

Modeling market diffusion of Electric Vehicles in Germany

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Objective

- Reaching the European target for M1 vehicles of EC regulation 443/2009, 333/2014
- Achieving the market share of 1M EV in the German Market
- Develop a "communication model" (PTD) which is easy to understand

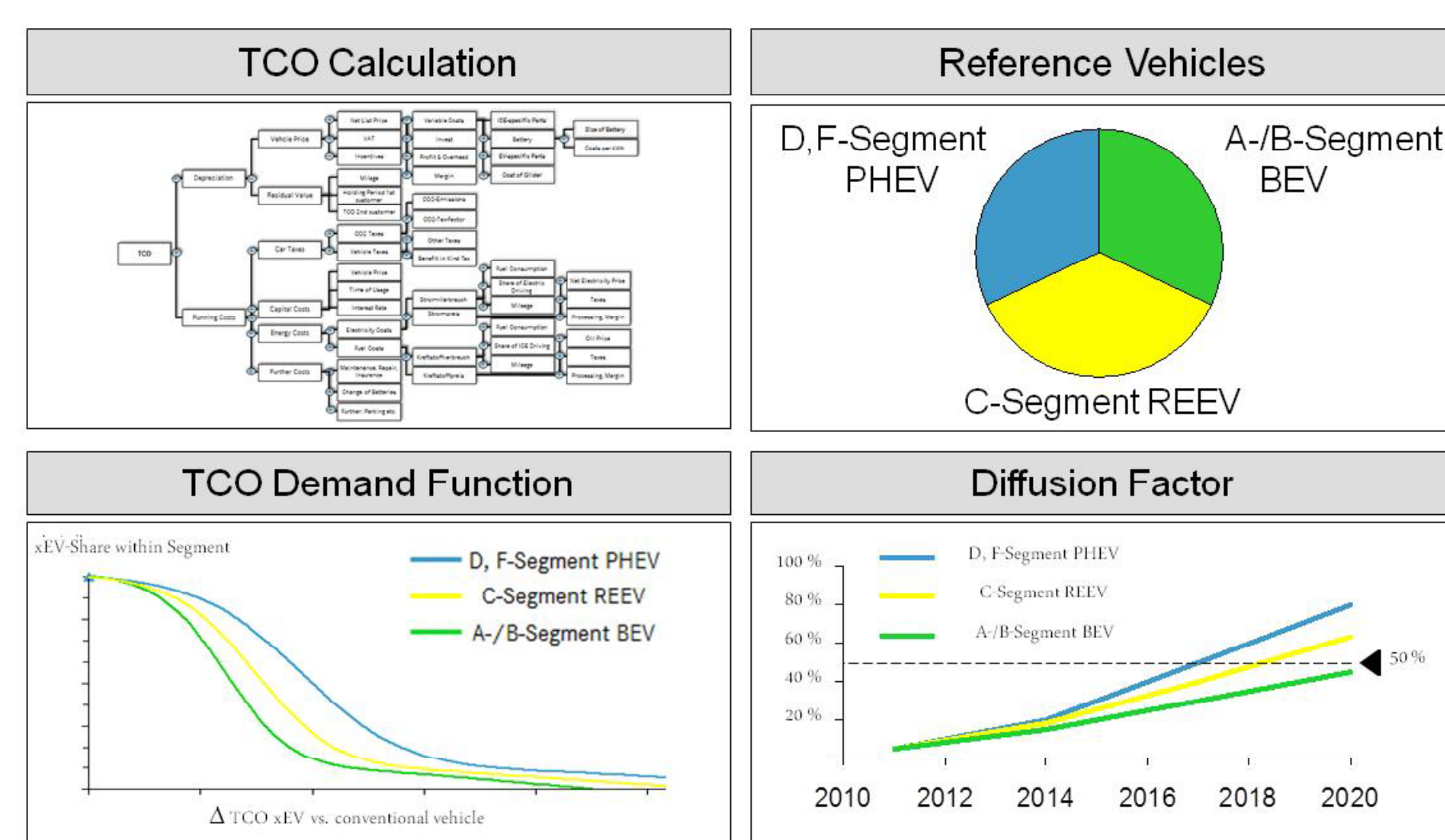


Fig. 2: The PTD model concept

The Method

The PTD model consists of

- a TCO module
- reference vehicles
- TCO demand function
- diffusion factor

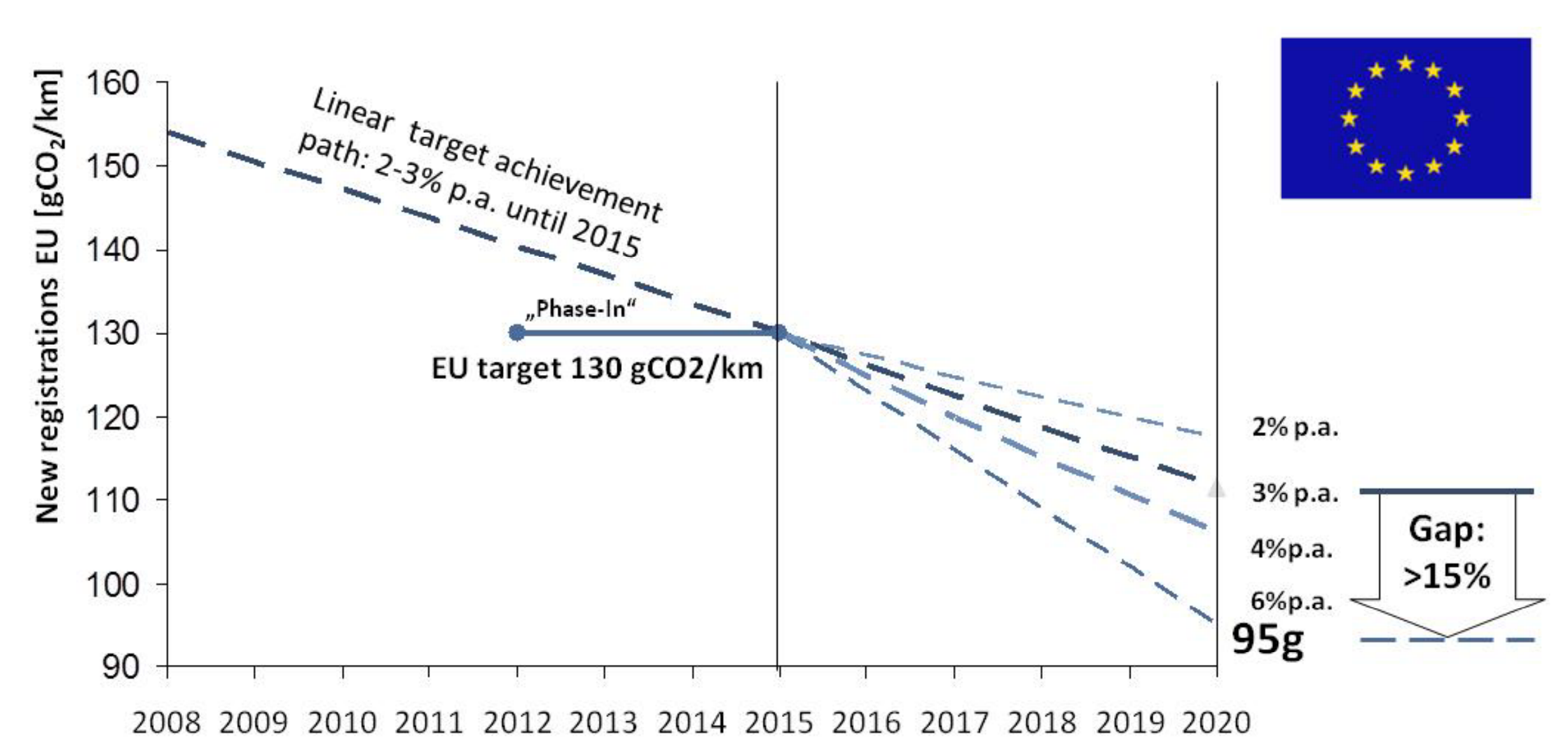


Fig. 1: The challenge to reach the European emission target

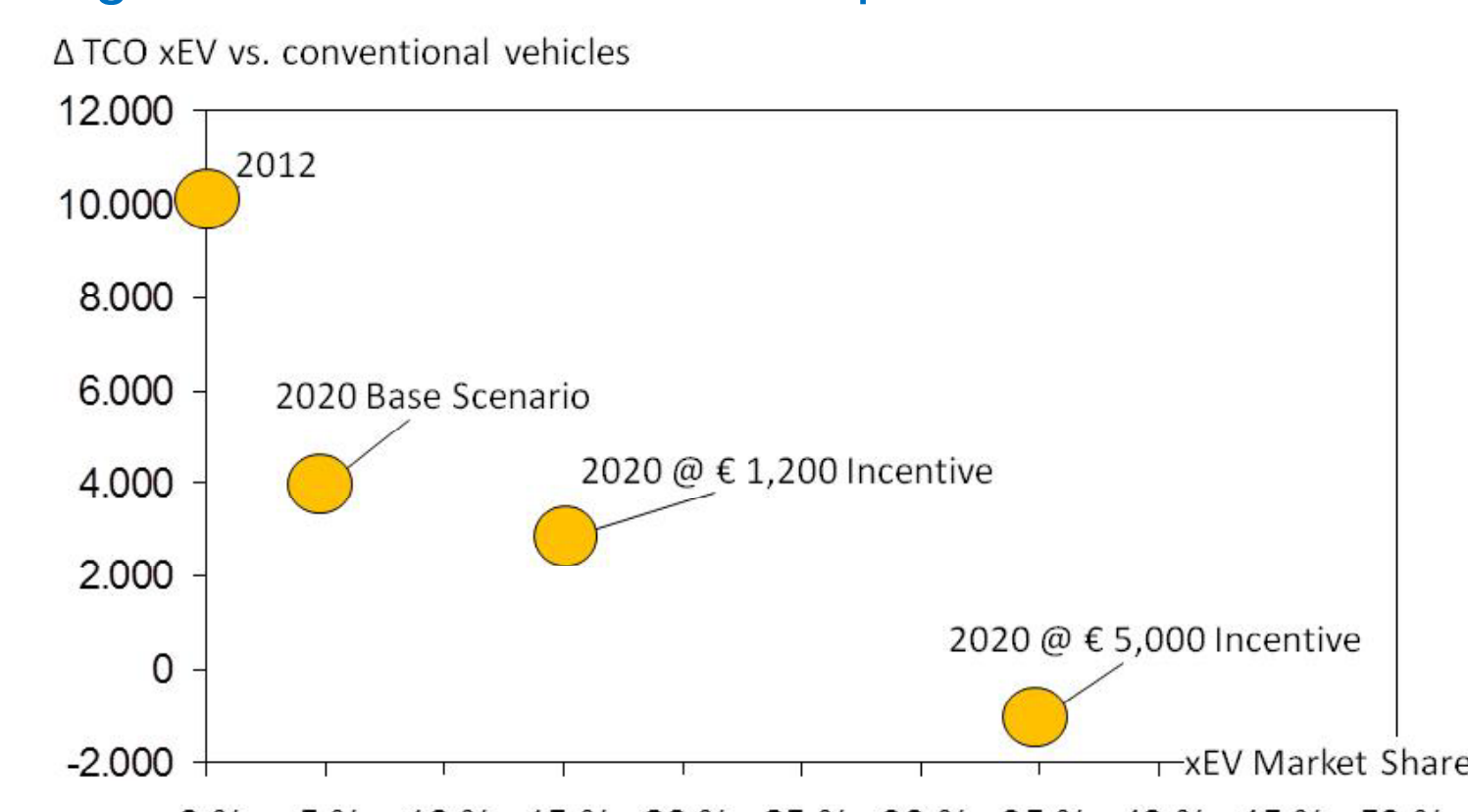


Fig. 3: Model results for different scenarios

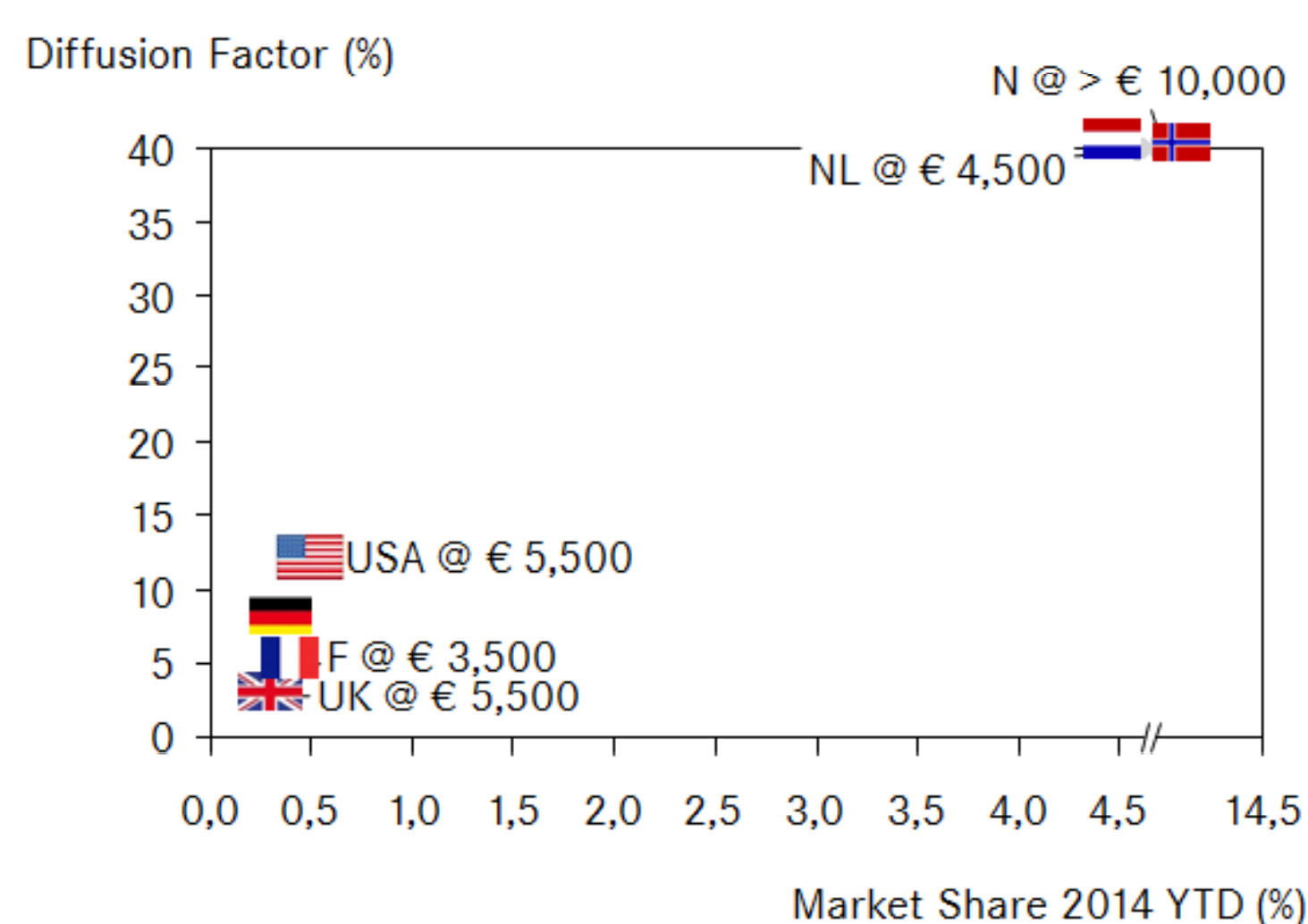


Fig. 5: Model results for other countries

Results for the German market

- Without subsidies the TCO disadvantage of EV is currently too high.
- A car purchase subsidy will increase the EV market share significantly (cf. Fig. 4).
- A subsidy of 5,000 Euro per EV will lead to substantial market share even in 2020 (cf. Fig. 3).
- Successfully applied by the National German Platform for Electric Mobility (2012).

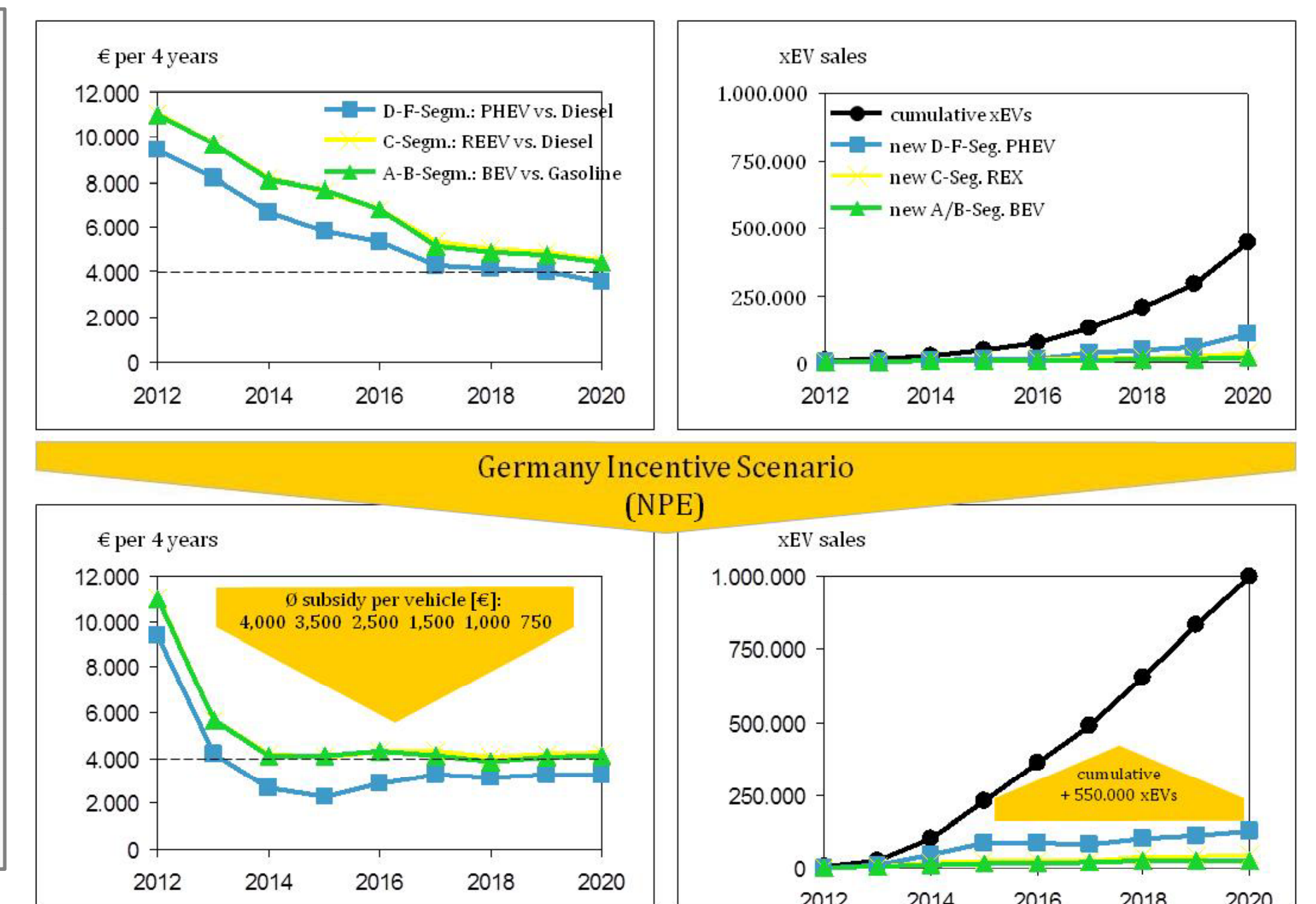


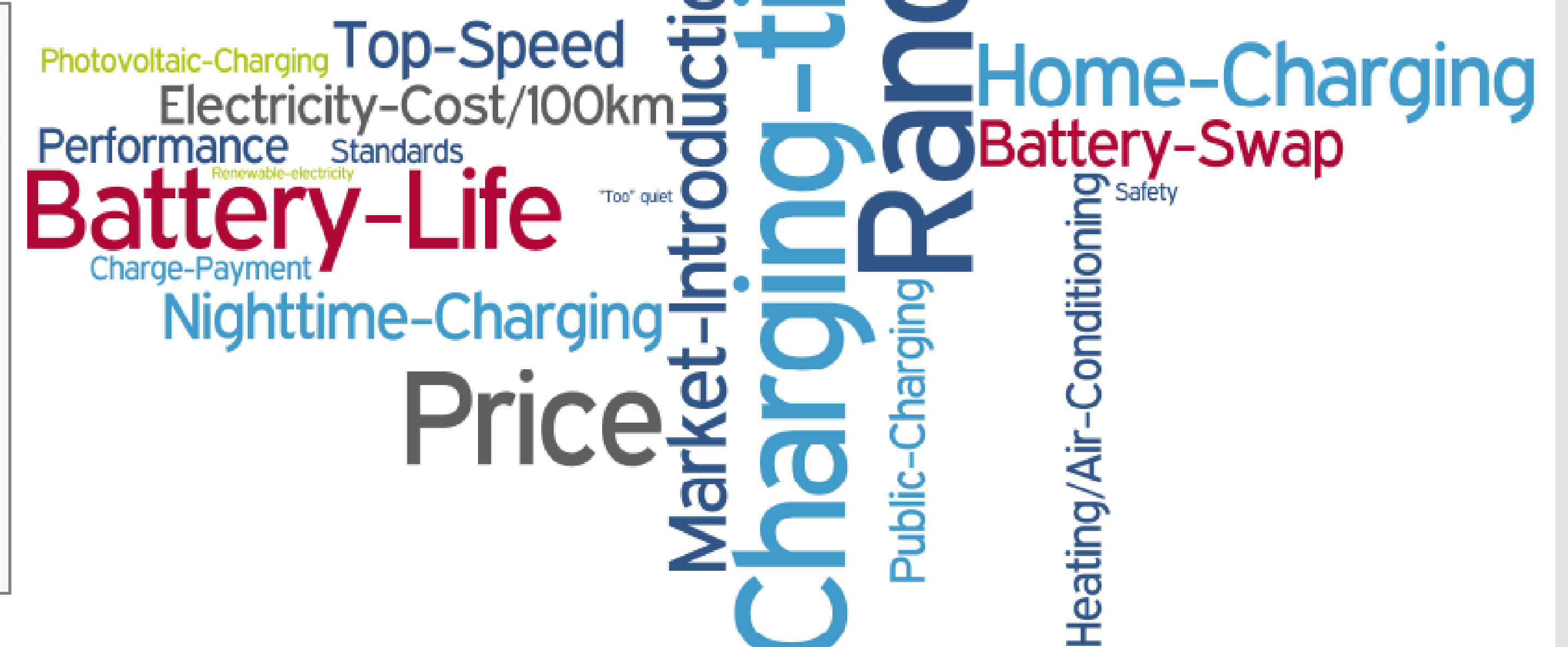
Fig. 4: Model results for the German Market

Results for other markets

- A first application to other markets shows considerable results (cf. Fig. 5).
- Results are confirmed by other studies (fka and RB).

Conclusions

- ✓ Without subsidies the EV market penetration is too slow and the German target will be very hard to reach.
- ✓ The easy comprehensible model PTD can be used to find a common understanding of the future of electric mobility among different stakeholders



Abbreviations: EC: European Commission | EV: Electric Vehicle | TCO: Total Cost of Ownership | ICEV: Internal Combustion Engine Vehicle | PTD: Prognosis on TCO and Diffusion factor (simulation model)

References: NPE (National German Platform for Electric Mobility) (2011): Zweiter Bericht der Nationalen Plattform Elektromobilität | NPE (2012): Zwischenbericht der Nationalen Plattform Elektromobilität | Pfahl, S. (2013): Alternative Antriebs-konzepte: Stand der Technik und Perspektiven – Die Sicht der Automobil-industrie, in: Jochem, P., W.-R. Poganietz, A. Grunwald, and W. Fichtner (Eds.): Alternative Antriebskonzepte bei sich wandelnden Mobilitätsstilen, Karlsruhe, 81-108 | fka and Roland Berger (2012), Quartalsindex Elektromobilität, Aachen, Germany.