Economic & Ecologic Sustainability with Smart Grid 2.0

Dialogos por un futuro sustentable
Centro Mario Molina/Embajada de Alemania

Mexico City, 22.06.2017
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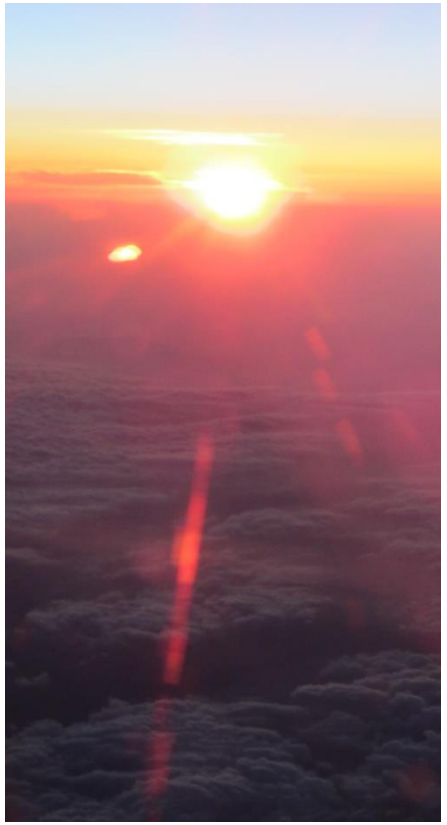
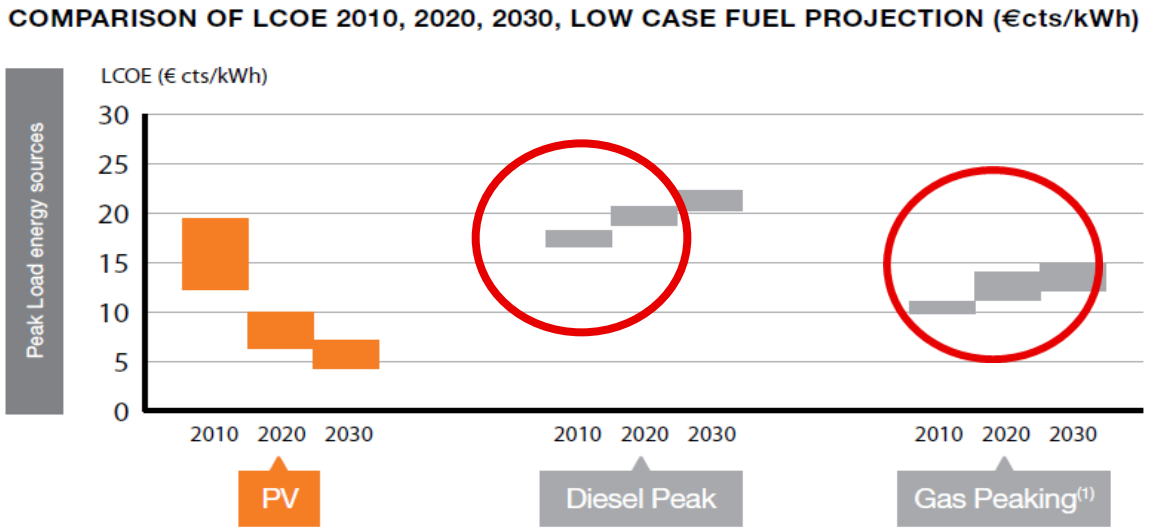


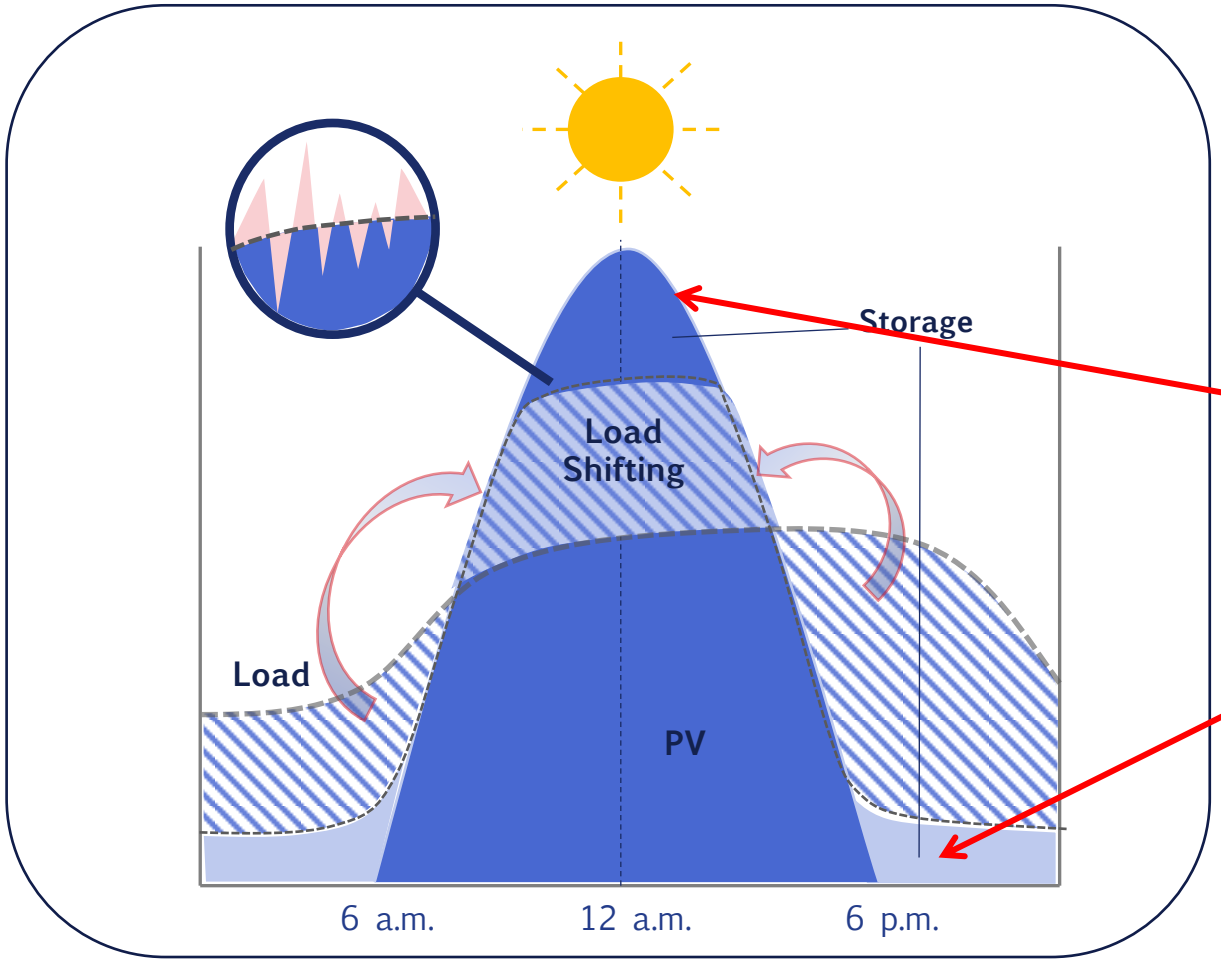
Element 1: More renewables
Replace diesel today, and gas tomorrow



Grafic presentation: Unlocking the Sunbelt – Potential of Photovoltaics – March 2011.
National Energy Technology Laboratory, EPIA Set for 2020, World Bank, A.T. Kearney.
LCOE: Levelized Cost Of Energy

- Reduce generation cost vs. Diesel with PV and Wind by ~20ct/kWh today
- No impact on grid stability up to ~25% volatile renewables
- Climate effect as a bonus: ~2.65 kg CO_2/litre diesel (~1 kg per kWh)

Element 2: Demand side management
Load follows generation wherever possible



- **Flexibility options:**
  cooling, heating
  water pumping
  e-mobility
  industrial processes
- **Use more Renewables:**
  Absorb peaks,
  don't curtail them
- **Pay less:**
  For fossil energy
  and electric storage

Element 3: Coordinate millions of players with real time markets

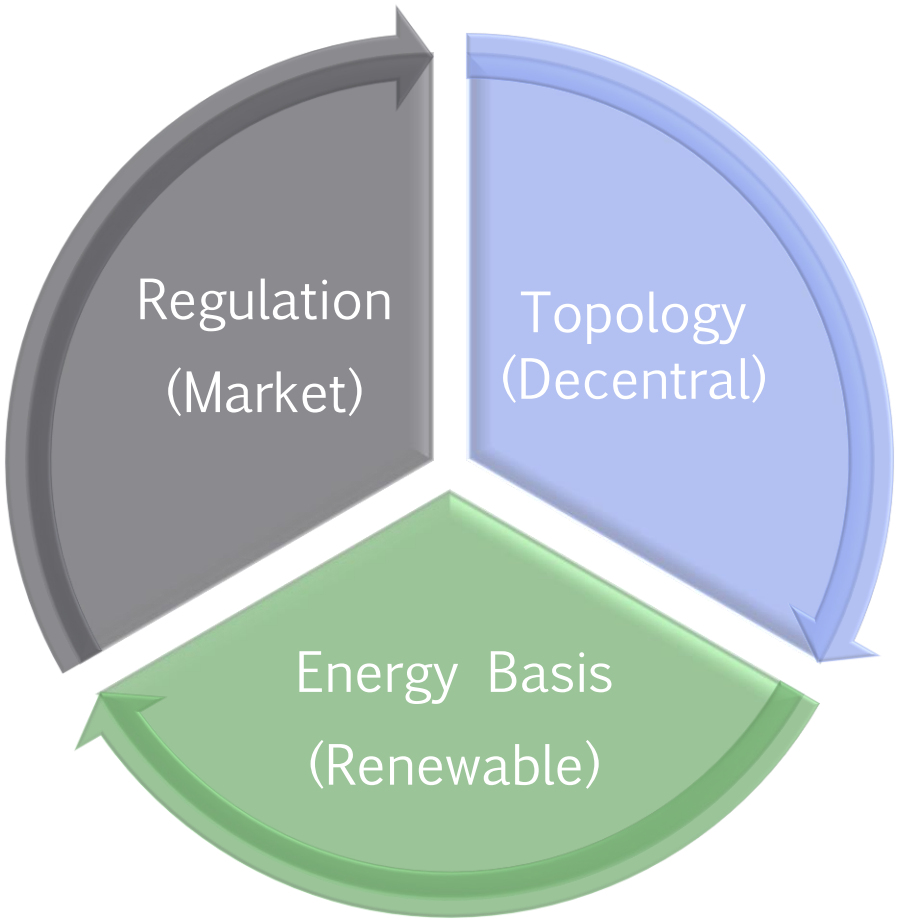
Generation < load	*Increase* price until rebalanced
Load < generation	*Reduce* price until rebalanced

Flexible generators	Shift generation to *high price* times
Flexible consumers	Shift consumption to *low price* times
Storage devices	Charge at *low*, discharge at *high* price

EU-project „ECOGRID“ on Bornholm/DK already operational

- 10 M€ ICT enable 5 minute price updates
- We only need to make it cheaper, faster and more resilient

Element 4: A changed energy system needs a changed Smart Grid (2.0)

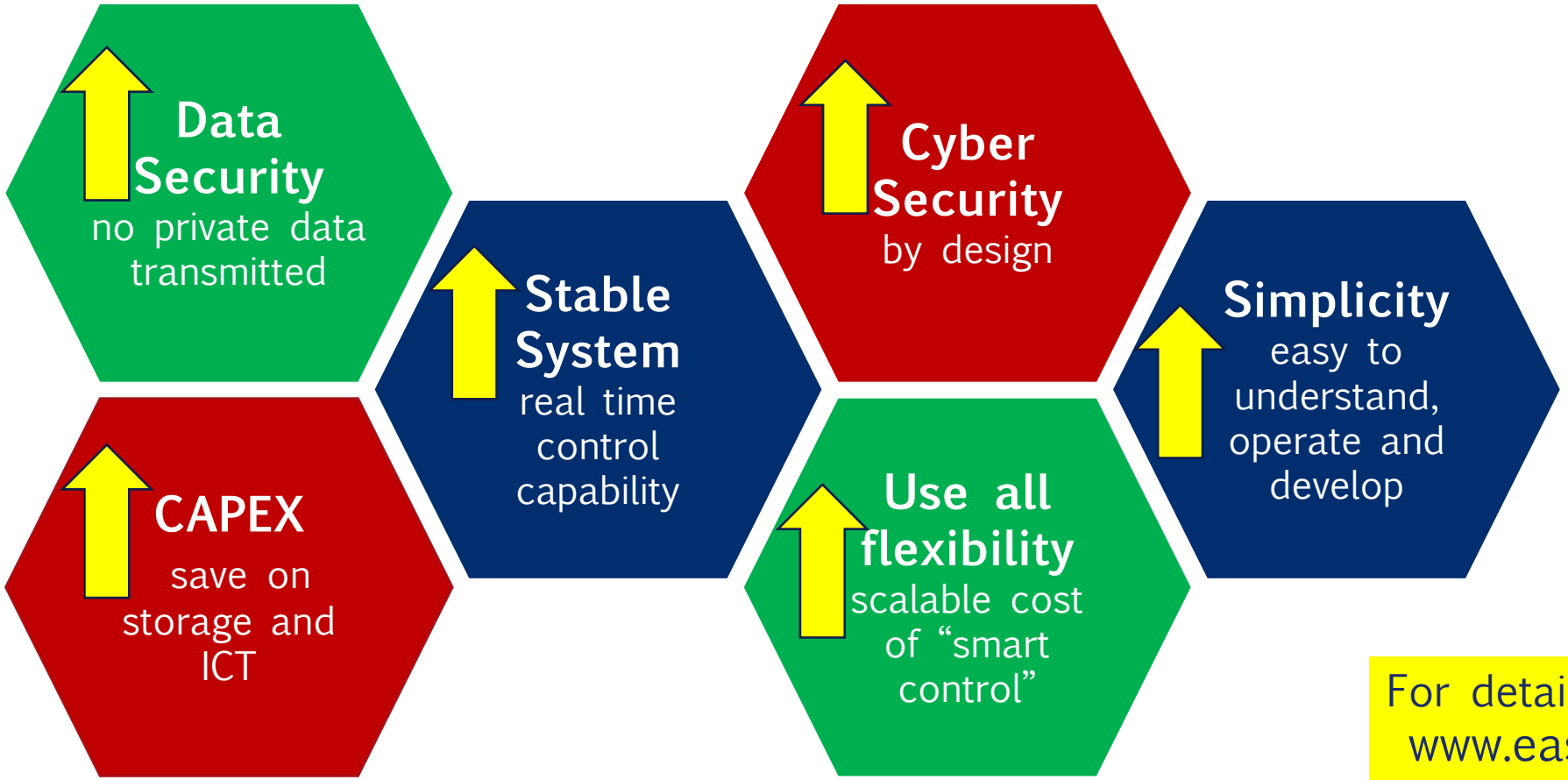


1. Renewable energy generation
   - Focus on demand management
   - Highly dynamics energy management (reaction in seconds, not ¼ hours)

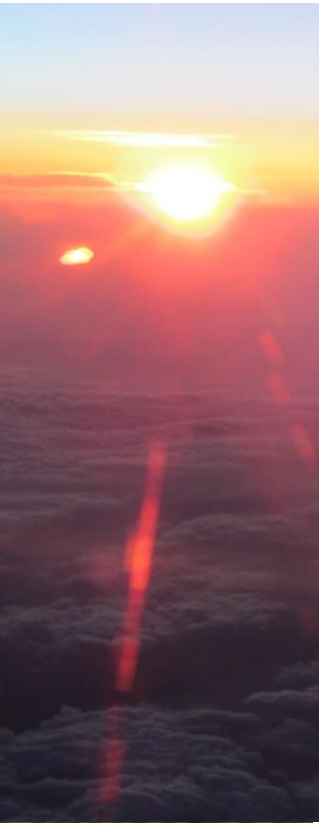
2. From Monopoly to Market
   - Ensure end customer access
   - EU: variable end customer prices

3. From Central to Decentral
   - Balancing moves to distribution grid
   - „Cellular grid“ reduces need/cost of transmission lines

We work on Smart Grid 2.0
Objective: More value at lower cost



For details goto
www.easysg.de



I would like to thank you for your interest and look forward to our exchange !

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