



Bundesministerium
für Wirtschaft
und Klimaschutz

Grid integration of wind energy and photovoltaics in Germany

Current state of the grid and legal framework

Colette Kufferath-Sieberin

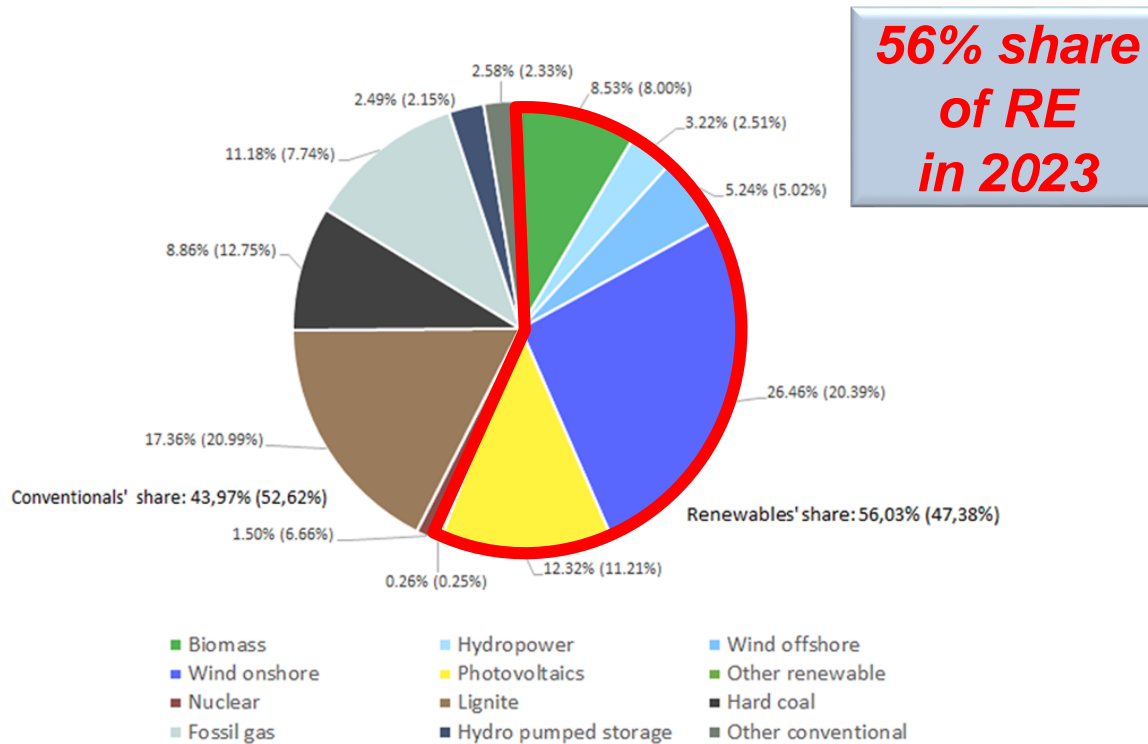
Federal Ministry for Economic Affairs and Climate Action

Initial situation: Expansion of renewable energies

Where do we stand?



Breakdown of total generation by energy source in 2023 (2022)



Source: Federal Network Agency / SMARD

Where do we need to go?

• RES Act targets by 2030

- 80 % share of RE
- 215 GW of solar & 115 GW of wind

➤ Action taken: numerous legal measures

- Example: overriding public interest established in 2022
- Current measure: „Solar Package“

What needs to be done in terms of the grid?

Legal cornerstones of the grid integration of RE

Tasks deriving from the Renewable Energy Sources Act (EEG) and Energy Industry Act (EnWG):

- Giving priority to RE in terms of grid connection, purchase, transmission and distribution
- Safe grid operation
- Needs-based optimisation, reinforcement and expansion of the grid

Parallel to RE expansion: Overriding public interest for grids



Current state of the grid

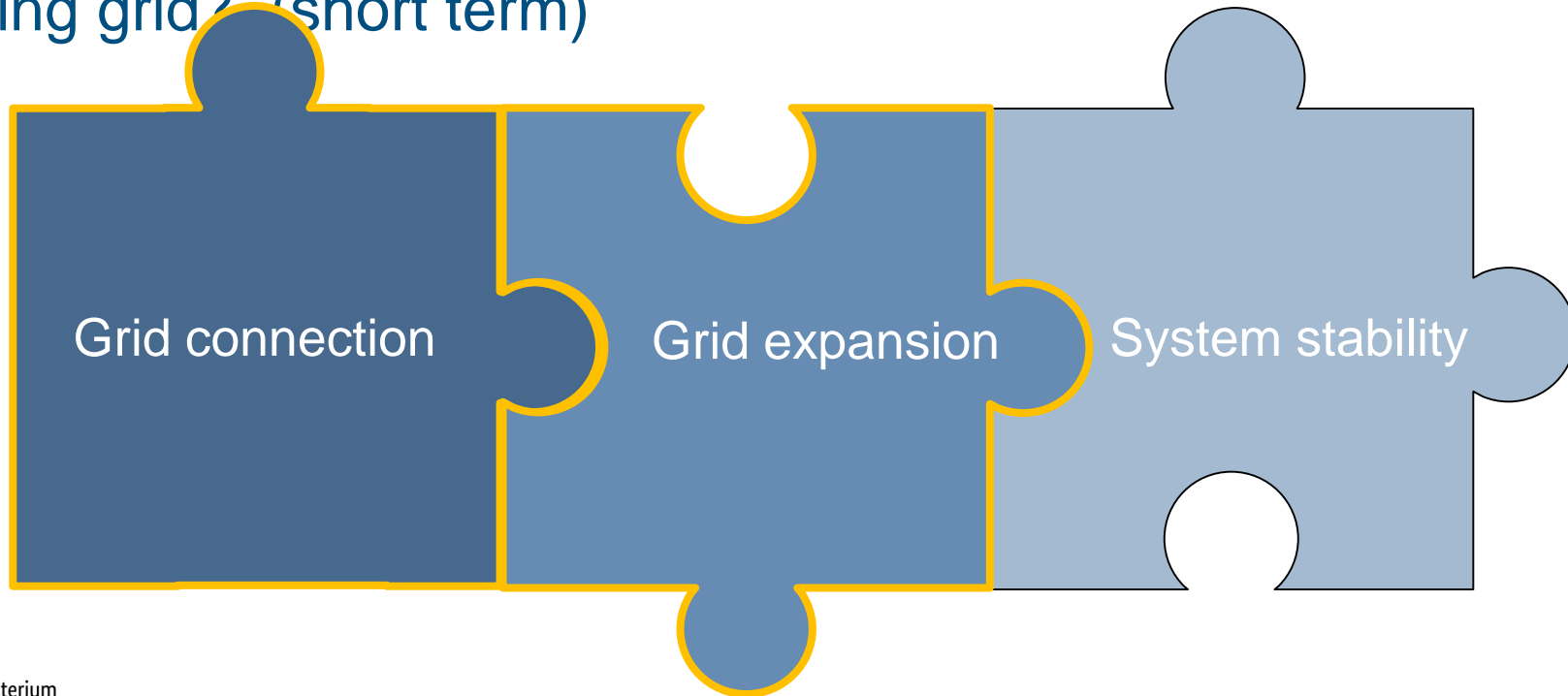


High need for expansion at all grid levels

- TSO estimate: €160 billion (onshore) investment required by 2037
- Distribution grid is increasingly coming into focus
- High need to expand distribution grid
 - RE expansion & sector coupling
- Investment requirement for distribution grid:
 - 2022 estimate: approx. €50 billion up to 2032
 - Current rough estimate by the Federal Network Agency: €150 billion up to 2045 plausible

Issues relating to the grid integration of RE systems

- How can the grid be operated safely and reliably? (permanently)
- How can enough new capacity be created in the grid? (medium/long term)
- How can as much RE power generation as possible be integrated into the existing grid? (short term)



Distribution grid expansion: "Thinking about tomorrow today"

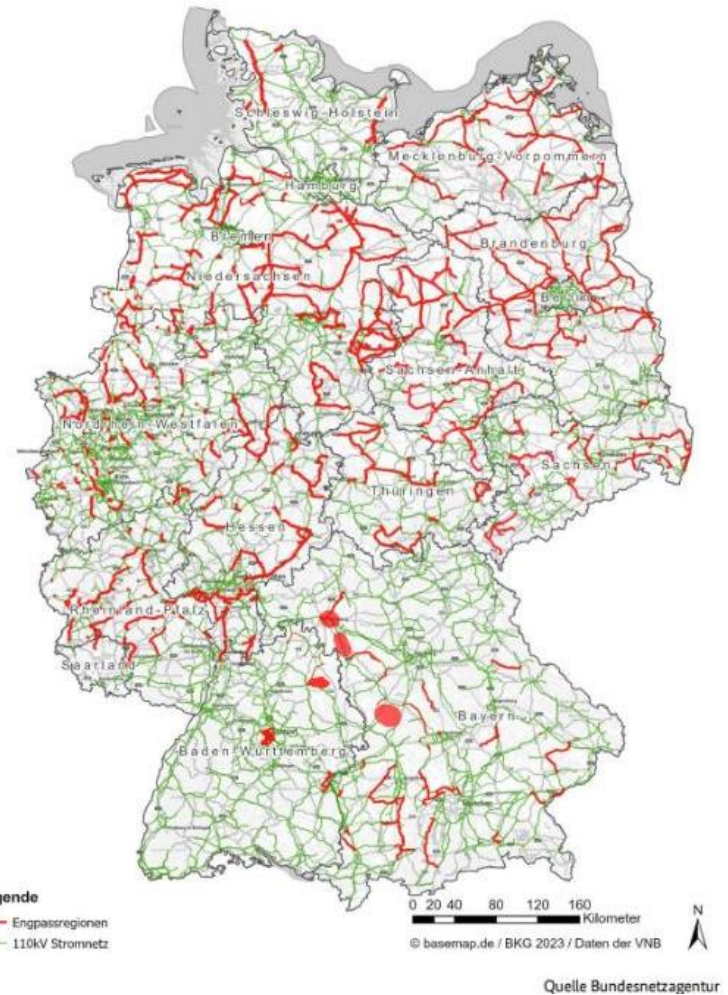
- Acceleration of permit-granting procedures
- **Forward-looking and integrated distribution grid planning** (2022 amendment to the Energy Industry Act)

Regional scenarios



Grid expansion plans

- Alignment of planning with the goal of greenhouse gas neutrality by 2045
- First grid expansion plans presented on 30 April 2024



Grid connection: Connecting systems quickly and efficiently



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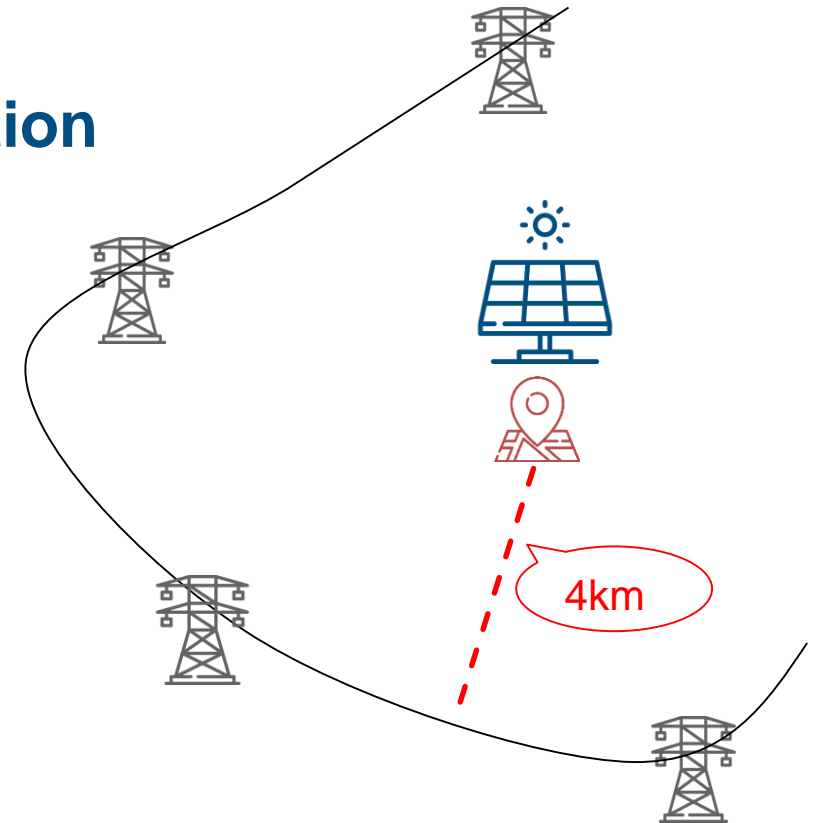
- Key process: **industry dialogue to accelerate grid connections**
- Focus agenda with 20 measures in 6 fields of action
- *Examples:* Feedback deadlines, standardisation of technical connection requirements
- **One of the central questions: How can existing connection capacities be better utilised?**

Grid connection: making better use of existing capacities

Current approaches to improve the utilisation of connection capacities

Approach 1: Non-binding grid connection information

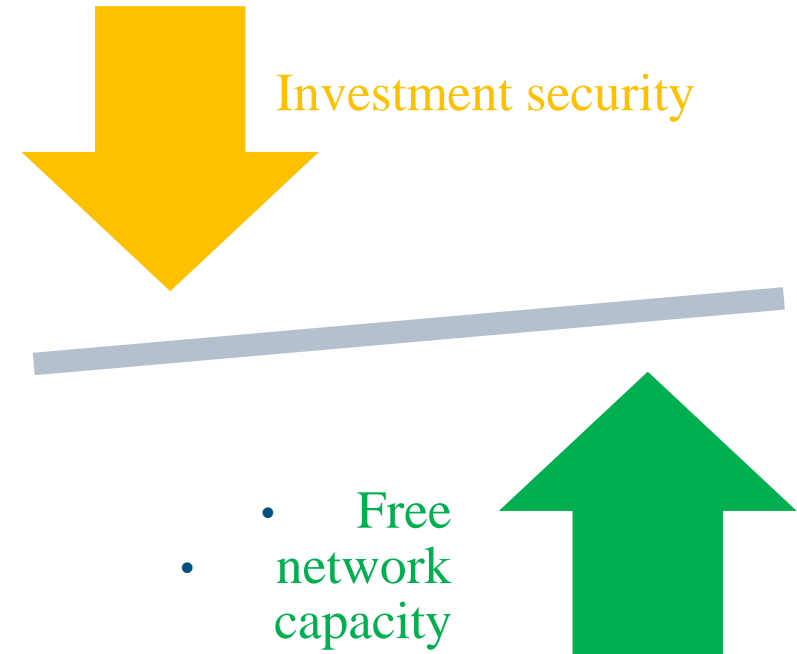
- Current situation: sometimes several individual requests for information to DSOs
- Goal: greater transparency
 - Optimised site selection
- Advantages:
 - Better capacity utilisation
 - More efficient processes on both sides



Grid connection: making better use of existing capacities

Approach 2: Uniform reservation mechanism

- Current situation:
 - “First come, first served”?
 - Contractual reservations
- Goal: Efficient reservation mechanism
 - Standardised framework
 - Time limit
 - Proof of project progress
 - Investment security
 - Release of unused grid connection capacity



Grid connection: making better use of existing capacities



Approach 3: Innovative grid connection concepts

- Current situation:
 - Grid connection point is determined individually for each system
 - Connection of the full amount of the installed capacity
- Possible solutions:
 - Flexibilisation of grid connection capacity (e.g. “cable pooling” / lower connection capacity than installed capacity)
 - Coordination of connection requests should already start during the grid expansion stage

3. Is that all?

- Focus agenda contains many more measures in the area of grid connection
- Major importance of cross-cutting issues
 - Example: Digitalisation
- Close exchange is therefore paramount!





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Thank you for your attention!

Contact details

Bundesministerium für Wirtschaft und Klimaschutz

Scharnhorststr. 34-37

10115 Berlin

Colette Kufferath-Sieberin

www.bmwk.de