



# Market design and regulation during the transition to low-carbon power systems

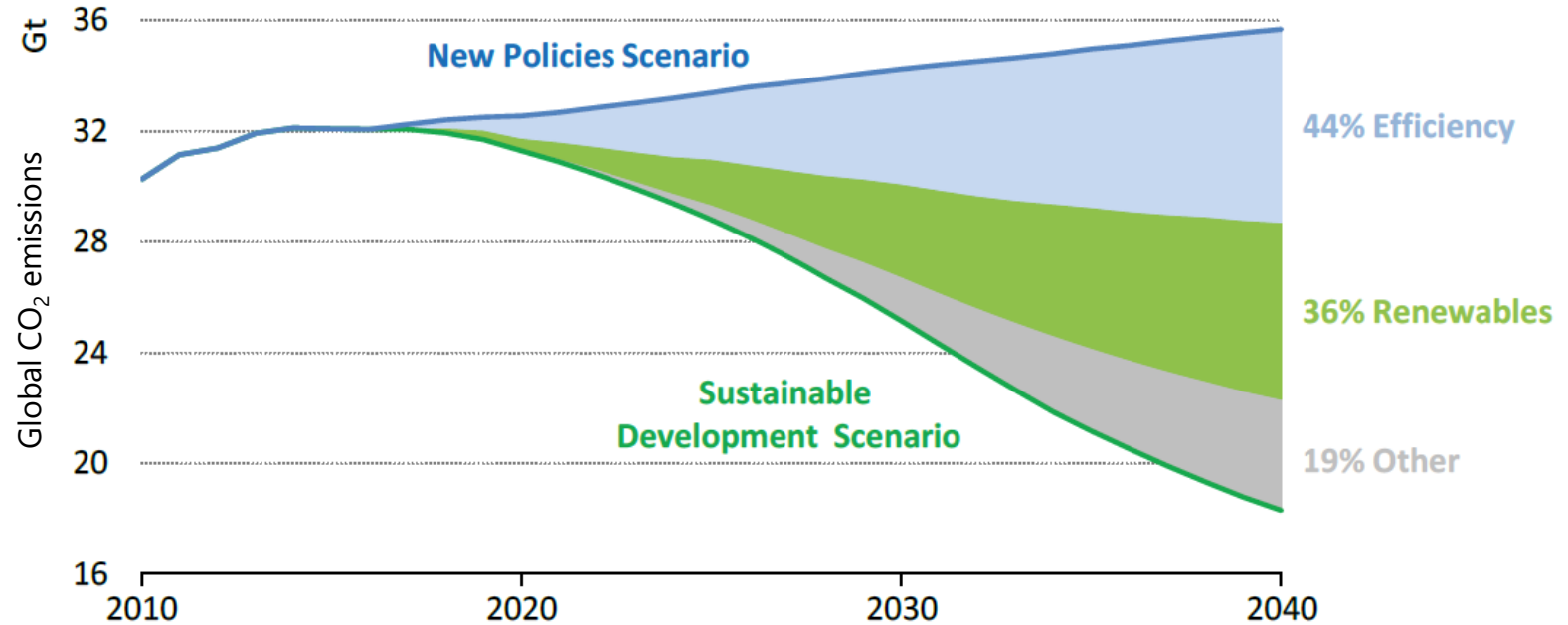
---

Dr. Stefan Lorenczik

Berlin, 23. October 2018

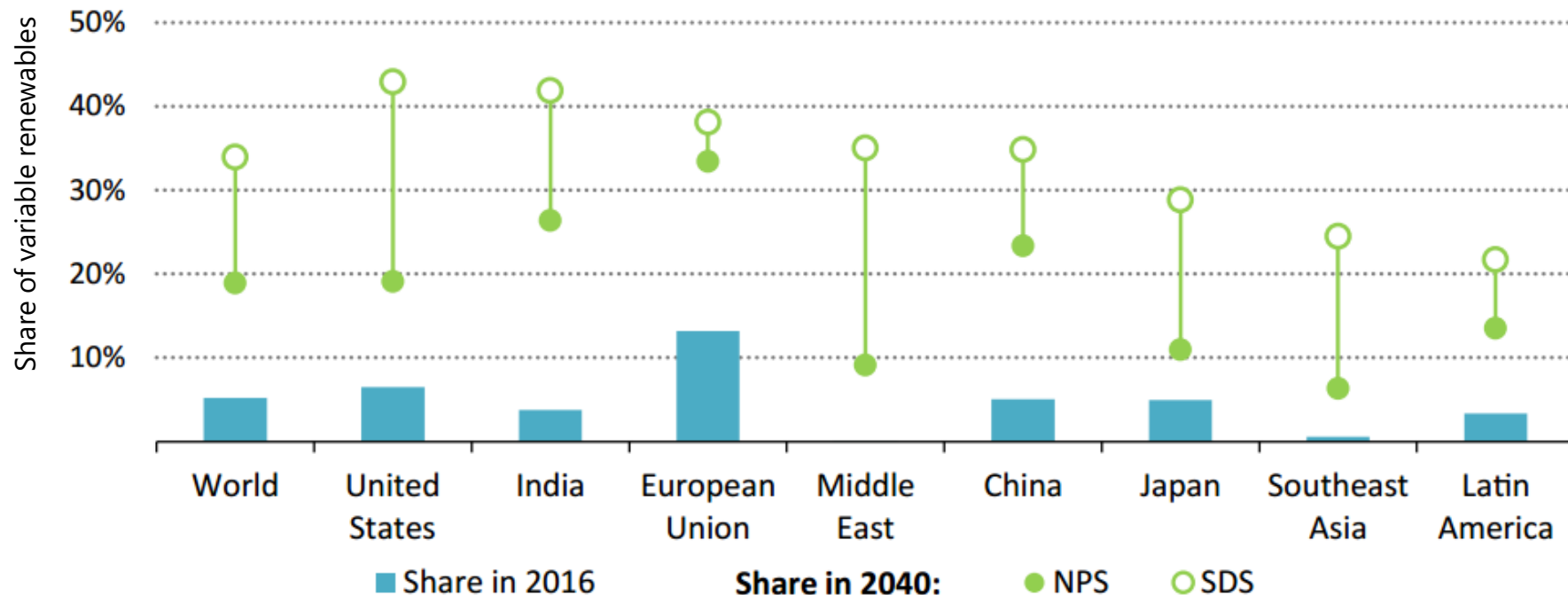


# The challenge ahead: from New Policies to Sustainable Development



**Improved energy efficiency and accelerated renewable deployment are the most important steps in the transition.**

# The share of variable renewables will need to rise substantially



**A rising share of wind and solar in the total generation mix requires a range of policy, regulatory, and market responses to enable sufficient power system flexibility.**

# Three areas of upcoming challenges

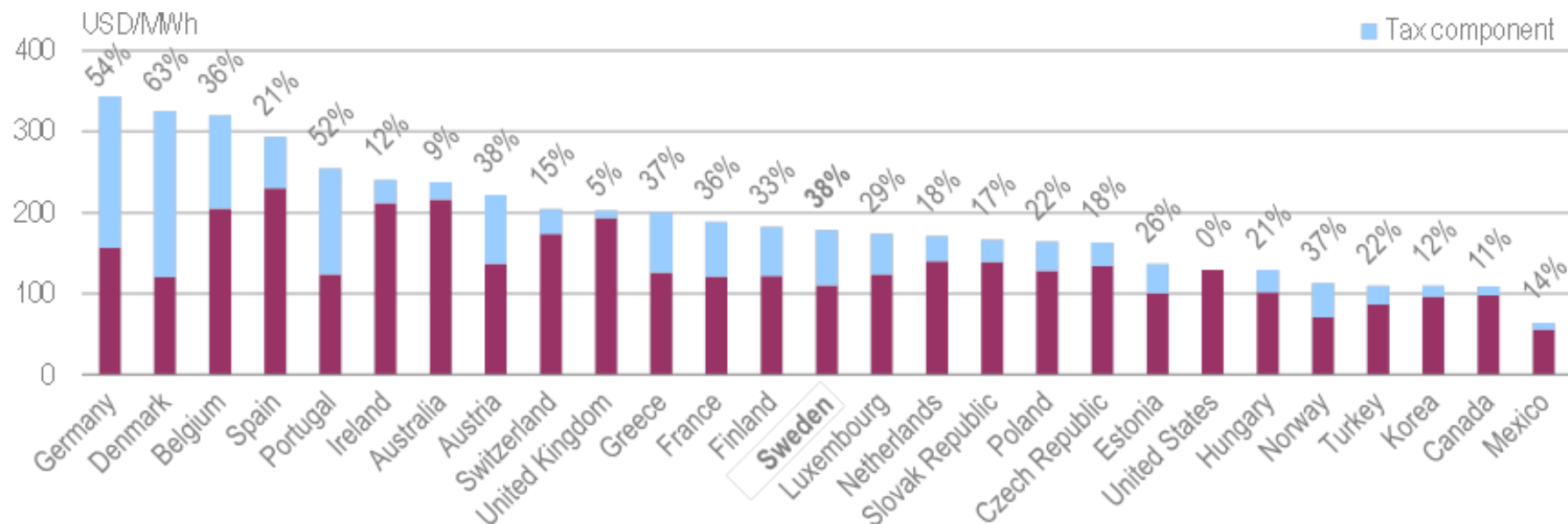
---

- Efficient addition of new renewable capacities
- Efficient use of renewable energy generation
- Securing system stability

How do we get the

- right capacity mix?
- at the right places?

# Taxes are a major component of household electricity prices

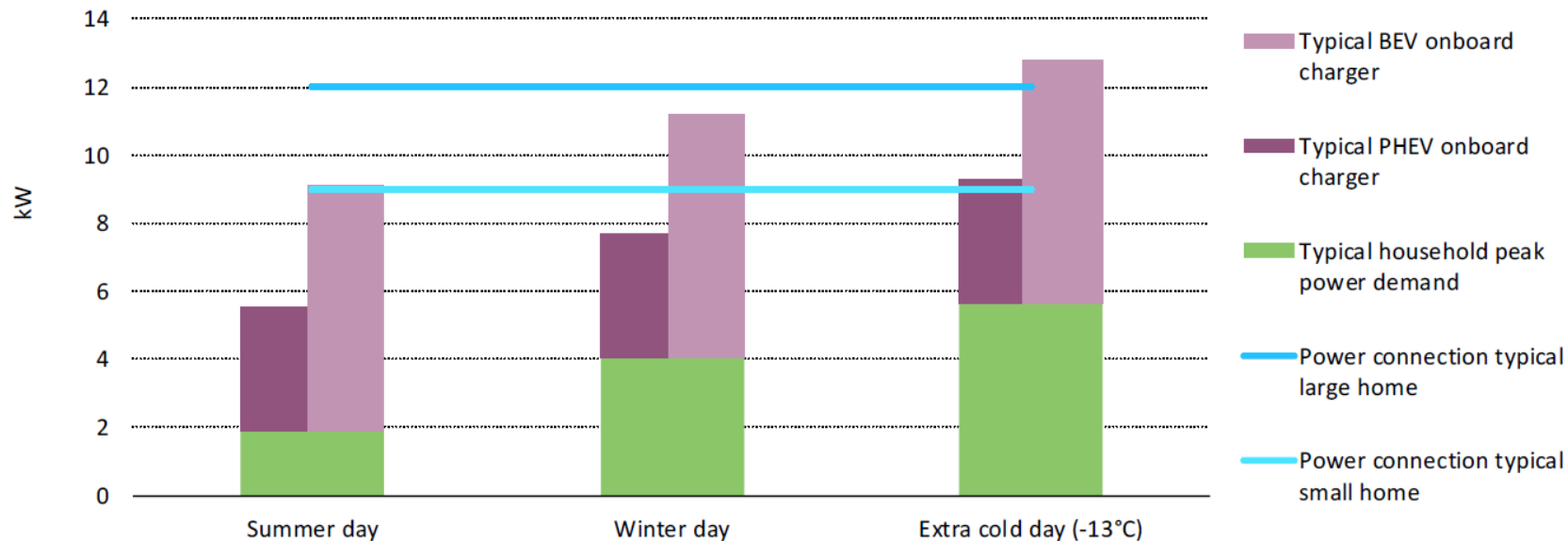


**Electricity taxes reflect an era when electricity was made inefficiently with fuels**

Increasing discrepancy between (short-run) electricity generation costs and consumer prices impede

- opportunities for efficient response
  - Other charges discourage consumption – even when such consumption is socially efficient
- opportunities for innovation
  - New technologies make it easier for intermediaries to capture value

# Peak electricity demand in Norwegian houses (detached)



Note: On-board charging capacity for both a typical BEV and a PHEV are in line with characteristics of the newest version of today's two most popular models in the region: Volkswagen Passat GTE (PHEV) and Volkswagen e-Golf (BEV).

Sources: IEA analysis based on Kipping and Trømborg (2016).

**New electric applications can significantly increase peak demand**



- Again, we need to think about electricity pricing
  - for final customers
  - for wholesale markets
- A changing role for DSOs?

- Energy transition is not only an engineering challenge
- The growth of hours with very low/negative wholesale prices will lead to economic opportunities in the energy system
- New economic thinking is needed to help reform electricity taxation, electricity rate design, and demand-side policies
- The right price signals will encourage the innovation needed to advance the clean energy transition



[www.iea.org](http://www.iea.org)

