
elia group
Elia Introduction
Cogen Vlaanderen
Powering
the decade
of electrification
27/06/2023 – Damien Rietjens

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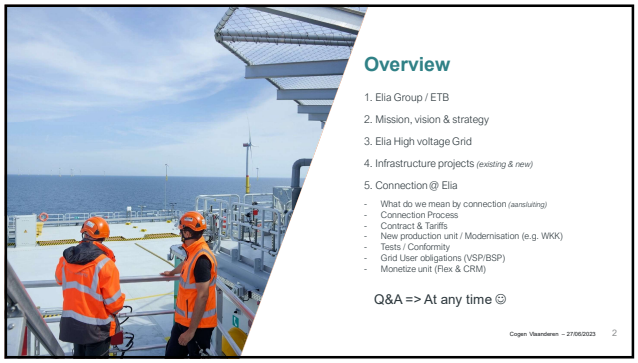
Overview
1. Elia Group / ETB
2. Mission, vision & strategy
3. Elia High voltage Grid
4. Infrastructure projects (existing & new)
5. Connection @ Elia
- What do we mean by connection (aansluiting)
- Connection Process
- Contract & Tariffs
- New production unit / Modernisation (e.g. WKK)
- Tests / Conformity
- Grid User obligations (VSP/BSP)
- Monetize unit (Flex & CRM)
Q&A => At any time ☺
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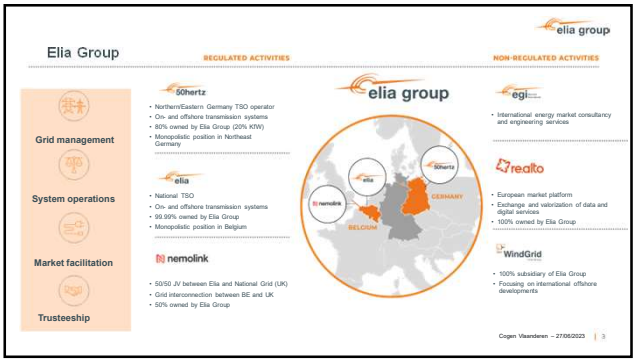
Elia Group
REGULATED ACTIVITIES
NON-REGULATED ACTIVITIES
Grid management
System operations
Market facilitation
Trusteeship
50hertz
Northern/Eastern Germany TSO operator
On- and offshore transmission systems
80% owned by Elia Group (20% KfW)
Monopolistic position in Northeast Germany
elia
National TSO
On- and offshore transmission systems
99.99% owned by Elia Group
Monopolistic position in Belgium
nemolink
50/50 JV between Elia and National Grid (UK)
Grid interconnection between BE and UK
50% owned by Elia Group
elia group
GERMANY
BELGIUM
egi
International energy market consultancy and engineering services
realto
European market platform
Exchange and valorization of data and digital services
100% owned by Elia Group
WindGrid
100% subsidiary of Elia Group
Focusing on international offshore developments
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3

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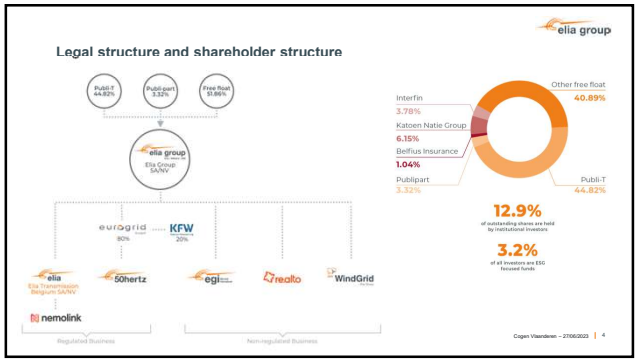
Legal structure and shareholder structure
Publi-T 44.82%
Publi-part 3.32%
Free float 51.86%
Elia Group SA/NV
eurogrid
KFW
80%
20%
elia
50hertz
egi
realto
WindGrid
nemolink
Regulated Business
Non-regulated Business
Interfin 3.78%
Katoen Natie Group 6.15%
Belfius Insurance 1.04%
Publipart 3.32%
Other free float 40.89%
Publi-T 44.82%
12.9%
of outstanding shares are held by institutional investors
3.2%
of all investors are ESG focused funds
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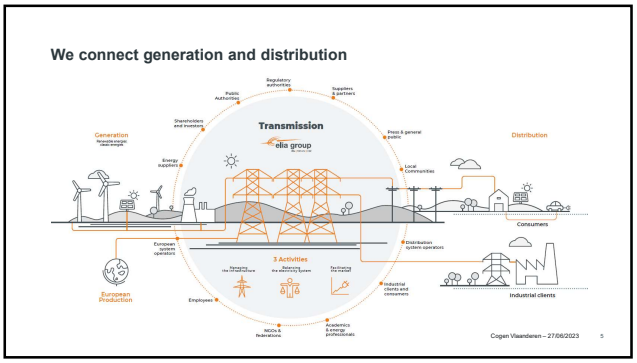
We connect generation and distribution
Transmission
elia group
Generation
Distribution
Consumers
Industrial clients
European Production
3 Activities
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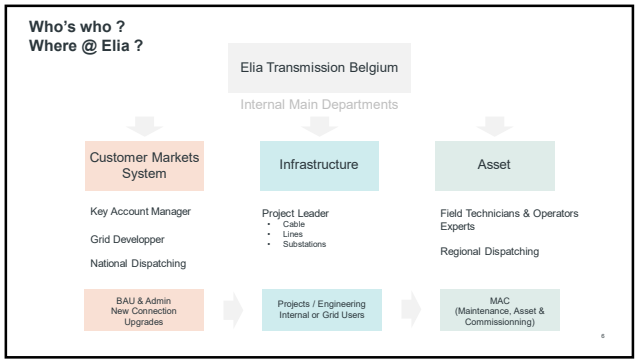
5

5


Who's who ?
Where @ Elia ?
Elia Transmission Belgium
Internal Main Departments
Customer Markets System
Key Account Manager
Grid Developper
National Dispatching
BAU & Admin
New Connection
Upgrades
Infrastructure
Project Leader
Cable
Lines
Substations
Projects / Engineering
Internal or Grid Users
Asset
Field Technicians & Operators
Experts
Regional Dispatching
MAC
(Maintenance, Asset & Commissionning)
6

6


Elia @ Cogen ?
ELIA
David Zenner Manager Customer Relations Keizerslaan 20, B-1000 Brussel T+32 (0)3 640 07 79 F -32 (0)3 640 08 06 david.zenner@elia.be www.elia.be
Elia is de netbeheerder voor het federale transmissienet voor spanningen boven 70 kV en tevens netbeheerder voor het plaatselijk vervoersnet in Vlaanderen met spanningen van 36 kV tot 70 kV. Elia is het rechtstreekse aanspreekpunt voor alle aansluitingsaanvragen van meer dan 25 MW of na doorverwijzing door de distributienetbeheerder voor lagere vermogens.
https://www.elia.be/en/contact-us/customers
Contact your Key Account Manager

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2 Mission & vision

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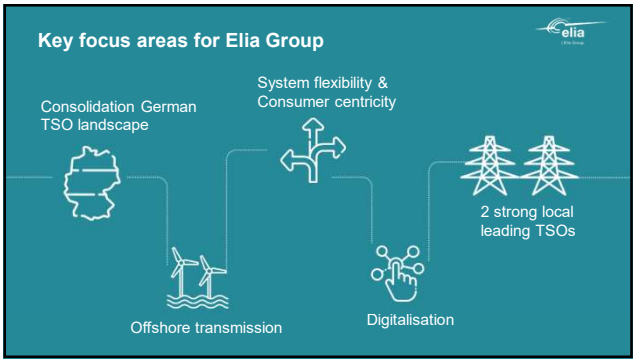
Key focus areas for Elia Group
Consolidation German TSO landscape
System flexibility & Consumer centricity
2 strong local leading TSOs
Offshore transmission
Digitalisation

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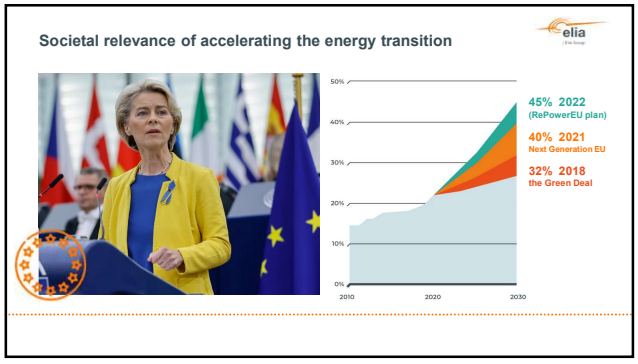
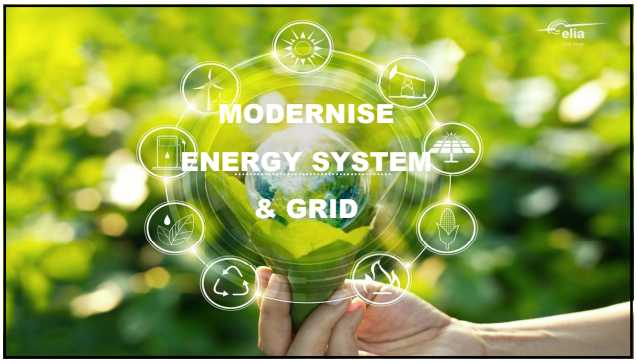

Societal relevance of accelerating the energy transition
45% 2022
(RePowerEU plan)
40% 2021
Next Generation EU
32% 2018
the Green Deal

10


MODERNISE
ENERGY SYSTEM
& GRID

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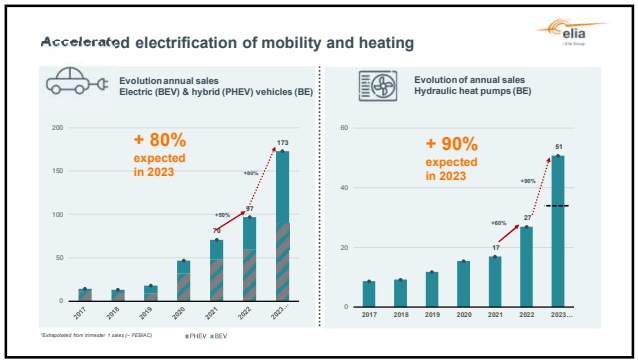
Accelerated electrification of mobility and heating
Evolution annual sales Electric (BEV) & hybrid (PHEV) vehicles (BE)
+ 80% expected in 2023
Evolution of annual sales Hydraulic heat pumps (BE)
+ 90% expected in 2023

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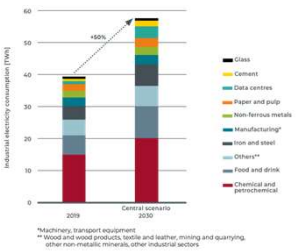
Evolution of industrial electricity consumption (BE)

+ 50% in 2030



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Powering society towards clean electrification


+10TWh


+20TWh


+10TWh

READY FOR **50%** INCREASE **BY 2032**

- > Reliable
- > Affordable
- > Sustainable

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Accelerated integration of renewable energy sources in Belgium

	SOLAR PV	ONSHORE WIND	OFFSHORE WIND
2022	7.5 GW	2.9 GW	2.26 GW
2034	18.0 GW	6.9 GW	5.76 GW
	X 2.4	X 2.4	X 2.5

Source: Central scenario Adequacy & flexibility study

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Powering society towards clean electrification


+10TWh


+20TWh


+10TWh

READY FOR **50%** INCREASE **BY 2032**

- Reliable
- Affordable
- Sustainable

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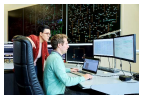
Our best response as TSO:
Make electrification happen along 3 pillars

1 Deliver infrastructure on time for electrification

2 Strengthen Security of supply - Adequacy



3 Unlock consumer flexibility to follow variable RES

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Our core tasks

Grid Ownership
We prepare to deliver the infrastructure of the future

System control
We maintain the balance

Market Facilitation
We are part of the European integrated market

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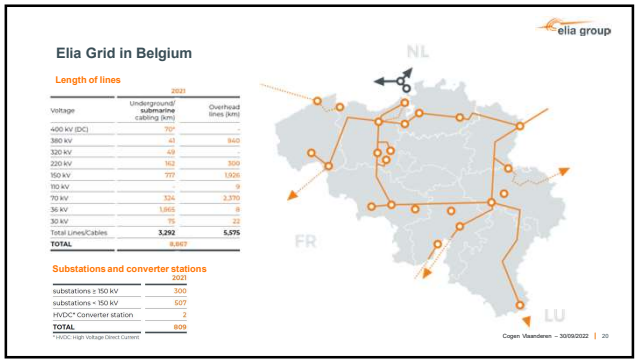

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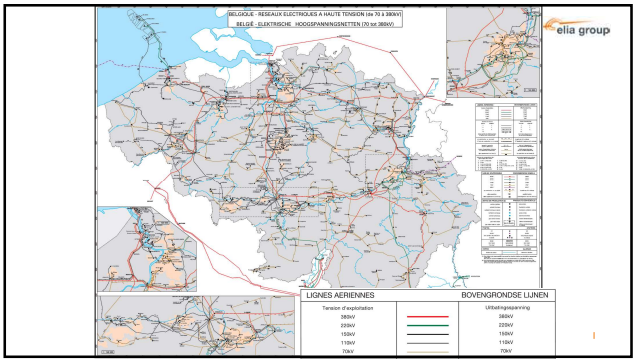

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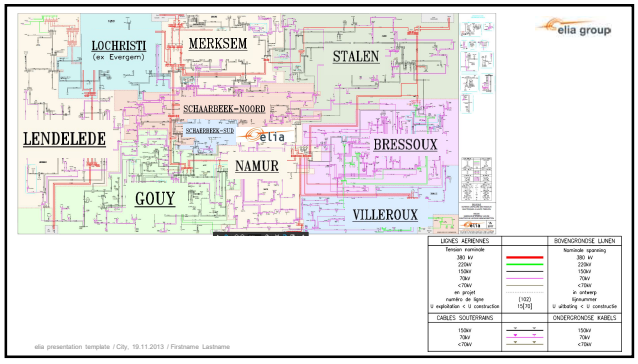

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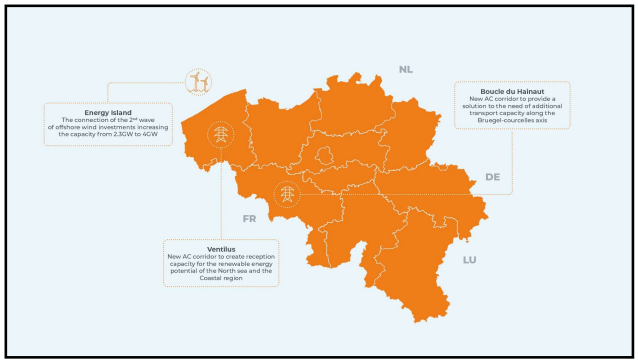

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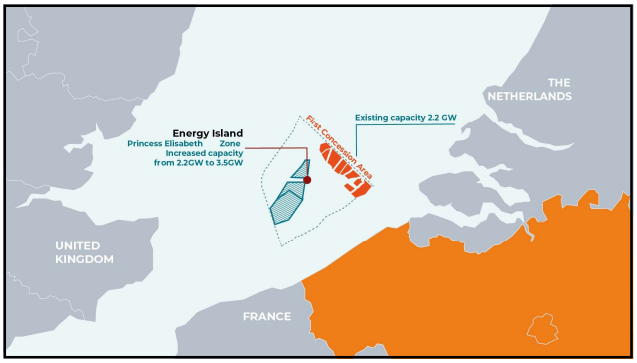

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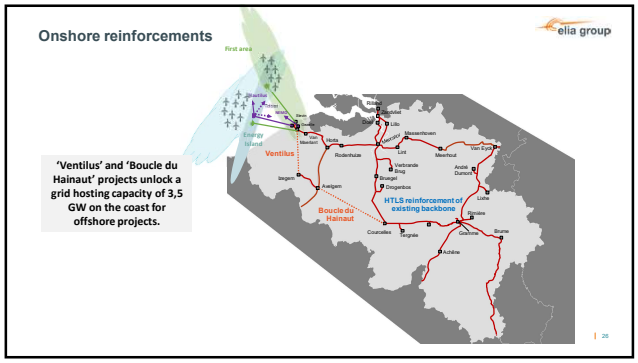

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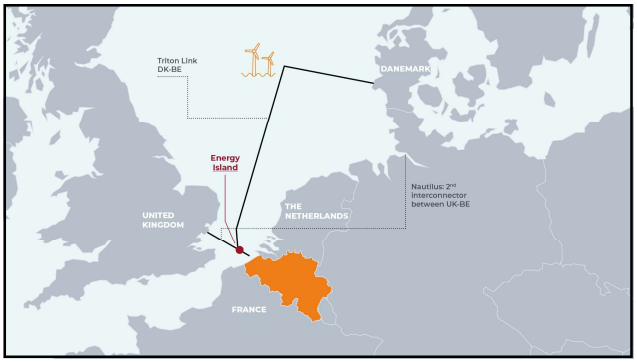

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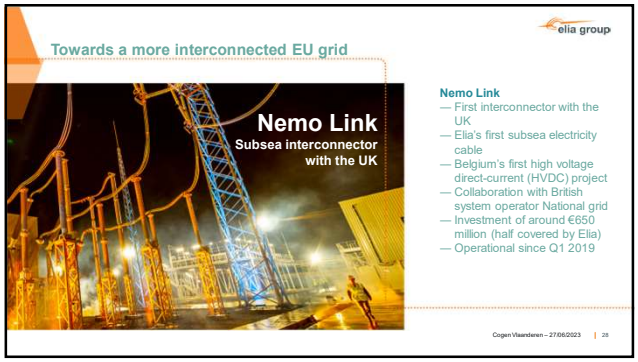

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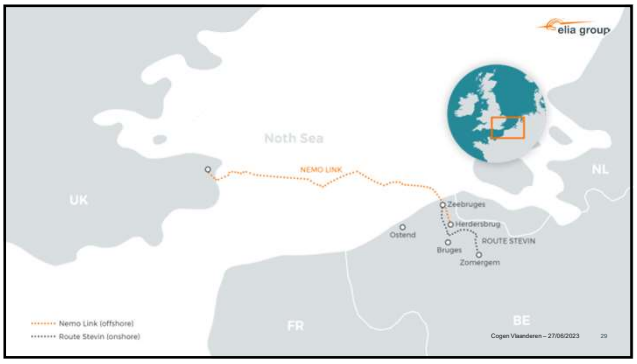

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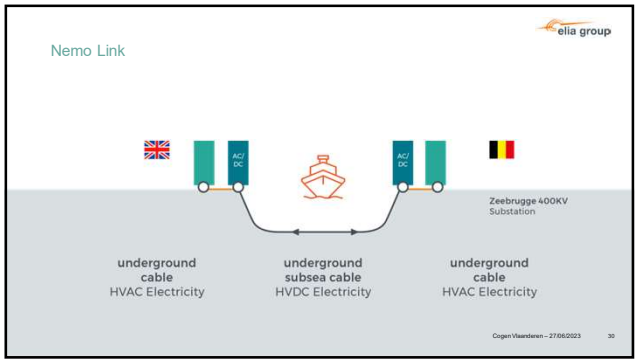

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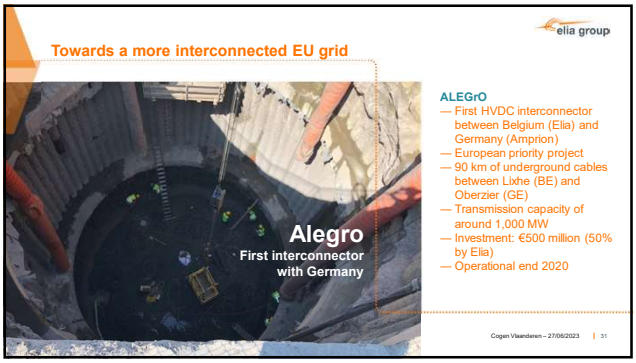

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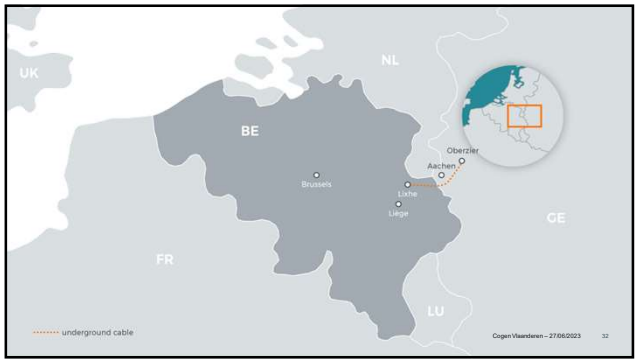

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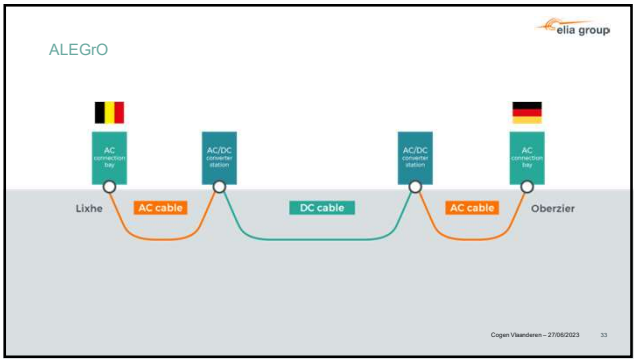

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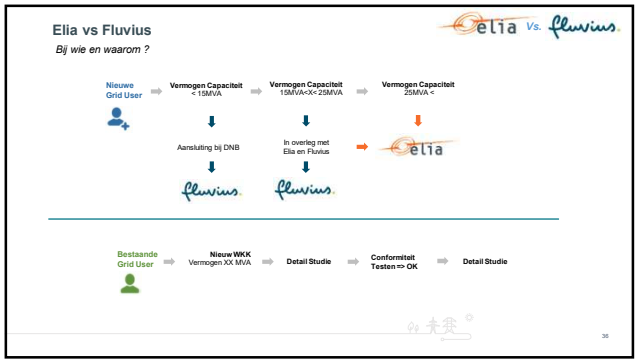

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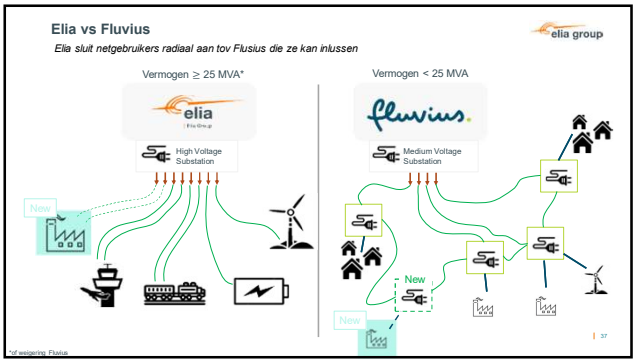

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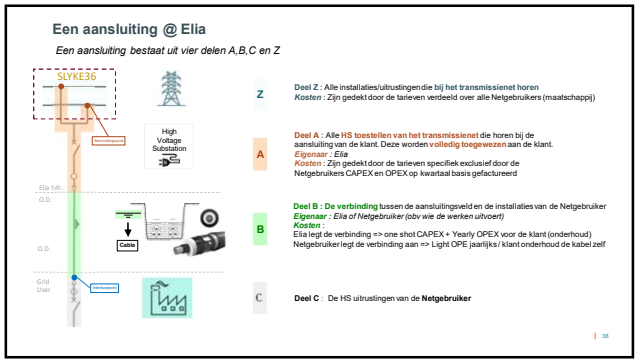

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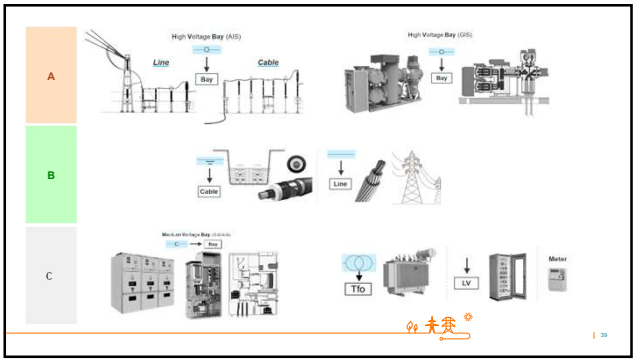

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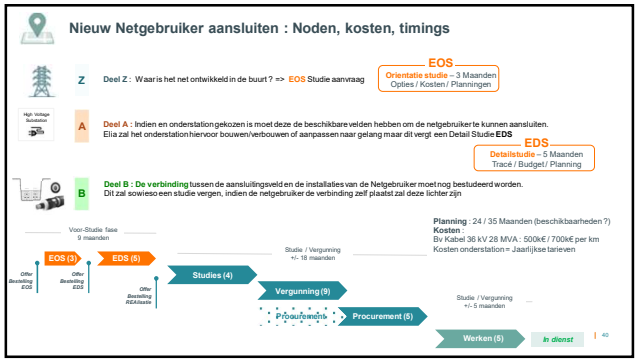

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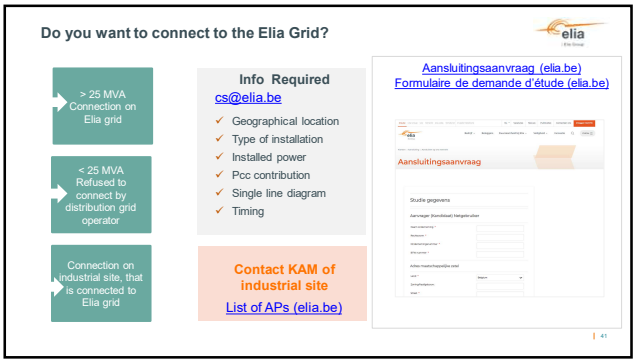

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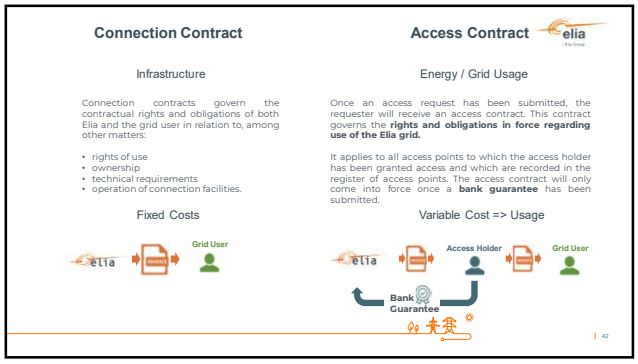

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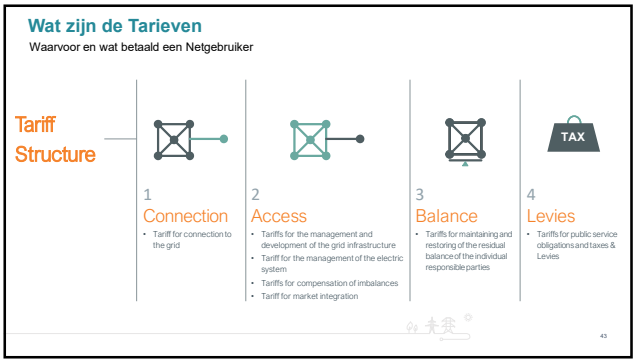

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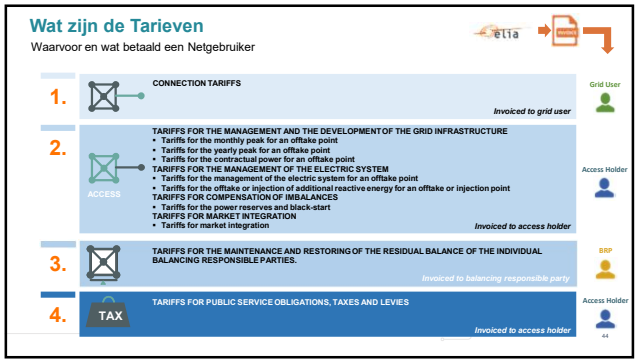

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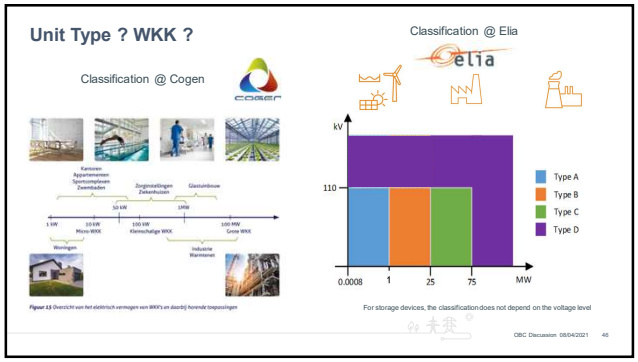

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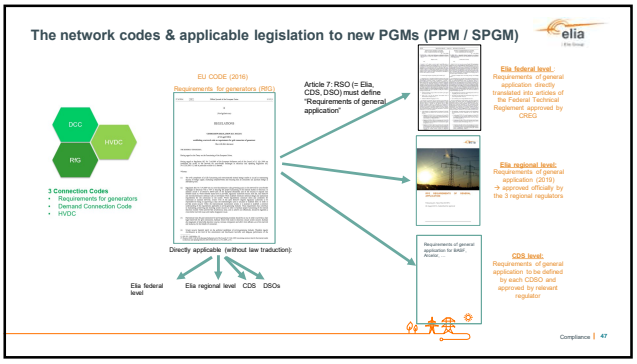

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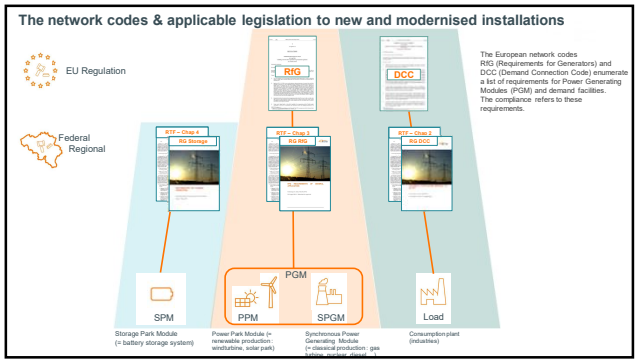

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Compliance process : EON, ION, FON, LON (from RfG)

EON : Energisation operational notification (**mandatory for PGM and storage type D**, optional for other types)

= Autorisation of energization of the internal network of the PGM by using network connection

→ Conditions for Elia to give an EON (see compliance check-list) :
- Agreement on modification of the connection (EDS or minor change) → Visa for MSI to be delivered by Elia in case of EDS
- data questionnaire and PGM internal compliance statements (RGIE)

ION : Interim operational notification (**mandatory for PGM and storage type D**, optional for other types)

= Autorisation to operate/inject power for the PGM by using the network connection for a limited period of time (max 24 months)

→ Conditions for Elia to give an ION (see compliance check-list) :
- compliance to requirements via simulation results & models, PGM internal compliance statements (RGIE) and planned tests

Remark: an extension (derogation) of the period of time is possible under condition of substantial progress

FON : Final operational notification (**mandatory for all PGMs**)

= Autorisation to operate the PGM by using the network connection

→ Conditions for Elia to give a FON (see compliance check-list) :
- Tests successful
- compliance check-list is fully validated by Elia

LON : Limited operational notification (**applicable to all PGMs that already received a FON**)

= Autorisation to operate the PGM after significant modification or failure leading to non-compliance

→ Conditions for Elia to give an LON (valid for max 12 months) while the FON has been suspended :
- there is a list with the unresolved issues and the expected solutions

Remark : the RfG code foresees a derogation process to some requirements (art 62) to be submitted to the regulator.

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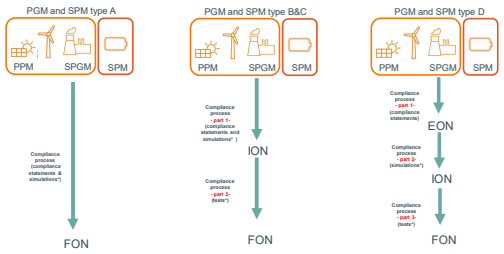
Compliance process : EON, ION, FON, LON (from RfG)



* In accordance with the RfG, some tests and simulations can be replace by equipment certificates or compliance statements

Source : [3]

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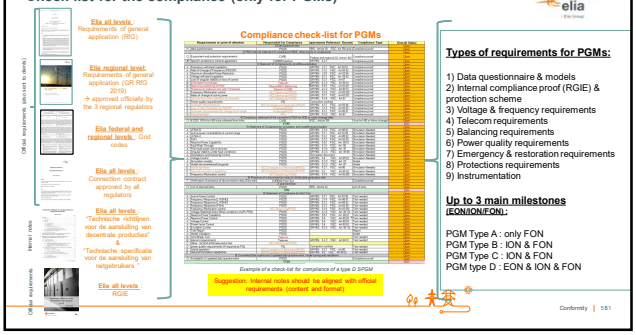
Check-list for the compliance (only for PGMs)



Types of requirements for PGMs:

1) Data questionnaire & models
2) Internal compliance proof (RGIE) & protection scheme
3) Voltage & frequency requirements
4) Telecom requirements
5) Balancing requirements
6) Power quality requirements
7) Emergency & restoration requirements
8) Protections requirements
9) Instrumentation

Up to 3 main milestones (EON/ION/FON) :

PGM Type A : only FON
PGM Type B : ION & FON
PGM Type C : ION & FON
PGM type D : EON & ION & FON

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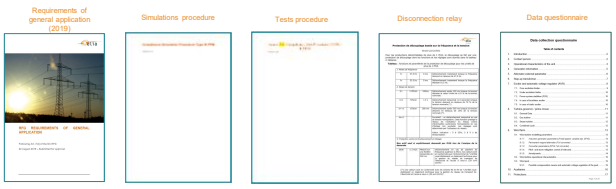
Documents for compliance

The compliance process of your installation (presented in the next slides) will be followed through a checklist.

Documents communicated by Elia:



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Modernisation: when ?

- **Which conditions for a substantial modernisation RfG or DCC ?**
  1) to be an existing installation (see definitions in back-up slides)
  2) to meet the criteria defined by Elia

→ The regulator has to decide (= publication of a decision !) :
- if the existing installation (RfG or DCC) meets the criteria for a substantial modernisation
- which requirements applicable to the new installations are applicable to the modernized existing installation

→ Elia has to submit a file to the regulator (CREG or regional regulator) for each modernisation case (see guidelines for the process)

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Criteria for a substantial modernisation

- A substantial modernisation takes place when the modifications to an existing installation (production or demand facility), on the basis of the assessment criteria defined by Elia, lead to a full or partial technical compliance of the existing installation to the new requirements.
- Substantial modernisation criteria for existing generation units (RfG) :
  - substantial modernisation only applicable to existing types C & D generation units
  - 3 different criteria trigger a substantial modernisation (not cumulative) :
    - 1) category switch (→ type C or type D) : full modernisation
    - 2) nominal power increase :
      - between 20% and 50% increase: partial modernisation → see table in the guidelines
      - more than 50% : full modernisation
    - 3) renewal of an equipment : partial or full modernisation
  - limiting elements are taken into account for criteria 2 & 3
- Substantial modernisation criteria for existing demand facilities (DCC):
  - only the renewed element in an existing demand facility must be compliant with new requirements
  - the renewed element cannot be a limiting element regarding the future compliance of the whole demand facility
- Replacement of an element by a spare part never triggers a substantial modernisation

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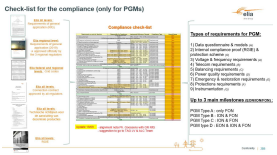
Which requirements are applicable in case of substantial modernisation ?

- For existing generating units (RfG) :



→ Modernized existing generating units must be compliant with part or all requirements applicable to a new unit according to the substantial modernisation criteria
→ !! Regulator validates via an official decision which requirements are applicable to the modernized existing unit
→ ION/FON process applicable (to be confirmed)

- For existing demand facilities (DCC) :
  - only the renewed element in an existing demand facility must be compliant with requirements applicable to new demand facilities
  - the renewed element cannot be a limiting element regarding the future compliance of the whole demand facility

→ Only the renewed element is subject to modernisation
→ !! Regulator validates each DCC modernisation case via a decision

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In Operations => check ☺

Obligation => ☹

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Contracting of VSP (1) and RSP (2) through yearly tenders organized by Elia & evaluated by CREG making sure to contract sufficient reactive power to offer voltage compensation (1) and autonomous capacity to build up the grid from scratch (2)

(1) VSP (Voltage Service Provider)
"MVAR"

*Elia is responsible to **stabilize the voltage** at any time and also in the event of an incident and maintain it within limits **ensuring grid security.***

In scope ? All units (as of type B) able to offer reactive compensation above 1 MVAr are invited to participate to the service, on a voluntary or mandatory basis.

How ? By injecting or consuming MVAR
- In automated way (The automatic voltage control = local control) or
- Reacting on a set-point (The centralized voltage control).

(2) RSP (Restoration Service Provider)
"Black Start"

Elia needs to make sure at all time to contract sufficient Black Start capacity to be able to restart the Grid.

In scope ? Large units that are able to handle 10MW instantaneously, compensate 30MVAR , restore sufficiently stable power to sections of the transmission system, provide power to the auxiliary equipment at other BS Restoration Facilities and also accept loads…

How ? Each Black Start Restoration Facility needs to disposes at all times of sufficient primary energy resources to be able to deliver the Service in case of Blackout.

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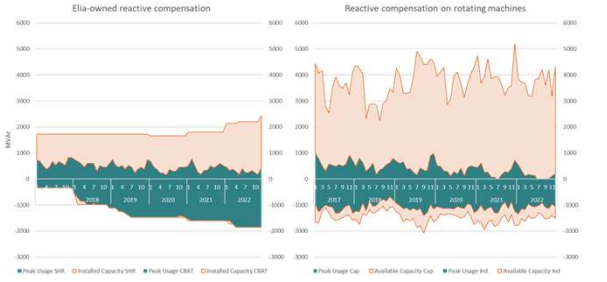
With voltage peaks up to 420kV, all reactive absorption means in the grid are used to the fullest



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VSP Participation to the service

Focus VSP

Who is obliged to participate to the service?

- ✓ The Grid User of technical units connected to the Elia grid as defined in the table beside
- ✓ Following technical requirements defined in the applicable legislation
- ✓ If at least 1 MVAr can be provided

Who can become a Voltage Service Provider?

- ✓ The Grid User of a technical unit himself
- ✓ A third party* designated by the Grid User to become VSP

How to participate?

- ✓ Participation to voltage services starts with submitting an offer in the **yearly tender** organized for the procurement of the service
- ✓ Submitted offers are subject to a **reasonability analysis of the price** by the regulator

	Grid User	Federal level (connection > 110 kV)	Regional level
Elia grid	New Type B,C,D SPGM	Mandatory	Mandatory
	New Type B,C,D PPM		Voluntary
	New Type B, C, D SPM		
	New HVDC interconnector		n.a.
	New generators connected on a HVDC link		
	New HVDC conversion stations at isolated extremity		
	New offshore PPM with onshore connection points		
	New offshore PPM with offshore connection points		Voluntary
	Existing SPGM and PPM type C,D		
	Existing SPGM and PPM type B		
	Existing HVDC interconnector	Voluntary	
	Demand facilities directly connected to Elia grid		
Non- Elia grid	DSO	Voluntary	
	CDSO	Voluntary	

* In case of participation of a unit connected to a public distribution grid or closed distribution grid, the DSO/CDSO is the VSP

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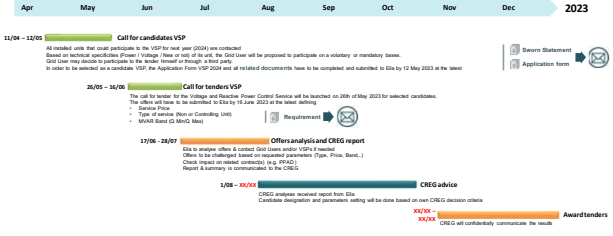
VSP Process Timing & Next Steps *(VSP 2024)*

The VSP process is made of five phases, from which the two first are to be completed by the Grid User starting with a call for candidates being mandatory for some units, followed by a call for tenders.



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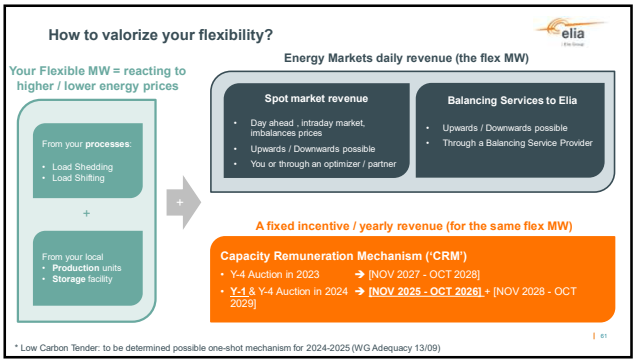
How to valorize your flexibility?
Your Flexible MW = reacting to higher / lower energy prices
From your processes:
• Load Shedding
• Load Shifting
+
From your local
• Production units
• Storage facility
Energy Markets daily revenue (the flex MW)
Spot market revenue
• Day ahead , intraday market, imbalances prices
• Upwards / Downwards possible
• You or through an optimizer / partner
Balancing Services to Elia
• Upwards / Downwards possible
• Through a Balancing Service Provider
A fixed incentive / yearly revenue (for the same flex MW)
Capacity Remuneration Mechanism ('CRM')
• Y-4 Auction in 2023 → [NOV 2027 - OCT 2028]
• Y-1 & Y-4 Auction in 2024 → [NOV 2025 - OCT 2026] + [NOV 2028 - OCT 2029]
* Low Carbon Tender: to be determined possible one-shot mechanism for 2024-2025 (WG Adequacy 13/09)

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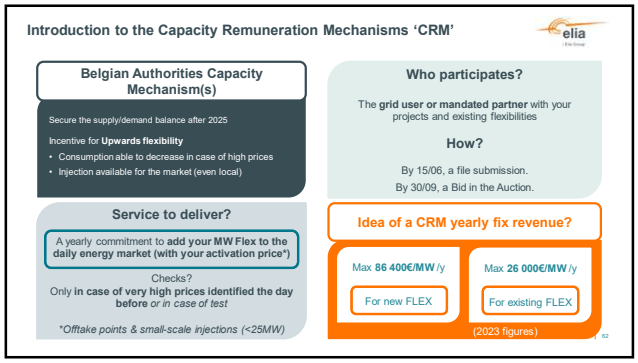
Introduction to the Capacity Remuneration Mechanisms 'CRM'
Belgian Authorities Capacity Mechanism(s)
Secure the supply/demand balance after 2025
Incentive for Upwards flexibility
• Consumption able to decrease in case of high prices
• Injection available for the market (even local)
Who participates?
The grid user or mandated partner with your projects and existing flexibilities
How?
By 15/06, a file submission.
By 30/09, a Bid in the Auction.
Service to deliver?
A yearly commitment to add your MW Flex to the daily energy market (with your activation price*)
Checks?
Only in case of very high prices identified the day before or in case of test
*Offtake points & small-scale injections (<25MW)
Idea of a CRM yearly fix revenue?
Max 86 400€/MW /y
For new FLEX
Max 26 000€/MW /y
For existing FLEX
(2023 figures)

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