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# Joining forces of European industries to accelerate the Energy Transition

1ST E.DSO / T&D EUROPE CEO MEETING

9 OCTOBER, BRUSSELS

# Welcome

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**Roberto Zangrandi**

Secretary General, E.DSO



**Diederik Peereboom**

Secretary General, T&D Europe



# Setting the scene

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**Joachim Schneider**

Technology Ambassador, E.DSO



**Jochen Kreusel**

President, T&D Europe



# Joining forces of European industries to accelerate the Energy Transition

1<sup>st</sup> E.DSO / T&D Europe CEO Meeting

## Basic beliefs – Our view on each other (1/2)

- E.DSO: Why don't you build more factories? What is hindering you?
- T&D: Will the regulators agree to the huge increase in investments?  
What will politicians say, if grid fees are increasing drastically?  
Will your balance sheets be able to fund all the investments?
- E.DSO: How long will you need to build up transformer manufacturing capacity?
- T&D: We are seeing ambitious plans and PowerPoints.  
But are you also willing to translate them into real commitments?
- E.DSO: Don't you believe in the numbers of our ramp up, which we are constantly showing?

## Basic beliefs – Our view on each other (2/2)

- E.DSO: Will you be able to solve the enormous ramp up and challenges lying ahead of us?  
Building factories fast enough, delivering the necessary materials
- T&D: And you - will you have sufficient Human Resources and „Excavators“? Will you achieve faster building permissions?

# Where can we work differently together to join forces?

- E.DSO: Is there anything we can solve together along the supply chain?
- T&D: What about more common standards and specifications?  
We need to utilize our resources more wisely!
- T&D: What hinders you to commit on long-term framework contracts?  
Are there legal or regulatory constraints?
- E.DSO: How can we deal with various types of risk – raw material prices, regulatory and political interventions – when signing long-term contracts?

## Political environment with major impact on our common goals

- E.DSO: Which impact does Clean Border Adjustment Mechanism (CBAM) have on the production capacities within Europe?
- T&D: The regulatory environment and support for the energy transition is different in every country.  
Will the competition of the national regulatory systems become a problem for single DSOs in hindering investments?
- E.DSO: In the first round the Raw Materials Act was missing Copper and Aluminum – grids were forgotten again.  
Is there anything else missing?





# Flashlights

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**Lutz Eckenroth**

Vice President Asset  
Management, E.ON



**Jérôme Bicail**

Industrial Director, Enedis



**Rodolphe de Beaufort**

Deputy CEO, GIMELEC



# Flashlights

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## Lutz Eckenroth

Vice President Asset  
Management, E.ON



### **DSO perspective:**

Translating the energy transition into industrial needs of network expansion, equipment and skilled workforce





# 1<sup>st</sup> E.DSO/T&D Europe CEO Meeting

## 09.10.2023

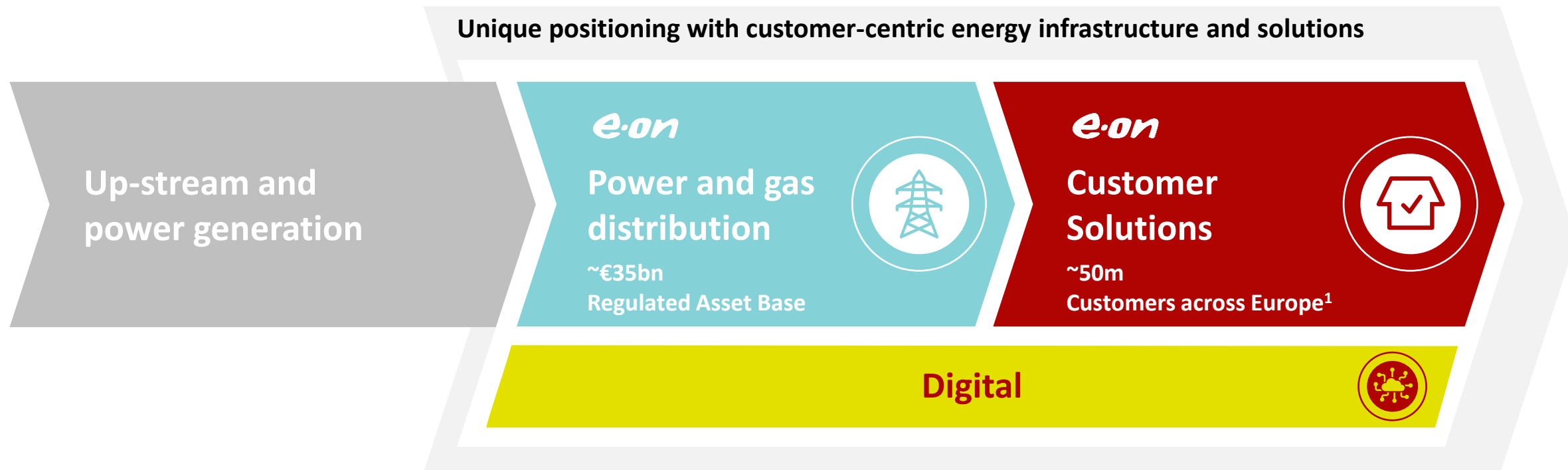
Energy Transition – E.ONs expectations and contribution



Lutz Eckenroth  
VP Asset Management



# E.ON combines stability of regulated and infrastructure businesses with ambitious growth ...



Employees 2022<sup>2</sup>

~72k

Dividend per share 2022

€0.51

Adj. EBITDA 2022<sup>3</sup>

€8.1bn

Adj. Net Income 2022<sup>3</sup>

€2.7bn

1. Including customers of at-equity participations 2. Number of employees does not include apprentices, working students, or interns. This figure reports persons 3. Adjusted for non-operating effects

# What are the challenges?

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# EU target setting (esp. decarbonization) requires massively growth in grid business

**50-70%**



Growth of annual investment needs in EU power distribution networks between 2020-2030<sup>1</sup>

- Renewables build-out
- Changing customer behavior
- Network reinforcement
- Digitalization

**>100%**



Growth in share of electricity vs. overall energy demand related to E.ON's main customer clusters between 2020-2050<sup>2</sup>

- Industry +111%
- Transport + 3,400%
- Buildings +36%

1. €39bn average annual investment need between 2020 and 2030. Source: Study from Eurelectric "Power Distribution Grid: Critical enabler of the European Green Deal"

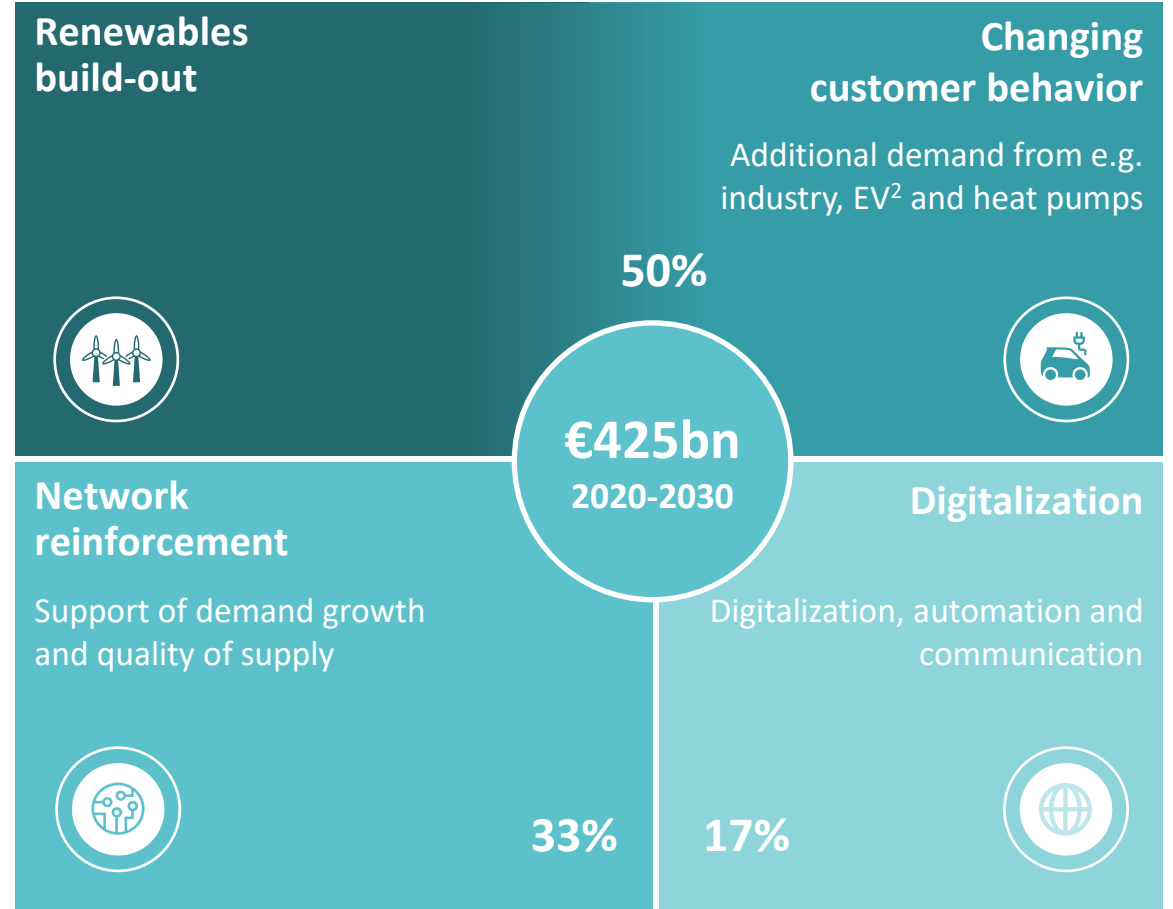
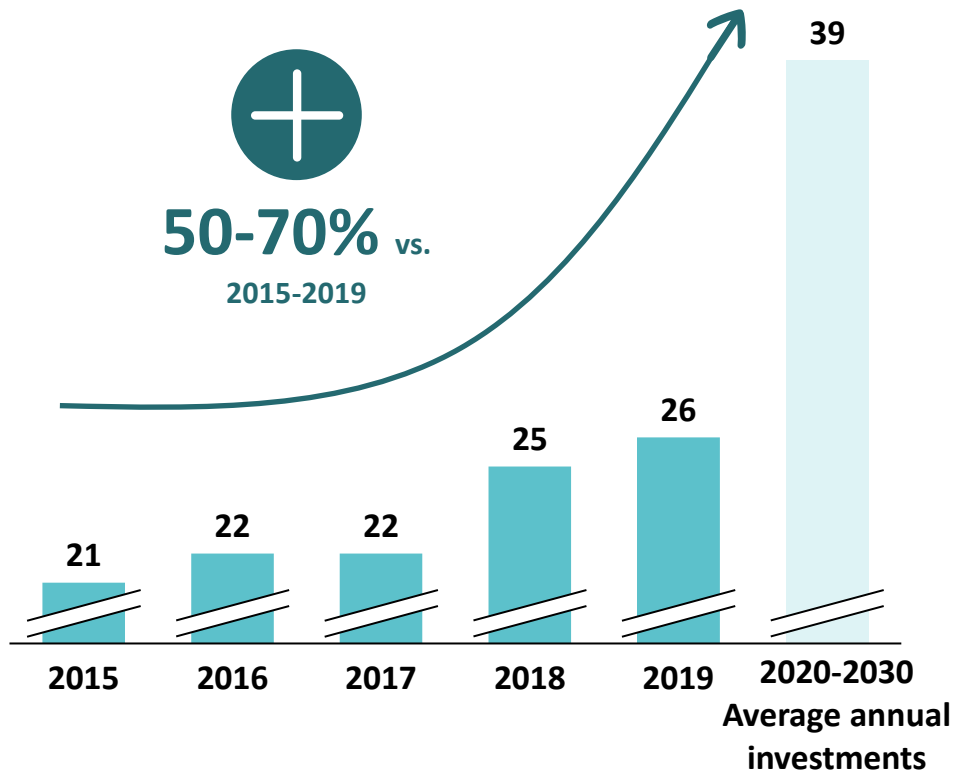
2. Source: IEA Net Zero Scenario Global (p. 196): Share of electricity demand compared to total energy demand per sector to rise from 19% to 48% related to industry, transport and building sector



# Decarbonization requires significant investments in power distribution networks

## Annual investment needs in EU power distribution networks

€bn

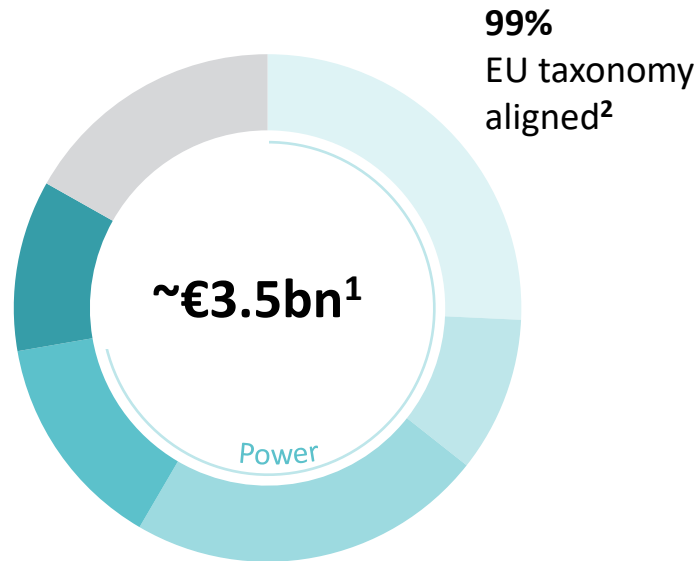


1. Source: Study from Eurelectric "Power Distribution Grid: Critical enabler of the European Green Deal", categories are reclassified 2. Electric vehicles



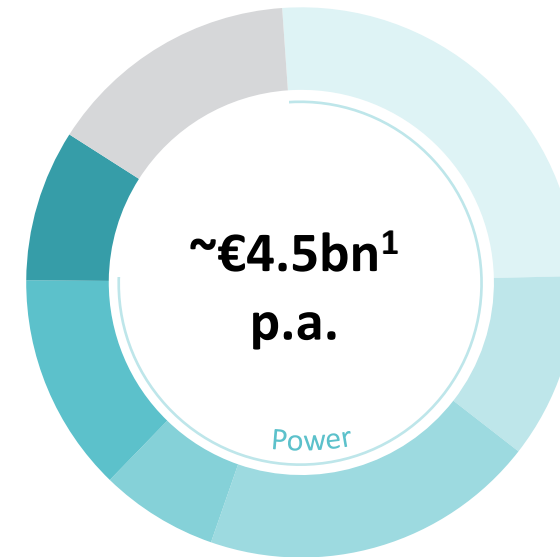
# Accelerated capex deployment in line with strategic ambitions

Capex 2021



+ ~€1bn  
 increase p.a.

Capex 2022-2026



**€22bn**  
**Total capex 2022-2026**

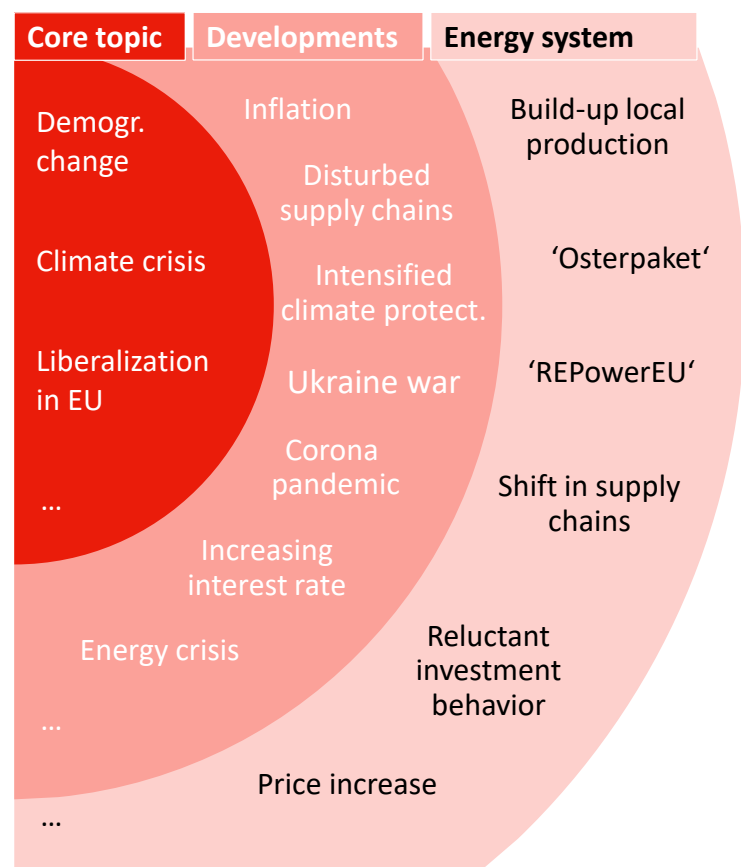
Network reinforcement
  Renewables build-out
  Changing customer behavior
  Digitalization
  Other (Power)
  Gas
  Other<sup>3</sup>

1. Cash-effective investments, annual average capex 2. Based on EU taxonomy eligible capex 3. Broadband, smart meter and additional network business investments



# Current environmental dynamics led to new political ambition for energy transition in Europe – requirements to power grid increase

## Dynamic environment factors



## EU & national governments revise energy targets for 2030

EU		'REPowerEU' announced in May 2022		
		RES	45% share in power prod.	+40%
'E.ON Countries' <sup>1</sup>		'Osterpaket' announced in April 2022		
		Wind onshore	115 GW	+60%
		PV	215 GW	+120%
	<b>Aggregated estimated targets</b> (national targets being revised)			
		Wind onshore	~35 GW	+60%
		PV	~26 GW	+50%
+ increased targets for consumption technologies (e.g. Heat pumps, e-mobility and electrolysis)				
Factor compared to targets in '21				

## Impact on power grid

- Increase in number of new plant/device connections
- Increase in CAPEX to expand power grid

1 Countries not included in quantitative assessment: (1) Romania, (2) Poland (as urban DSO in Warsaw), (3) Turkey due to lower degree of operational steering by E.ON

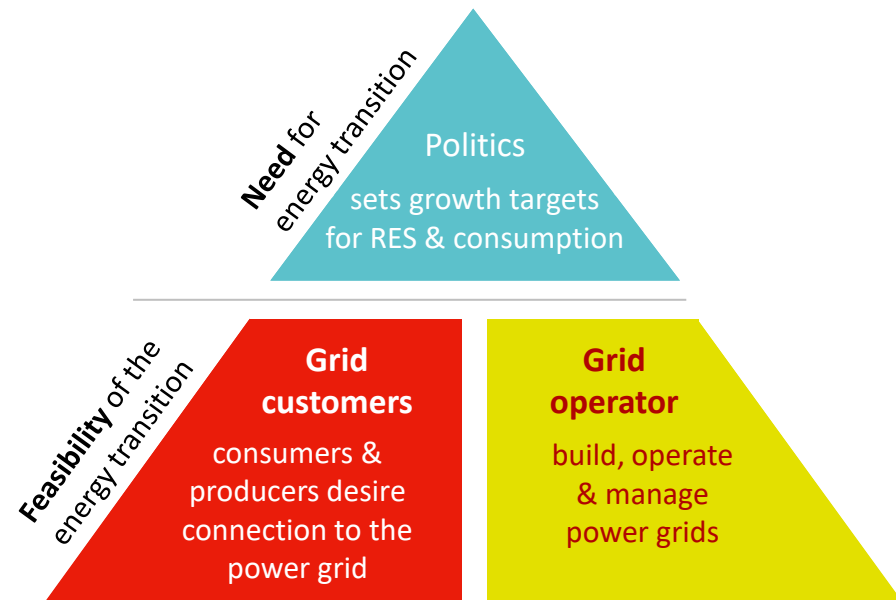
What does this mean in quantities?

***e.on***



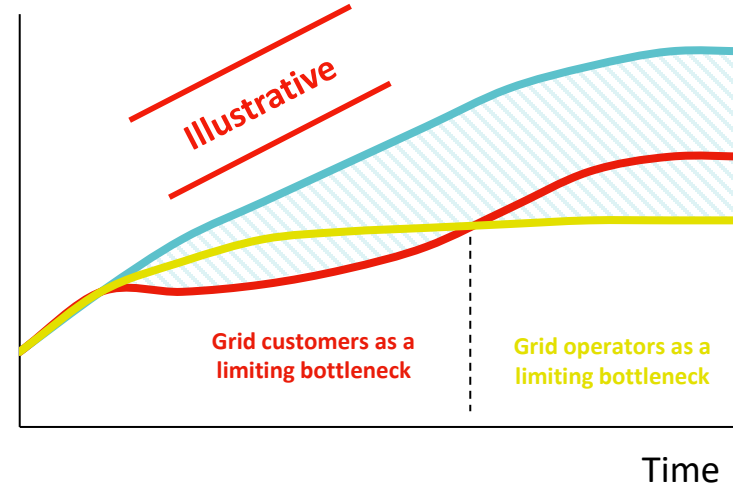
# To analyze the impact on E.ON's power grid business and derive strategic recommendations, 3 perspectives need to be considered

## Key players for a successful energy transition



## Impact on power grid business

### Annual new plants/devices connected to the grid<sup>1</sup>



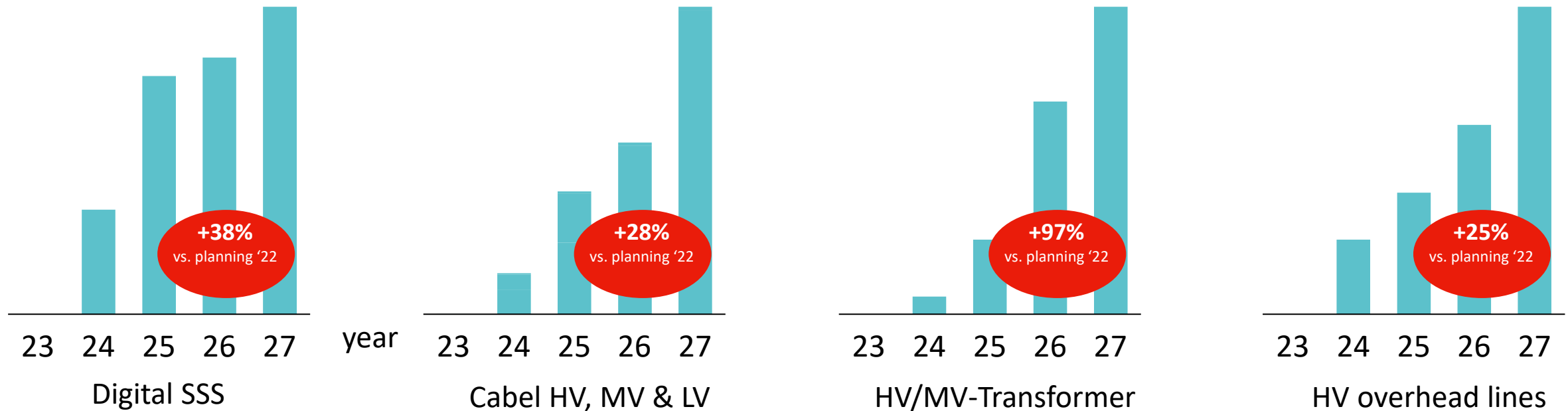
Strategic recommendations for E.ON

E.ON has to meet grid customer needs

<sup>1</sup> Analysis as part of the 'Backbone Distribution Grids' project by EN Technology & Innovation, EN Europe and E.ON Inhouse Consulting; For German analysis: sparring of input data & model logic with asset management from Avacon, Bayernwerk, Westnetz as well as Consentec and E.ON e-mobility; For international analysis: input data provided by asset management and/or strategy department of respective country DSOs

# Substantial additional need of material – planning already started

Technical equipment quantity structure  
add on to MTP, (examples)



# How does E.ON approach?



# E.ON will become an all-digital company unlocking additional value for the core businesses

## Group-wide harmonized architecture (Common-Technology-Platform)

### Experience and solutions

Seamless customer experience, insightfulness, digital mindset

### Digital operations

Data insights and advanced analytics, agility, employee efficiency

### Business operation

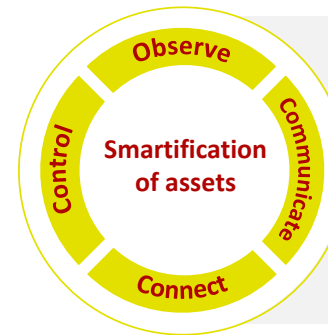
Process excellence, standardization, automation

### Technology foundation

Cloud centricity, efficiency, security and availability



## Energy Networks



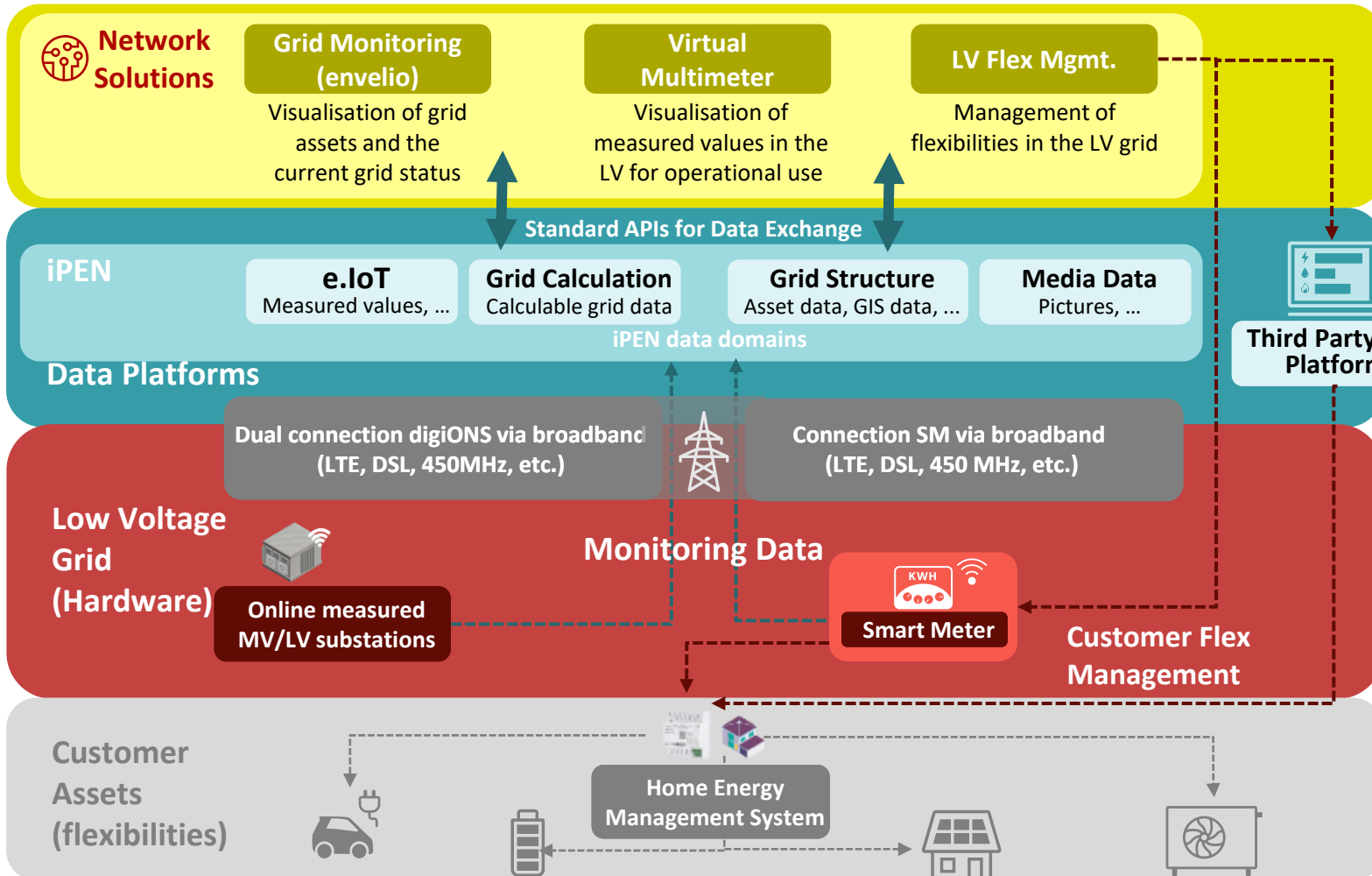
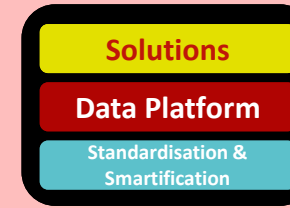
Productivity increase in Energy Networks supported by digitalization

## Customer Solutions



Efficiency increase supported by digitalization

# One Big Picture “Digitalization” for all DSOs in E.ON-Group

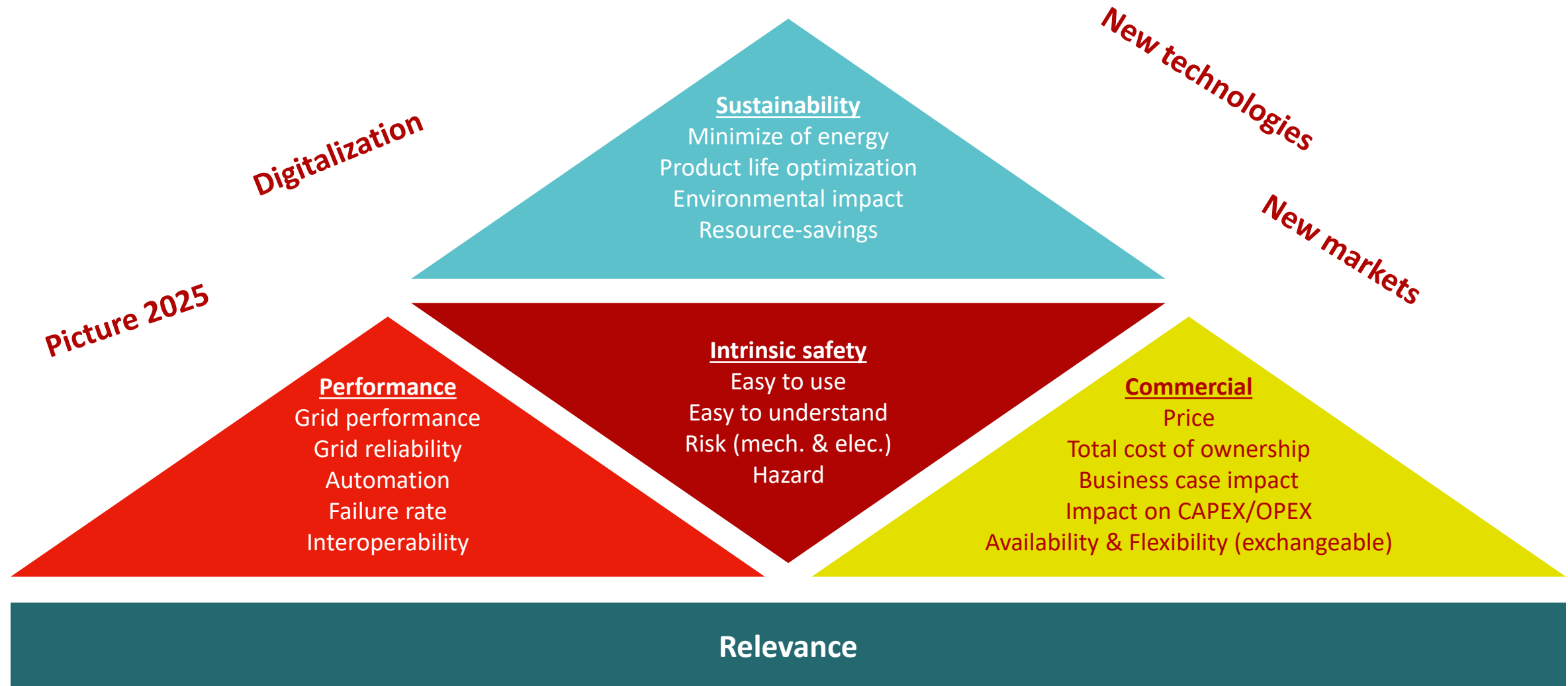


## Main components

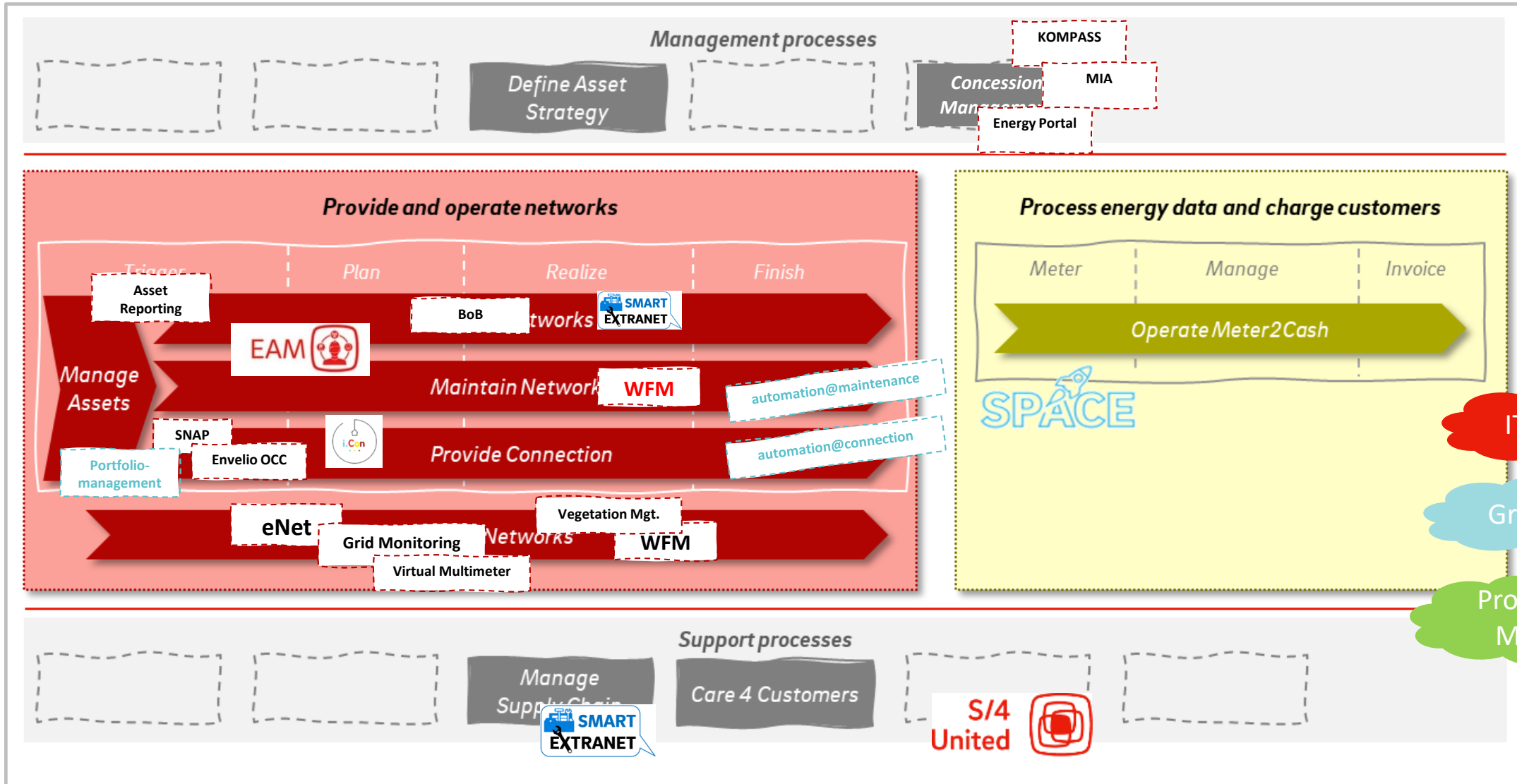
- **Observability:** We implement „Virtual Multimeter“ and Grid monitoring to see actual status and forecast for our grids
- **Controllability:** We expand our existing control systems to manage Low Voltage flexibilities
- We collect and provide all asset data on central data platform iPEN
- We implement sensors and actors in the grid: digital secondary substations (digiONS) and (switchable) smart meters
- We send signals to customers to control flexibilities



# Asset Standardization is key



# Optimizing and connecting processes & IT



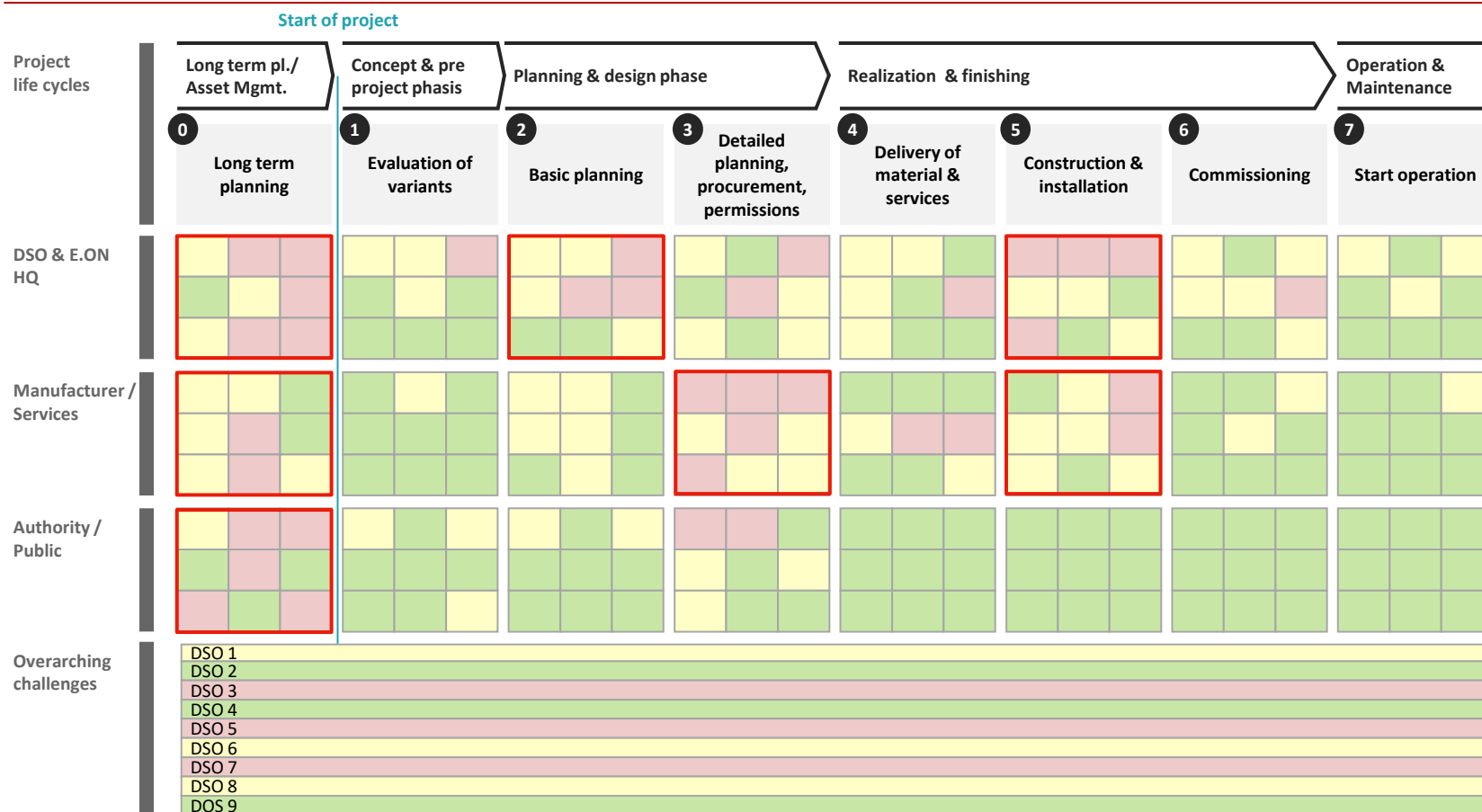
IT-Rocks  
GridOn!  
Process Map

iPEN      E.ON Data House

# Short term optimization in cooperation of all German E.ON DSOs by best practice sharing and weak point analysis

## EXAMPLE: SUBSTATIONS

### Challenges along project phases



### Comment

Realization of challenging political targets require both, long and short term optimization in internal and external processes.

Workshops indicated clusters of challenges.

→ **Quick wins to be realized until end of '23**

# Summary

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To realize challenging targets, E.ON evolves in all areas

***Standardization***

***Digitalization***

***Processes***

***Automation***

***Supply Chain***

***Innovation***

Mastering the Energy Transition requires joint efforts – we'll only make it together



*e-on*

# Flashlights

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**Jérôme Bicaïl**

Industrial Director, Enedis



**DSO perspective:**

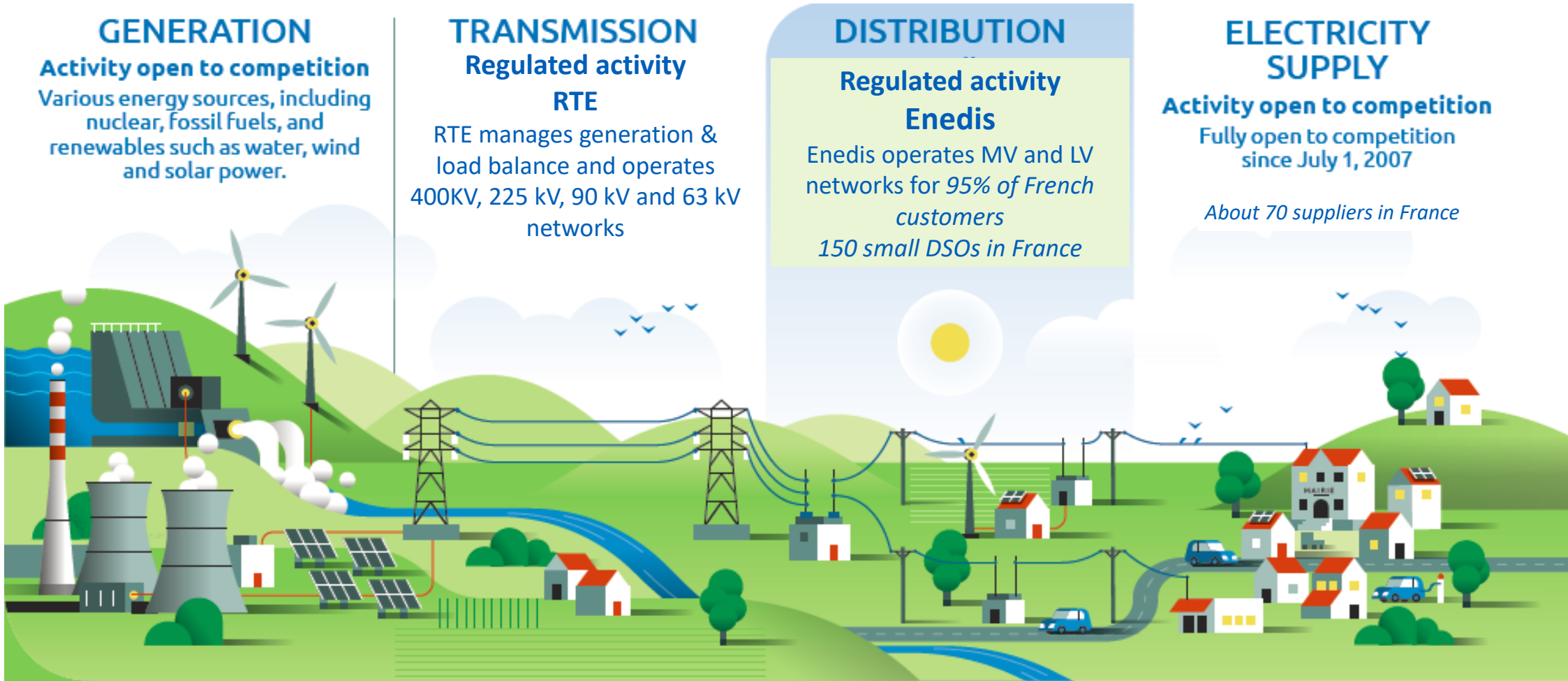
Translating the energy transition into industrial needs of network expansion, equipment and skilled workforce



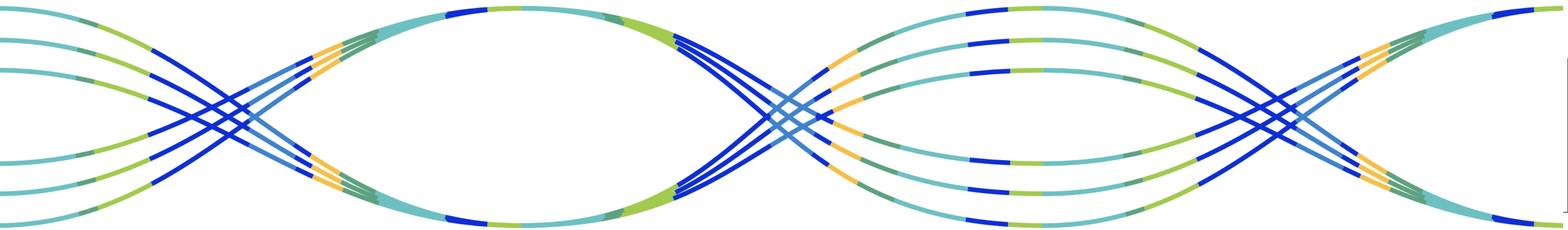
# Enabling the extension and modernization of the French electricity distribution network



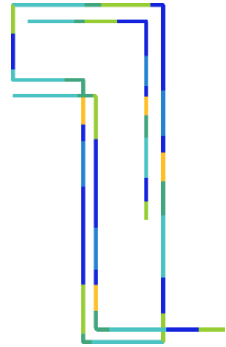
# Enedis, France's main Distribution System Operator



# Enedis medium and long-term investment strategy



# Three games changers causing an unexpected acceleration



## Energetic transition

Fit for 55  
"PV 2021" decree  
Towards the end of fossil fuels



## Resilience to climate change

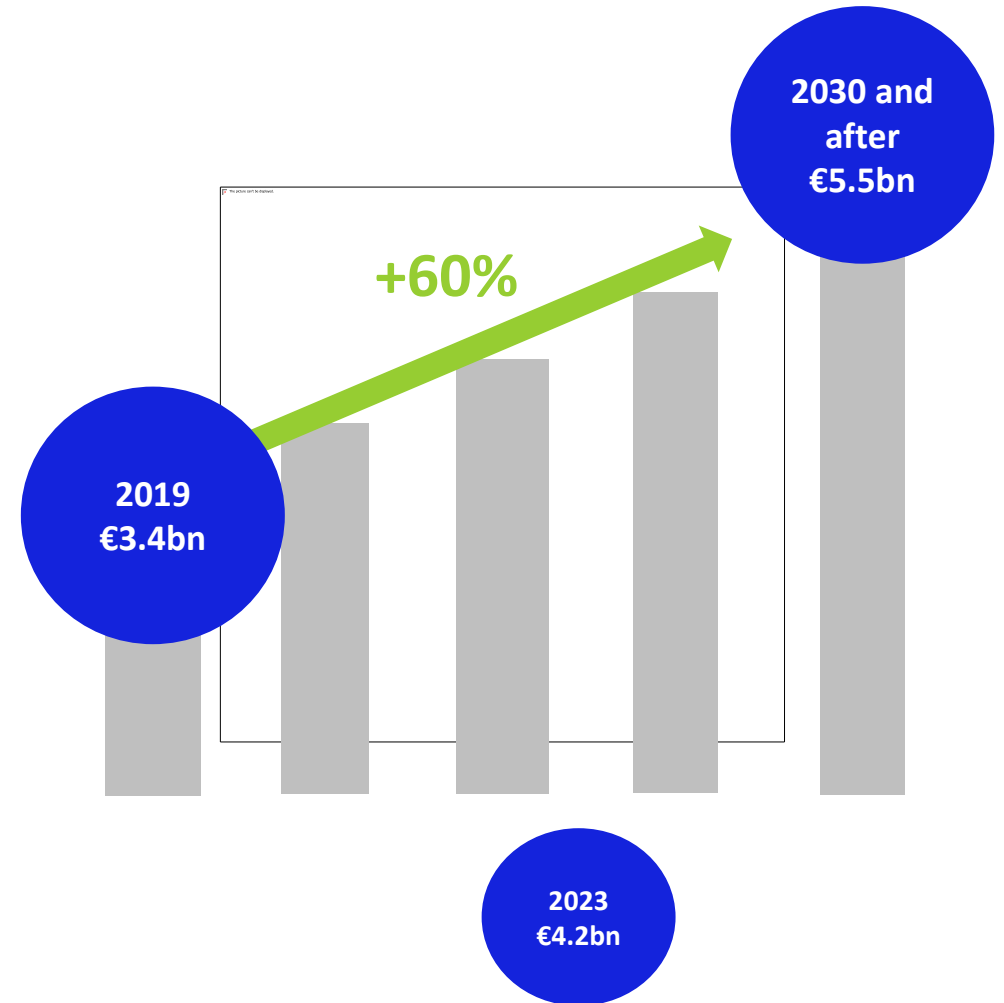
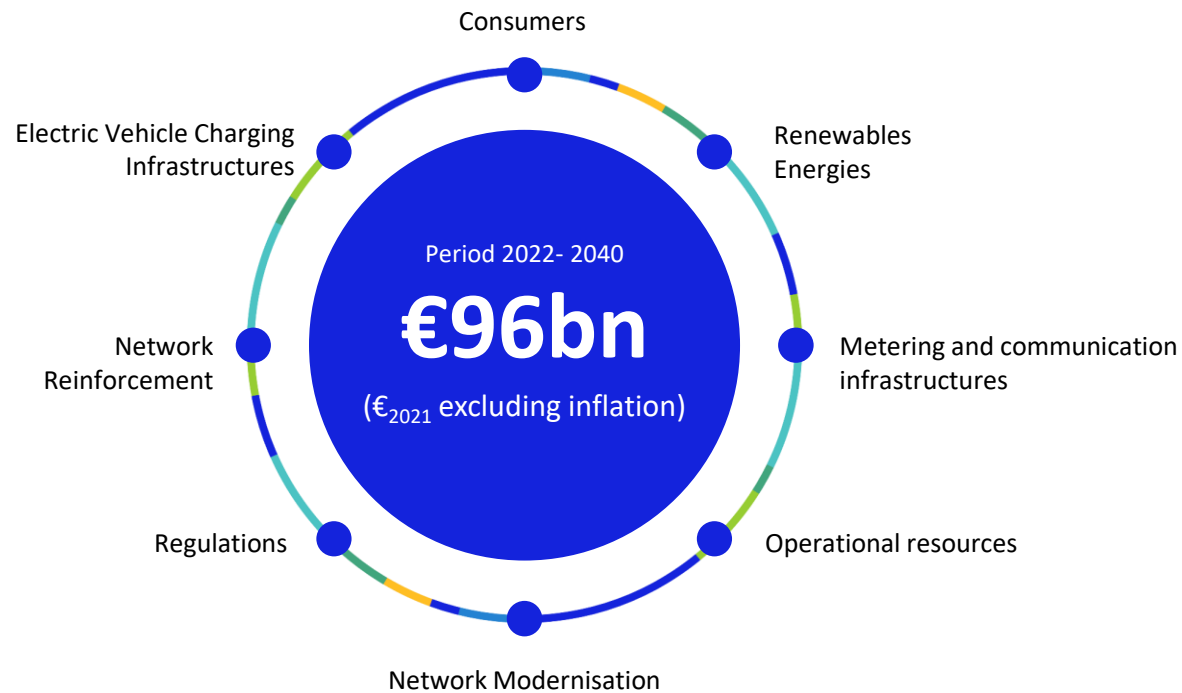
Heatwaves  
Fires  
Floods  
Storms



## Digitalisation of the grid

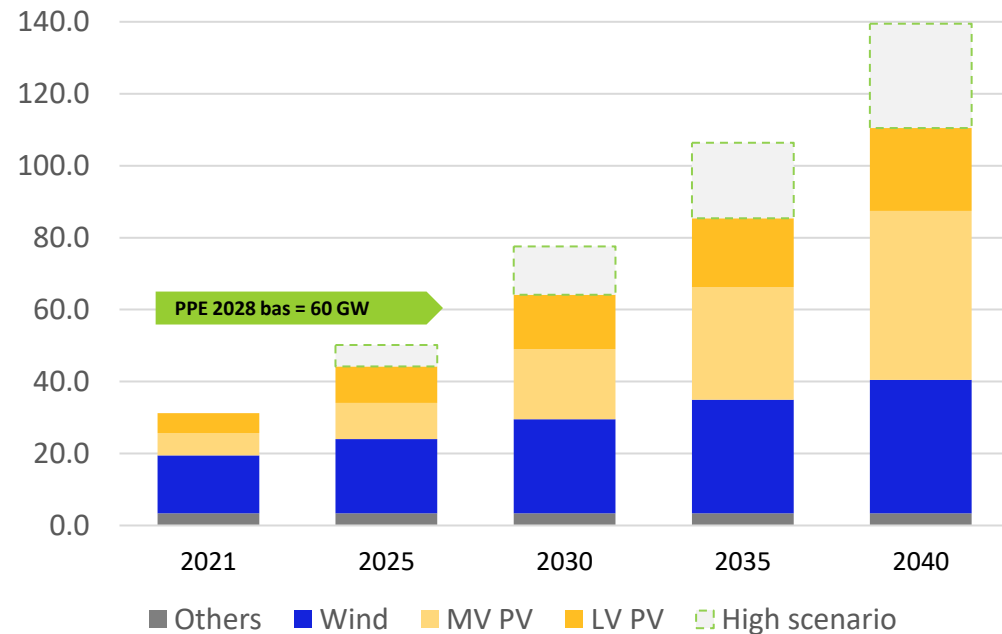
35 M Smart meters  
Smart MV/LV substation  
Full 61850 primary station  
IOT  
Cybersecurity

# Industrial project for “la nouvelle France Electrique”



# Increasing RE connections up to 2040 : connections has to raise from 3 to up than 5 GW each year (and maybe 7...) !

GW connected to Enedis network



RE connections hypothesis are consistent with the 2018 multi-annual energy plan (MEP) and scenarios published by Enedis and RTE:

- The “transition” scenario of the Enedis forecast document published in spring 2021
- Aligned with the **N1 energy futures scenario from RTE** published on 25 October 2021
- The 2028 way-point is close to the low trajectory of the MEP (delayed in 2020), extended to 2040

**2040 target in this baseline scenario is around 110 GW of RE connected to the distribution network**

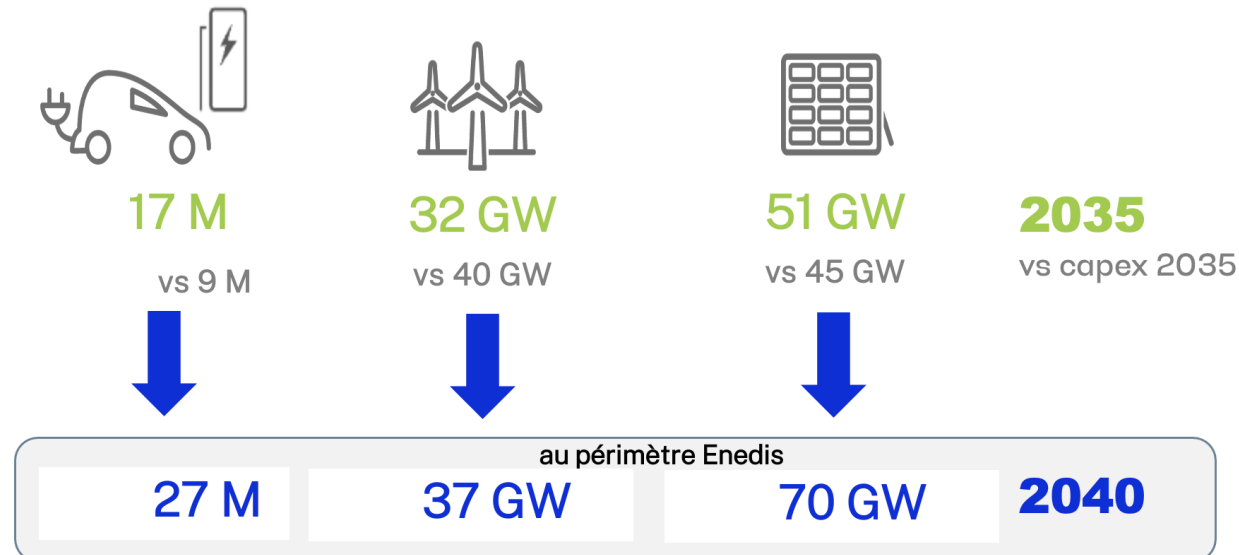
The upturn seen over the past 12 months suggests a steeper slope, with more widespread growth of photovoltaic

# The expected upturn is under way

Collective move as a result of the war in Ukraine and pressure on the balance of supply and demand

## Measures for acceleration by all possible means :

- Bill to accelerate renewable energy production. E.g. the requirement for solar panels in all car parks (2,500 m<sup>2</sup> - 80 places), which will lead to 10,000 additional installations within 3/5 years.
- Constant and responsive tariff support: possibility of selling RE electricity on the markets, modification of the S21 tariff order, etc.
- Accelerated investigation of application processes : REPowerEU, prefects' circular, decree appeals, etc.
- Facilitation of land availability
- French Climate Strategy and 2028/2033 MEP
- Long-term vision (RTE's 2050 strategy) for which all configurations feature a significant RE fleet



# A digitalisation of the grid everywhere needed

paving the way for big data analysis and AI

Observability and automation through new smart sensors including smart meters

1000+  
digital HV/MV  
substations

130 000  
MV remote  
control  
switches

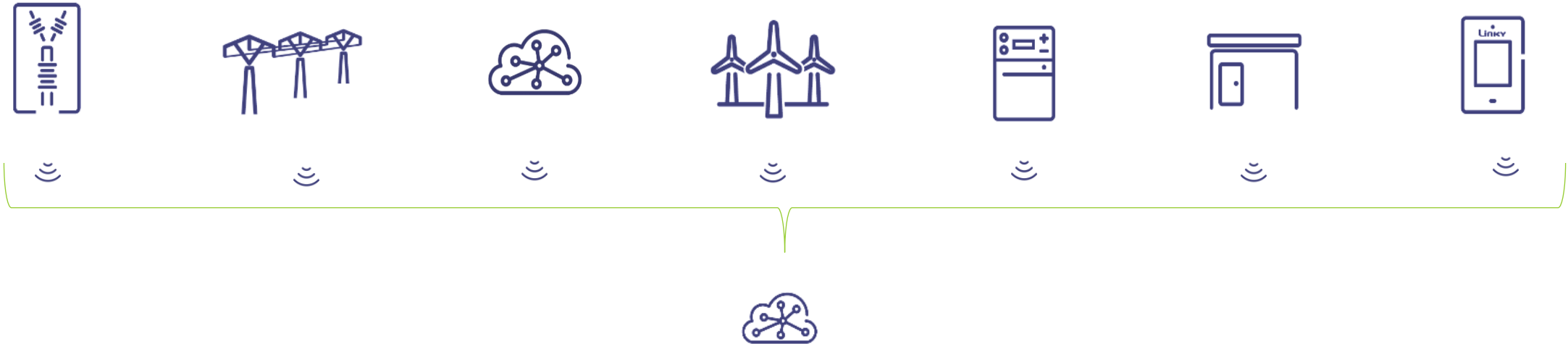
10 000  
IoT on MV  
lines

5 000  
generators  
directly  
controlled

500 000  
industrial sites  
smart meters

10 000  
smart MV/LV  
substations

35 millions  
LV smart  
meters



*Monitoring, remote control, Big Data / AI*

# Industrial strategies and electrical equipment needs forecasts



# Forecast of electrical equipment needs\*- Data Model (1/3)

## Switchgear and control gears

Equipment type	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	Volatility
	st	st	st	st	st	st	st	st	
S12 accessories	176	179	182	188	189	190	190	191	High
TUPI accessories	113	116	123	132	158	170	175	177	High
TUR accessories	95	99	107	113	145	159	165	170	Low
Scalable MV disconnection cabinet	107	111	120	206	234	247	253	257	Medium
MV/LV substation control box	87	87	86	100	98	94	95	95	Medium
Underground fault detector	111	111	109	131	125	117	118	118	Low
LV substation circuit breaker	104	105	105	107	108	108	109	109	Low
MV fuse	110	113	116	123	132	137	138	139	Low
PAC4 envelope substation	186	189	193	202	209	212	213	214	High
PRCS substation	95	98	100	106	107	107	107	108	High
PSSA substation	210	214	219	229	233	236	237	238	High
PSSB substation	147	151	156	175	178	180	181	182	High
MV switchboard	137	140	144	152	163	168	171	172	High
S12 switchboard	151	154	157	170	174	176	177	178	High
TUPI switchboard	106	109	114	122	141	149	153	155	High
Cabin transformer (Lot 2)	202	205	208	216	221	223	224	225	High
Pole transformer (Lot 1)	108	105	95	84	84	84	84	84	Medium
Special transformers (Lot 3)	101	100	96	92	92	92	92	92	Low
TPC cabin transformer (Lot 1)	187	190	195	209	213	214	216	217	High

Uncertainty / volatility of needs

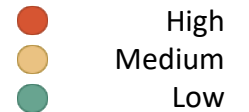
- High
- Medium
- Low

# Forecast of electrical equipment needs\* (2/3)

## Overhead conductors

Equipment type	2023 forecast	2024 forecast	2025 forecast	2026 forecast	2027 forecast	2028 forecast	2029 forecast	2030 forecast	Volatility
MV anchorage protectors	116	120	125	134	139	142	142	143	●
MV DAC protectors	113	115	117	128	131	132	132	133	●
MV rigid protectors	124	134	145	156	165	174	174	174	●
MV hanging protectors	119	127	136	144	153	161	161	161	●
MV rigid ties	122	131	141	151	159	167	168	168	●
Bird protection	102	104	107	112	116	119	119	119	●
LV connection insulated cable	101	101	102	105	107	108	109	110	●
LV network insulated cable	116	118	122	153	156	158	159	161	●
MV overhead control box	105	104	101	114	109	103	103	103	●
Overhead conductor and copper earth	116	118	122	126	133	135	137	137	●
MV overhead Aster sheath conductor	134	139	145	156	165	170	171	172	●
MV overhead bare conductor	113	116	121	127	131	134	134	134	●
MV overhead twisted conductor	104	106	107	95	96	96	95	94	●
MV overhead connector	121	127	132	141	147	151	152	152	●
LV(A) branch connectors	101	102	103	110	112	113	114	115	●
LV overhead connectors	110	111	113	126	128	130	130	131	●
Overhead fault detector	116	117	117	152	137	127	127	127	●
Surge protector fittings	133	136	139	151	155	157	158	158	●
MV overhead switch	109	111	114	119	121	122	122	122	●
MV composite insulators	121	129	138	148	155	163	163	163	●
MV glass insulators	123	131	140	151	160	167	168	168	●
MV overhead junction	107	110	113	117	120	122	122	122	●
LV connection junctions	102	102	103	104	104	105	105	105	●
LV network junctions	106	106	107	114	114	115	115	116	●
Surge protectors	131	135	138	149	155	157	158	159	●
LV connection anchorage clips	103	103	104	107	108	109	109	109	●
LV network anchorage and hanging clips	110	111	114	134	136	137	138	139	●
MV anchorage and hanging clips	122	130	138	148	156	163	163	163	●

Uncertainty / volatility of needs



# Forecast of electrical equipment needs\* (3/3)

## Poles and OHL supports

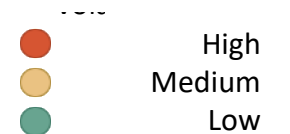
Equipment type	2023 forecast	2024 forecast	2025 forecast	2026 forecast	2027 forecast	2028 forecast	2029 forecast	2030 forecast	Volatility
Metal support	112	116	120	126	129	132	132	132	Medium
Concrete support	114	117	122	140	144	147	147	148	Low
Wooden pole	108	110	113	120	122	124	125	125	High

Uncertainty over the use of wooden posts (regulations on creosote) and growth in the use of metal supports

## Connecting equipment

Equipment type	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	forecast	Volatility
Total BPS box+cabinet	151	154	165	163	163	163	162	159	159	High
Connection box	103	103	104	105	107	108	108	109	109	Low
MV Saphir meter	103	104	106	384	388	393	397	402	402	High
SME meter	148	151	161	160	160	160	159	156	156	High
LINKY meter	34	36	38	31	41	46	49	62	62	High

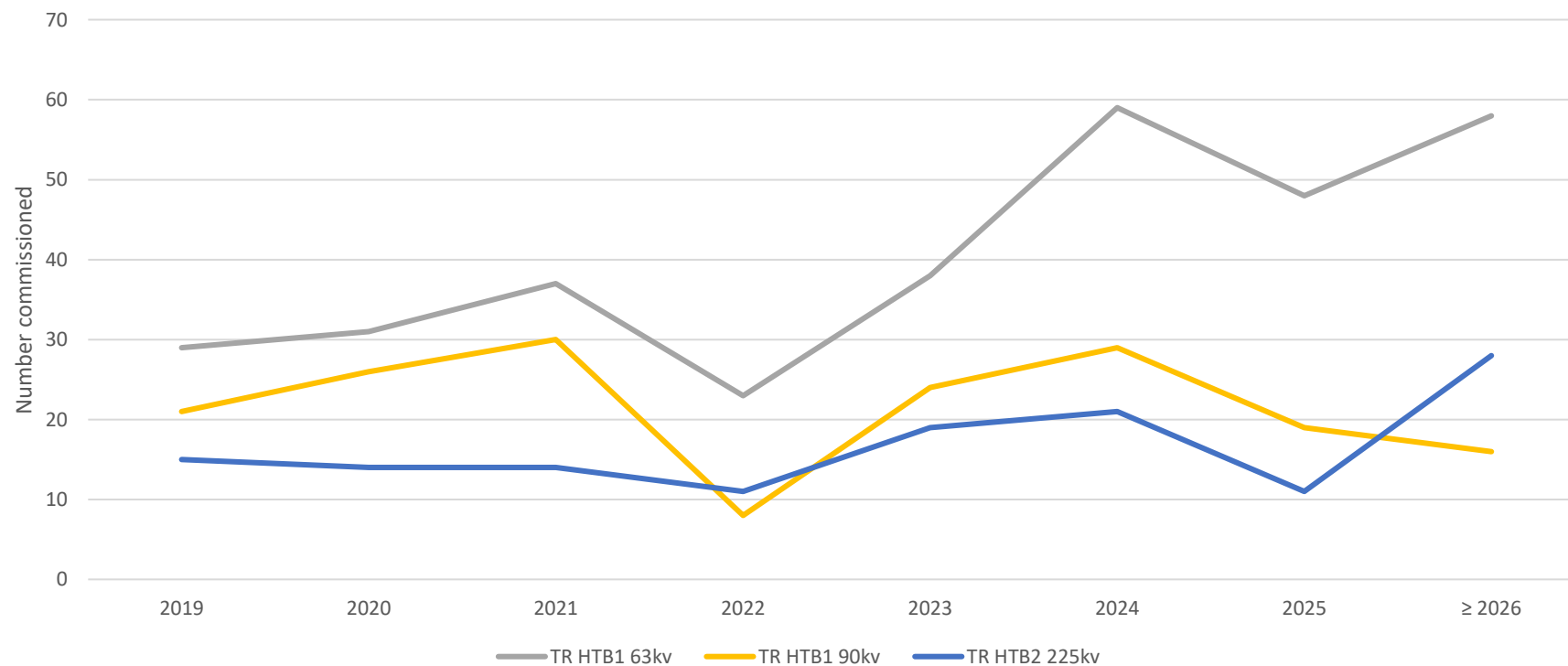
Uncertainty / volatility  
of needs



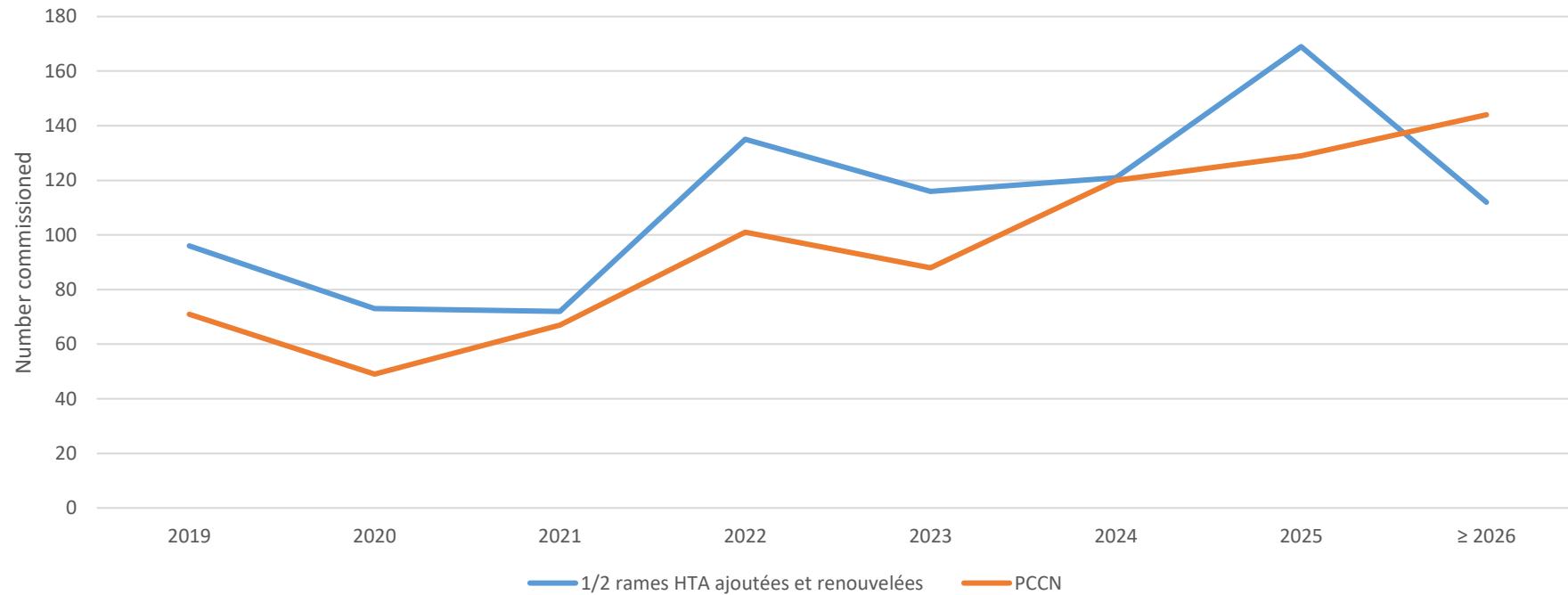
Strong increase in MV Renewable Energies connections planned in 2026 (regulations requiring PV equipped pergolas for car parks), with a gradual increase possible from 2025

**The forecast shows that the needs for Enedis will increase up to the double of actuals for some category of equipments !**

# Focus on the number of HV/MV transformers commissioning program

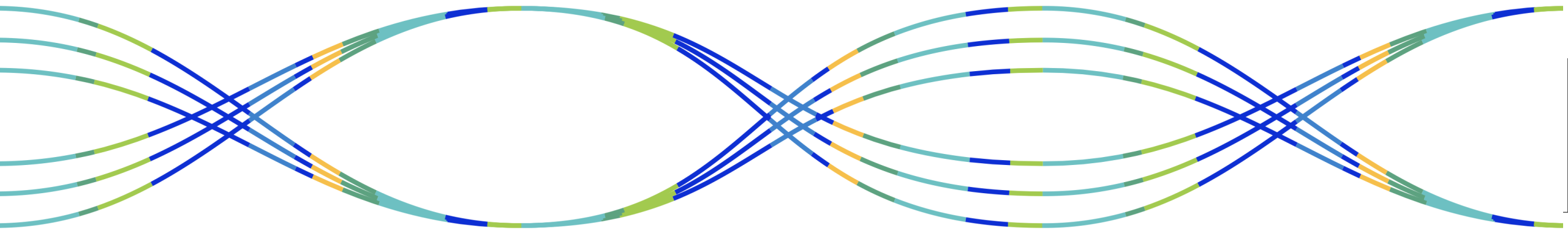


# Focus on the number of MV breakers commissioning program





# HR outlook for the industrial sector





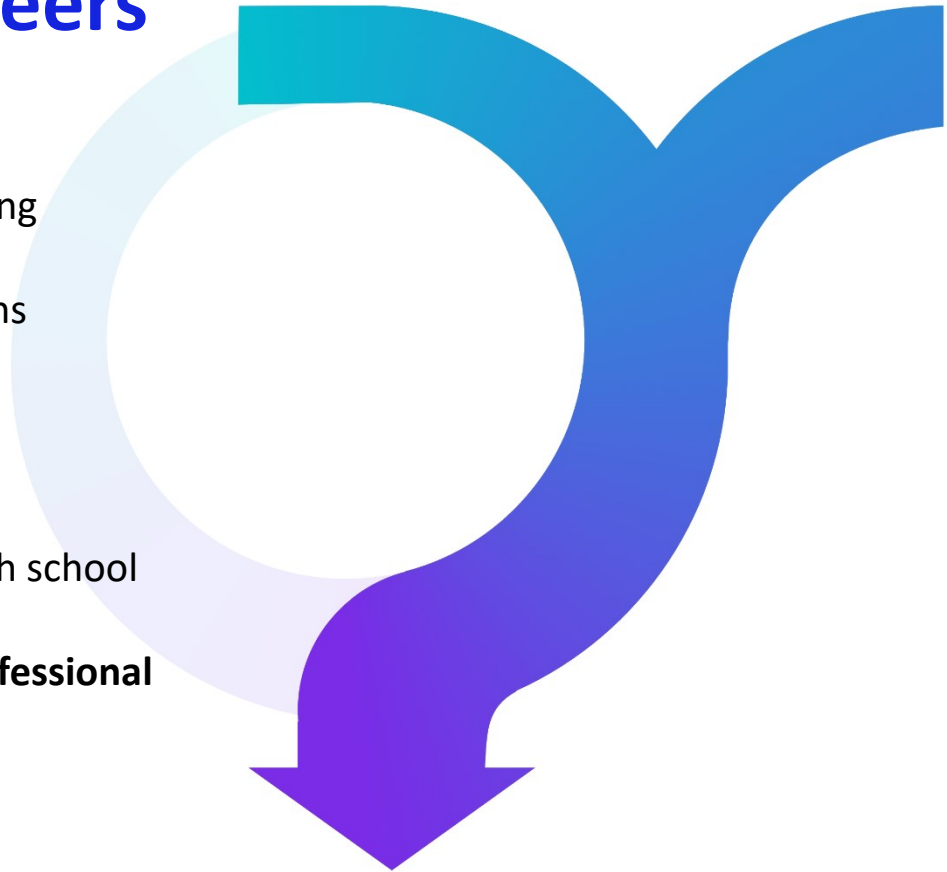
# Attracting young people to our careers

## Convincing advisors

- Training teaching staff
- Contributing to electrical engineering teaching
- Investing in Trades and qualifications campuses (CMQs)

## Convincing young people

- Stronger input from companies high school programs
- **Creation of Network classes in professional high schools**
  - 30% Network Teaching Program
  - 22 weeks of work experience with partner companies
  - Mentoring



**8,300 new hires per year**  
5,000 permanent contracts and 3,300 work-study trainees for the sector

# Diversifying HR sourcing

Seeking out the skills we need in untapped channels

## Retraining and professional reorientation :

- Working with advisors to guide young people towards our professions
- Providing a training offer for **high-demand** professions throughout the country

Through a strengthened partnership with GRETAs, AFPA and the french Job Centers

# Enedis ranked 1st on Singapore Power Smart Grid Index for 2021 & 2022 !

Utility	Country/Market	Score	+ / - (%)	Best Practices
Enedis	FRA	98.2	1.8	
TaiPower	TWN	94.6	-	
UKPN	GBR	94.6	-	
ConEd	USA	92.9	-1.8	
WPD	GBR	92.9	-	
CitiPower	AUS	91.1	-1.8	
DEWA	ARE	89.3	-	
SP Energy Networks	GBR	89.3	1.8	
SDGE	USA	87.5	-	
FPL	USA	85.7	-	
Northern Powergrid	GBR	85.7	1.8	
SCE	USA	85.7	-	
Stedin	NLD	85.7	-	
ComEd	USA	83.9	-	
PG&E	USA	83.9	-3.6	
ENWL	GBR	82.1	-3.6	
Jemena	AUS	82.1	1.8	
PEPCO	USA	82.1	5.4	
Powercor	AUS	82.1	-	
Radius	DNK	82.1	-3.6	



## SMART GRID INDEX

Measures the smartness of electricity grids globally, in seven key dimensions. The benchmarking also identifies best practices to build smarter grids that deliver better value to customers.

- 01. MONITORING & CONTROL**
  - . SCADA
  - . DMS / ADMS
- 02. DATA ANALYTICS**
  - . Smart Meter Coverage
  - . Data Analytics Application
- 03. SUPPLY RELIABILITY**
  - . SAIDI
  - . SAIFI
- 04. DER INTEGRATION**
  - . Management of DER Integration
  - . Grid Scale Energy Storage
- 05. GREEN ENERGY**
  - . Renewable Energy Penetration
  - . EV Facilitation
- 06. SECURITY**
  - . IT Cyber Security
  - . OT Cyber Security
- 07. CUSTOMER EMPOWERMENT & SATISFACTION**
  - . Real-time data to Customers
  - . Customer Satisfaction Feedback

# Any Question ?

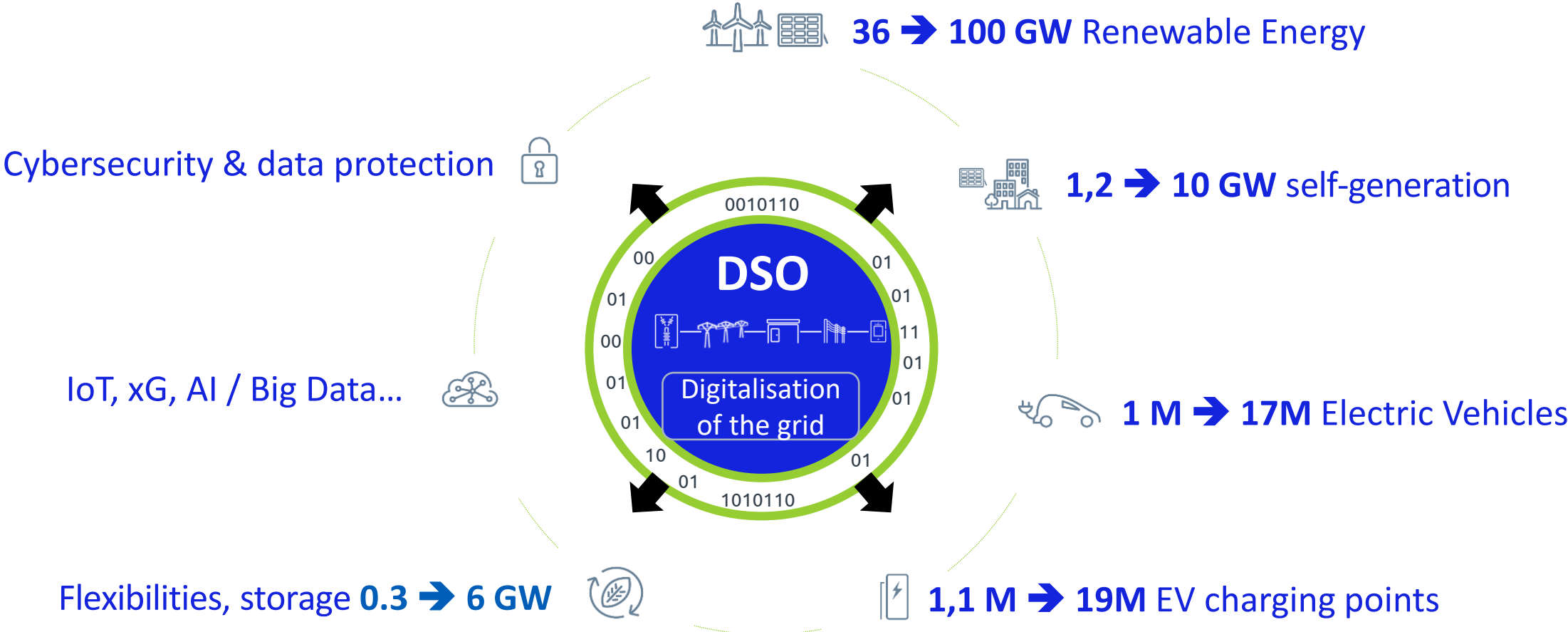
# Annexes

# Improving reliability of MV and LV networks

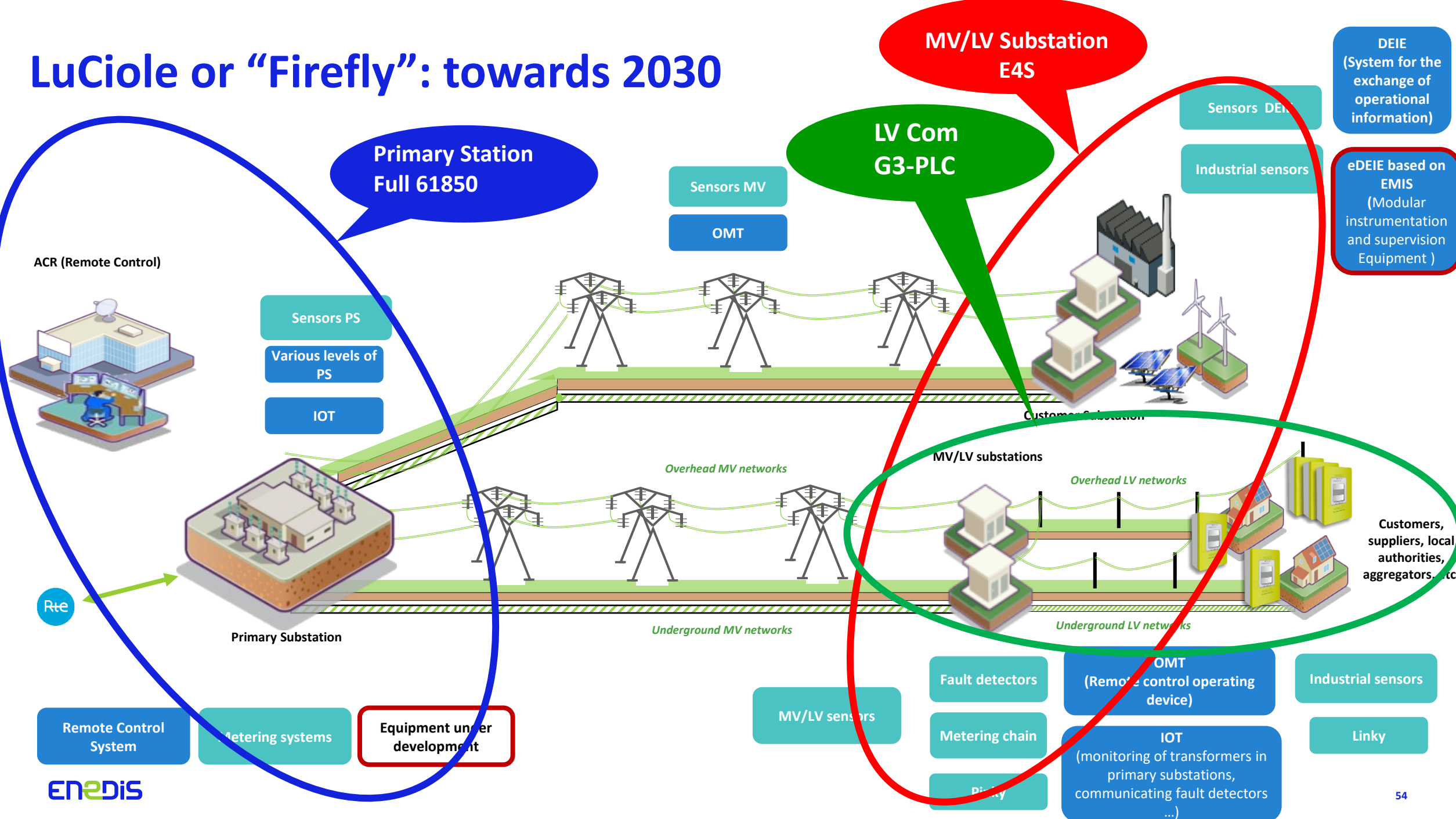
5 targeted modernisation programmes to increase network resilience to climate change and improve the quality of supply:

- ❑ Renewal of MV underground cables (21,100 km)
- ❑ Renewal of LV Impregnated Paper underground Cables (21,000 km)
- ❑ Climate Resilience Plan for vulnerable OHL (50,000 km to be replaced by underground cables)
- ❑ Scheduled renovation of overhead MV system (230,000 km to be renovated)
- ❑ Withdrawal of LV bare wires (26,000 km)

# From 2022 to 2035 : connecting the dots of our green world



# LuCiole or "Firefly": towards 2030



# Flashlights

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## Rodolphe de Beaufort

Deputy CEO, GIMELEC



### **Manufacturer perspective:**

Dealing with ambitious plans, uncertainties, constraints and globally evolving markets





# GIMELEC

Nous décuplons les énergies

## E.DSO & T&D Europe | CEO Meeting | Brussels

Challenges, uncertainties and proposed actions

Brussels, 09/10/2023 – contact [rdebeaufort@gimelec.fr](mailto:rdebeaufort@gimelec.fr)

**GIMELEC**  **ÉNERGIES**  
les industriels pour l'électrification durable

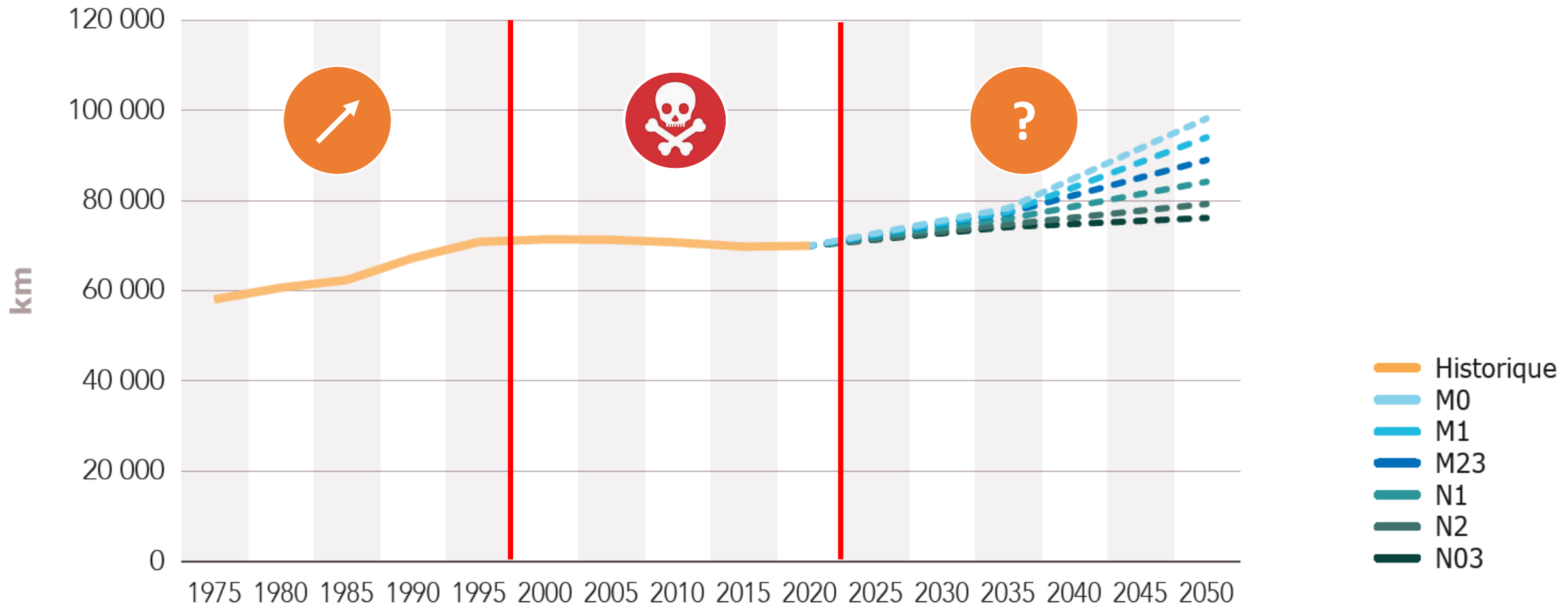
# Story line

- REX based on French collaboration with Enedis, RTE and Sycabel, but representative
- The end of a difficult period for industrials, the beginning of a new electrification area ?
- First uncertainty : Electricity consumption
- Second uncertainty : Electricity production mix
- Third uncertainty : Value Chain capacities and bottlenecks
- Fourth uncertainty : Environmental regulation
- Manufacturer's State of Mind
- GIMELEC's common list of challenges



# Our common history

**Figure 10.12** Évolution de la longueur du réseau régional de transport (km de circuits)

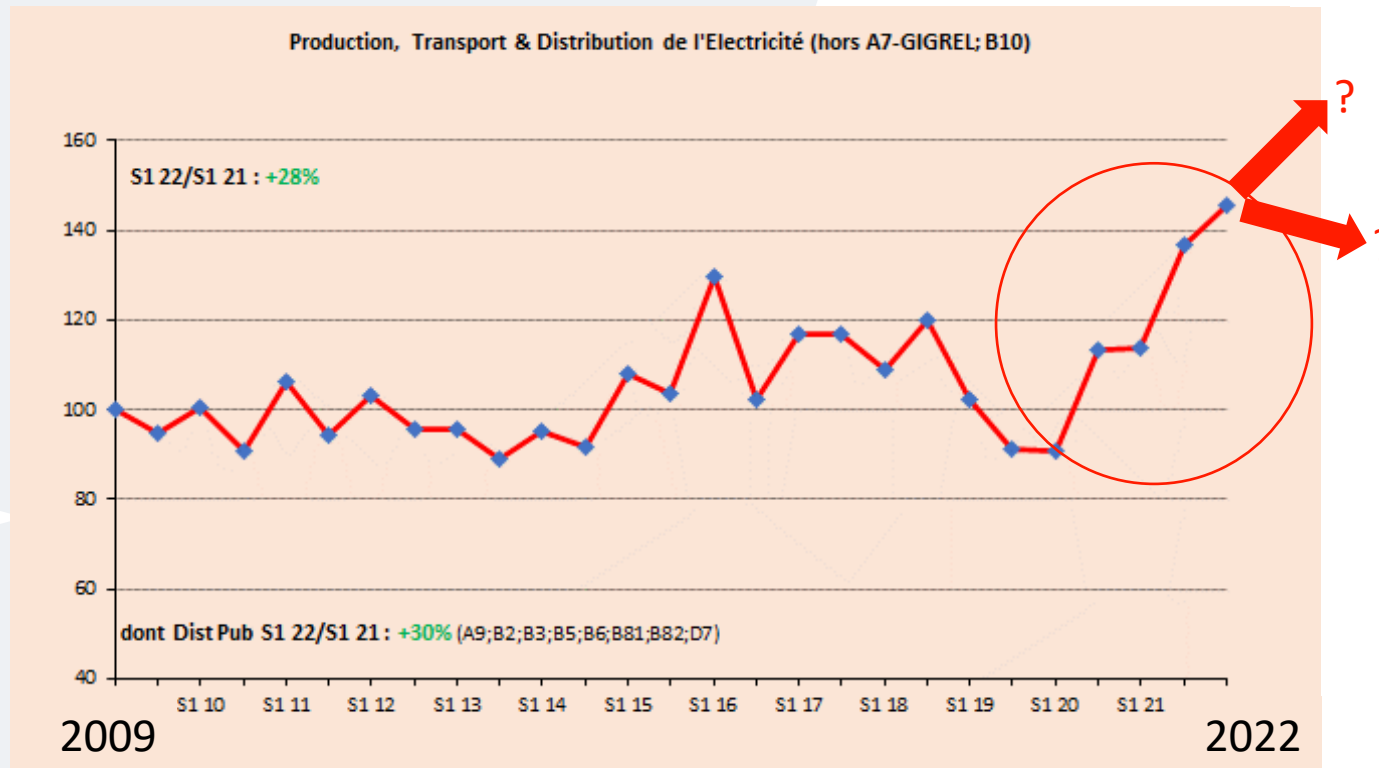


Source RTE Prospective 2050, Analyse GIMELEC

# A new Dilemma ?

Index of cumulative sales of network equipment in France 2009 - 2022

Confidentiel GIMELEC



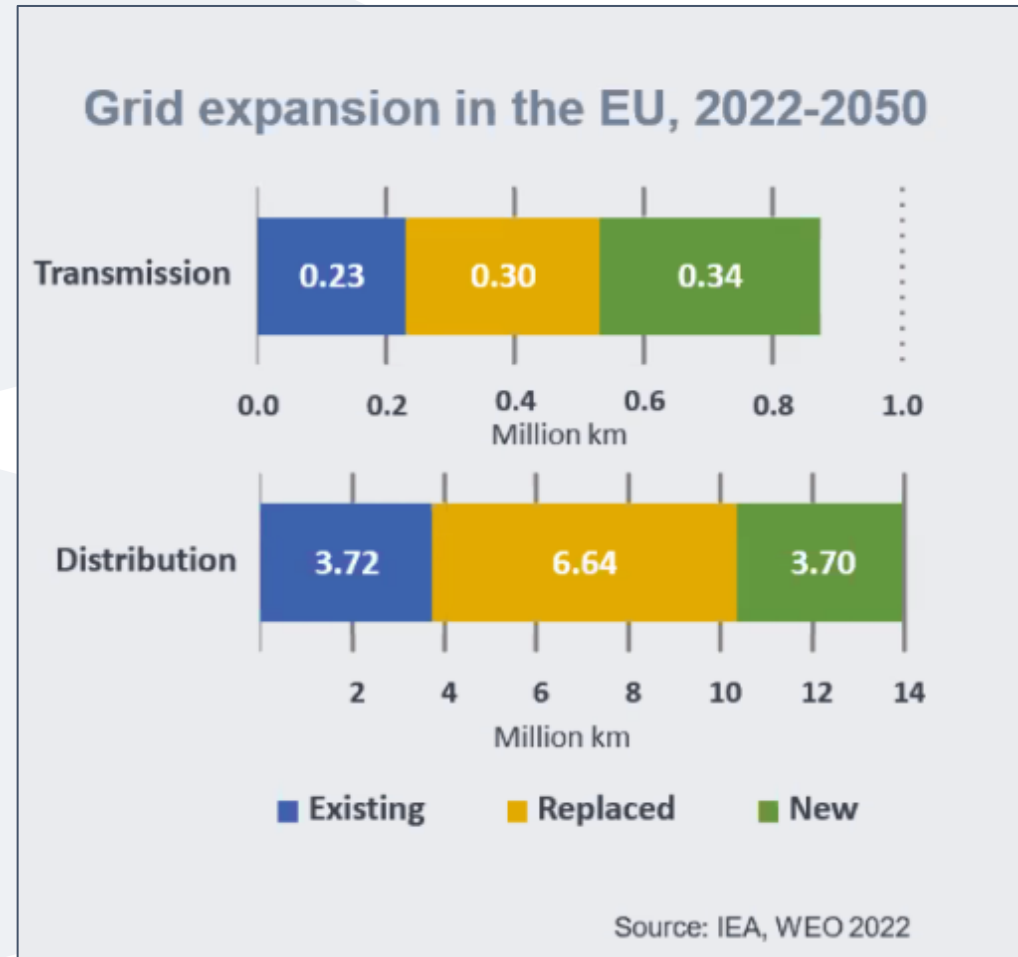
Strong mobilization of the sector, above long-term trends, even taking into account price effects

Similar or higher trend in all global geographies

An industry that is beginning to see a resurgence in Europe and the United States of the practice of reserving production capacities

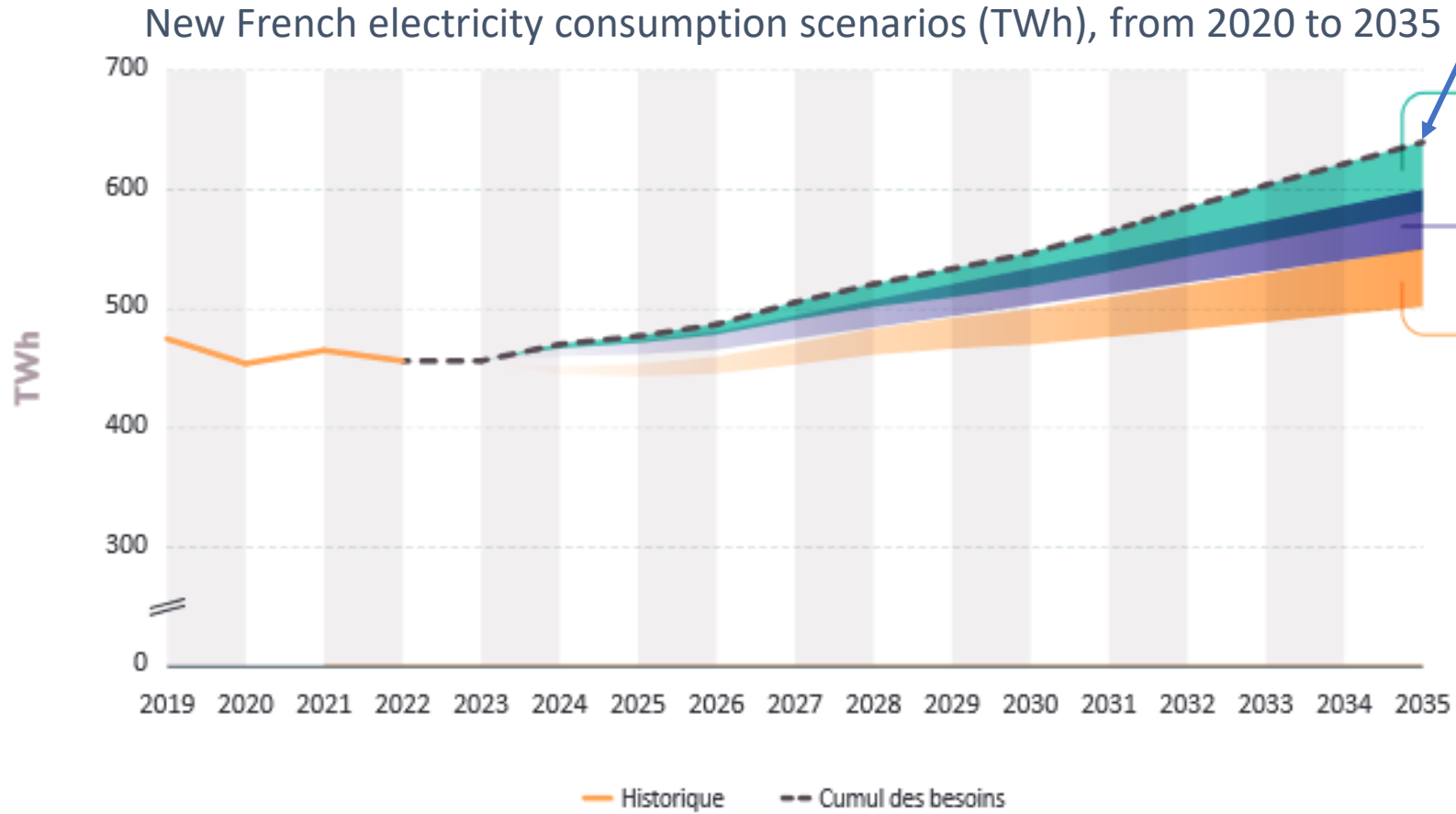
But a strong uncertainty on the real evolution of the needs

# Our main challenge : expend & renew electricity grids





# First uncertainty : consumption scenarios



645TWh : previous reference scenario in RTE's 2021 publication...  
*... but for 2050...*

Scénario A

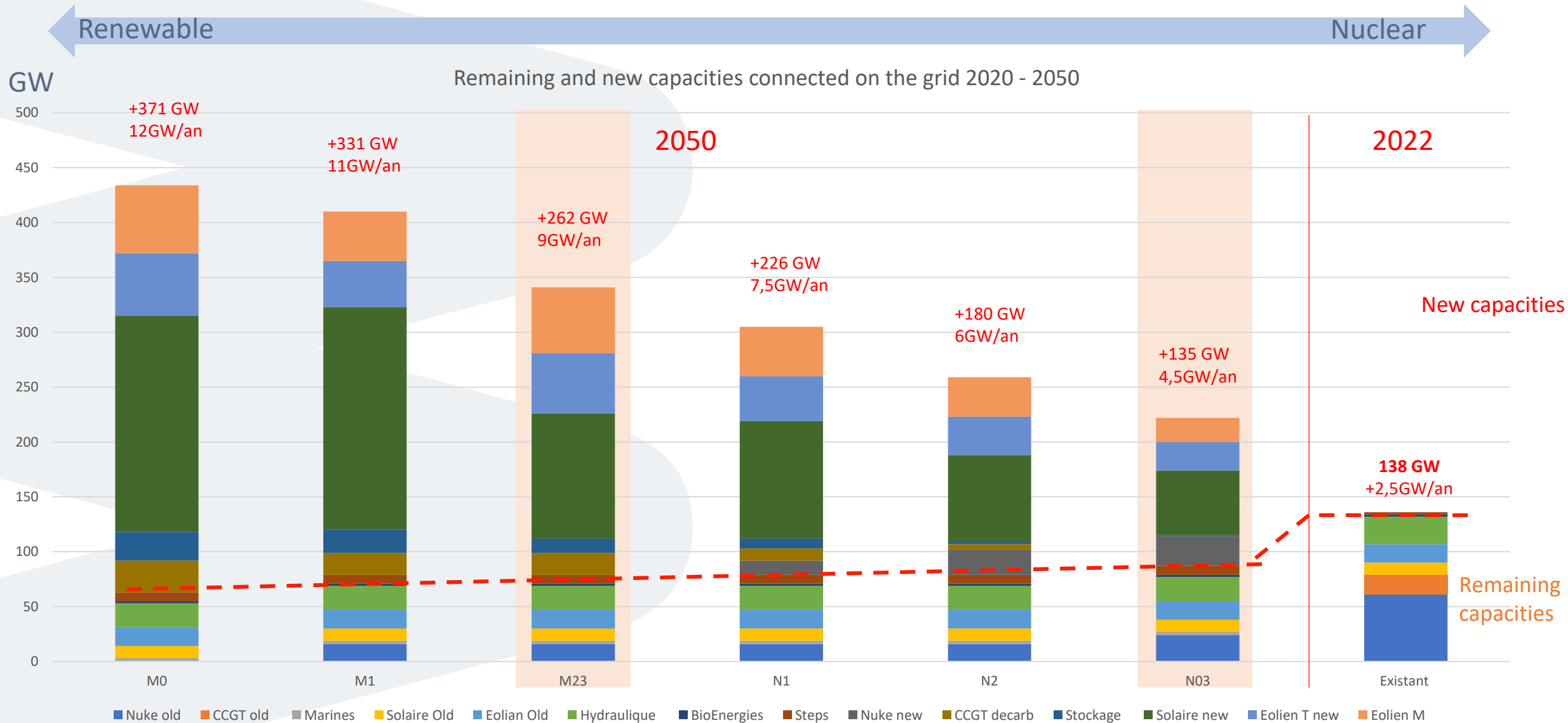
Scénario B

Scénario C

Des trajectoires contrastées de consommation sont à l'étude dans le cadre du Bilan prévisionnel 2023

Source BP 2025, RTE Sept 2023

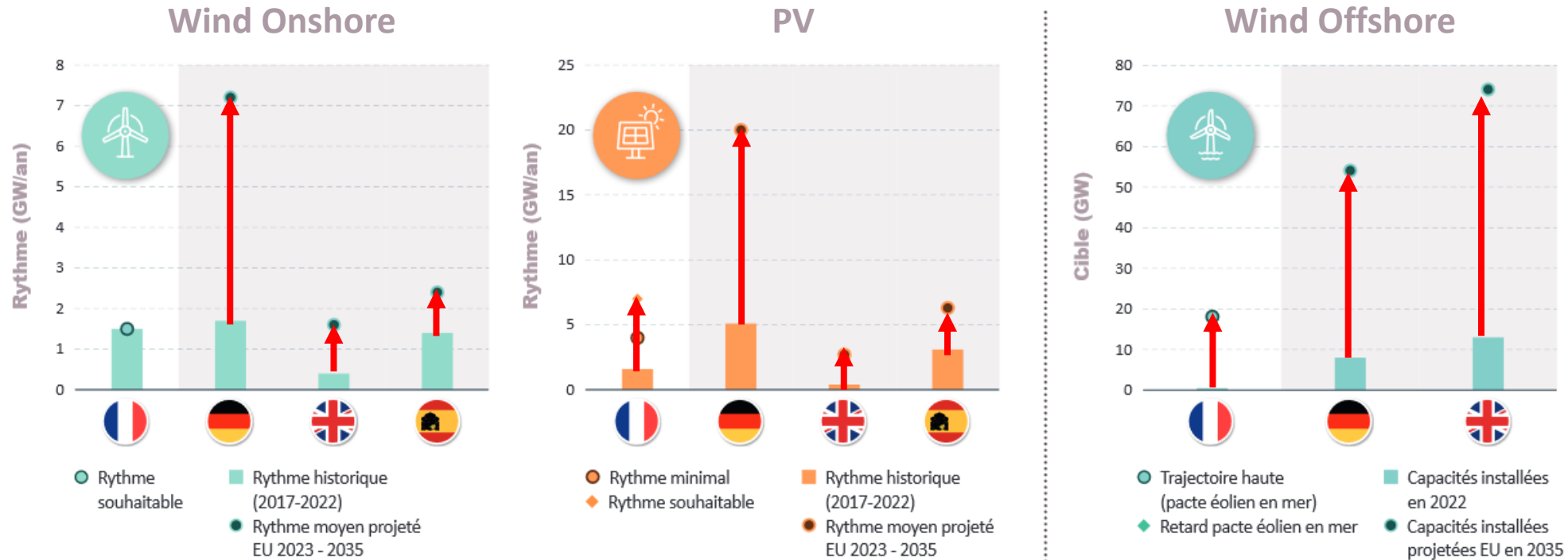
# Second uncertainty : Electricity production Mix (2021 figures)





# An unplanned & constant acceleration of deployment goals

**Figure 15** Development goals 2023 – 2035 for France and some comparable countries, RTE (BP 2023)



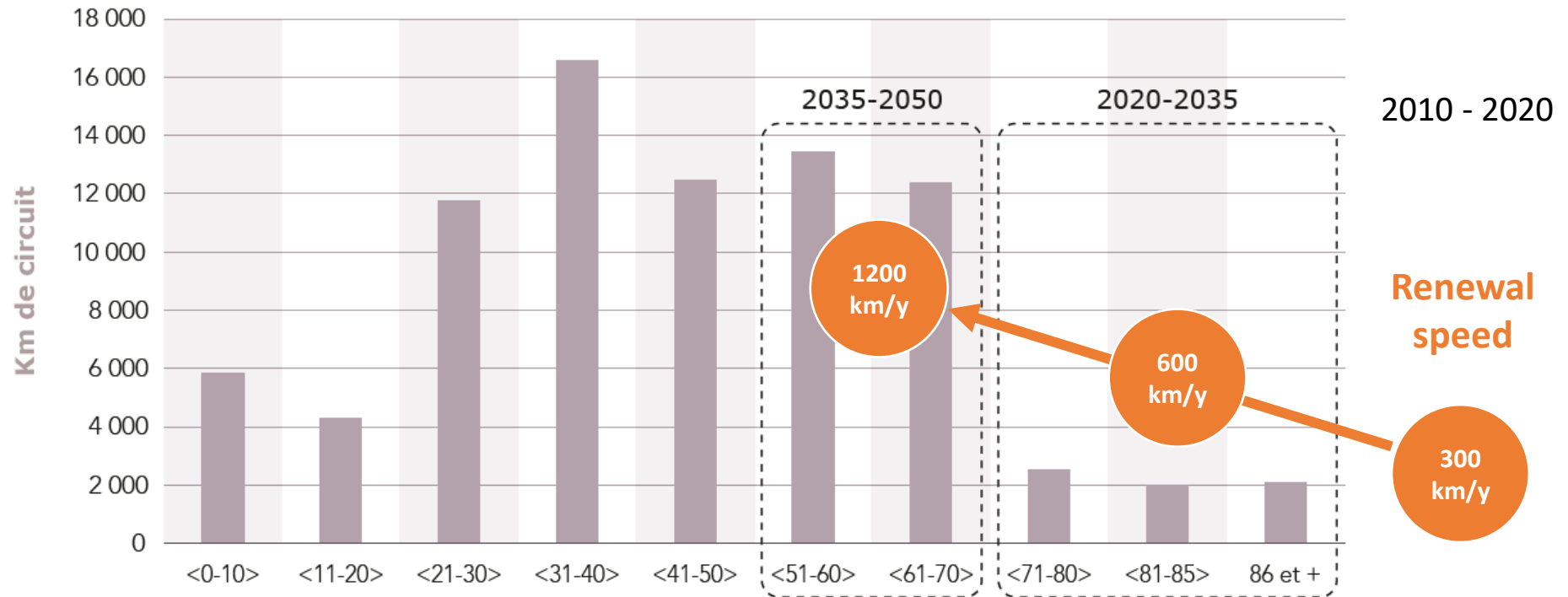
Several countries  
...  
Same equipment providers



Source BP 2025, RTE Sept 2023

# A blind spot in politician's mind : aging grids and replacement needs

**Figure 10.20** Cable distribution by age group and renewal period, RTE (2021)

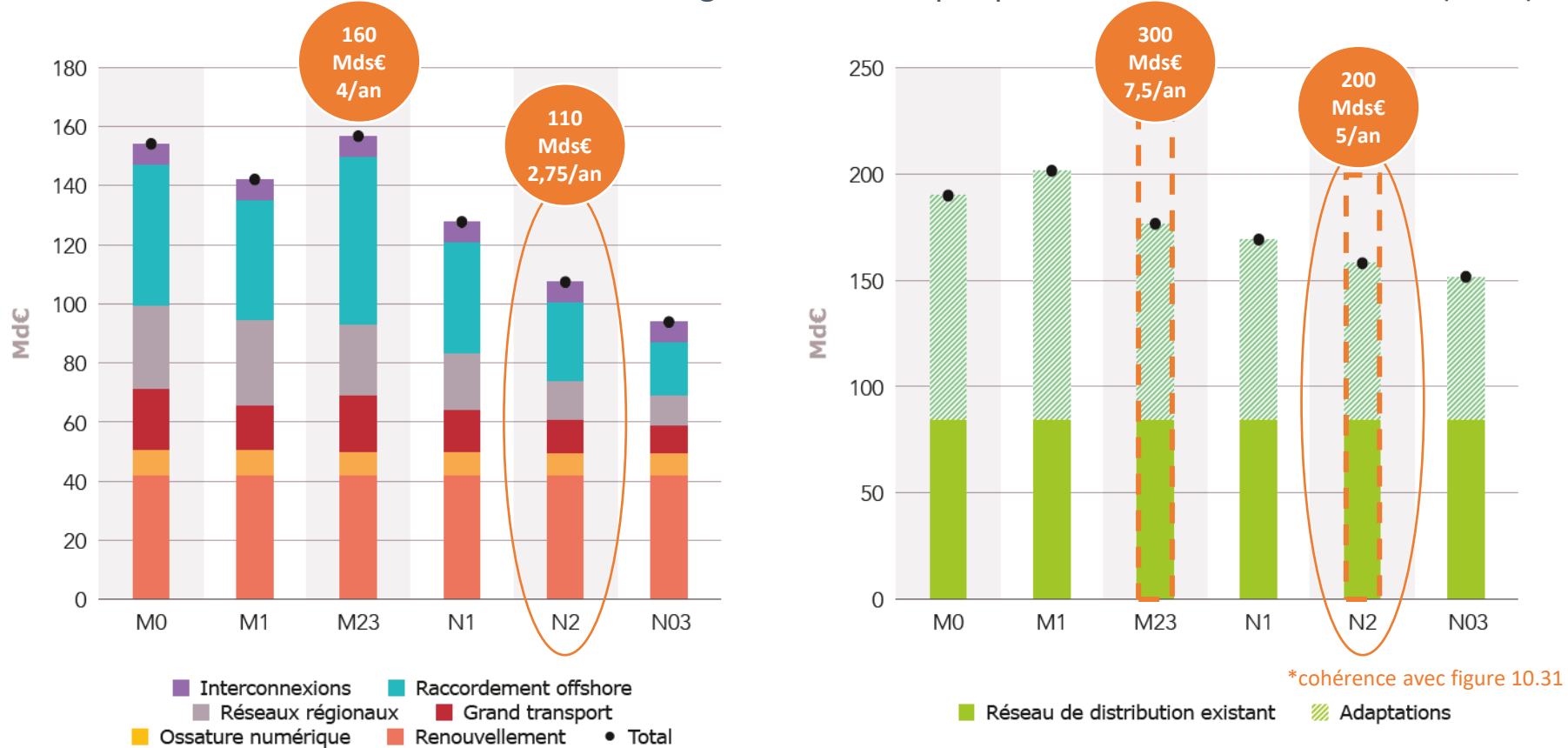


Source RTE Prospective 2050, Analyse GIMELEC

In parallel with the new electrification, the modernization of the current network (transmission and distribution) will also call on the industrial capacities of the sector.

French RPT/RPD investments by 2060 are estimated in 2021 at €310 billion by GIMELEC, i.e. almost 8 billion/year, double the trend of the last ten years (with Nuclear Scenario 2021)

**Figure 10.33** Cumulative CAPEX on DS & TSO grids in France, per production mix scenario, RTE (2021)



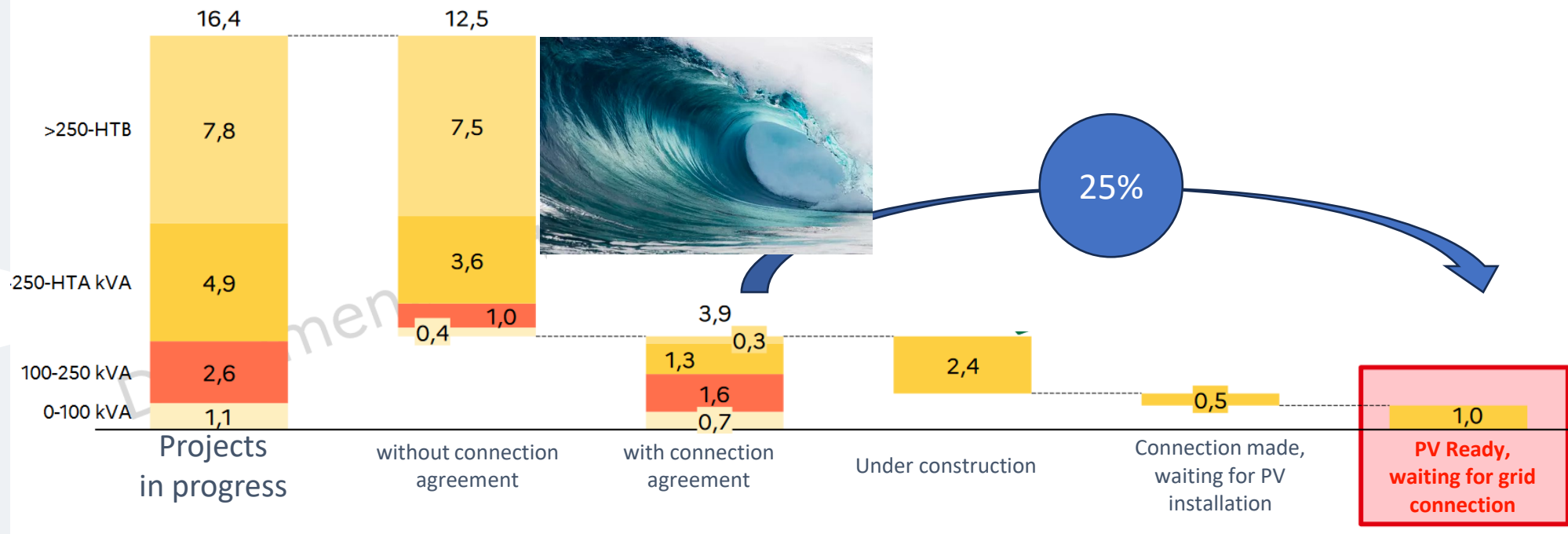
Source RTE Prospective 2050, Analyse GIMELEC

**While RTE's Nuclear scenario leads to a doubling of investments, the current acceleration linked to the geopolitical context seems to lead to a (Renewable + Nuclear) trajectory which would represent a tripling of investments**

# Third uncertainty : ability of the value chain to deliver

**At this stage, the network is not the limiting factor - apart from a few exceptions - but there is a need for better anticipation.**

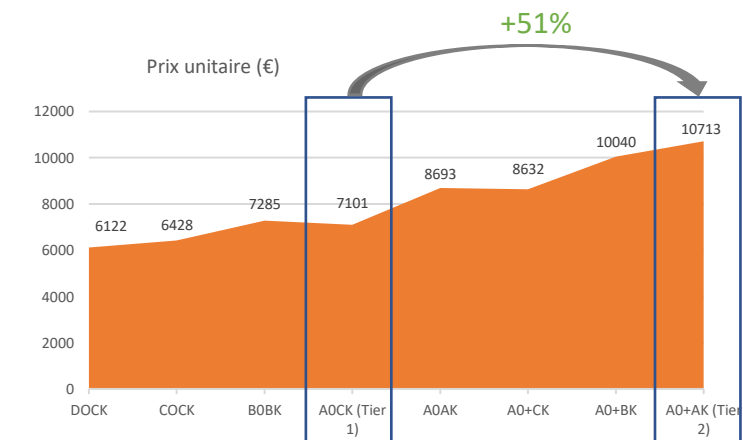
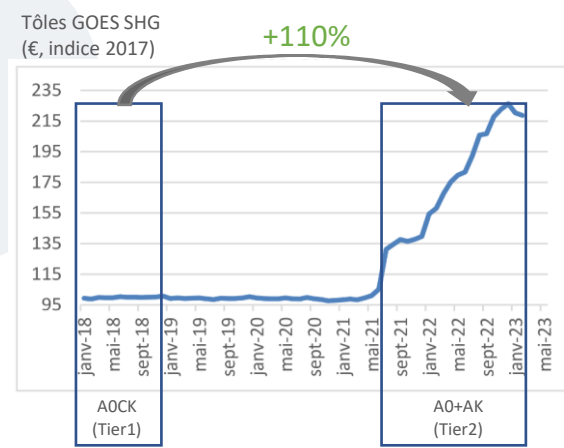
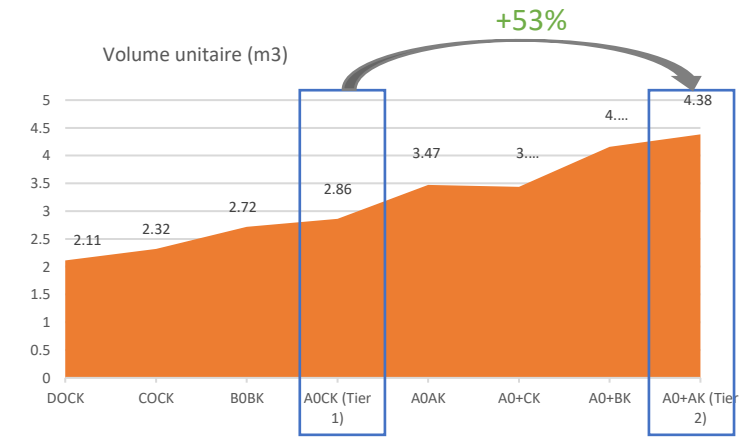
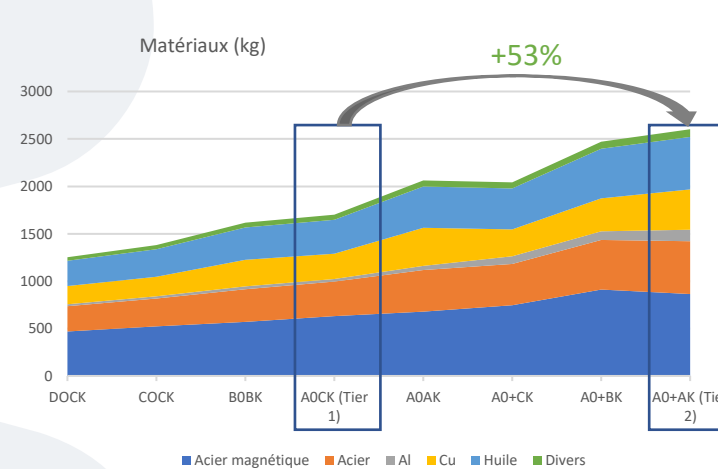
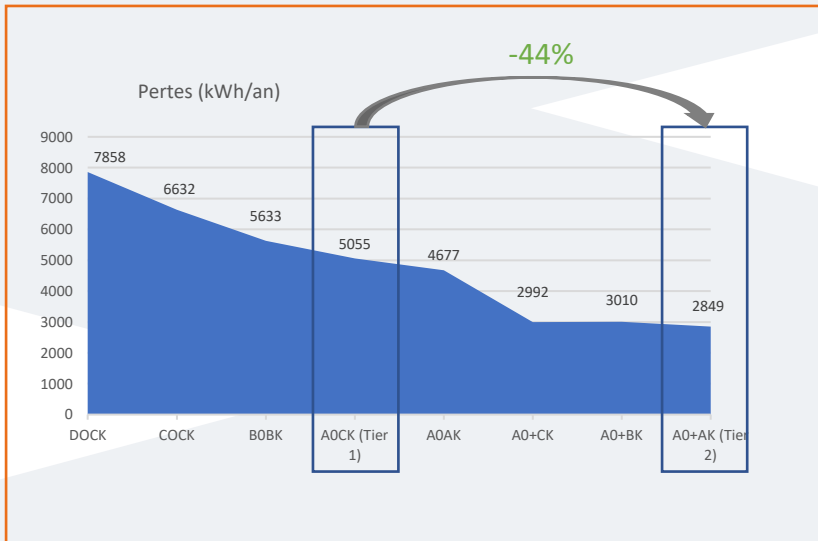
Breadown of PV projet maturity phase (GW, dec 2022)



# Fourth uncertainty : Environmental standards can have a significant impact on products, their prices and network design : Ecodesign Tier 3 ?

## Illustration of the different levels of Ecodesign on material, price and weight of 400 kVA distribution transformer

Objective : reduce losses



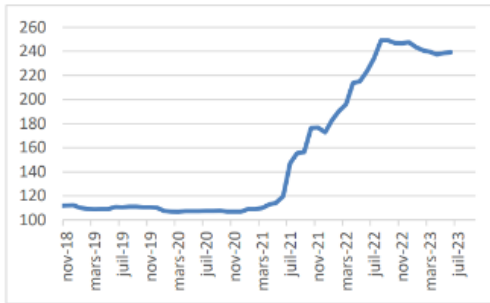
# Tensions that are reflected in the prices of raw materials and in the prices of the sector

Structural weaknesses in the supply of magnetic sheets and electronic components

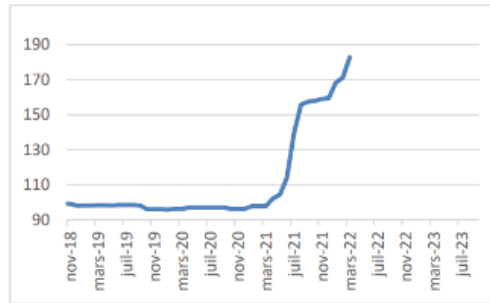
## Transformer Commodity Indices

Sources : T&D Europe

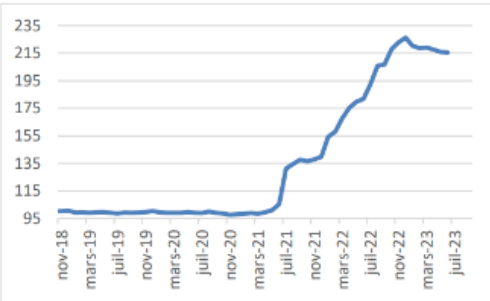
**GOES CONV. G**  
Base 100=avril 2017



**GOES HIGH GRADE**  
Base 100=avril 2017



**GOES SUPER HIGH GRADE**  
Base 100=avril 2017

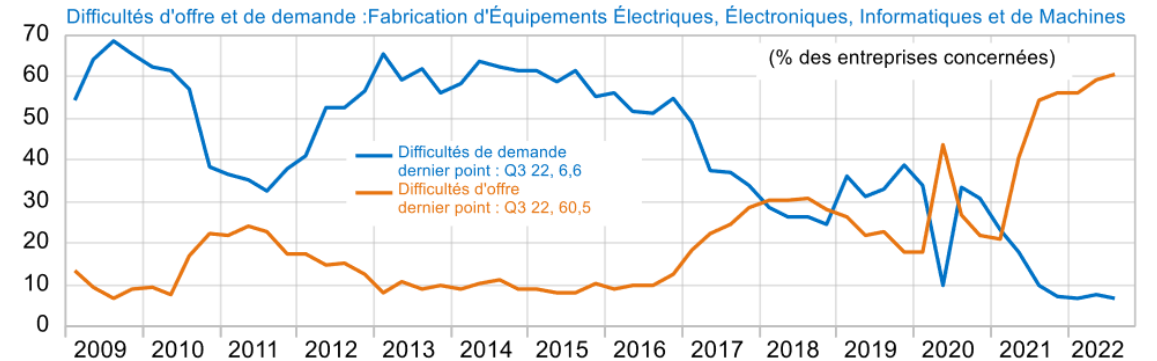


**MIN. OIL**  
Base 100=avril 2017

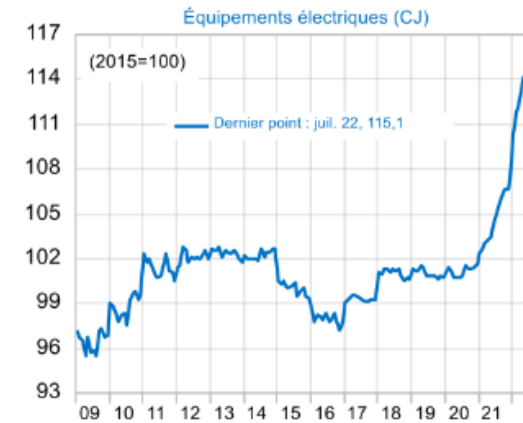


Tensions on magnetic sheets are not due to the geopolitical context but to regulations and the acceleration of the energy transition

## Market indices in the electrical sector

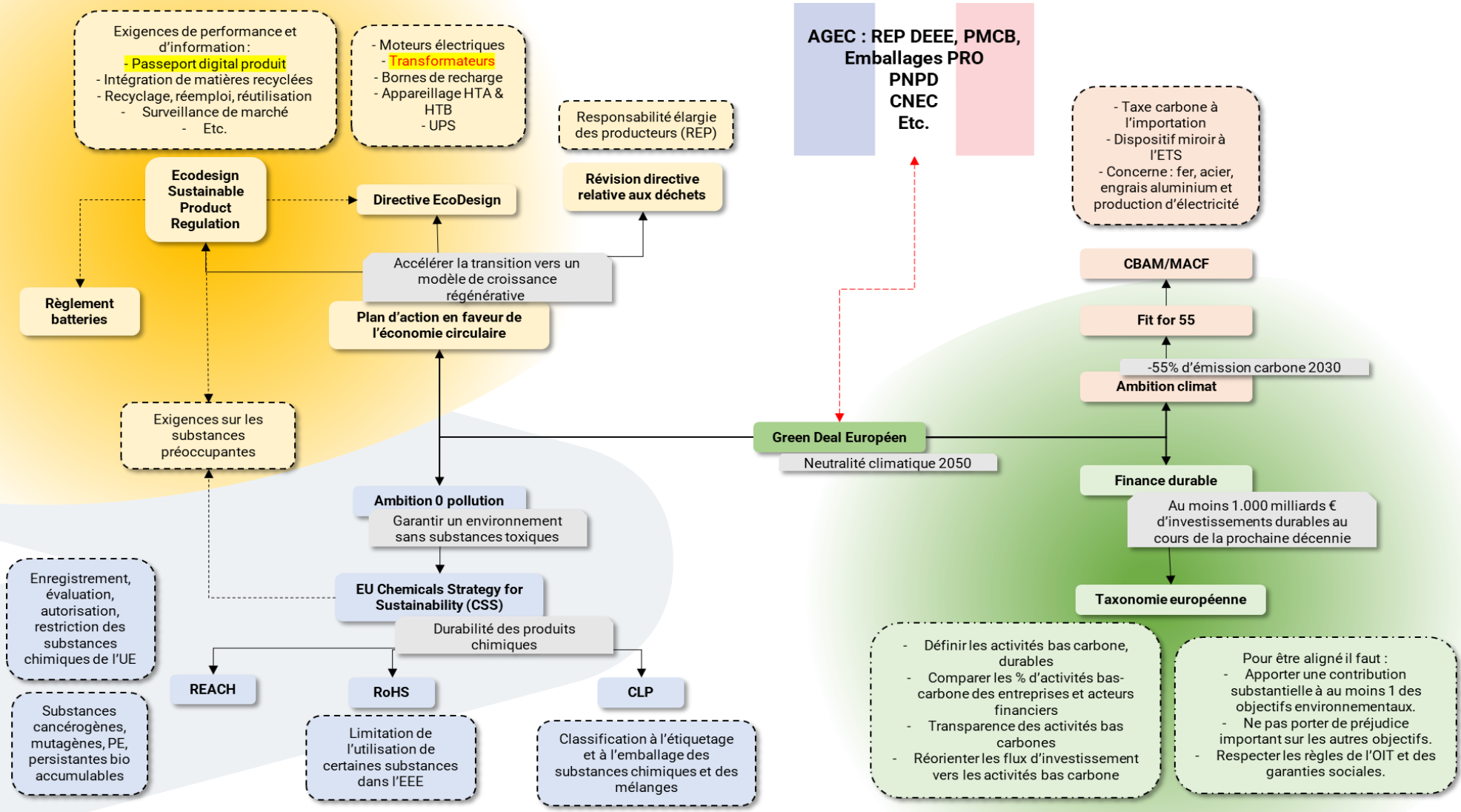


Indice de prix des matériels électriques en France



The market suddenly changed in 12 months from a demand market to a supply market. Industrial capacities are stretched to the limit and delivery times are getting longer.

# The "Tsunami" of European regulations considerably widens its scope around two main texts: ESPR and Taxonomy



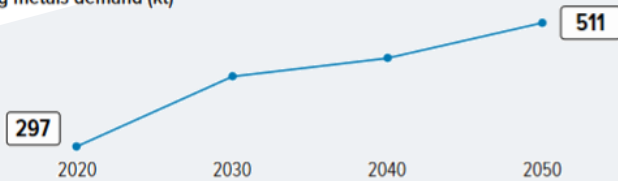


# European electricity networks are among the main global drivers of increased demand for copper and aluminum

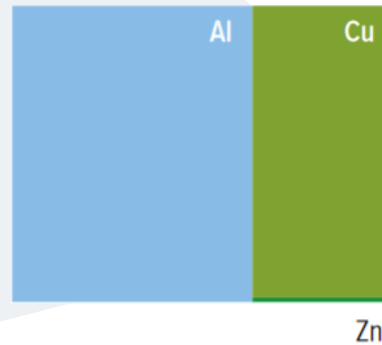
## ELECTRICITY NETWORKS †

The components for Europe's electricity networks are produced domestically, and it is assumed that this will remain the case.

Evolving metals demand (kt)



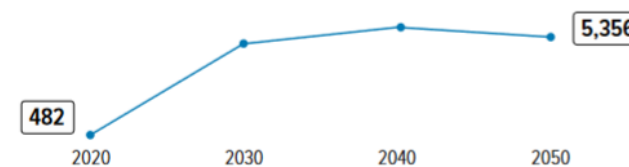
Makeup of metal usage (%)



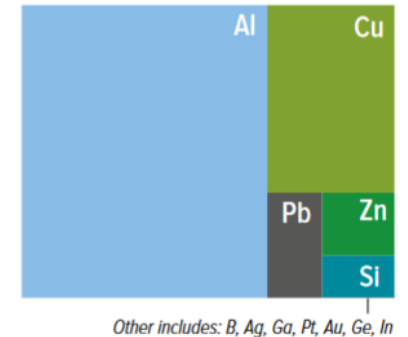
## ELECTRIC VEHICLE (excluding battery, permanent magnet)

The European automotive industry is a mature net export market. As electrical vehicles will replace traditional ICE cars, it is assumed that Europe retains its current market position.

Evolving metals demand (kt)\*



Makeup of metal usage\* (%)



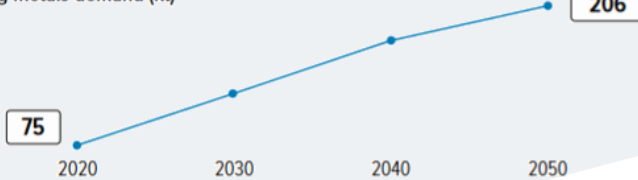
Other includes: B, Ag, Ga, Pt, Au, Ge, In

Projections are based on the IEA's SDS technology scenario for Europe, domestic technology production plans, and metals concentration levels  
 \* The figures shown only take into account metals demand for the expansion of electricity networks, not replacement.

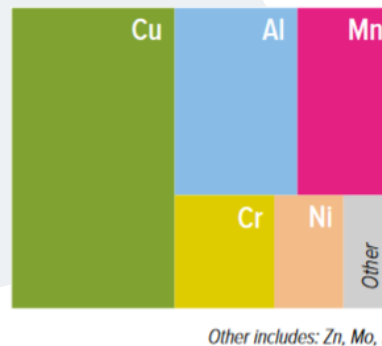
## WIND TURBINES

Europe is a significant producer of wind turbines and a net exporter of components, with a current capacity of 15 GW per year. There are ambitions to grow this capacity to meet the demands of the next decade, but without formal targets.

Evolving metals demand (kt)



Makeup of metal usage (%)

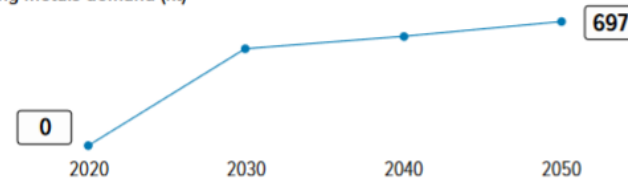


Other includes: Zn, Mo, B

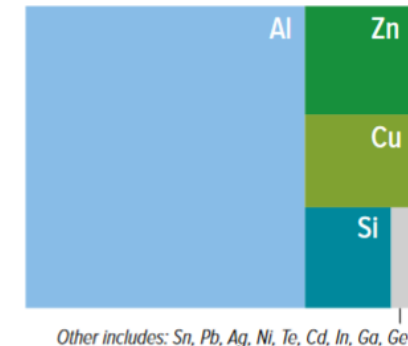
## SOLAR PV

The 2021 European Solar Initiative aims at restoring and rescaling the solar PV value chain in Europe after its loss to China, with an initial objective of 20 GW production by 2025.

Evolving metals demand (kt)



Makeup of metal usage (%)



Other includes: Sn, Pb, Ag, Ni, Te, Cd, In, Ga, Ge

† Europe = EU, Norway, Iceland, Switzerland, UK. \* Steel is not included in charts due to study focus, but used across most technologies  
 \*\* Lithium is expressed in terms of metal content for comparison (not LCE)

# Verbatim

*"Faced with these challenges, we have neither the right trajectory nor the right speed today. We can no longer put off our initiatives until tomorrow.*

***We must drastically accelerate: go three times faster, in the next ten years and not in thirty.***

*"We will not be able to serve everyone in 2030, the demand for copper will reach 35 million tons per year, far from the current capacities of 22 million tons"*

***"in 2 years it will be the fight of nations for copper"***

***"When there is a shortage, I will only serve customers who bring us their copper"***



Jean-Pascal Tricoire –  
PDG Schneider  
Electric



Christopher Guérin –  
PDG Nexans

# Manufacturer's state of mind

- Manufacturers are not 100% confident regarding the Utilities' ability to fund and deliver all these projects, a better insight from regulators on how to keep tariffs acceptable would be beneficial
- Network Operator's development plans are increasing every month (when they do the exercise)
- Sometimes the orders for product supply are booming and sometimes not, volatility is high, some customers are artificially trying to secure 10 – 15 years of supply in short-term contracts.
- Everyone is individually assessing very carefully the risk of overcapacity if the trend goes down in a few months (lack of finance, human resources, acceptability...)
- Everyone is individually afraid that a short-term lack of European capacities may result in an opportunity for non-European players to qualify their technologies without being on a level playing field regarding cost structure or CSR compliance.
- Some first renewable projects are cancelled due to inflation and cancellation of the business case. CSR standardisation will probably fuel inflation in the future, increasing again CAPEX plan of the Utilities: where is the appropriate balance?
- Utilities are facing a lack of human resources to ramp up the civil work and connection works, what is the realistic and consensual objective everyone can target ?

# GIMELEC's common list of challenges

# 1

## Forecast

- a. **More stable and precise energy planning** by Member States (NECP)
- b. **Detailed industrial planning by network operators** over a 10-year horizon (SDDR/CAPEX)
- c. **Alignment of contractual commitments with forecasts** and smoothing volumes of orders
- d. **Assessment of primary raw material needs** (Aluminum, Copper, Plastics)
- e. **Convergence on an industry-wide CSR strategy** to guide individual strategies
- f. Enhance visibility on **technological and environmental milestones**

# 2

## Availability

- g. **Secure financing acceptability** in network infrastructure
- h. **Enhance attractiveness and available training** in the industry (Network School for Energy Transition)
- i. **Improve the competitiveness of investments** in new industrial capacities (Taxo, TCTF, PJLF, Green Industry, NZIA vs IRA)
- j. **Promote recycling and reuse** (experiments, business models)
- k. **Accelerate the deployment of digitalization and flexibility** to leverage existing infrastructure
- l. **Influence environmental regulation to avoid hindering deployments**

# 3

## Agility

- m. **Plan networks in advance to secure project commitments** (Future of our grids, Grid EU action plan)
- n. **Simplify permit procedures for validating network facilities** (Law)
- o. **Adapt contractual frameworks for public procurement** to collaborative and long-term practices (Law)
- p. **Increase and pool experts involved in environmental standardization** (LCA, Taxonomy, ESPR...)
- q. **Enhance and expedite product qualification processes** (ecodesign...)
- r. **Standardize product specifications and operational processes** among operators (massification of demand)

# 4

## Sovereignty

- s. **Establish sovereign funds** to secure the capital of certain strategic companies (DGE, BPI)
- t. **Contribute to the reindustrialization** of Member States
- u. **Ensure access to primary and recycled raw materials** by collaborating with mining and recycling industries (DGE projects, CRA, Grid EU action plan)
- v. **Foster cybersecurity development in network products and systems** (CRA, NIS2, Cyber Shield, Network Cyber GT)

- Collaboration with Member State / EU
- Collaboration with regulator
- Collaboration within the industry

# Our common challenge



# Wrap-up and conclusions

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## Paula Pinho

Director for Just Transition, Consumers,  
Energy Efficiency and Innovation,  
DG Energy, European Commission





Find our joint press release [here](#)