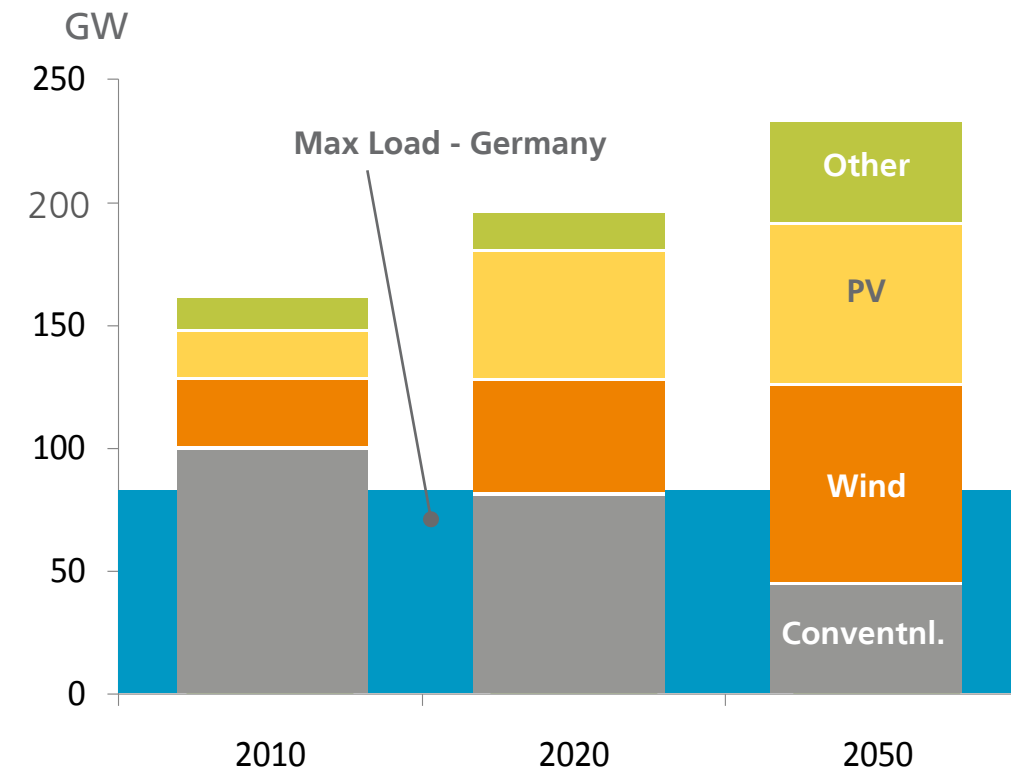


Energy Infrastructure in Transition

Local and regional challenges, 5 July 2016

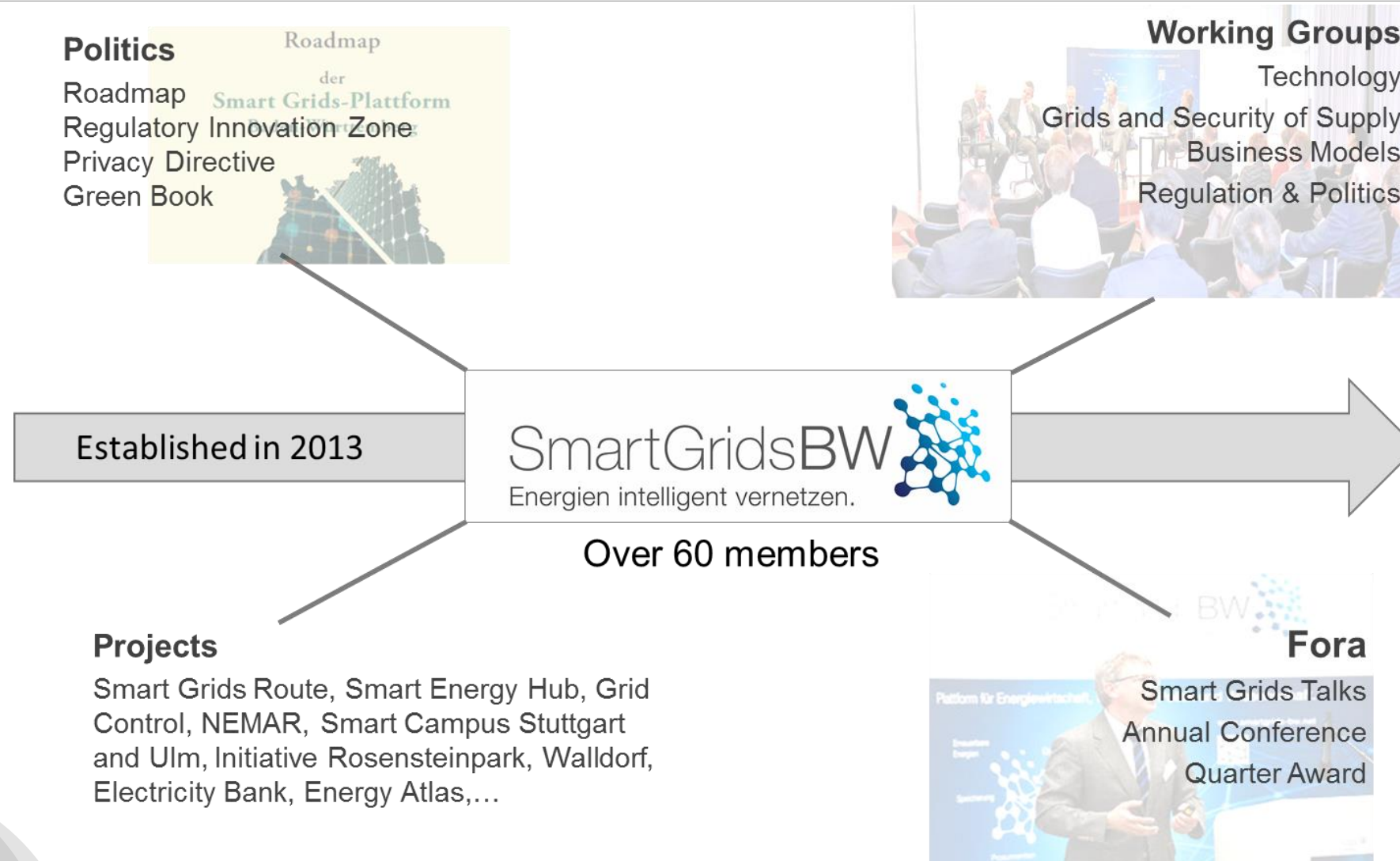
The Electricity Future is Renewable and Sustainable

- 2050 will have substantial overcapacities
- Electricity (kWh) will be abundant. The challenge will be to consume electricity when it's available
- This needs communication and orchestration
- The energy transition will start a giant IT-Project the digitization of the energy system



Smart Grids-Plattform Baden-Württemberg e.V.

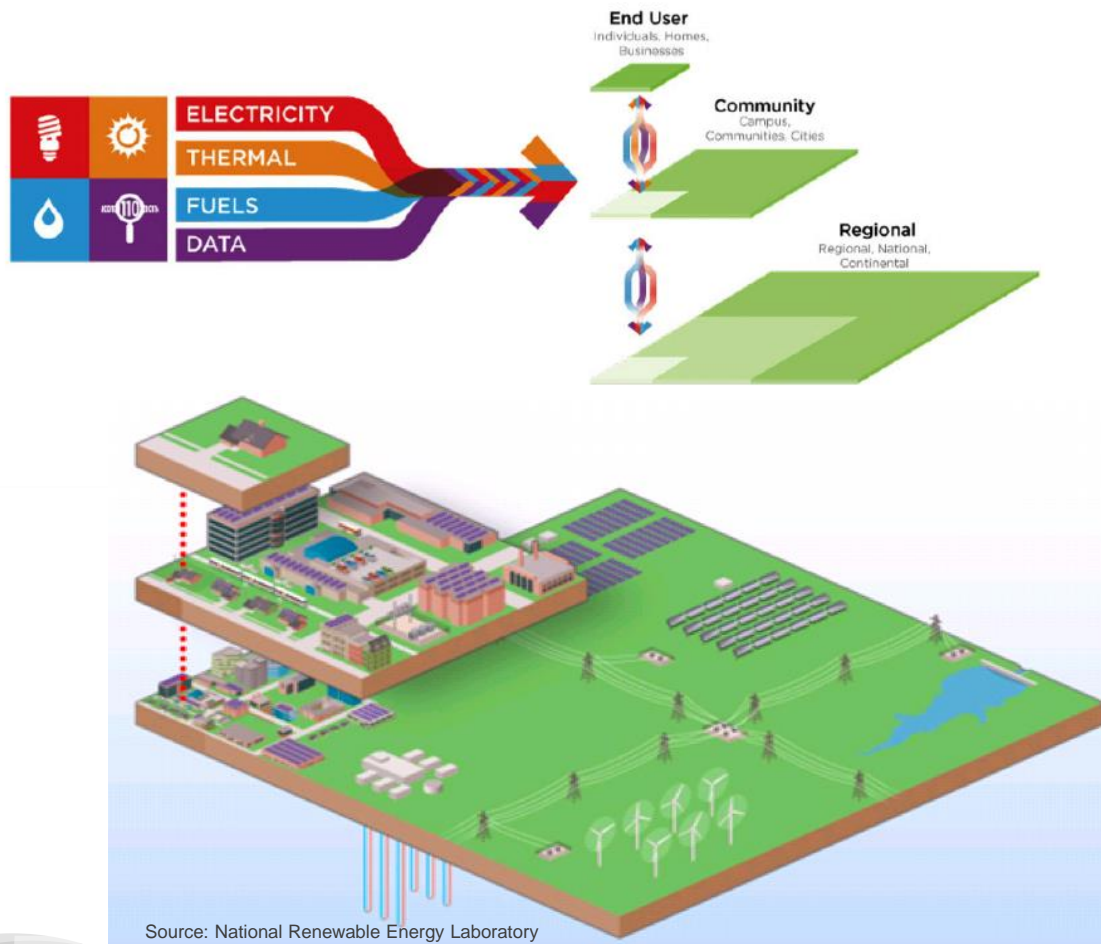
Network for Participation & Acceptance



Mission 1 – Develop a Smart Vision for Future Energy Systems

- Push a cellular power system: resilient, participative, simple, renewable, low carbon
- Energy cells are decentralized, self-organized, regional, autonomous
- Adapted to local conditions and local energy potentials
- Connected through an Information Infrastructure which ensures transparent market orchestration

The Cellular Approach as a New Paradigm




Interconnection at all levels to increase flexibility

- electricity, heat and mobility markets (sector coupling)
- end users, communities, regions
- electric and district heating grids
- Buildings
- Quarters (Micro-Grids)
- Industrial and Business Areas (Micro-Grids)
- Distribution Grids
- Transmission Grids
- Europe within an integrated network

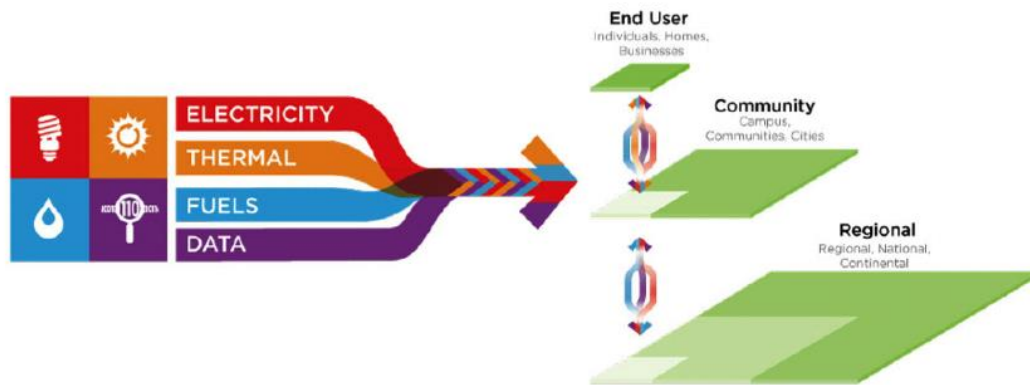
Mission 2 – Achieve functional Flexibility Markets

- ▶ Unleash market power: producers must sell their kWh at market prices
Today: guaranteed purchase at a fixed price
- ▶ Create market places for flexibility
- ▶ Modify actual unbundling regulation which obstruct innovation

Mission 3 - Involve People

- ▶ Promote the common vision of smart energy systems
 - ▶ Foster cooperation and participation
 - ▶ Harmonize standards
 - ▶ Demonstrate innovative pilot projects as seed for smart energy systems
 - ▶ Create a movement for the new energy system
 - ▶ Pursue an active participation process
- 

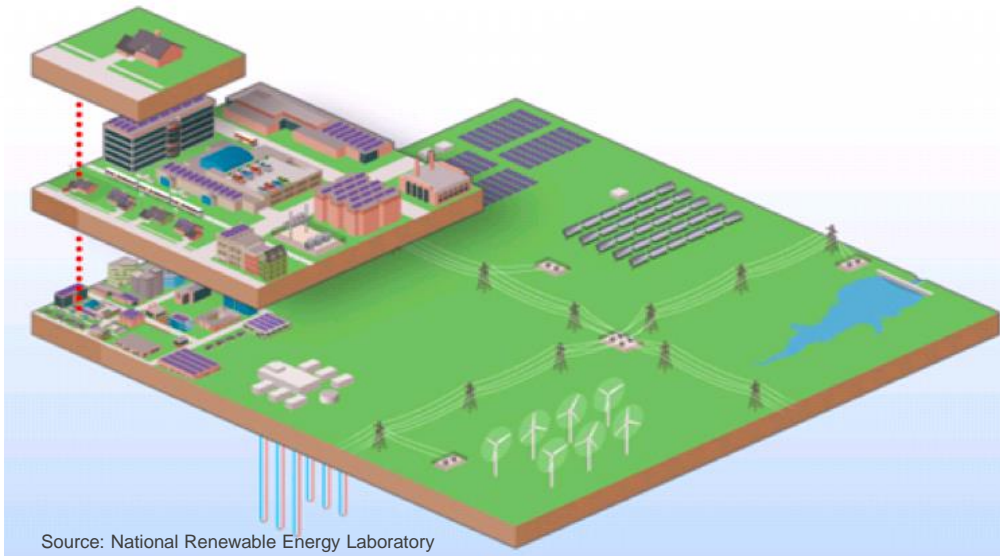
Establish a Showcase for the Digital Energiewende



- The solar arc: Baden-Württemberg, Hessen, Bavaria
- 120 Mio EUR, 65 participants
- Utilities, grid operators, communities, IT companies

Objectives

- Bring stakeholders together to make it work
- Demonstrate solutions
- Connect Cells to increase grid stability
- Sell flexibility
- Harmonize markets, grid and safety
- Establish an Infrastructure Information System (IIS) as Base for the Efficient Interaction of Grids and Markets



Source: National Renewable Energy Laboratory