Legal framework for grid connection and use in Germany

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- Offices in Berlin, Munich, Cologne, Hamburg, Stuttgart and Brussels
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- Studies of Law at the Universities of Marburg and Hamburg
- 1982 Research assistant, University of Hamburg
- 1988 Ministry for the Environment and Energy, Hamburg
- 1991 Liaison office of Hamburg and Schleswig-Holstein to the European Commission in Brussels
- 1993 Partner at law firm Kuhbier, Brussels
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2. Rules on grid connection and use
   1. Conventional energy sources
   2. Renewable energy sources
3. Conditions for decentralized electricity supply and demand
4. Conclusions and discussion
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The German Energiewende
Nuclear Phase-out

- June 2000: SPD/Green-Coalition announces the successive phasing out of nuclear power until 2021
  - (CDU)-Opposition lead by Merkel opposes this “Nuclear consensus”
- April 2002: Nuclear phase-out becomes legally binding
  - “Stade” closed down in Nov. 2003
  - “Obrigheim” closed down in May 2005
- November 2010: Merkel-Government decides to extend the lifespan of all 17 nuclear power plants by 12 years in average
  - Final phase-out deferred to 2040
  - 150,000 people demonstrate against the lifetime extension
The German Energiewende
Nuclear Phase-out after Fukushima

- 14. March 2011: Merkel announces 3 months moratorium for 8 nuclear power plants to initiating security check ups
  - Massive public demonstrations demanding immediate exit
- June 2011: Government proposes to terminate 7 oldest nuclear power plants (+ „Krümmel“) = phase-out by 2022
  - BUT: Provision suggests to allow for one active nuclear power plant as back-up for possible blackouts
- After vexed discussions:
  - back-up provisions nullified
  - irrevocable closure of 8 plants legally effective from 01.08.2014
  - successive phase-out till 2022
The German Energiewende
Increase renewable energy

Germany wants to reach **40-45% renewables by 2025, and 55-60% by 2035**

- To stay in control of the development
  - EEG 2012 introduced a “breathing cap” and development corridor for PV
    - 2,4 – 2,6 GW per year, overall limit of 52 GW
  - EEG 2014 now introduced “breathing cap” and a development corridor also for wind power
    - Onshore: 2,4 – 2,6 GW per year
    - Offshore: 6,5 GW until 2020, 15 GW until 2030
  - EEG 2014 capped development of biomass to 100 MW per year
The German Energiewende
Transition towards the market

With higher shares of renewable energy = more market integration

› All producers have to start selling on the market
  - Market Premium instead of Feed-In Tariff
    - Exception for small producers under 500 kW (from 2016 under 100 kW)
      • For them: “reduction” in EEG support compared to market premium of 0.2 – 0.4 ct/kWh
  - All plants participating in the market premium support need to be equipped with remote control
    - Allowing grid operators to better balance the grid
  - After more than 6 hours of negative market prices – no more support
The German Energiewende
Interactions in the field of renewables
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In Germany, everyone has a right to use the grid

- §20 EnWG: right to use the grid under regulated or approved conditions
  - Conditions regulated in respective regulations (e.g. StromNZV)
  - Grid use tariffs regulated in § 21 EnWG and respective regulations
    - Generally, only consumers pay grid use tariffs, not producers
  - Finally, conditions set out in individual grid use agreement
Grid connection and use
Conventional sources

Legal framework foresees general obligation to connect

- §17(1) EnWG: **obligation to connect** under “technical and economic conditions which are appropriate, non-discriminatory, transparent...”
  - Conditions regulated in § 19 EnWG and in other respective regulations (e.g. NAV, NDAV)
  - Finally, conditions set out in **individual grid connection and access agreement (s)**
    - Producer pays grid connection costs including a “one time off” contribution to the costs for the extension and improvement of the grid (“Baukostenzuschlag”, BKZ)
    - Not costs of grid extension/improvement
Grid connection and use
Conventional sources

Grid connection and grid access agreement

Grid use agreement

Energy supply contract

Supplier
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Rules for renewable energy sources
Development

Originally, EEG had **just one article** on grid access and use for renewable energy

- **BUT: proved to be not very practical**
  - More detailed rules were considered necessary
    - Where to connect
    - Within what time frame to connect
    - Which information to be provided by whom
    - What to do with grid extension/improvement (costs)
    - What to do in case of congestion
    - How to control feed-in
    - What about offshore grids
    - ...
Grid access, transmission and dispatch
Renewable energy sources

New rules **thus much more detailed** (§8-§15 EEG 2014)

- **§8(1) EEG 2014:** Obligation to connect without delay and with priority
  - Normally to the closest connection point, unless there is a technically and economically more fit connection point
  - Obligation on the grid operator to connect also where this requires grid extensions and improvements (§8(4) EEG 2014)
  - Obligation to inform by grid operator (§8(6) EEG 2014)
  - Producer pays the **cost only for the connection** (§8(6), §16 EEG 2014), including a **“one time off” contribution** to the costs for the extension and improvement of the grid (“Baukostenzuschlag”, BKZ)
    - Grid operator pays for extension and improvement (§17 EEG 2014)
Grid access, transmission and dispatch
Renewable energy sources

Technical rules and rules on information exchange added

- §9 EEG 2014: **Technical rules for power plants > 100 kW**
  - Equipped with remote control
  - Possibility for grid operator to read out real-time feed-in at any time

- §9(2) EEG 2014: **Special rules for Solar PV**
  - Obligation to have remote control and read out possibility already for plants > 30 kW
  - Otherwise max. 70% of the production may be fed in
  - NOTE: Special rules also as regards **which plants are considered “one plant” for those purposes** (same property and into operation within one year)
Grid access, transmission and dispatch
Renewable energy sources

To ensure that greatest amount renewable electricity possible is in the grid:

- §11 EEG 2014: **Obligation on grid operator to give priority**
  **physical take off, transmission and dispatch of renewable**
  **electricity**
  - In case of continued Feed-In Tariff, not only physical take-off but also commercial take-off
  - §11(2) EEG 2014: Obligation continued: not only off-taking grid operator, but also “on-taking” grid operator in (higher) distribution or transmission grid
Grid access, transmission and dispatch
Renewable energy sources

Clarity on obligations as regards grid extension and improvement

- §12 EEG 2014: Grid operators obliged to extend/improve the grid to ensure take off, transmission and dispatch of renewable electricity
  - Also for distribution grids (< 110 kV) to which the renewable electricity plant is not directly connected, if necessary

- §13 EEG 2014: If grid operator does not comply with obligation = possibility for producer to claim damages
  - Producers can ask grid operator for information on what was done and why
Grid access, transmission and dispatch
Renewable energy sources

Regime for congestion management

- §14 EEG 2014: In exceptional cases curtailment for renewable electricity plants allowed
  - Otherwise grid congestion
  - And priority for renewable electricity to the extent possible ensured
  - After data of real-time feed-in of those plants was collected
    - Solar PV plants complying with technical rules to be curtailed only in subordinated role
  - Grid operators to inform curtailed producers immediately about times, extent and reasons for curtailment
    - Upon request: Proof of necessity
Rules on curtailment
Renewable energy sources

In cases of curtailment, obligation to pay compensation („hardship“ cases) (§ 15 EEG 2014)

- Grid operator has to compensate 95% of the lost income
  - In case the lost income of one year amounts to more than 1% of the overall income of the plant, the grid operator has to cover 100% of the lost income
    - Grid operator of the grid wherein the reason for the curtailment lies has to compensate the grid operator who has to pay the compensation to the producer
    - Grid operator can include those costs into grid use tariffs, i.e. pass them on
      - BUT: Not if due to own fault (e.g. failure to extend/improve the grid)

- Additionally: Damages possible
Grid access, transmission and dispatch

Special regime for offshore wind

In order to ensure sufficient grid development for offshore wind

- § 17b EnWG: 10 year offshore grid development plan
  - Incl. information on the planned completion and binding dates for the start of the works
  - Annual updates on progress, incl. information on reasons for delay

- § 17d EnWG: obligation on transmission grid operators who will connect to execute grid development plan
  - Realization in coordination with offshore wind developer

- § 17d(3) EnWG: Capacity normally allocated by regulator
  - Until 2020 6,5 GW to be allocated
Rules on curtailment
Special regime for offshore wind

Financing offshore grid development and compensation

§17d (7) EnWG: special surcharge to finance development
- Transmission grid operators equalize the costs among each other and pass it on to consumers

§17e EnWG: compensation/damages regime
- Interruption/accident: compensation of 90% of lost income in case feed-in of the offshore plant not possible for more than 10 consecutive days, starting the 11th day
- Connection not completed in time: compensation of 90% if binding date exceeded by 10 day, starting the 11th day
- Construction/repair works: compensation of 90% of the lost income if more than 10 days a year, starting the 11th day
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Decentralized systems
Role of the distribution grid operators

The German legal framework generally foresees a rather active role for distribution grid operators

- § 14 EnWG: responsibility for system stability also to distribution grid operators
  - Demand side management at distribution grid level is thus in principle possible
    - Within their grid, they thus have to match demand and supply in order to ensure the system is stable
  - E.g. §14 a EnWG requires grid operators to charge reduced grid use tariffs for electricity consumers that allow being completely cut off from the grid temporarily
    - (Industrial) Consumers thus can get “compensated” for such system services
Decentralized systems
Role of the producer

The German legal framework sets incentives for decentralized generation through “avoided grid use costs”

- §18 StromNEV jo. 24 EnWG, §57 Abs.3 EEG and §4 Abs.3 KWKG gives producers in decentralized systems right to payment for "avoided grid use costs"

  - Idea: decentralized generation saves costs in the higher level grid – i.e. grid use costs are avoided

  - For renewable energy supported by EEG: payment for “avoided grid use costs” included in EEG support

    - i.e. “avoided grid use costs” supposed to contribute to EEG support and lower EEG surcharge
Decentralized systems
(Potential) Role of the consumer

The German legal framework may also allow for a more active role of the consumer

- Supply and demand should determine the price
  - Little demand at times of high supply = should lead to low prices

- § 40 EnWG thus requires electricity suppliers to offer variable prices
  - Potential incentives for consumers to adapt their consumption behaviour (lower prices in times of less demand etc.)

- § 21c EnWG requires at least for new connections and large energy consumers the installations of “smart meters”
  - Improvement of the information on consumption may lead to better uptake of incentives for changing consumption behaviour
    - As the law currently does not address existing building stock, Germany is considering a general “smart meter roll-out” to all households
Decentralized systems
Example: Community projects

In Germany, **more than 50% of** wind power capacity is “community owned”

- Friedrich-Wilhelm-Lübke-Koog was one of the first
  - Close to the Danish border, in the North of Germany
  - First turbines built in 1992, expansion in 1999, up to 32 wind turbines with a combined capacity of 18.5 MW in 2004
  - Owned by 270 residents of the polder
- Many immediate advantages
  - Profits flow to citizens through the local economy
  - Project pays local taxes increasing local welfare
  - Higher public acceptance
  - …
Decentralized systems
Example: Self-consumption in industry

Many consumers such as industry parks in Germany have some renewable energy production capacity

- Until 2014: No EEG-Surcharge
  - Changed with EEG 2014
- Now: Introduction of reduced EEG-Surcharge for self-consumption
- No grid use tariffs for production in self-consumption
- Favorable tax treatment for self-consumption
  - NOTE: With the introduction of the EEG-Surcharge on self-consumption, role of distribution grid operators even more active!
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Conclusions and discussion

Transition to renewable energy will come with transition towards more decentralized generation

- Need for legislative framework allowing market entry
- Need for markets allowing effective participation
- Need for more active role of distribution grid operators
- Need for a tariff system reflecting the benefits of decentralized generation
- Need for specific rules for self-consumers
- ...

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Thank you very much for your attention.

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