



SMART ENERGY COMMUNITY

VOOR WONINGEN EN
BEDRIJFSGEBOUWEN

Len Wismeyer

**Business Developer –
Strategy & Partnerships @
TenneT**

Flexibility in Practice

TenneT at a glance 2020



Workforce

5,700
Employees



EBIT

796
EUR million



Assets

27.3
EUR billion



Investments in 2020

3.4
EUR billion



Grid

99,99%
Availability



Grid length

23,900
Km



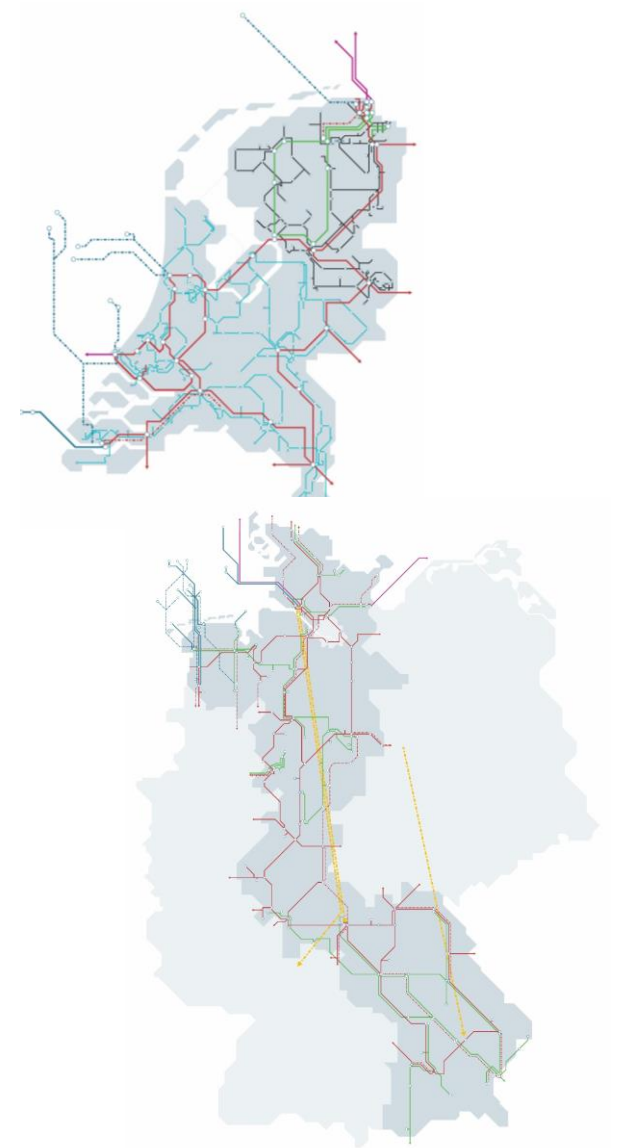
Dutch State

100%
Shareholder



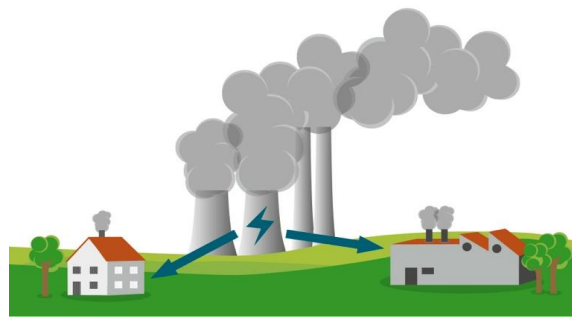
Footprint

62%
Greened



A changing environment

Renewables fundamentally change how power grids work and drive innovation



From

- Central, predictable production
- Central, Predictable Loads/Consumption



To

- Distributed, weather dependent production
- Decentral, unpredictable consumption and prosumers
- Electrification throughout different sectors

Key tasks

1) Transmission services

- Transporting electricity
- Maintenance and construction
- N-1 Security

2) System services

- Maintaining balance between supply and demand (50Hz)

3) Market facilitation

- Facilitating a smoothly functioning, efficient, liquid, and stable electricity market

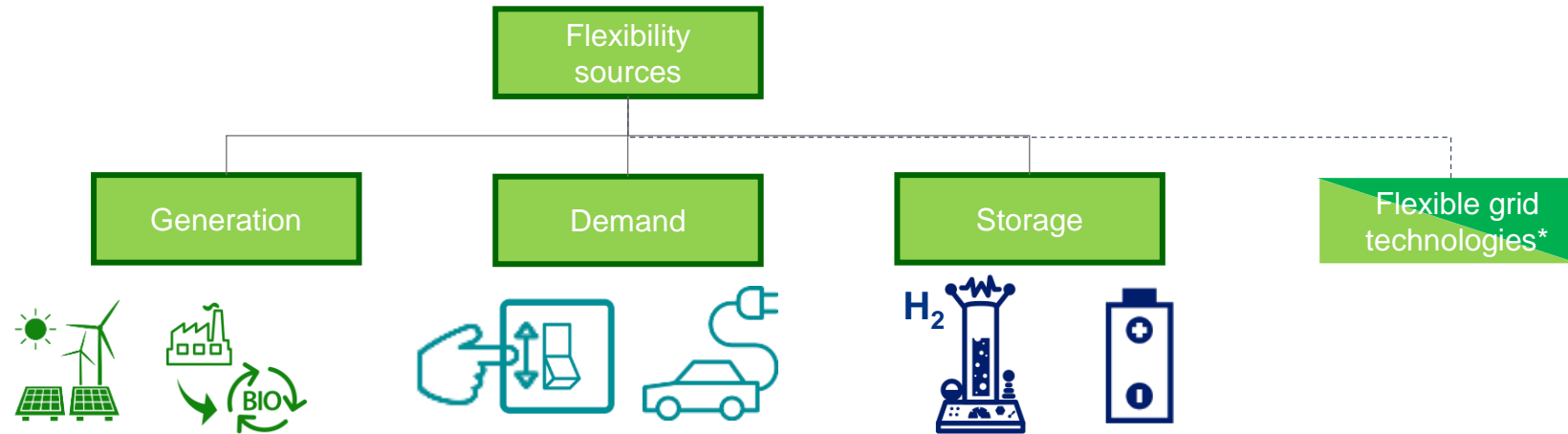


We need flexibility!

One of TenneT strategic goals is to unlock flexibility

Flexibility:

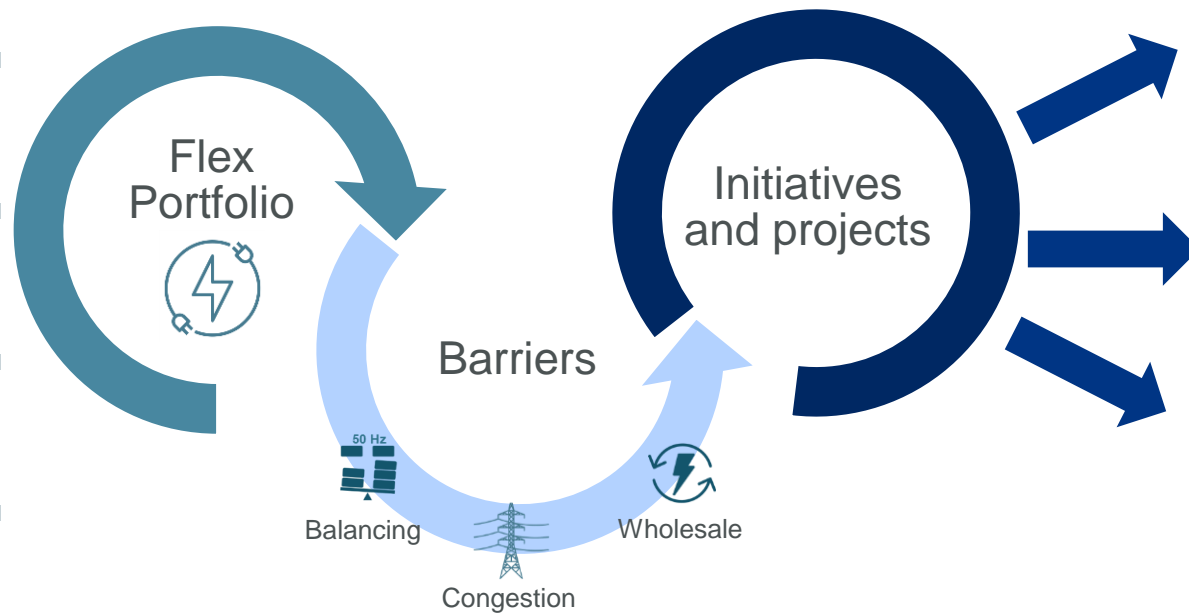
“The ability to cope with variability and uncertainty in demand, generation and grid, while maintaining a satisfactory level of reliability over all time horizons” (ENTSO-E)



We are driving the energy transition by **ensuring** that **all flexibility technologies** can be **unlocked** by **market parties** and grid operators, including by partnering with stakeholders, to make these flexibilities available for **ancillary services and market needs**

From the Flexibility Portfolio to Projects

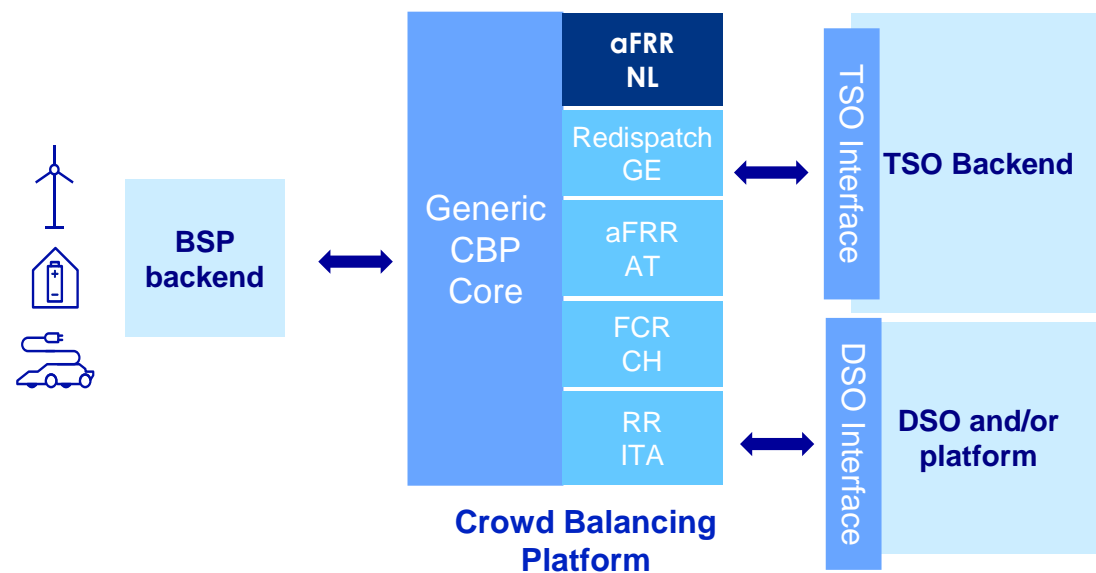
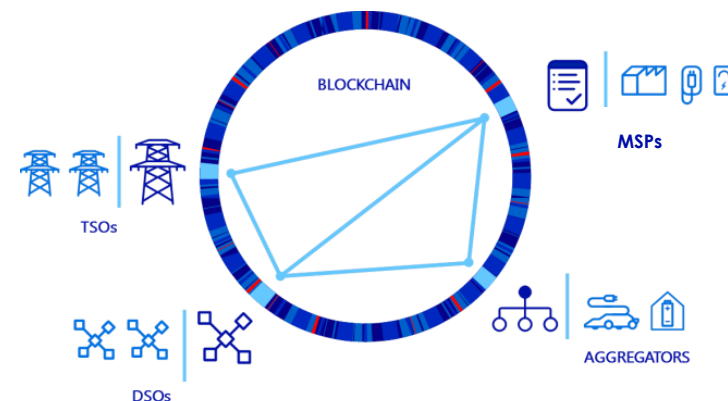
TenneT actively steers flexibility projects by an integrated portfolio approach



	Germany	Netherlands
Balancing	<ul style="list-style-type: none"> Wind for Balancing PV for Balancing New generation ABLa 	<ul style="list-style-type: none"> aFRR pilot mFRRda 2.0 FCR pilot
Congestion Alleviation	<ul style="list-style-type: none"> VIESMANN Norddeutsches Reallabor KOPERNIKUS PROJEKTE Kopernikus ENSURE 	<ul style="list-style-type: none"> NBNLETP Programme Board Pilot Noord-Nederland
Congestion Management	<ul style="list-style-type: none"> HealFlex Positiver Redispatch mit EE-Anlagen Redispatch Plus 	<ul style="list-style-type: none"> Congestion Management update in NL Grid Code entsoe WG ENTSOE TSO-DSO WG Flexibiliteit Programme Board WG Flexibiliteit en Opstap
Wholesale	<ul style="list-style-type: none"> Daimler Trucks & Buses FAU research project ES-FOR-IN Redispatch 3.0 	<ul style="list-style-type: none"> XBID 15min One inside portfolio Flexibility Monitor Phase 2 Industrial Demand Response - International Best Practices Program for Indus. Flex NL Topsector Energie Engagement Fiermaster - DSR

Crowd Balancing Platform for aFRR in NL

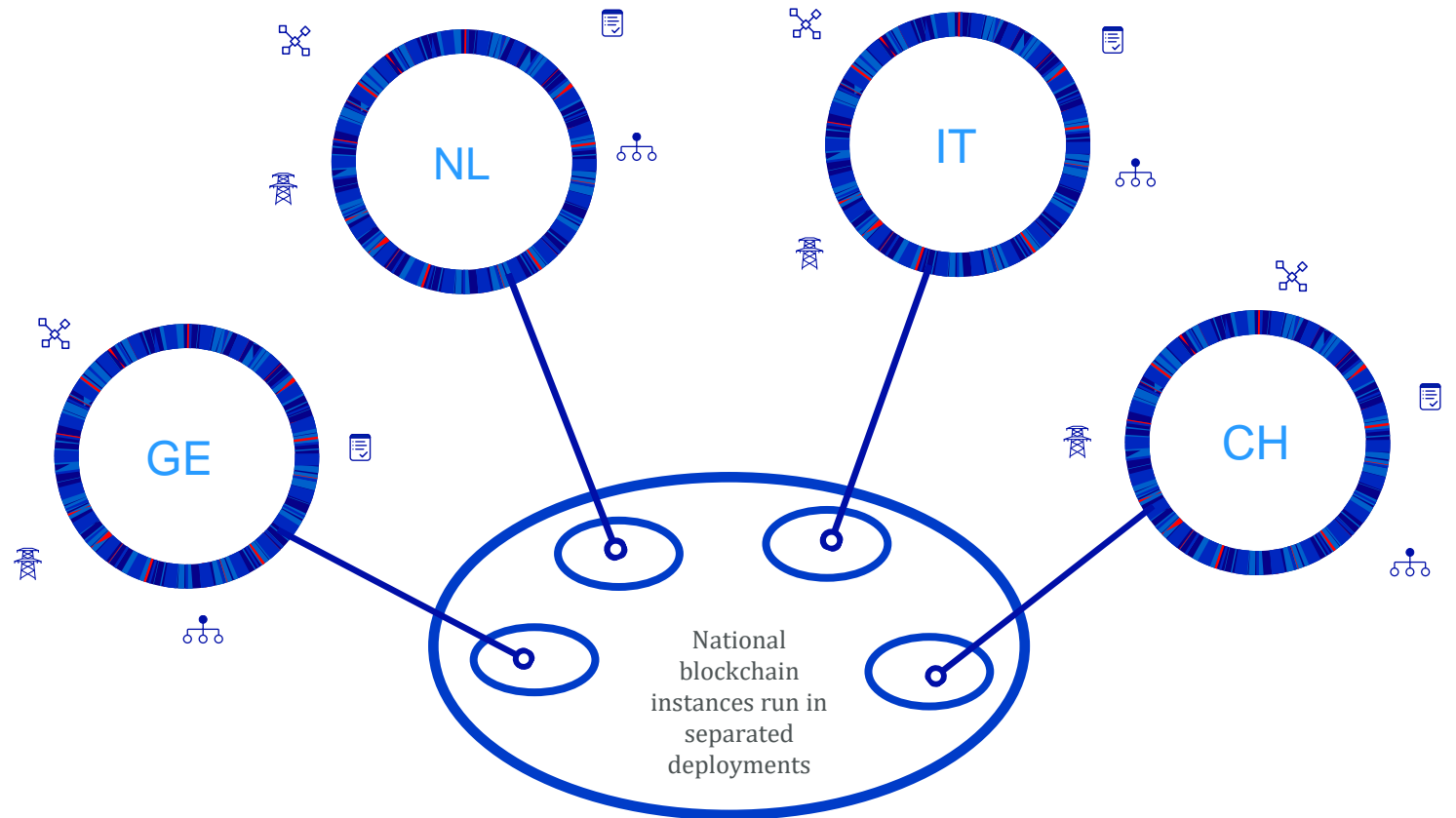
- The Crowd Balancing Platform (CBP) aims to lower barriers for BSPs to enter the aFRR market
- **One data communication hub** (based on REST APIs) for all the required aFRR data streams.
- The CBP is a product developed and maintained by Equigy, a TSO-owned entity, established to support TSOs in their role as market facilitator. Equigy is not intended for commercial purposes.
- The CBP is currently available in the Netherlands only for aFRR voluntary energy bids.



Equigy and Crowd Balancing Platform

The platform set-up is designed to:

- Create European standardisation while maintaining independence in national markets
- Share a common core to leverage synergies across markets
- Socialise relevant costs as much as possible between TSOs



Q&A

Len
Wismeyer

Business Developer
Strategy & Partnerships

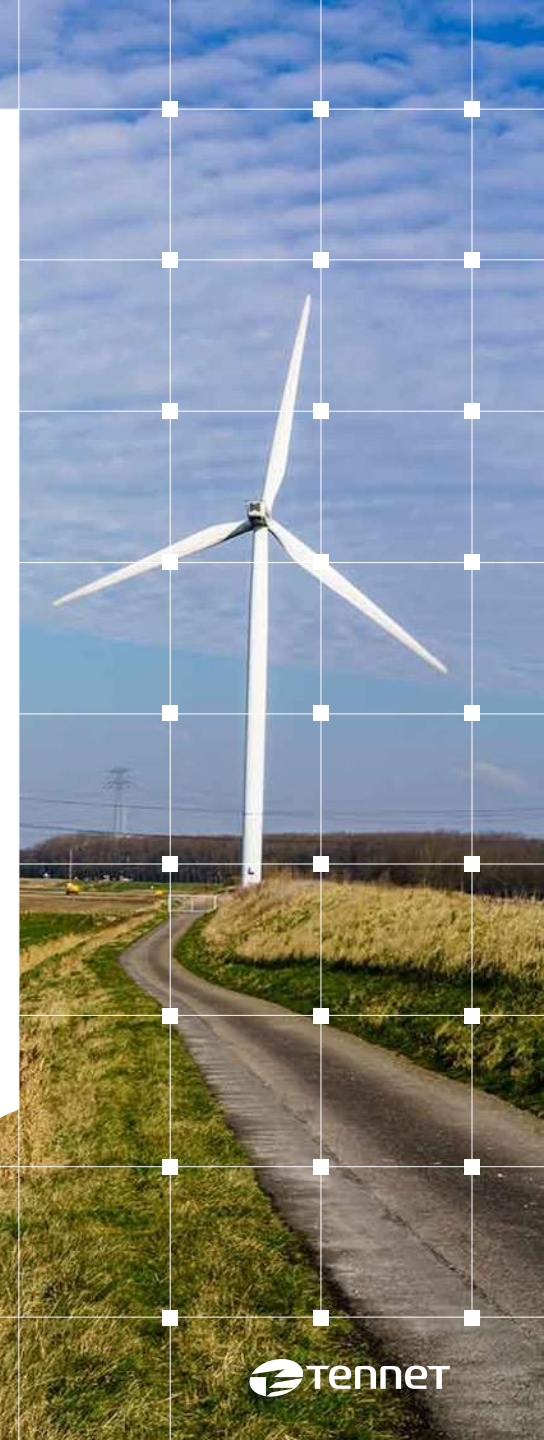


*For any questions or project ideas related to Flexibility
or digital business opportunities*

Len.wismeyer@tennet.eu

TenneT is a leading European grid operator. We are committed to providing a secure and reliable supply of electricity 24 hours a day, 365 days a year, while helping to drive the energy transition in our pursuit of a brighter energy future – more sustainable, reliable and affordable than ever before. In our role as the first cross-border Transmission System Operator (TSO) we design, build, maintain and operate 23,900 km of high-voltage electricity grid in the Netherlands and large parts of Germany, and facilitate the European energy market through our 16 interconnectors to neighbouring countries. We are one of the largest investors in national and international onshore and offshore electricity grids, with a turnover of EUR 4.5 billion and a total asset value of EUR 27 billion. Every day our 5,700 employees take ownership, show courage and make and maintain connections to ensure that the supply and demand of electricity is balanced for over 42 million people.

Lighting the way ahead together.



Disclaimer

This PowerPoint presentation is offered to you by TenneT TSO B.V. ('TenneT'). The content of the presentation – including all texts, images and audio fragments – is protected by copyright laws. No part of the content of the PowerPoint presentation may be copied, unless TenneT has expressly offered possibilities to do so, and no changes whatsoever may be made to the content. TenneT endeavours to ensure the provision of correct and up-to-date information, but makes no representations regarding correctness, accuracy or completeness.

TenneT declines any and all liability for any (alleged) damage arising from this PowerPoint presentation and for any consequences of activities undertaken on the strength of data or information contained therein.