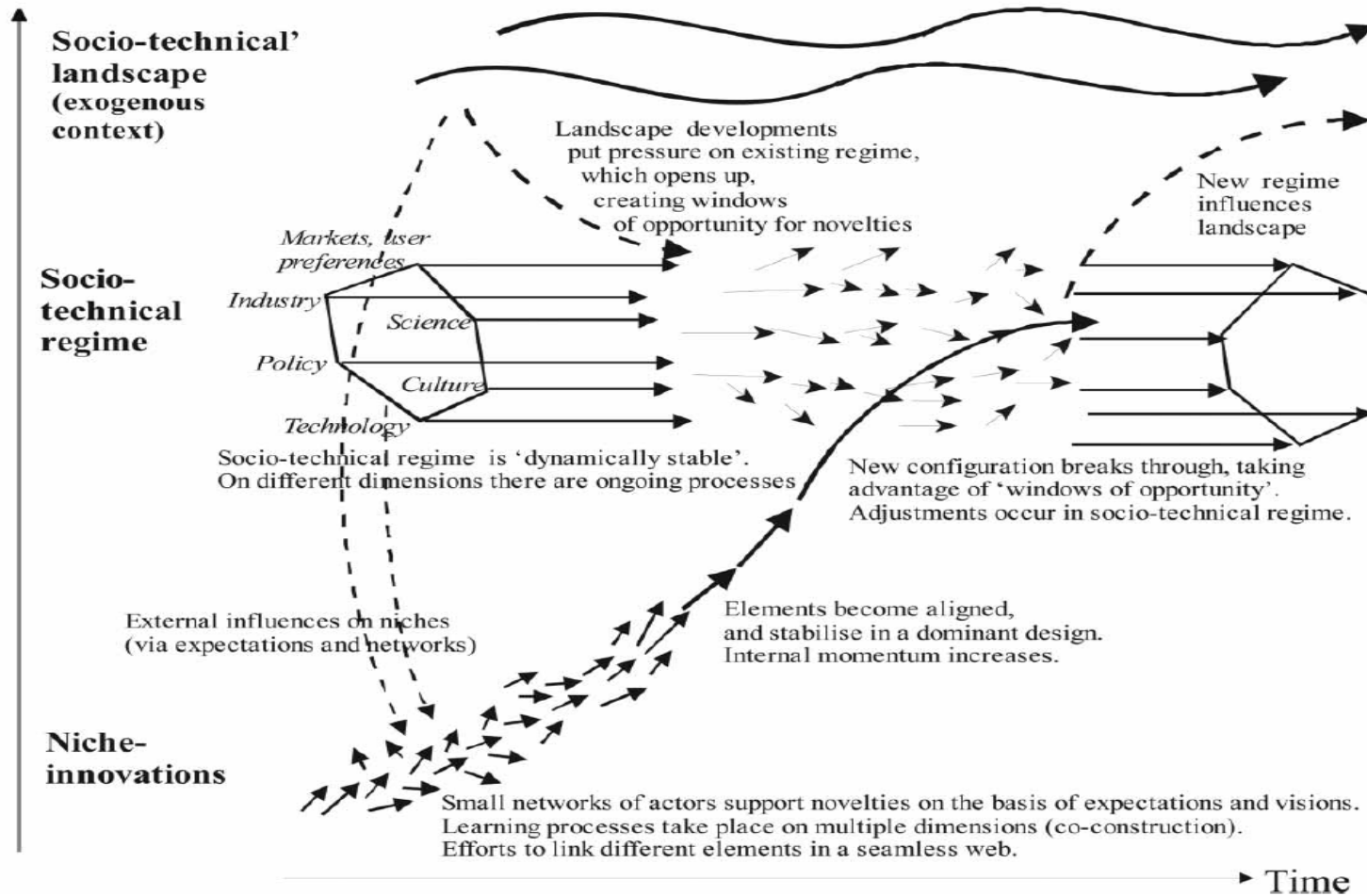


Figure 5. Multi-level perspective on transitions (adapted from Geels 2002, 1263).



Driving forces and unsolved problems



Driving forces

- Technically: Renewable energies (RE) and digitalisation – later on at ‘zero marginal cost’ (J. Rifkin)
- Economically and politically: Emission limits (climate protection), expansion of fluctuating RE and consistent user financing
- Behaviorally: ‘permanently online’, pragmatic multimodality (‘using instead of possessing’) and the erosion of status of possession (+ ‘possessing instead of using’)



Cross-linked e-car sharing: what the audience research says:

- Intermodal transport services meet the need for individualised mobility ('automobile' means 'self-moving')
- Ability to become routine is decisive for success of new forms of mobility
- Socialisation of 'being permanently-online' reduces transaction costs



Problemes needed to be solved...

- *Fragmented ,landscape of suppliers‘*: Interfaces and business cases for interlinked services are necessary as well as social innovations
- *High costs of transformation*: loss of employment in production in transition to post-carbon mobility, time gap in building up new employment
- *Loss of data privacy and ensuring of data protection*: transferring and sharing of personal data without becoming transparent customer & problem of hacking



Transformation Path: Problems and Outlook

- OEMs remain in path dependency, role of active industrial policy
- Consensus building and binding timetable needed („Agora Verkehrswende“)
- Loss of jobs unavoidable, social policy measures needed



Summary and outlook

- German automotive industry is under pressure because of needs for climate change protection, disruptive technology innovations like electrification and autonomous driving and last not least changing attitudes of younger generation in developed countries
- Technical and business strategies can be to switch to new products and business fields: combined e-mobility, i.e. primarily mobility services
- Strong driving forces support this fundamental shift to combined and shared mobility but also some big problems need to be solved

