



WindNODE – showcasing smart energy systems from northeastern Germany

Status quo and prospects for German-Japanese cooperation

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Markus Graebig, markus.graebig@windnode.de

www.windnode.de/en















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on the basis of a decision
by the German Bundestag

“Energiewende” was essentially an “electricity transition”

Energy concept 2050, decided in 2010 – Government’s assessment report 2018*

	Base year	Status 2016	Assessment**	Target 2020	Target 2050
Greenhouse gas emissions	1990	- 27.3%		- 40%	≤ - 80%
Nuclear power phase-out				by 2022	
Renewables ... share of gross final energy consumpt.		14.8%		18%	60%
... share of gross electricity consumption		31.6%		35%	≥ 80%
Energy efficiency ... primary energy demand	2008	- 6.5%		- 20%	- 50%
... heat demand of building stock	2008	- 6.3%		- 20%	
... final energy consumption in transportation	2005	4.2%		- 10%	- 40%
Security of supply ... transmission grid expansion					
... redispatch					
... system average interruption duration index (SAIDI)					
Prices					
Acceptance					

* Selected indicators in 7 major assessment dimensions

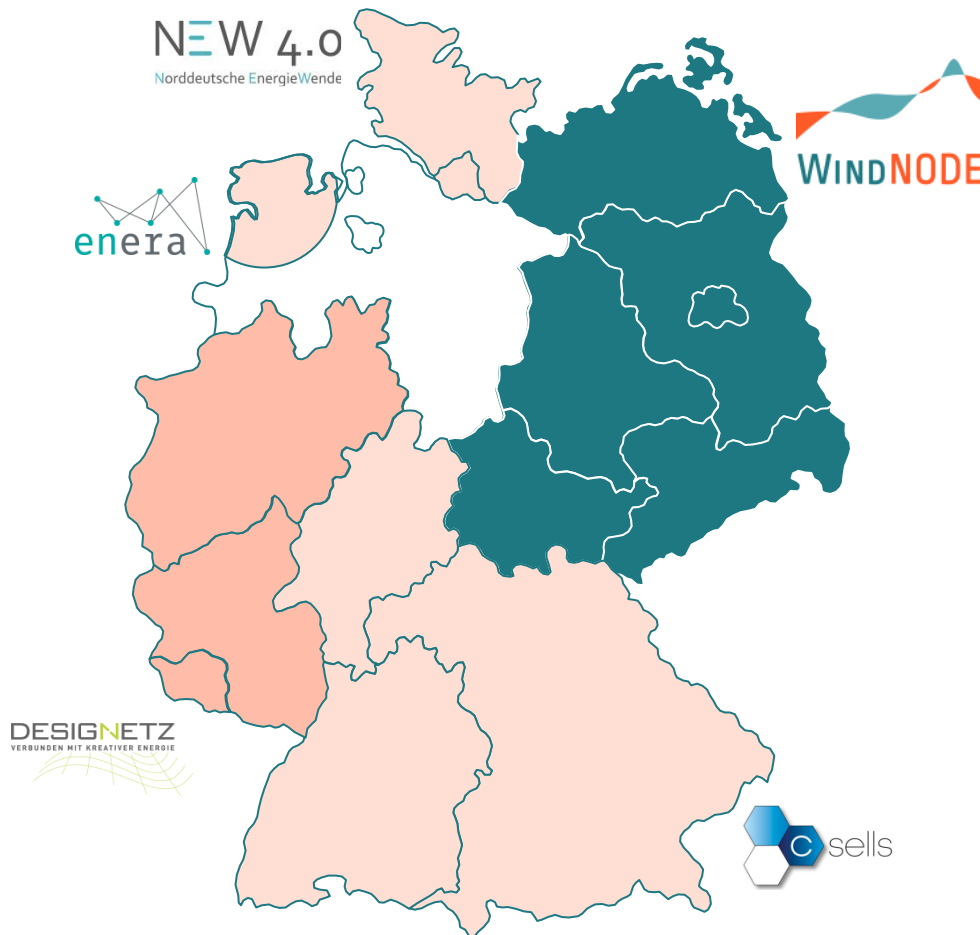
** Assessment by independent expert commission – qualitative assessment if no performance indicator is shown

Source: 6th Monitoring Report for the Energy Transition (Sechster Monitoring-Bericht zur Energiewende), 2018;

Assessment Report of the Independent Expert Commission “Monitoring-Prozess Energie der Zukunft”, 2018

SINTEG program: field tests for 2nd phase of energy transition

Overview of 5 smart energy showcases



Challenge

Scalable solutions for efficient, eco-friendly and safe integration of large amounts of renewables

Government Funding*

230 mio. € for five consortia under the SINTEG program,
37 mio. € for WindNODE

Total budget

>> 500 mio. €

Duration

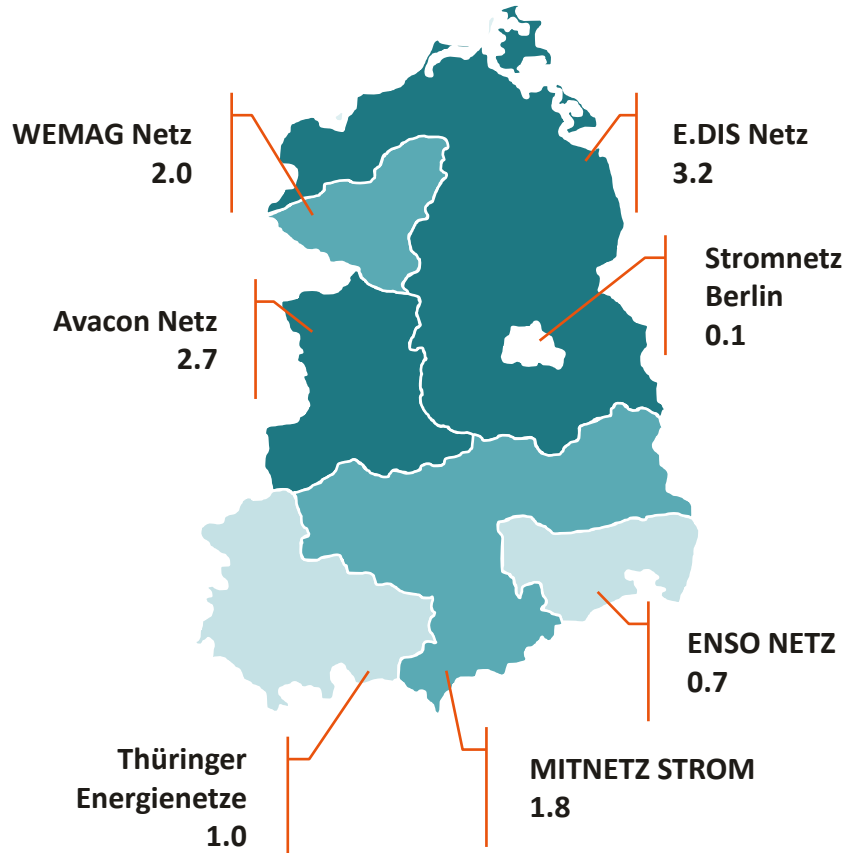
2017-2020

* Funded by the German Federal Ministry for Economic Affairs and Energy (BMWi)

WindNODE – showcases from the German Capital Region

Installed renewable capacity per DSO* in our region

as a multiple of regional peak load (2014)



Our region's USPs (2017)

Entire East of Germany

- 6 federal states
- ca. 16 mio. people
- 1 control area (50Hertz)
- > 70 partner

Renewables frontrunner

- > 53% of the region's electricity is green

Energy transition challenges

- Grid congestion: Redispatch on 171 days, ~ 2% curtailment of renewables
- Large grid expansion projects
- Structural transformation in Lausitz region

* DSO = Distribution System Operator

A joint effort by > 70 partners from industry and academia

WindNODE partners

Steering Group



Partners



Associated Partners



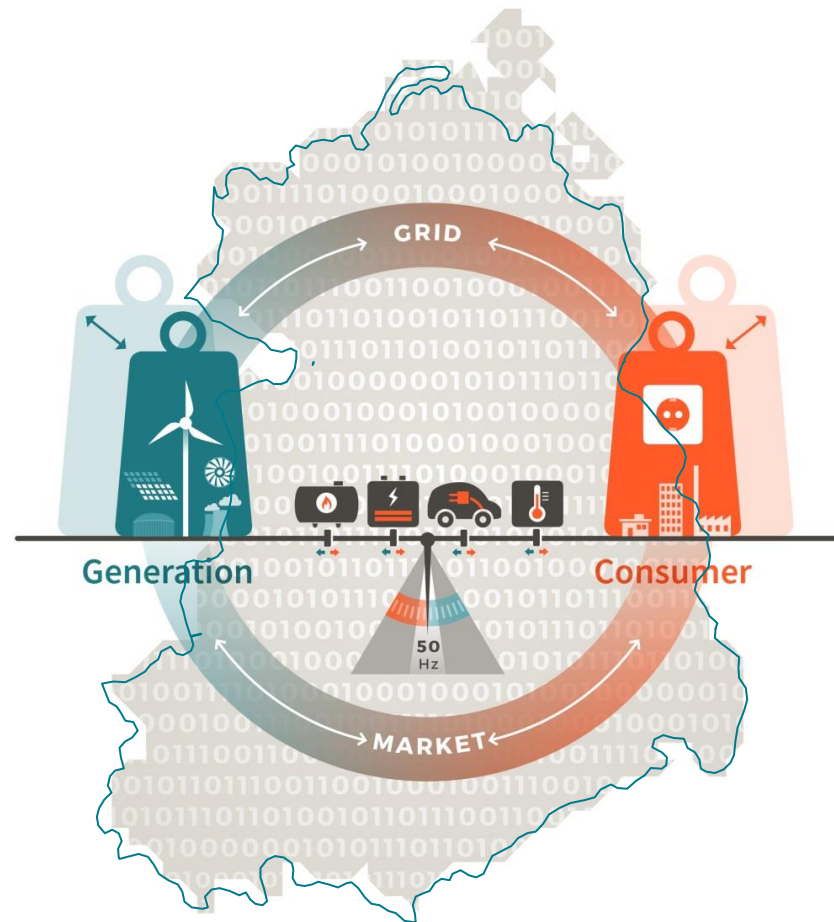
Subcontractors



Utilizing flexibility to cope with intermittence

WindNODE approach

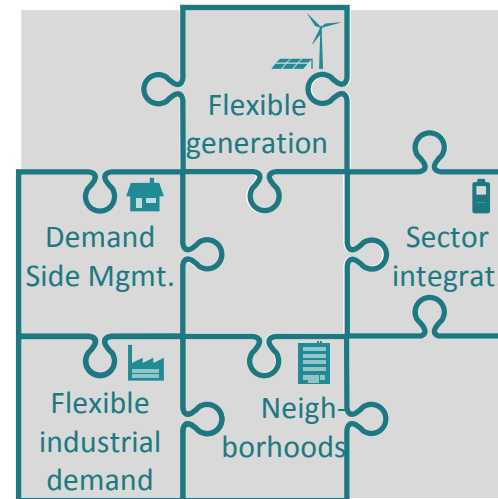
- ✓ **Identifying flexibility options**
(technical potential)
- ✓ **Developing use cases for flexibility**
(economic potential)
- ✓ **Creating value from energy data**
(digitalisation in the energy space)
- ✓ **Field test**
(blueprints, narrative, dissemination)



Abundance of technical flexibility options

Approach and intermediate results of selected partners

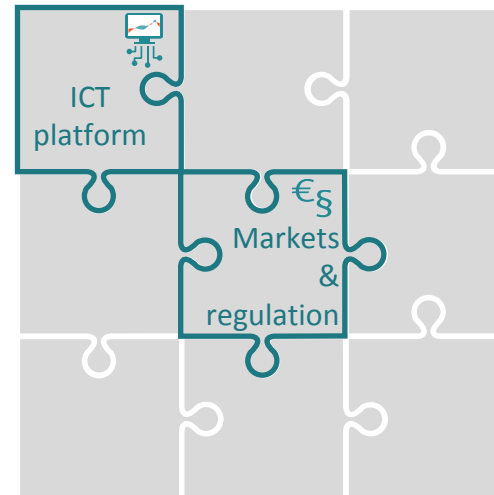
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Flexibility platform for grid congestion management

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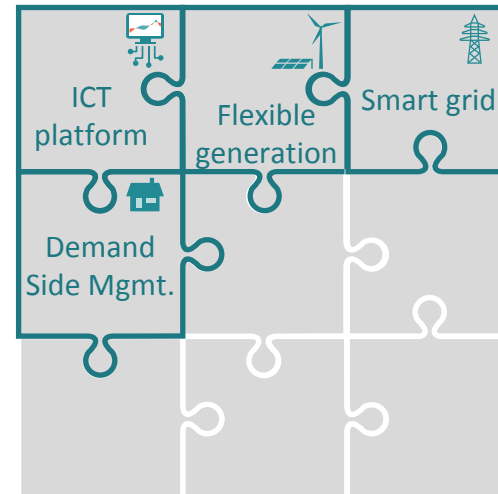
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Digitalisation in the energy industry – more than just an enabler

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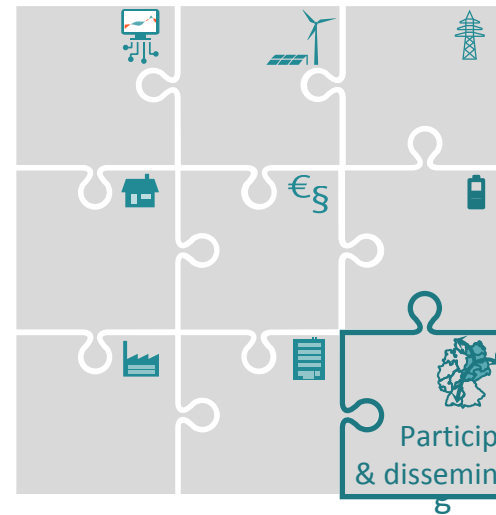
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Making energy transition tangible

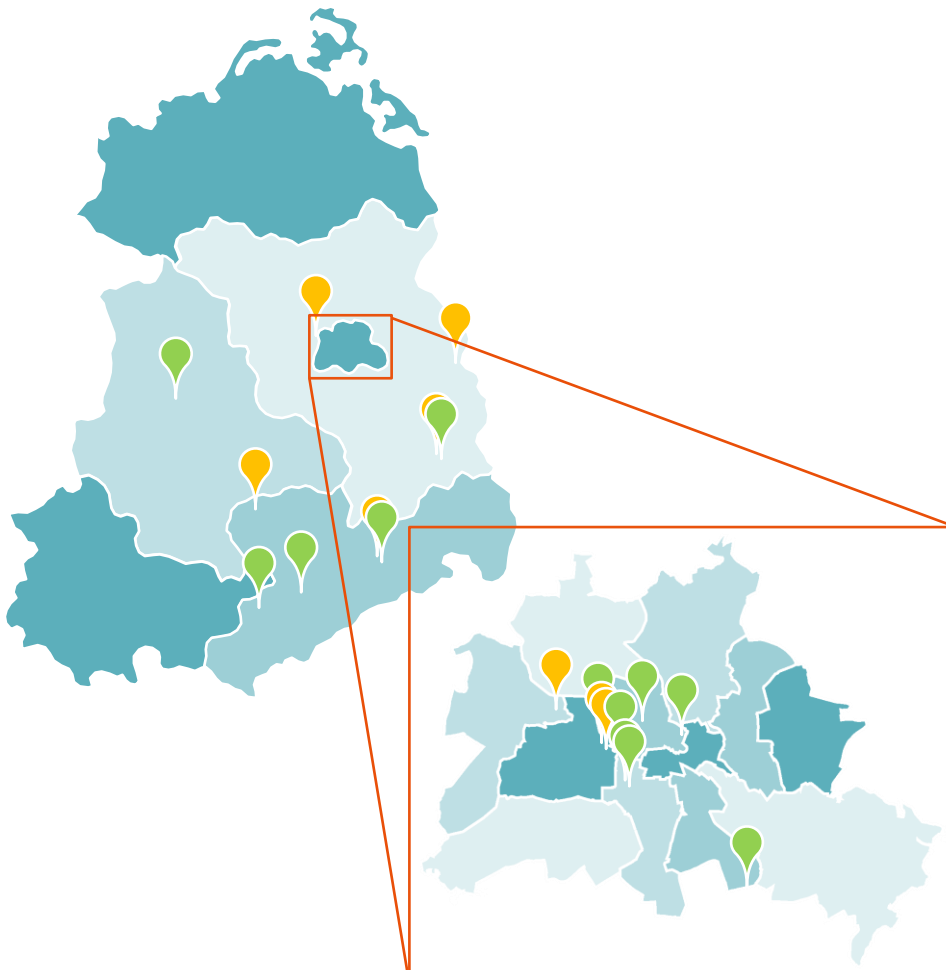
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More than 20 “visitor sites“ are planned

Overview of selected “visitor sites“, more are coming



Open

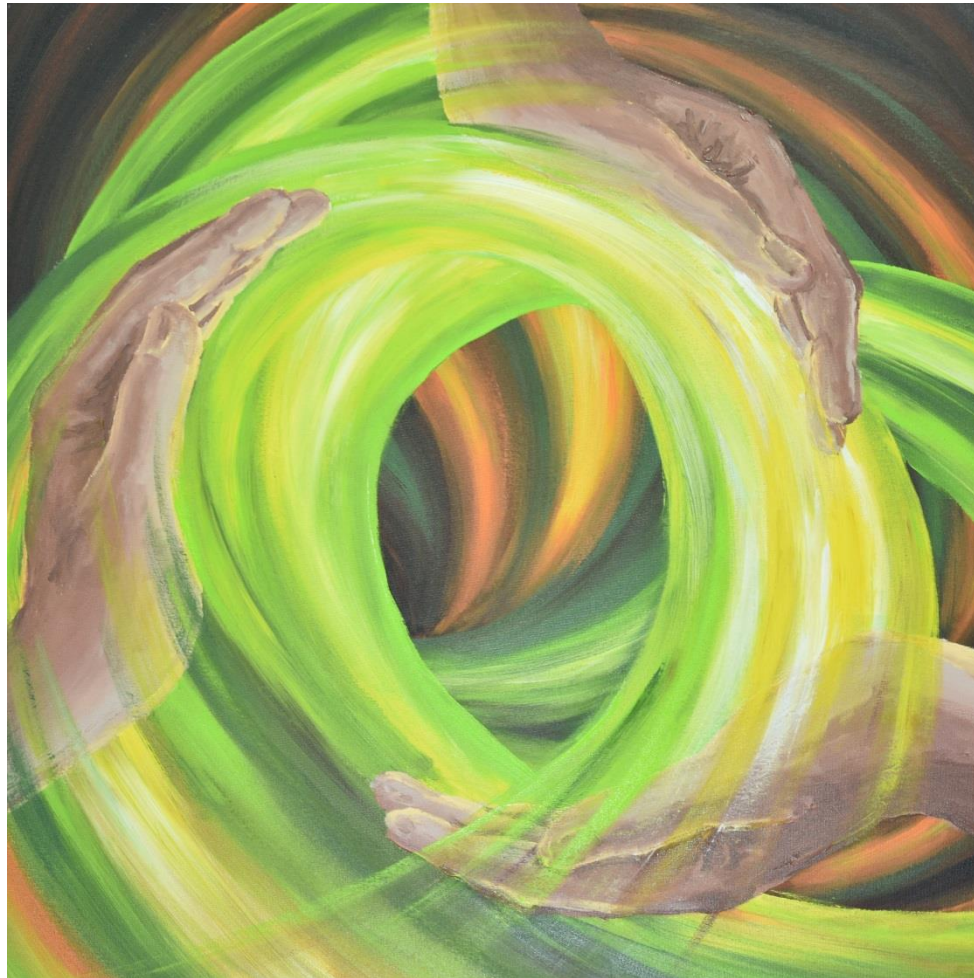
50Hertz	Showroom Energy Transition
BMW	Battery Farm
BTU Cottbus-Senftb.	Visitor Center Intelligent Energy Grids
Fraunhofer FOKUS	IT4Energy Center
Fraunhofer IFF	Virtual Development & Training Center
Fraunhofer IWU	E3 Research Factory
GASAG	Energy Workshop on EUREF Campus
Green Cycle	Supermarkets of Lidl (Hauptstr.) & Kaufland (Alexanderplatz) in Berlin
SenerTec, WHZ, ZEV	Ubineum
Uni Leipzig, GridLab	Grid Simulator
...	...

Coming Soon

Bosch SI	Showroom
IBAR	Energy Control Room
ILK Dresden	Power-to-Cold Exhibit
Siemens	Showroom
SW Frankfurt (Oder)	Control Room and Heat Transfer Station
TU Berlin EnSys	Energy in Motion
...	...

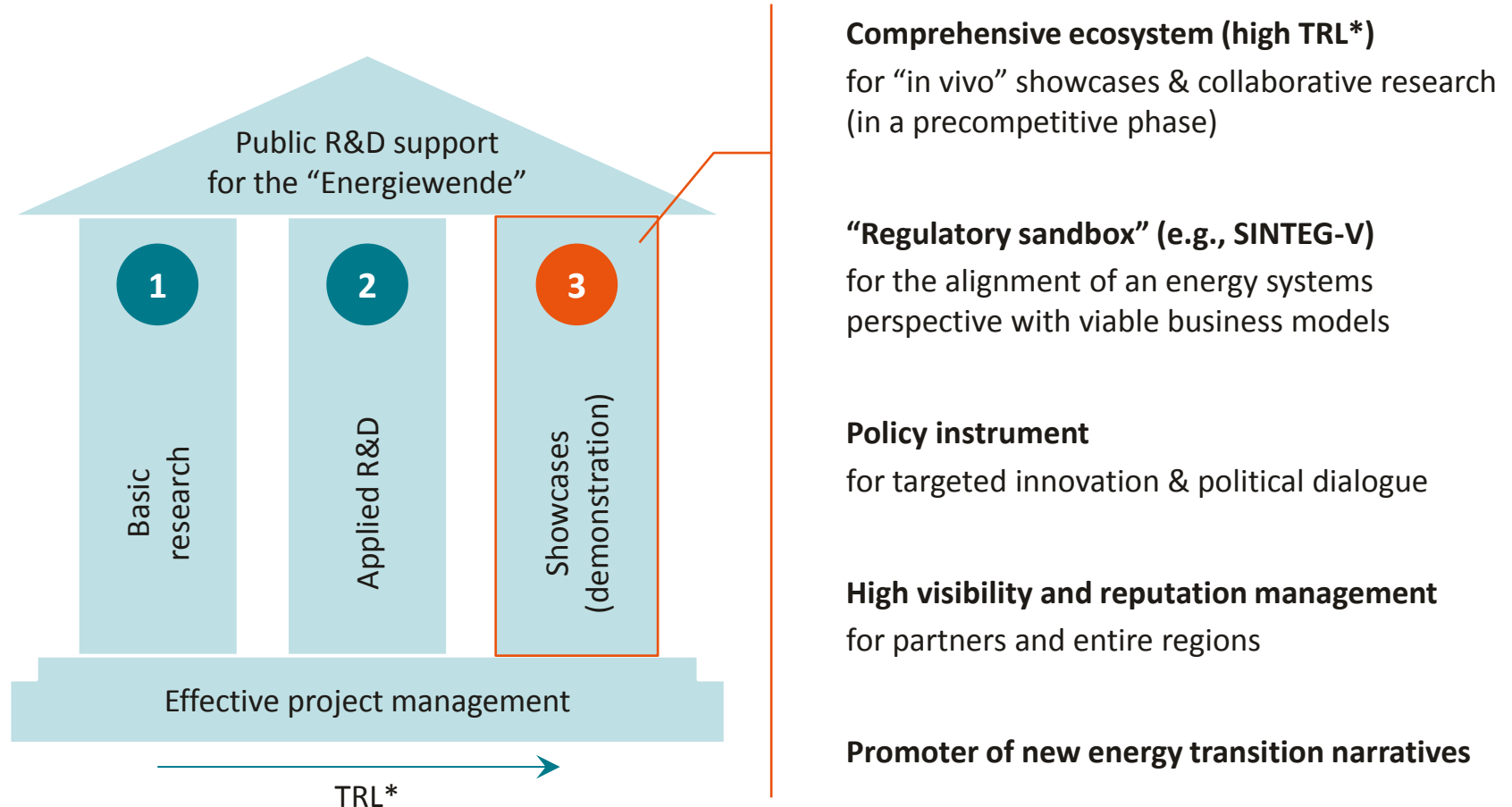
New perspectives on energy transition: “Energy & Art“

The vision: “Joint responsibility for a successful energy transition“



Showcases as an innovative, third pillar of public R&D support

Benefits and lessons learnt from WindNODE as a showcase

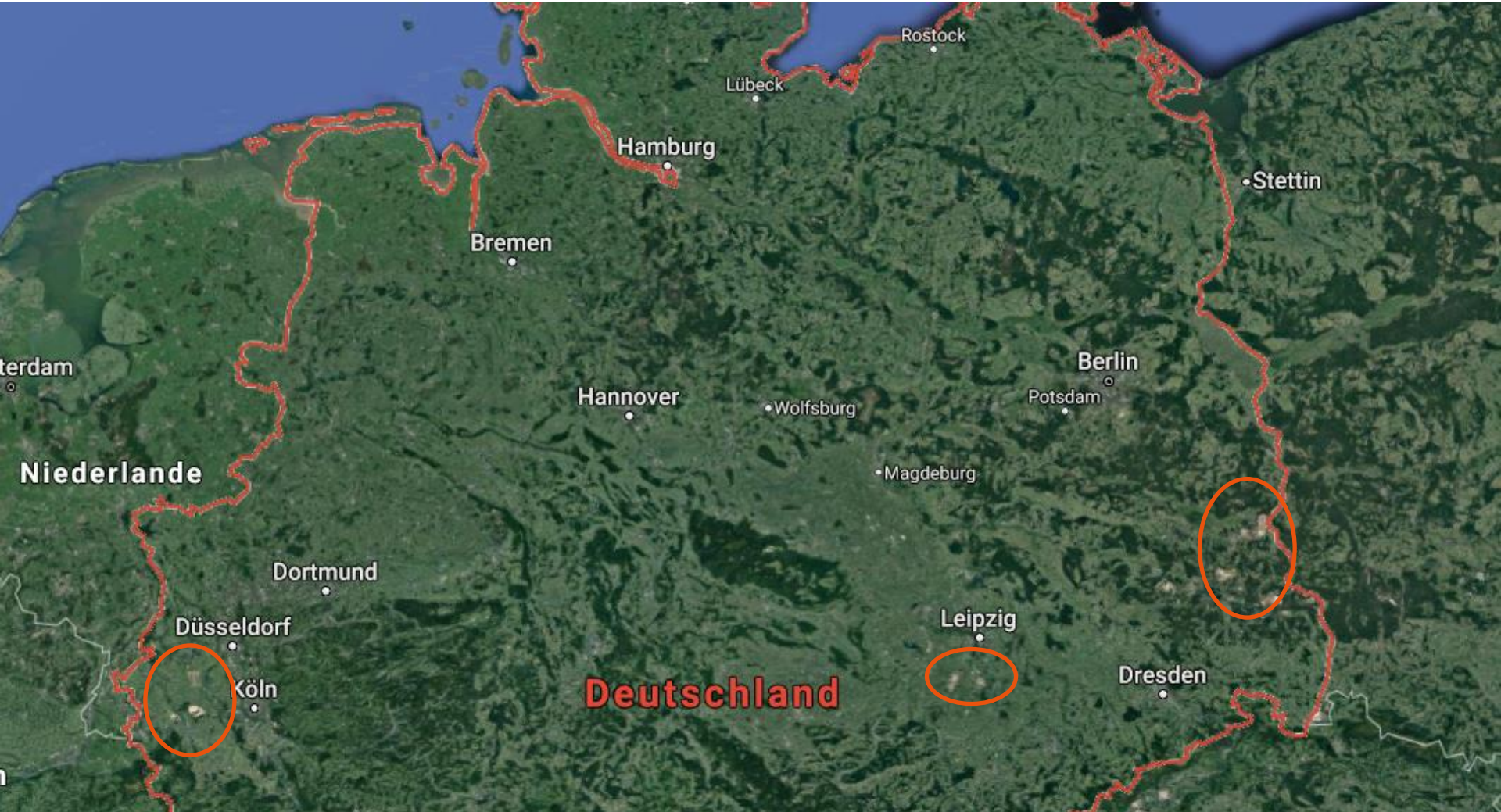


* TRL = Technology Readiness Level

Source: WindNODE

Phasing out coal by 2038: Lignite open pit mining in Germany

 Lignite regions



Outlook: Combining expertise in Renewables and Hydrogen

Prospects for German-Japanese cooperation

Opportunities for German-Japanese cooperation on the energy transition are plentiful and exciting – combining leading expertise in Renewables (generation and system integration), Hydrogen, Mobility and many more.

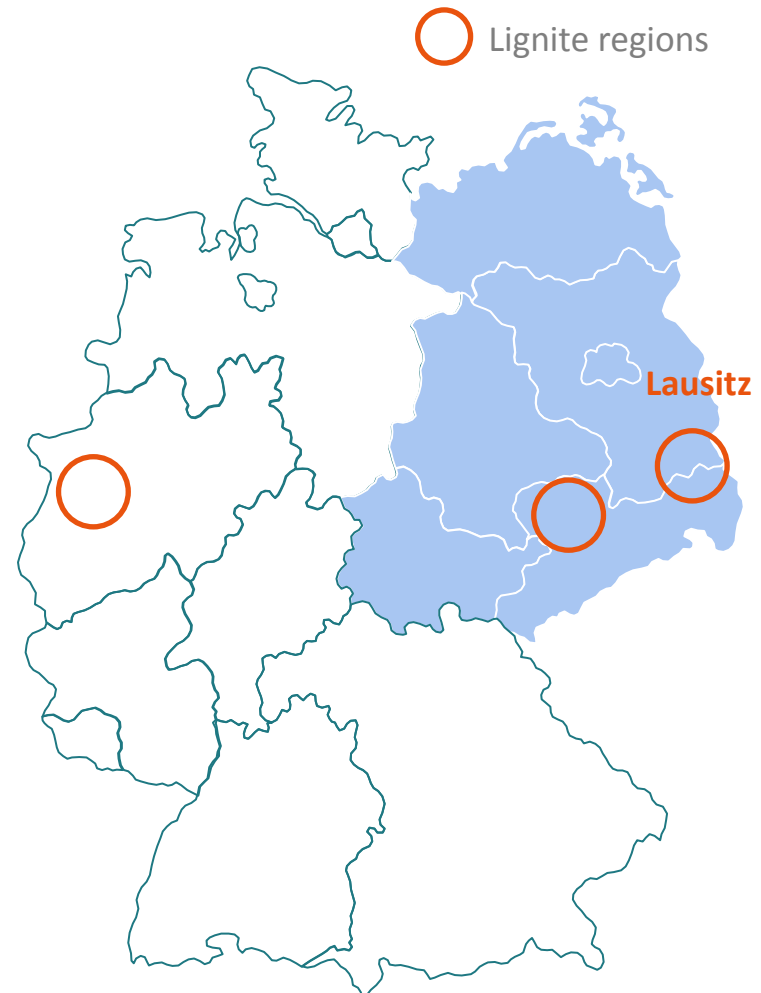
Examples for potential collaboration in East Germany:

- **Young companies**, looking for partners.
- **Power-to-Gas**. Government have recently launched their call for “Reallabor“ applications (“reality labs“ = showcases at a high TRL*) with a focus on Power-to-Gas**. Application deadline is 05th April 2019, up to EUR 100 mio. funding per year.
- **Phasing out coal**. Most likely, lignite will be phased out by 2038. Strong political attention for a major transformation effort. Currently, there is intensive discussion on perspectives for former coal regions. Hydrogen & sector coupling as promising approaches.

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** Call by BMWi (Federal Ministry for Economic Affairs and Energy) is available online (only in German): www.energieforschung.de/antragsteller/foerderangebote/ideenwettbewerb_reallabore-der-energiewende

Source: WindNODE, BMWi





For more information visit:

WWW.WINDNODE.DE/EN

Markus Graebig, Project Director, markus.graebig@windnode.de



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