bne

Integration of RES: What are the local system challenges and how to organise a market for flexibility?

Conference "Technology Challenges and Regional Approaches for Integrating Renewables and Energy Security

Brussels, 27/05/2015

Who is bne and what are our goals?

bne ...

- bne represents the interests of grid-independent energy suppliers and energy service companies in Germany. Unlike suppliers with a connected grid, bne-members are free of monopoly interests: They are committed to fair competition and a diverse energy market.

.... has the following goals

- To promote a competitive regulatory framework for the energy sector
- To implement and control competitive principles on the market
- To implement fair conditions for competition in the design of grid acces and grid use
- To protect customers as consumers in competition

bne currently has 41 ordinary members:

AKTIF TECHNOLOGY
EDF Deutschland
GETEC DATEN- UND ABRECHNUNGS-MANAGEMENT GmbH
LandEnergie
MR
QUADRA Energy
BEEGY Better Energy.
ENERNOC
goldgas
meine-energie.de
VORWEG GEHEN
BERGEN ENERGI LEADING INTERNATIONAL ENERGY EXPERTS
ENOPLAN wenn's um Energie geht
GP JOULE Mit Energie gewinnen
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SAG
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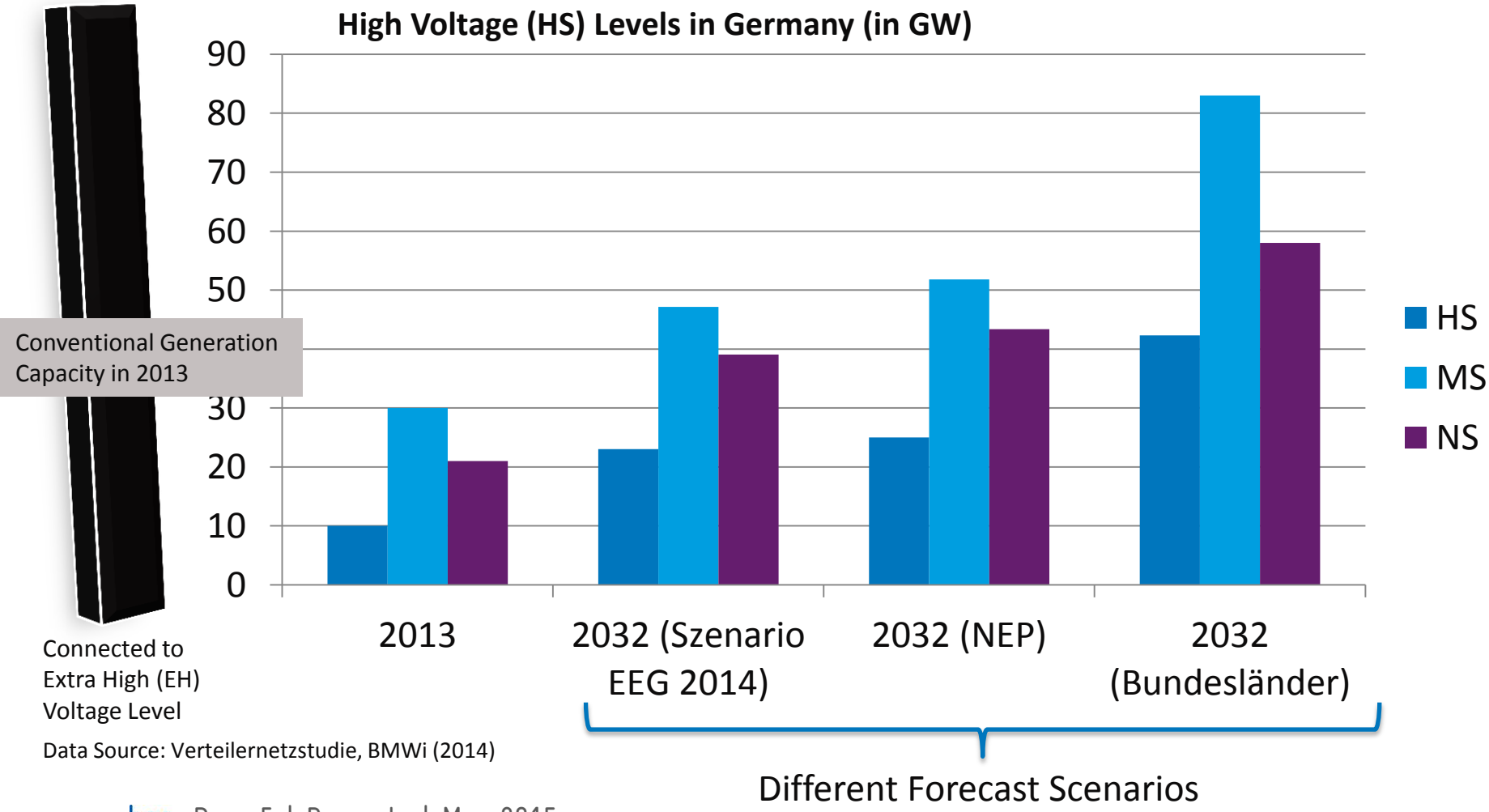
nexus energie
VATTENFALL
dse Energie neu entdecken.
watt synergia
GENEK
LichtBlick Generation reine Energie
PQ ENERGY
ECONGAS
Yello Strom

Agenda

1. Current system challenges
2. Concept of a decentralized flexibility market
3. How such a market should not be organized

Challenge „Distributed Generation“
Transformation of the energy system

Connected Wind and Solar PV Capacity on the Low (NS), Medium (MS) and High Voltage (HS) Levels in Germany (in GW)

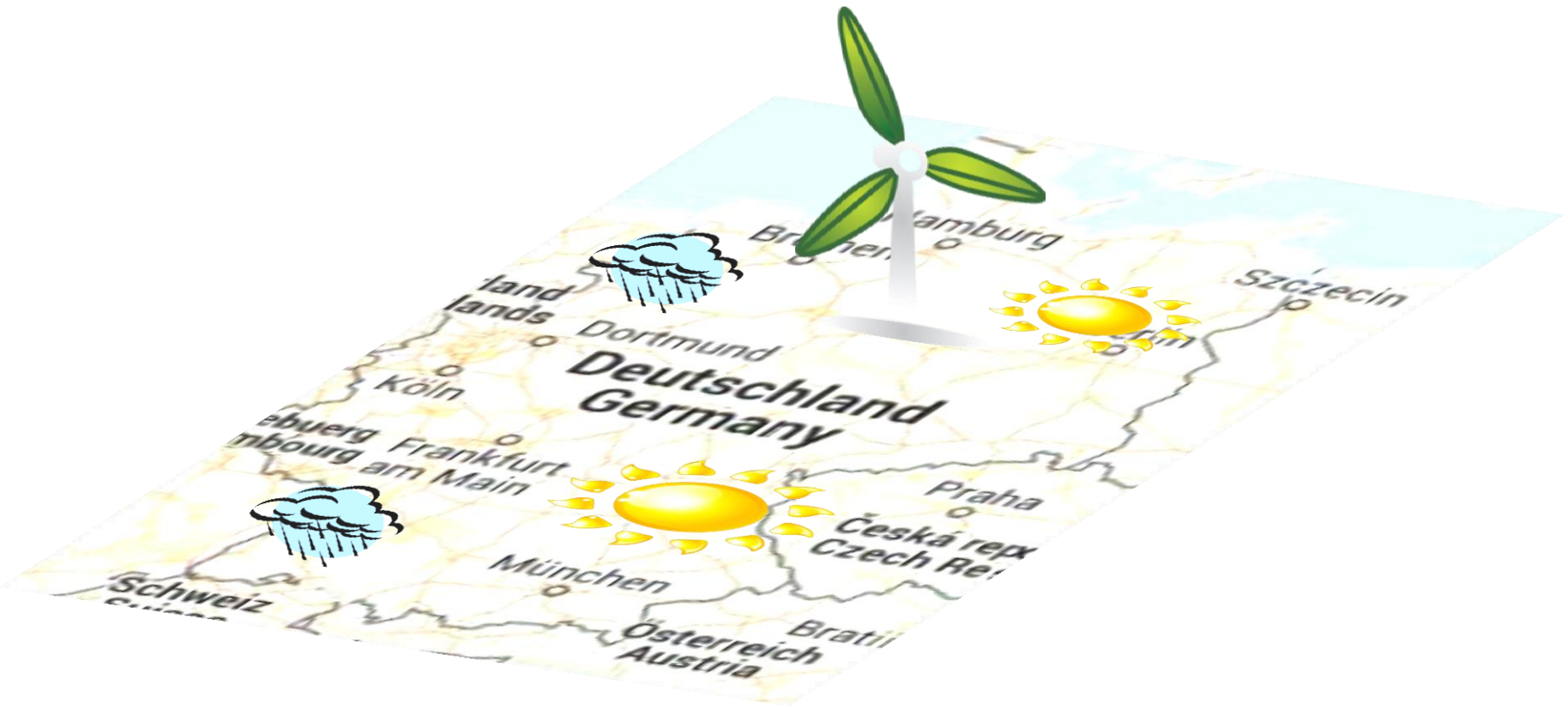


Conventional Generation Capacity in 2013

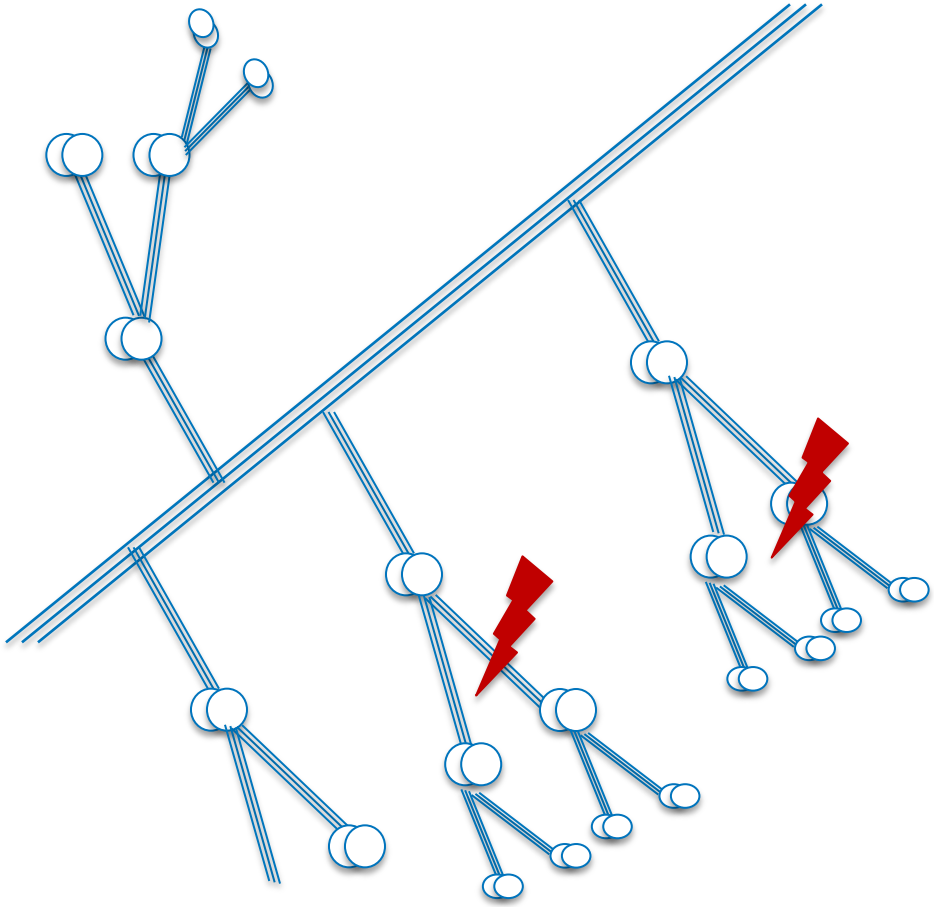
Connected to Extra High (EH) Voltage Level

Data Source: Verteilernetzstudie, BMWi (2014)

Challenge „One Wholesale Market – One Price Signal“

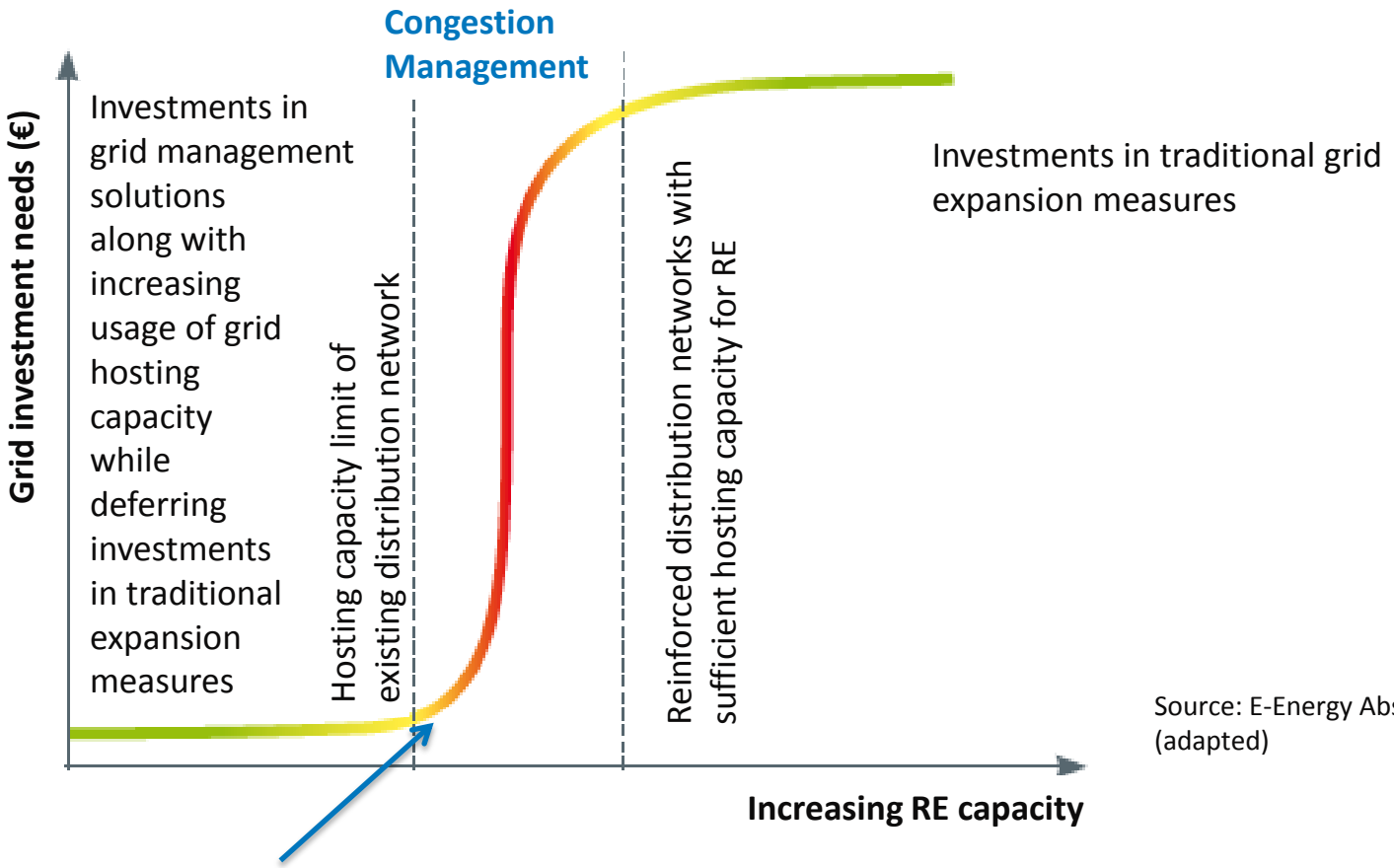


Challenge „No Copper Plate!“



If the price is low, demand increases – at the same time AND with all price sensitive customers!

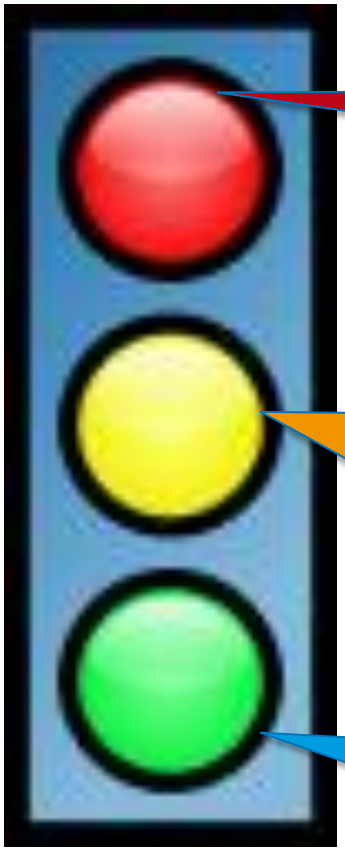
Distribution System Operators (DSOs) in need of flexibility services



Source: E-Energy Abschlussbericht, BMWi (adapted)

The core problem addressed

Setting the context for a **Decentralized Flexibility Market**: The Smart Grid Traffic Light Concept



Emergency cases: Contingency measures with intervention by the grid operator

Potential or actual network shortage: Responsible network operators interact with market participants according to rules for system stability / network operator remedies the situation by utilising the flexibility offered by market participants
→ Decentralized Flexibility Market

Normal operating state: No intervention by the grid operator / market mechanisms taking effect (competition)

Decentralized Flexibility Market: Core Concept

In Germany: 900 DSOs

Proposed: 25 flexibility platforms

Signal		Market parti-cipants	24-h-in advance	Time period	Capacity
Introduced via internet platform	Later on automated via market communication protocols	Each supplier/ aggregator with registered portfolio	Shorter lead times possible in the future	Unlimited	Value in percentage (e.g., 20% of 10 MW)

Decentralized Flexibility Market: Challenges that need to be addressed

Basic Problem:

In Germany: All customers with annual consumption below 100,000 kWh

SLP

One meter-reading per year = one data point per year!

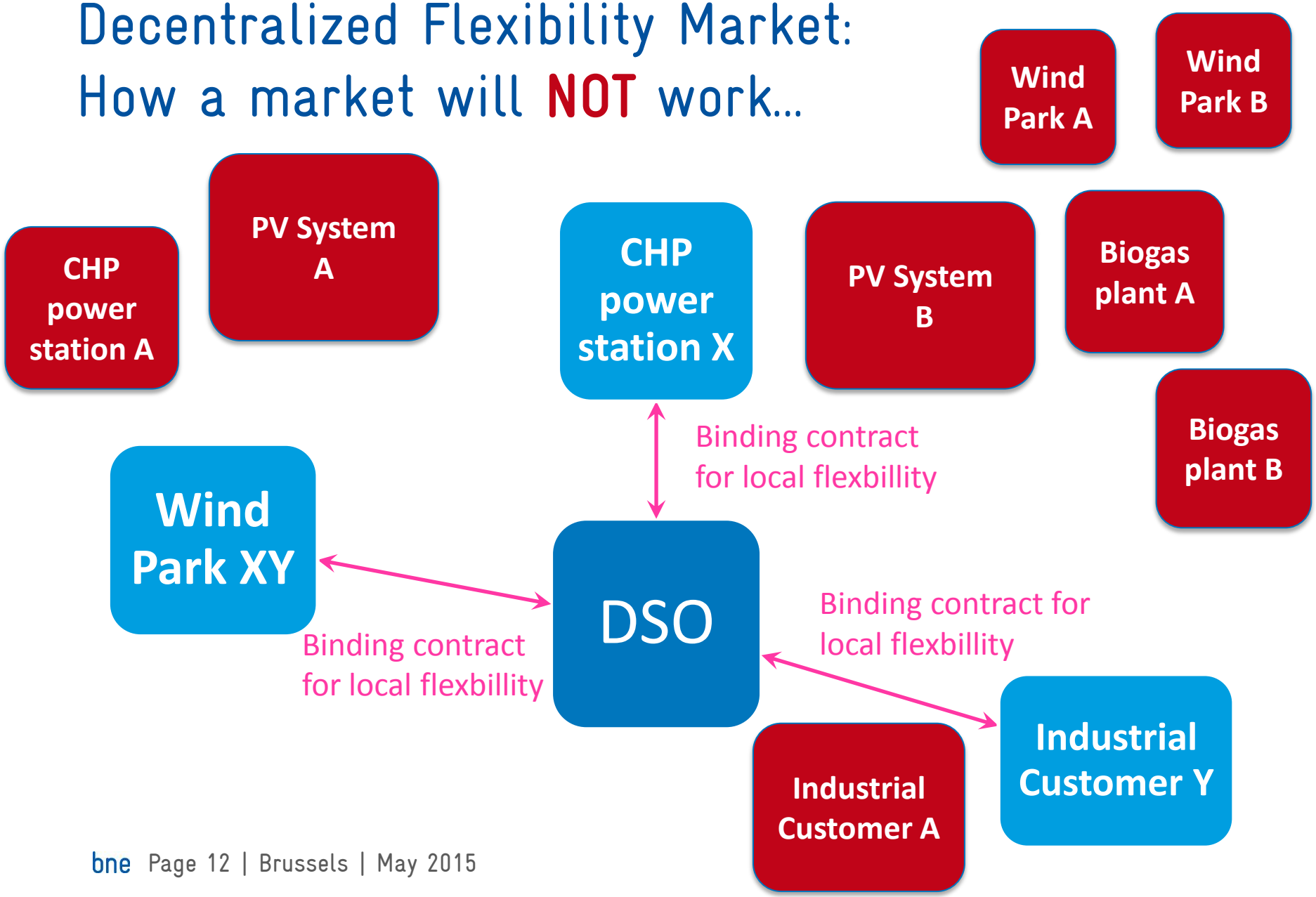
Activating Flexibility Options

More data at high costs (between 800 and 1000 EUR per year charged by DSOs)

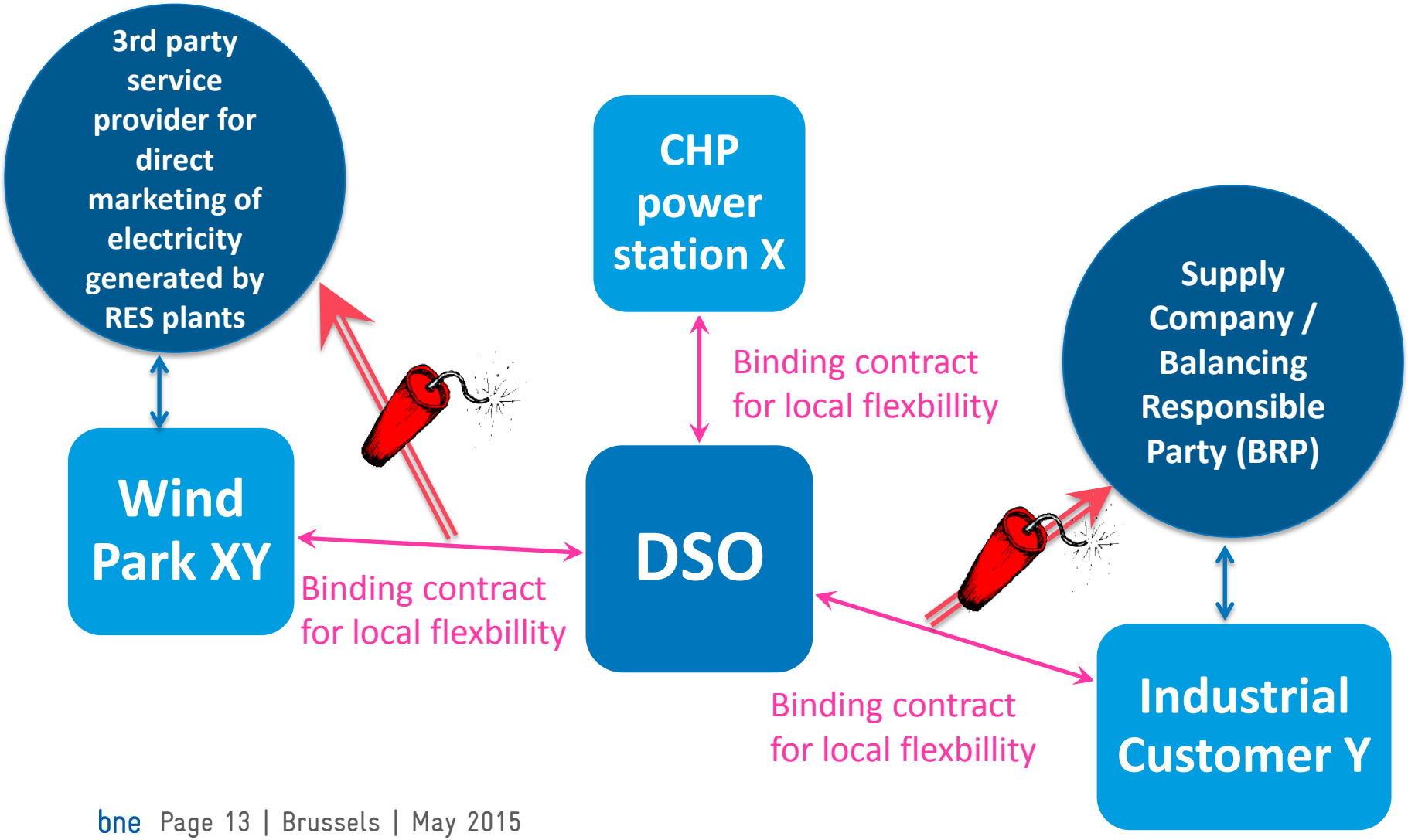
rLM

→ **Balancing methods and billing processes need to be enhanced**
→ **Advanced consumption metering will be required**

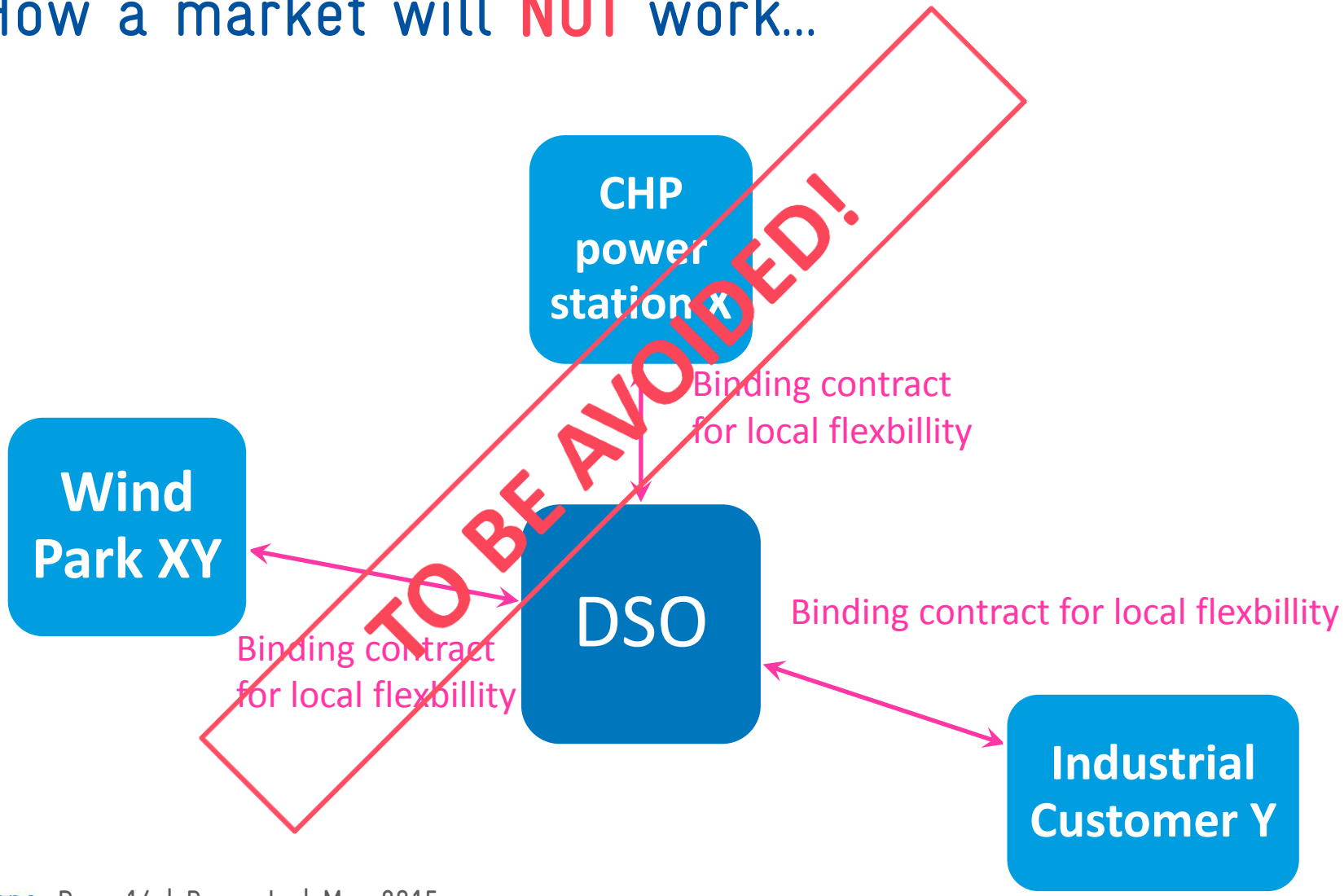
Decentralized Flexibility Market: How a market will NOT work...



Decentralized Flexibility Market: How a market will NOT work…



Decentralized Flexibility Market: How a market will NOT work…



Decentralized Flexibility Market: Key Messages

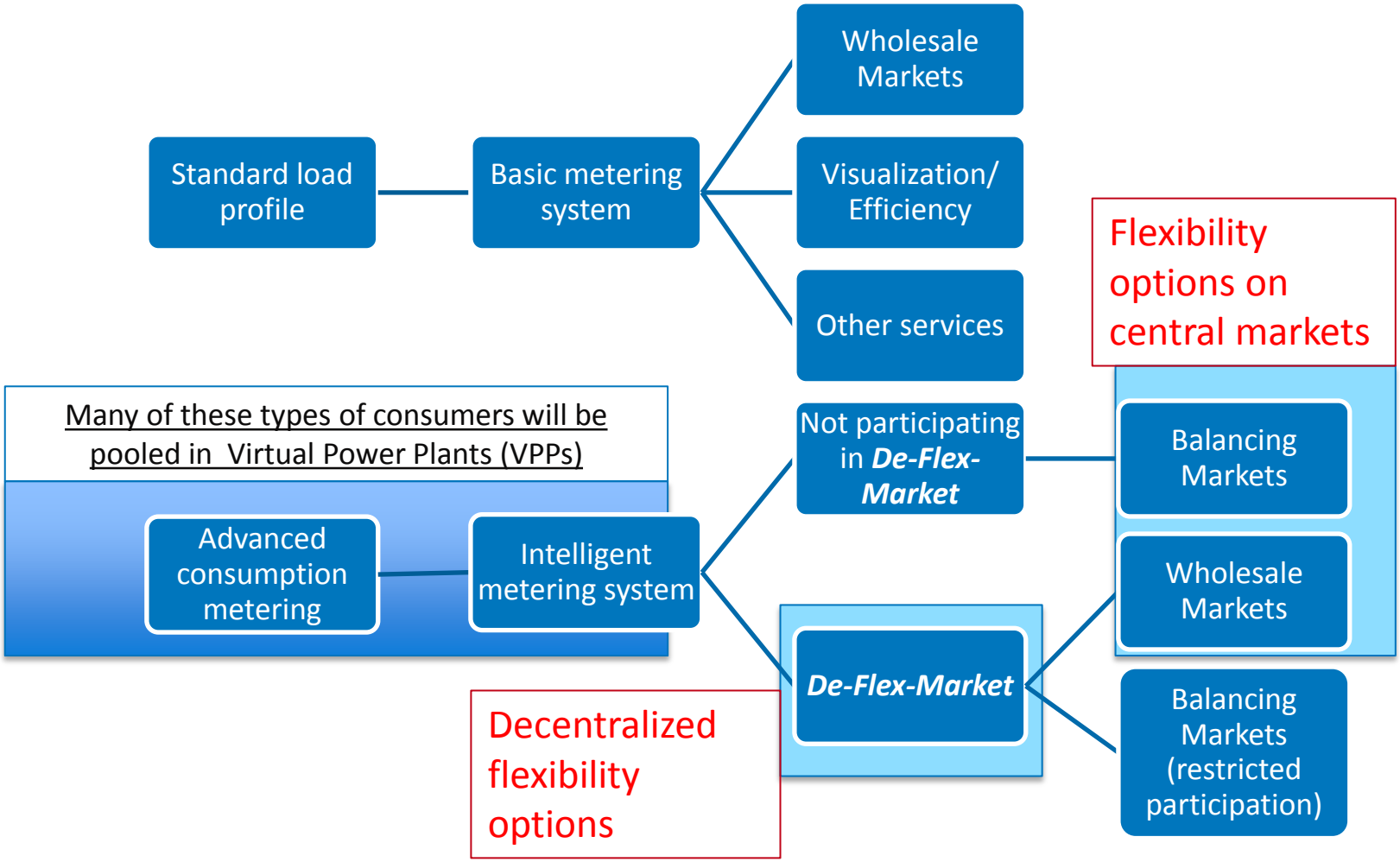
- The *De-Flex-Market* concept aims at presenting a **market based solution** for **organizing access to flexibility on the local distribution network**, while keeping the balance between acceptability, costs, increasing renewable generation capacity, network reinforcement and related distribution issues.

- **Tension between regulated and market based areas** in the electricity sector is **addressed** by this concept.

- From the point of view of energy supply companies, aggregators and other new market players, it offers **interesting new business opportunities**.

- **Further discussions**, including all market roles concerned, will have to take place and **continuing refinements** need to be carried out in order **to advance the concept and its implementation.**

Schematic Overview of Future Market Structure



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Thank you for your attention!

Bianca Barth
Bundesverband Neuer
Energieanbieter e. V.
Hackescher Markt 4
D-10178 Berlin, Germany

Telephone +49 30 400548-0
Fax +49 30 400548-10
bianca.barth@bne-online.de
www.bne-online.de