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NEW CHALLENGES FOR
DECENTRALISED LABORATORIES OF INNOVATIONS
IN THE GERMAN ENERGY TRANSITION

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ROLE OF DECENTRALISED LABORATORIES IN MULTI-LEVEL GOVERNANCE SYSTEMS

Idea of “laboratory federalism”:

- Decentral jurisdictions (with a given degree of discretion) function as “*laboratories of innovations*”
- Diverse interlinkages between de-central jurisdictions within a multi-level system cause subsequent horizontal processes of policy learning and diffusion



Bottom-up and decentralised innovation diffusion is an alternative or complementary *mechanism of convergence* to hierarchical and (inter)national state-centred negotiation

NEED FOR LABORATORIES OF INNOVATION IN LOW CARBON ENERGY TRANSITIONS

The specific nature of transition processes:

- **Complex process of socio-technical change**
 - Destabilisation of lock-in mechanisms
 - Shifts in behavioural patterns
 - Need for technological, political and social innovation

- **Characterised by a great deal of uncertainty**
 - No predefined and uncontested script /vision
 - Need for experimentation



Assumption and **positive narrative** offered by scholars of polycentric governance:

the decentralised level provides a space to experiment with innovation

NEED: BACKING UP (*QUESTIONING?*) THE POSITIVE NARRATIVE WITH EMPIRICAL EVIDENCE

- Idea of laboratory federalism is not new
- New: solid basis in empirical reality (e.g. 100% Renewable energy regions, transnational energy cities' collaboration, etc.)

but

- Literature on sub-national experimentation has a tendency to show over-enthusiasm for the innovation potential of decentral and bottom-up processes (*positive narrative*)
- **More research is needed on:**
 - empirical evidence of decentral level's *real* contribution to manage the systemic challenges of energy transformations/global climate change mitigation
- **Re-shift research focus to:**
 - Evaluation of efforts at decentral level with regard to :
 - governance challenges of systemic relevance that can be addressed at the local/regional level - *need for SCALABLE solutions*
 - transferability of decentral innovations

NEW GOVERNANCE CHALLENGES FOR DECENTRALISED EXPERIMENTATION

- **Governance challenge I:** multi-level coordination of RES targets, planning and implementation strategies
- **Governance challenge II:** New modes of regional governance to manage conflicts
- **Governance challenge III:** adapting to changing/dynamic political framework conditions
- **Governance challenge IV:** Experimentation with decentralized energy flows to provide services for grid stability (security of supply)

CHALLENGE: ADAPTATION TO CHANGING/DYNAMIC POLITICAL FRAMEWORK CONDITIONS AT SUPERIOR POLICY LEVELS

I. Reform of support scheme EEG in 2014 and 2016 (partly based on European Commission's state aid guidelines)

- Introduction of annual caps
- Mandatory direct marketing
- Introduction of volume-based auction system

Increase of risks for planners/investors in RES/de-motivation at de-central level

- Discussion about discrimination against small-scale initiatives, such as citizen energy projects and cooperatives → verified empirically: see table

Structure of bidders in the first four pilot bidding rounds for ground-mounted PV.

Bidding round (auction volume in MW)	Total number of bids	Number of small- scale bids (<1 MW)	Volume of successful bids (in MW)	Volume of successful small- scale bids (in MW)	Volume of successful bids by "big players"* (in MW)	Share of successful bids by "big players" ^a (of total volume)	Share of successful small-scale bids (of total volume)
First	170	25	157	1	110	70%	1%
Second	136	16	160	2	116	73%	1%
Third	127	15	204	4	41	20%	2%
Fourth	108	13	128	2	85	67%	2%

^a Bidders with more than one bid and bidders who indirectly feature intercompany ties.

Source: Own compilation of data based on [Deutscher Bundestag \(2015a, 2015b, 2016a, 2016b\)](#).

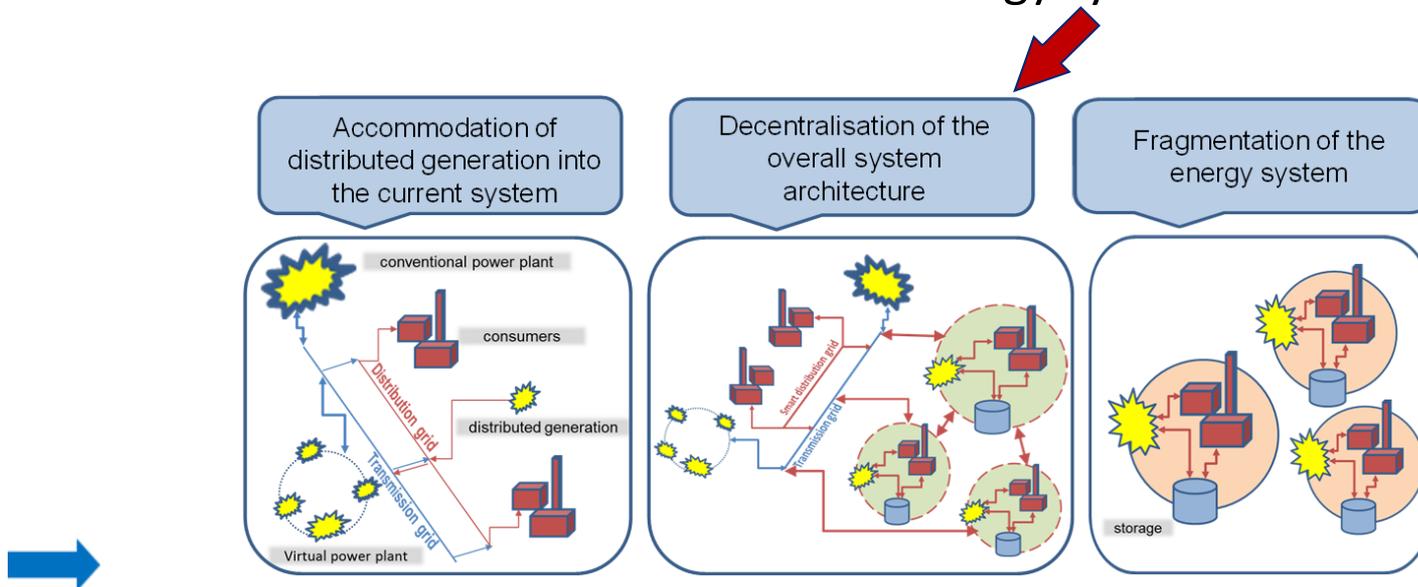
CHALLENGE: EXPERIMENTATION WITH DECENTRALIZED ENERGY FLOWS TO PROVIDE SERVICES FOR OVERALL GRID STABILITY (I)

The *decentralization paradigm* in grid infrastructure governance ?

- High portion of volatile RES in power mix – relevance security of supply issue increases
 - Open questions: how, by whom and at which spatial level to organise the balance of supply and demand to guarantee grid stability
 - Also a political question of grid infrastructure governance: underpinned by vision of the future energy system architecture
 - Visions do not evolve automatically as a consequence of technology - but as a consequence of political discourse
- 
- Ideational struggle between the centralisation and decentralisation paradigm

CHALLENGE: EXPERIMENTATION WITH DECENTRALIZED ENERGY FLOWS TO PROVIDE SERVICES FOR OVERALL GRID STABILITY (II)

The *decentralization paradigm* in grid infrastructure governance: the *control over* the use of flexibility options in smaller spatial entities to provide evidence for scalable solutions for a decentralized energy system



Source: © Kerstin Tews; own illustration based on IZES et al. (2008) and Leprich et al. (2005)

Decentral pioneers (e.g. 100% RE-Regions) have to re-invent themselves

- Shift from a dominant inward-looking focus on merely adding local RE capacity to the grid into a more system-based perspective by offering feasible models of a regional organisation of energy flows (sector coupling of warmth, electricity & mobility; DSM; regional marketing models etc.)

CONCLUSIONS I

- I. Political framework conditions are getting worse for new entrants to the energy market

- II. The previous pioneers/challengers (e.g. 100% regions) can lose their pioneer role and become mere niche actors

....if they do not consider the following →

CONCLUSIONS II

Decentralised initiatives (e.g. 100% regions) need to strengthen their *systemic impact*

Requirements:

- to take a broader perspective beyond the individual region to address regional coordination of energy flows
- to strengthen informal horizontal coordination mechanisms within and beyond formal political administrative borders
- to start experimenting with governance arrangements in order to utilize flexibility options at decentralized level to address the *security of supply* issue
- to strengthen lesson-drawing among each other to foster diffusion of good practice, and to politically lobby for alternatives to the centralisation paradigm

MANY THANKS FOR LISTENING!

Please share your thoughts,
feedback and recommendations!

Reference:

Beermann, Jan; Tews, Kerstin (2016): Decentralised laboratories in the German energy transition. Why local renewable energy initiatives must reinvent themselves. In: Journal of Cleaner Production. DOI: 10.1016/j.jclepro.2016.08.130.

Download at: <http://www.sciencedirect.com/science/article/pii/S095965261631294X>

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