

Grid Connection and Access

Current regulations and discussed improvements in
Germany

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Agenda

- **Where do we come from?** – The current regulatory situation regarding:
 - Grid Connection and capacity allocation for RES and other actors
 - Grid Connection and procedural guidelines
 - Cost Allocation in the grid connection process
 - Compensation in case of redispatch
 - Flexible Connection Agreements and cable pooling
- **What happens next?** – Current regulatory developments
- **Conclusion**
- **Questions**



Where do we come from?

The current regulatory situation

Structural context



Connection applicants

- Private households
- Citizen energy communities
- Project development companies

Fundamental power imbalance



Information advantage of grid operators



Grid operator

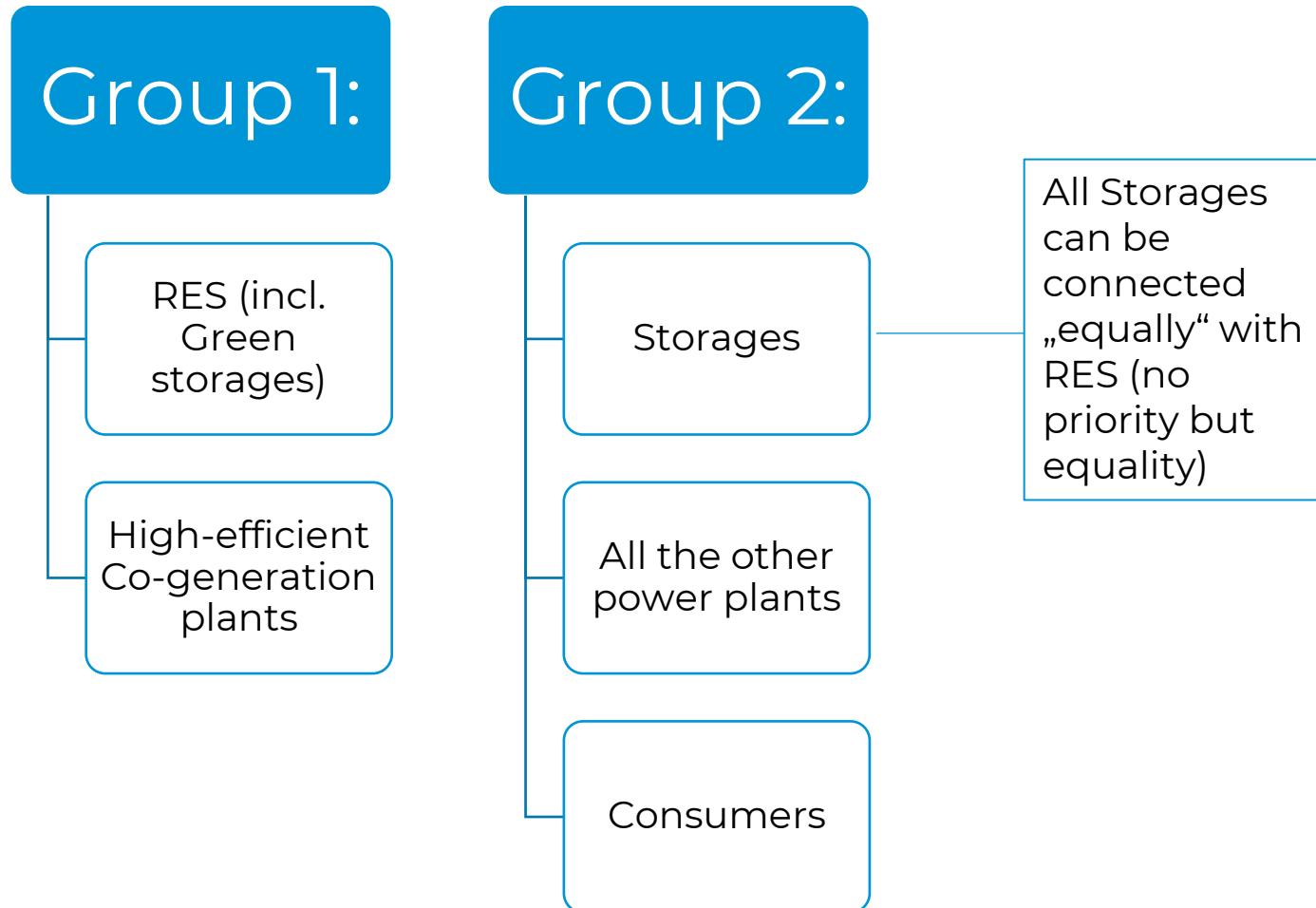
- Almost 900 network operators (DSO & TSO) of varying sizes, location, size of the network and topography of the area

Diversity of stakeholders on both sides



Grid Connection and Capacity Allocation for RES and other actors

Priorisation of grid access and grid allocation in general



Allocation acc. to a **First-Come-First-Served-Principle** (Greyhound):
Time of the complete grid connection request is essential;
First-Ready-First-Served principle at the TSO-level for storages

Grid Connection and procedural guidelines

The priority principle as a structural feature of the German Renewable Energy Act

- ▶ The priority principle in the German Renewable Energy Act (abbr. as: EEG 2023) has two key aspects for RES-Connection applicants:
 - **Priority grid connection**
 - **Priority grid access**
- ▶ The technical establishment of the **grid connection** and **the use of that connection (grid access)** for the purpose of feeding electricity into the grid must be strictly **separated**

Grid connection for renewable energy installations

- ▶ **Priority & without delay** (Section 8(1) EEG 2023)
 - “**even if** the purchase of electricity only becomes possible through the optimisation, reinforcement or expansion of the grid”
 - No specific reasons for refusal or rejection
- ▶ Corresponding obligation to upgrade and expand the grid (Section 12 EEG 2023):
 - RES-Connection applicants can demand from the System Operator to expand the grid
- ▶ The **entitlement** to grid connection exists even before grid reinforcement and regardless of the need for grid reinforcement/expansion (Section 8(4) EEG 2023)
- ▶ May only be refused if establishing **the grid connection** is unreasonable or impossible as per Section 17(2) of the Energy Industry Act (abbr. as: EnWG)
 - Not if there is ‘only’ a lack of grid capacity to accommodate the (full) volume of electricity generated (-> redispatch)

Deadlines & guidelines for System Operators

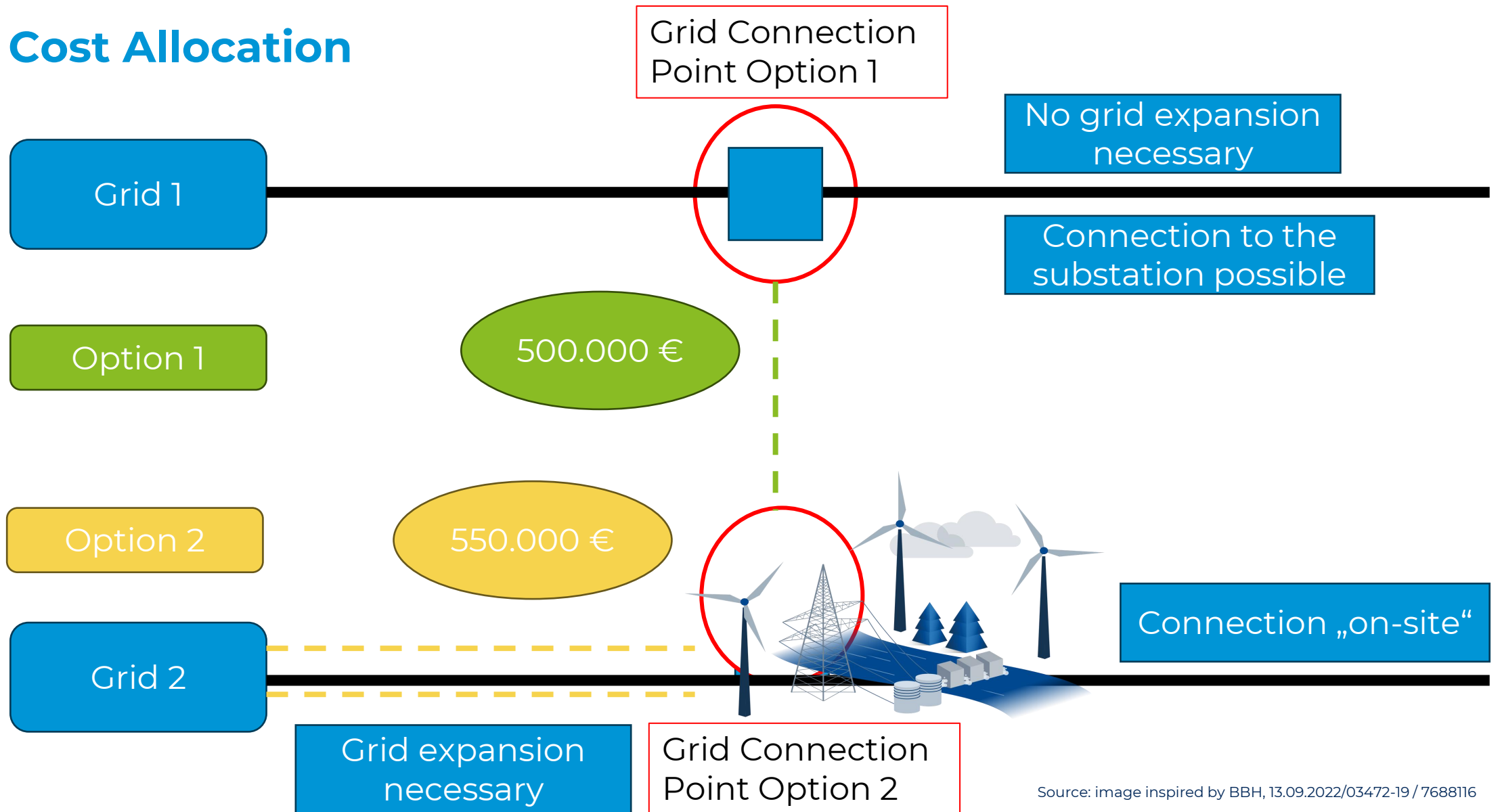
- ▶ Response deadlines after the request for grid connection:
 - For **RES-Connection applicants** under the EEG 2023:
 - Provision of the results of the grid compatibility assessment, a connection schedule, all required information, and a cost estimate **within 8 weeks** after receiving complete information;
 - **1-month deadline** applies from 2025 for certain installations (e.g., PV systems up to 100 kW).
 - As per new draft of the Section 17 (c) EnWG:
 - Current status of the grid connection application communicated

Cost allocation in the grid connection process

Determination of the grid connection point & cost allocation


- ▶ The legal grid connection point is determined on the basis of the overall economic costs (Section 8(1) Sentence 1 EEG 2023):
 - Grid connection costs (**Plant Operator**)
 - Grid reinforcement and expansion costs (**System Operator**)
- ▶ Cost allocation in accordance with Section 16 EEG 2023
- ▶ Follow-up costs (in particular redispatch compensation) are not taken into account

Cost Allocation



Compensation in case of redispatch

Compensation principles for RES in case of redispatch

- ▶ Legal Basis: § 13a (2) EnWG & Art. 13 (7) Electricity Directive (European Law)
- ▶ **System operators must** compensate costs for losses incurred by plant operators due to redispatch measures
 - **Cost-based compensation** for generators affected by redispatch interventions (e.g.: start-up and shutdown costs; decremental costs)
 - **Only proven, verifiable costs** are eligible (no over-compensation)
 - **Avoided costs must be deducted** (e.g., saved fuel or variable OPEX)
- ▶ Currently in the new EnWG-Draft: grid connection **conditional upon accepting the loss of entitlement to redispatch compensation** in certain capacity-limited regions (*redispatch proviso*)  highly controversial

Preliminary conclusion

- ▶ Fundamental power imbalance between system operators and connection applicants:
 - **Transparency** and **freedom from discrimination** as a guiding principle
- ▶ Grid connection and grid access must be kept separate
 - Grid connection must not be refused if the electricity cannot be (fully) fed into the grid -> question of grid access
- ▶ Restrictions on the use of the grid connection are (in general) compensated
- ▶ Grid connection point is determined based on total costs – but costs for connection and the grid are allocated separately

-> Regulatory landscape in which the **flexible connection agreements (FCAs)** enter the scene...

Flexible Connection Agreements and Cable Pooling

Flexible Connection Agreements and Cable Pooling

- ▶ Cable pooling and FCAs can offer more options for grid access points for RES;
- ▶ Flexible connection agreements grant **conditional feed-in rights** applicable during specific time periods (negotiated with the system operators);
- ▶ Restricted right for redispatch compensation (voluntarily?);
- ▶ Enabling combinations of **several** Connection Applicants at a **single grid connection point** (ex: wind, pv, storage);
- ▶ (So far) no restriction to congestion regions

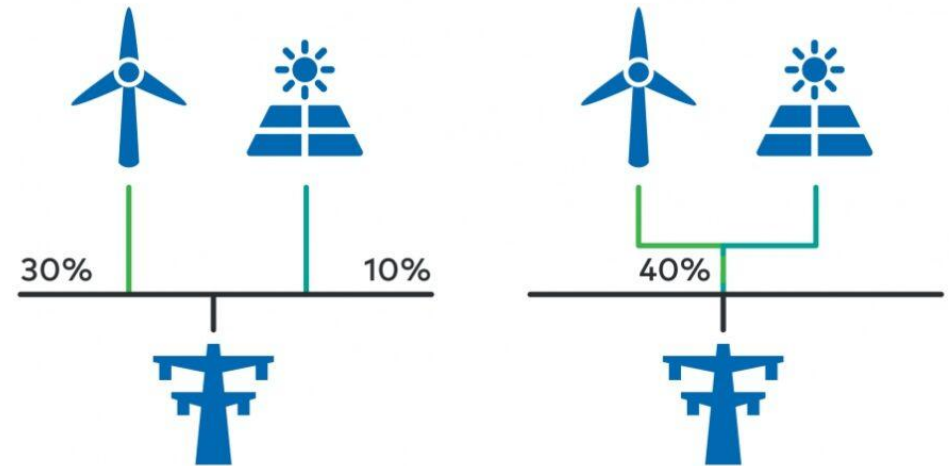


Image source: [Cable pooling - Firan](#)

Interim Conclusion

- ▶ RES must, in principle, be connected **even** if the necessary grid capacity is not (yet) sufficient: BUT in reality there is an increasing scarcity of grid capacity;
 - New capacity allocation mechanisms can address the problem;
 - RES plant operators might face a change in their finance schemes (feed-in tariffs and further fees possible);
 - However, curtailments that are foreseeable do **not** have any **prior effect** on the connection of the renewable energy plants; the grid adapts to the renewable energy plant – and not the other way round...
- ▶ FCAs and cable pooling can provide a temporary relief but the duty to expand the grid remains;
- ▶ Regulatory changes must address the balance between the rights of the plant operators and system operators



What happens next?

Current regulatory developments at the national level

Current regulatory developments: AgNeS & Grid Package (I)

- ▶ Regulatory Authority in Germany (BNetzA): currently develops a new general regulatory framework for network tariffs from 2029 (abbr. as: AgNeS):
 - Possible feed-in network tariffs (not applicable so far)
 - Dynamic network tariffs
 - Prosumer network tariffs
 - New network tariffs for storages and hydrogen-plants
- ▶ **Goals:**
 - *Cost-oriented function* (RES participating in financing the grid-costs)
 - *Financing-function* (ex.: cost-reflectivity of network tariffs)
 - *Incentive-function* (ex.: for grid-friendly behaviour reducing congestion)
 - *Feasibility-function* (ex.: reducing the complexity in the implementation)

Current regulatory developments: AgNeS & Grid Package (II)

- ▶ Current reform of the EnWG (2026):
 - More **transparent** and **digitalised grid-connection process**;
 - **Prioritisation framework** for the allocation of the electricity transport capacity (alternative to the first-comes-first-serves principle);
 - **Abolition of compensation for RES**: in pre-defined congested areas, new RES will no longer receive compensation after curtailment due to congestion (3 % rule);
 - **Construction cost subsidies to be paid by RES** to ensure their financial participation in the energy transition.
- ▶ TSOs introduced a „first-ready-first-served“ principle for the allocation process for grid-capacity (especially important for storages)



Conclusion

Conclusion

- ▶ **Priority principle for renewables as a core of the EEG**
 - Essential for enabling large-scale renewable expansion
 - Ensures broad participation of diverse market actors
- ▶ **Grid Connection costs** are distributed between System Operator and Plant operator:
 - Slight power imbalance in determining the grid connection point
 - Obligation of grid operators to expand the grid remains
- ▶ **Managing the growing connection backlog**
 - Requires pragmatic, system-oriented solutions such as cable pooling and FCAs (**permanent FCA = exception**)
 - Measures must **not undermine** the legal priority right to grid connection
- ▶ **Loss of Redispatch compensation & redispatch proviso in certain regions**
 - Leads to uncertainty for investors and RES-plant operators (*undermines priority principle*);
 - Other instruments available to foster system efficiency and reduce curtailment (co-location, regional tariffs, incentives for grid connection in grid-friendly regions, etc.)



Thank you very much for your attention!

Questions?

Abbreviations and specific terms

- ▶ **Directive:** a legislative act in European law setting binding objectives for Member States, which they must achieve in their national laws
- ▶ **EEG:** German Renewable Energy Act
- ▶ **EnWG:** Energy Industry Act
- ▶ **FCA:** Flexible Connection Agreement
- ▶ **OPEX:** Operating Expenses
- ▶ **RES:** Renewable Energy Sources

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