Global Digital Solutions

Vendor Day

2020, June 18th

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Vendor Day

Carlo Bozzoli - Group CIO

2020, June 18th

1 **Context**
Overview

2 **Enel Group**
Overview

3 **Enel Group**
Digital Strategy

Agenda

Agenda

Three major trends are shaping the new future

SUSTAINABILITY

MACROECONOMIC TRENDS

Impacting on Countries, Organizations and People life and work

DIGITAL

Main macroeconomic trends rising, impact expected from Covid-19

Population is growing and ageing with cross countries differences

- **0,5%:** population growth rate by 2025
- **1B:** 65+ individuals more in the next decades
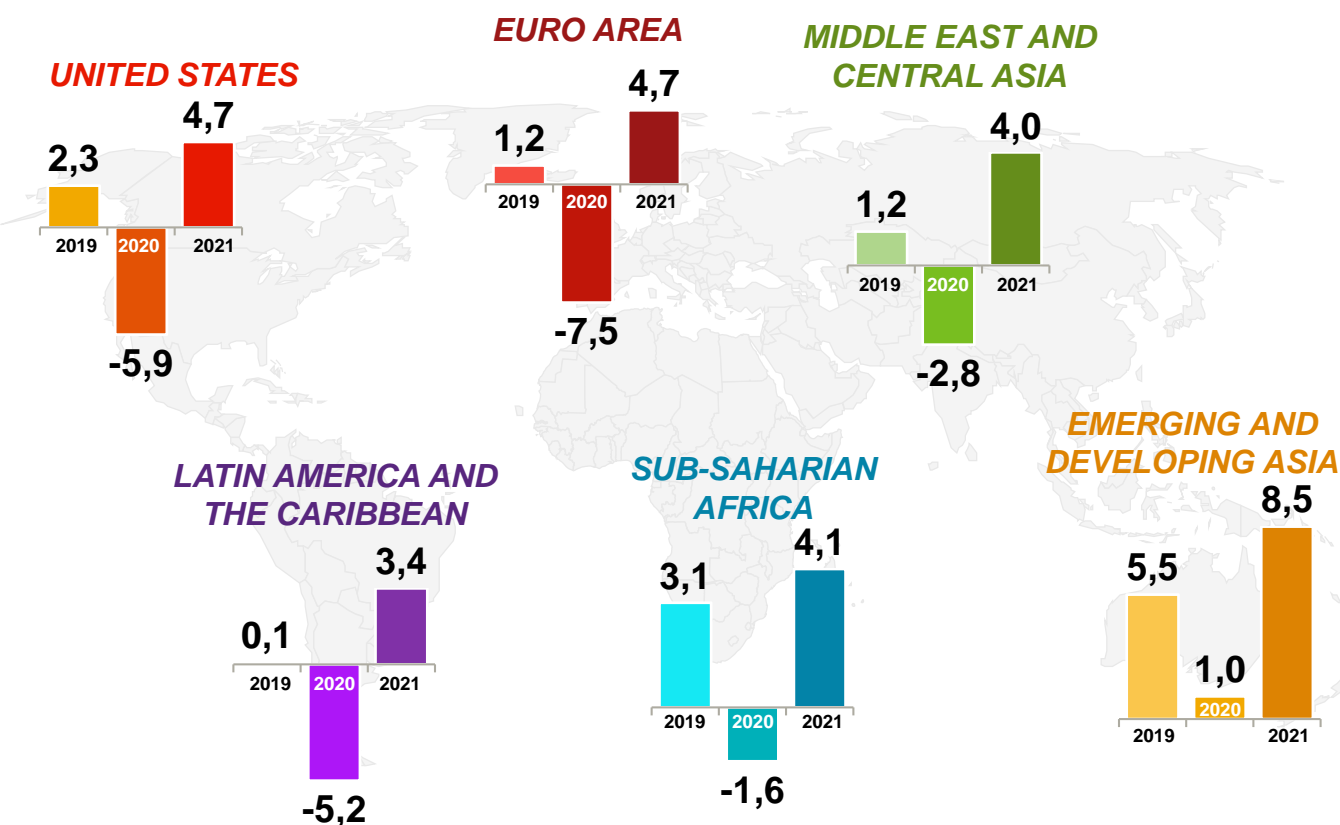
Urbanization is accelerating

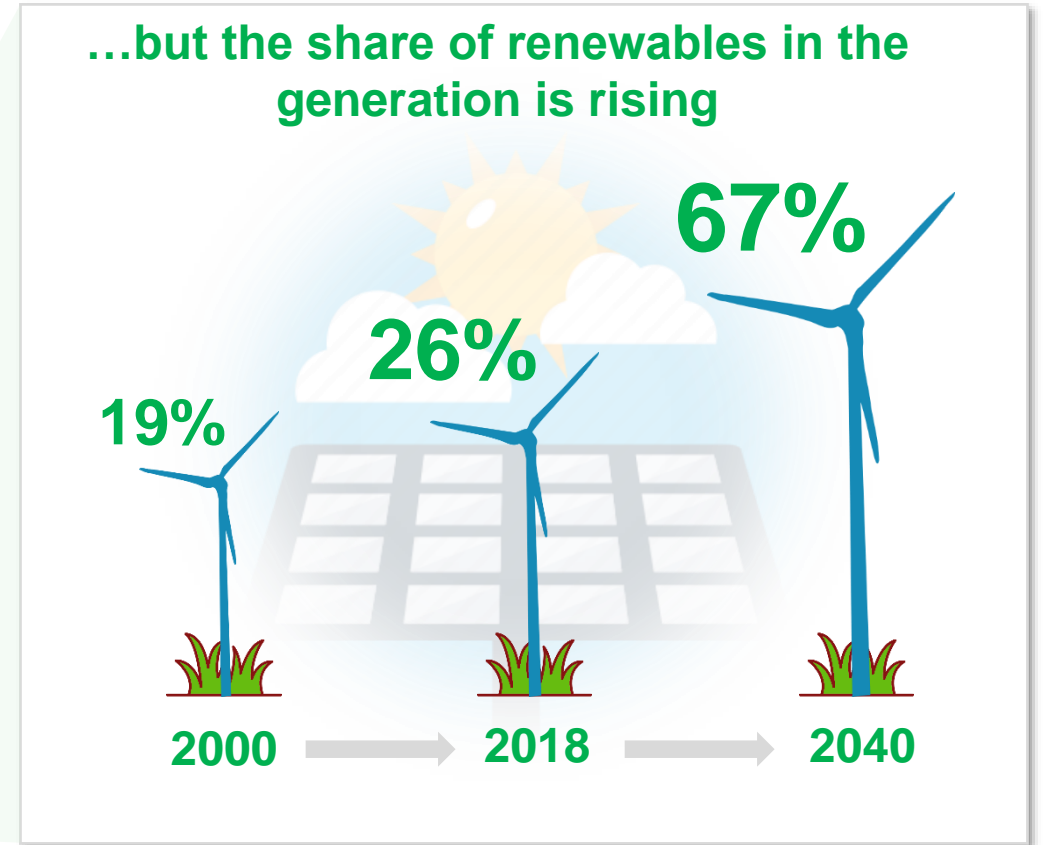- **68%** of the world's population will live in urban areas by 2050

The global economy faces mounting challenges

- **- 3.0%** real GDP growth in 2020
- **+5.8%** real GDP growth in 2021[1]

Covid-19 will have severe impact on economic activity in 2020

UNITED STATES
2,3 (2019) | -5,9 (2020) | 4,7 (2021)

EURO AREA
1,2 (2019) | -7,5 (2020) | 4,7 (2021)

MIDDLE EAST AND CENTRAL ASIA
1,2 (2019) | -2,8 (2020) | 4,0 (2021)

LATIN AMERICA AND THE CARIBBEAN
0,1 (2019) | -5,2 (2020) | 3,4 (2021)

SUB-SAHARIAN AFRICA
3,1 (2019) | -1,6 (2020) | 4,1 (2021)

EMERGING AND DEVELOPING ASIA
5,5 (2019) | 1,0 (2020) | 8,5 (2021)

Temperature increase has relevant footprint, sustainability into spotlight again after Covid-19 emergency

~ $ 7.9 trillion
Direct **global economy cost** by 2050

~ 250 thousands
additional deaths per year between 2030 and 2050

~ 1 billion
People with no access to energy today

> 35%
share of power sector **global energy related CO_2 emissions** in 2025

...but the share of renewables in the generation is rising

19% **26%** **67%**

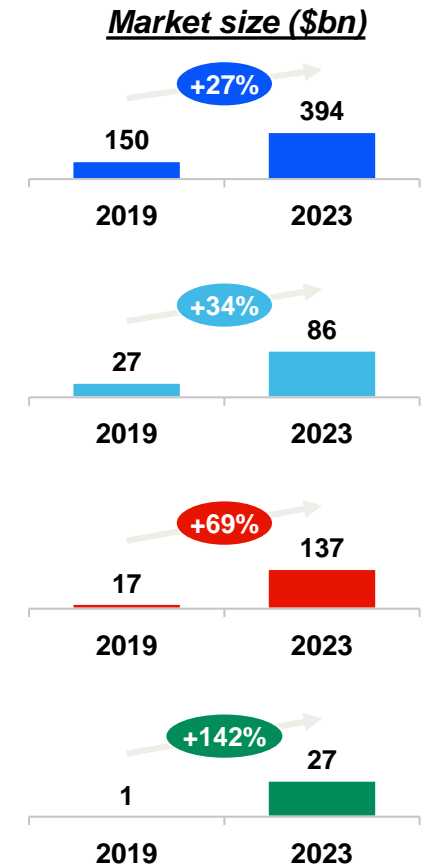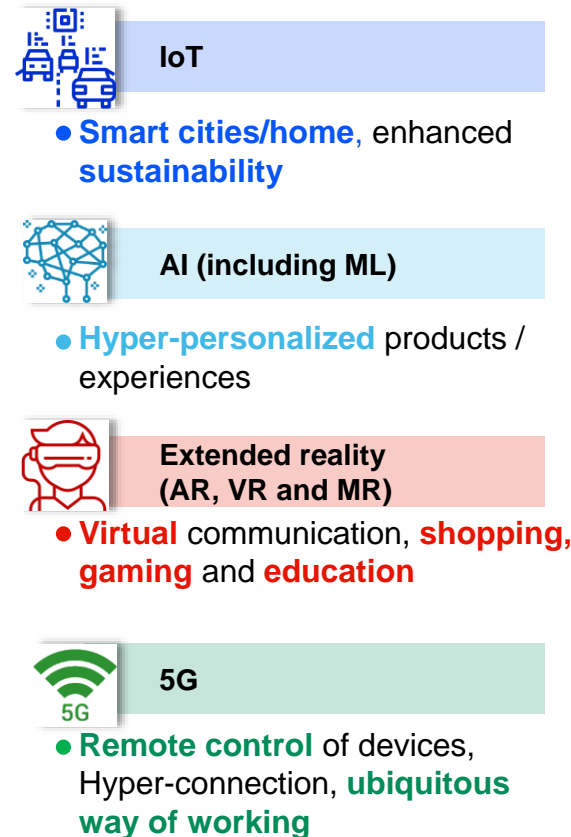**2000** ➡ **2018** ➡ **2040**
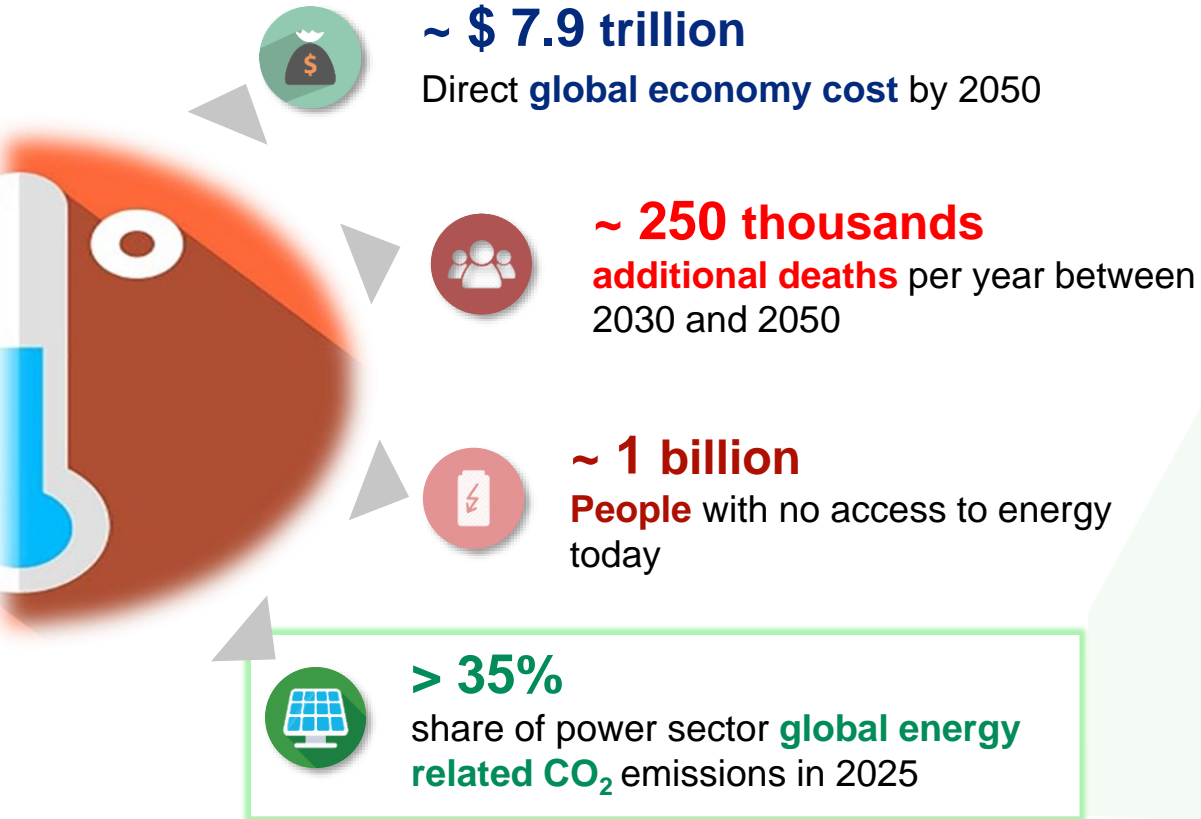
Scientists suggest that **air pollution** has significantly **worsened** the **Covid-19 outbreak**

Covid-19 has accelerated the advance of disruptive technologies

	Already adopted	To be adopted in the future	Not interested
IoT	47%	30%	23%
AI / ML	41%	39%	20%
AR / VR	27%	31%	42%
5G Network	20%	46%	34%
SW defined infrastructure	43%	29%	28%
Bots	39%	28%	33%
Cloud	49%	26%	25%

- Already adopted
- To be adopted in the future
- Not interested
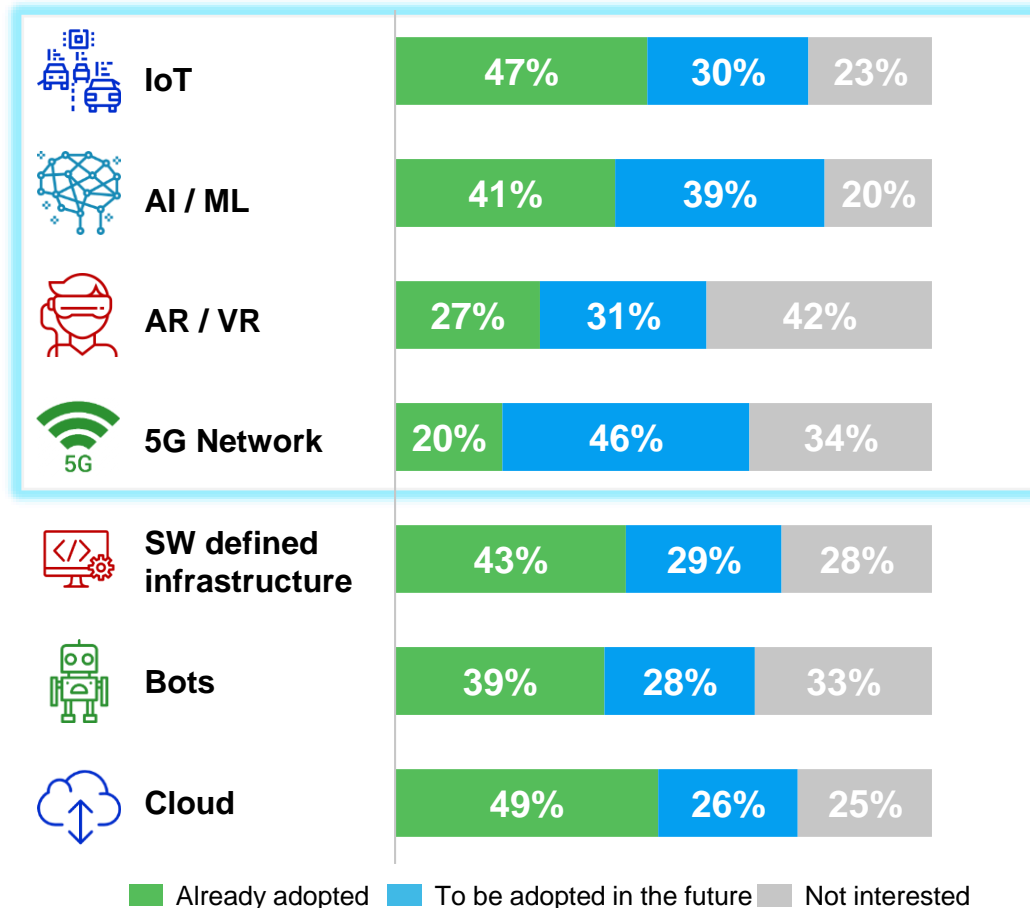
Technologies accelerated by Covid-19

Market size ($bn)

IoT
- **Smart cities/home**, enhanced **sustainability**

+27%
2019	2023
150	394

AI (including ML)
- **Hyper-personalized** products / experiences

+34%
2019	2023
27	86

Extended reality (AR, VR and MR)
- **Virtual** communication, **shopping, gaming** and **education**

+69%
2019	2023
17	137

5G
- **Remote control** of devices, Hyper-connection, **ubiquitous way of working**

+142%
2019	2023
1	27

SW defined infrastructure: technology infrastructure completely virtualized, unrelated from specific hardware components and extensible / programmable as a software
Note: Survey based on a panel of 702 IT decision-makers from a variety of industries, all with an average company size of > 14,000 employees
Source: IDG, 2019; PR News Wire, 2020; Market Watch, 2020; Allied Market Research, 2020; Kearney elaboration

Customer habits are changing, also boosted by Covid-19 issue

Wellness

Higher attention paid to personal needs: **eat well**, **get sleep**, **move more, stress less**

+ 26% : Online fitness

+ 10% : Telemedicine

~ 50% : Dedicate more time for family and their selves

Sustainability

Higher attention to **sustainable behaviors** influencing purchasing decisions

+79%[1] : Healthier and better for the environment products

**+80%[1]** : Reuse products rather than buying

Digital channels

Use of **digital channels** to **shop** and to receive **tailored offerings**

+ 27% : Digital payments

Leisure Time

More time at home, using online platforms to enjoy **digital contents** (e.g. Music, videos, films, games…)

- 25% : International Travel in 2020

+ 47% : Online streaming in 2020

Remote communication

Continuous **online interaction** leveraging on apps/tools

+ 30% : Video chatting

+ 19% : Remote learning
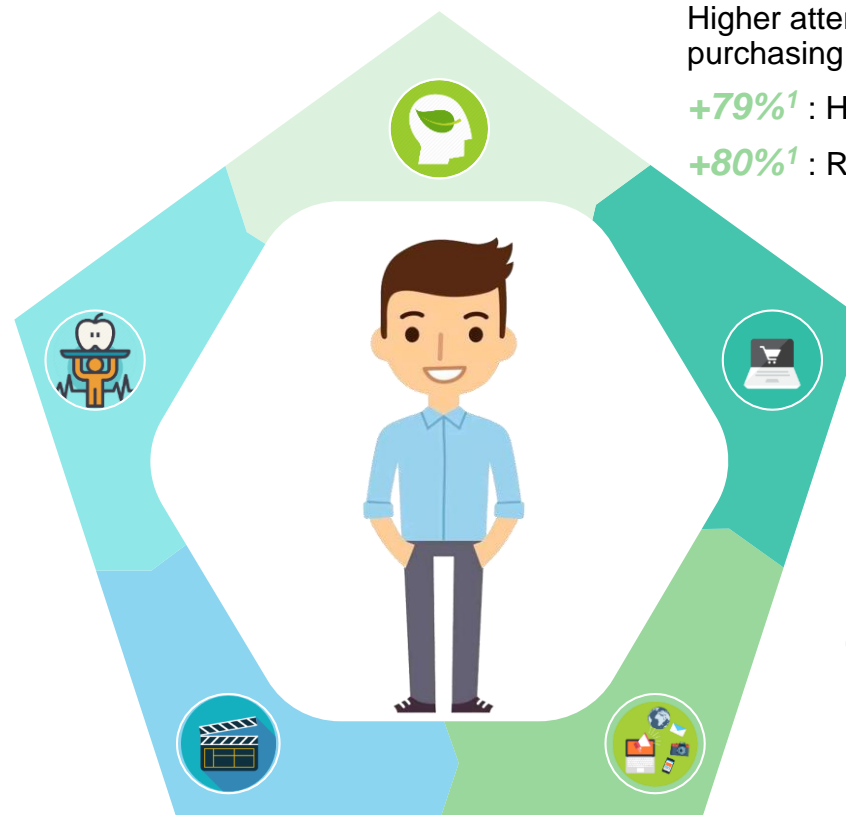
High growth for **digital** and **low-touch activities** that will become the **"next normal"**

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Enel positioning: leadership in the new energy world

End users
73 mn

1st network operator[1]

Renewable Capacity
46 GW

World's largest player in **renewables**[2]

Clients
71 mn

Largest retail **customers** base worldwide[3]

2019 EBITDA 17.8 €bn

1% 18% 26% 9% 46%
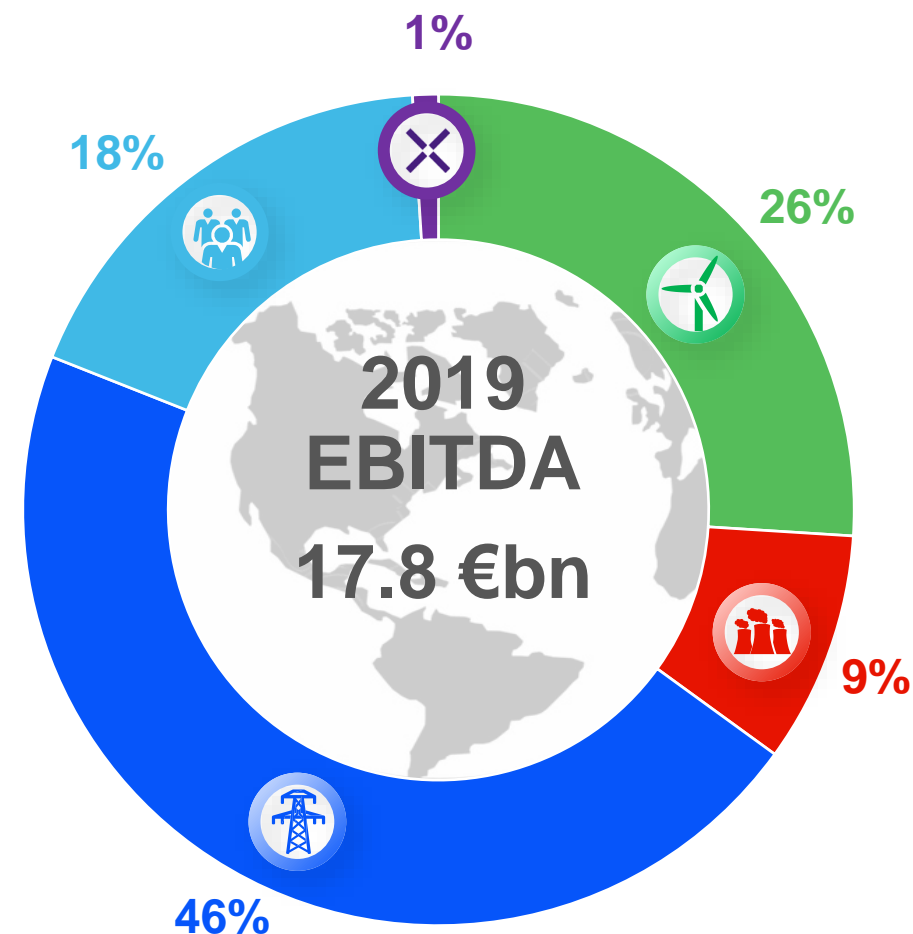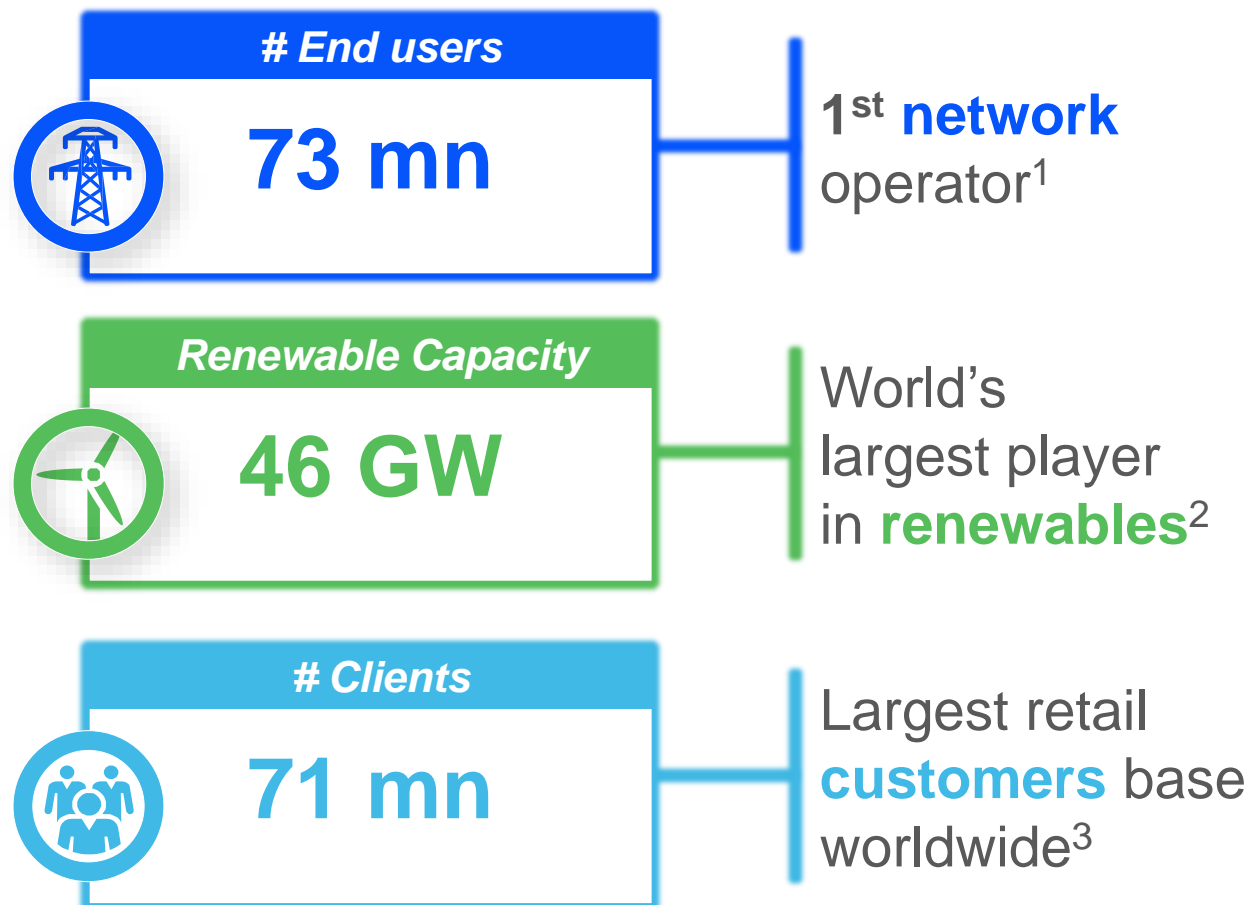
1. By number of end users. Publicly owned operators not included
2. By installed capacity. Includes managed capacity for 3.4 GW
3. Including customers of free and regulated power and gas markets

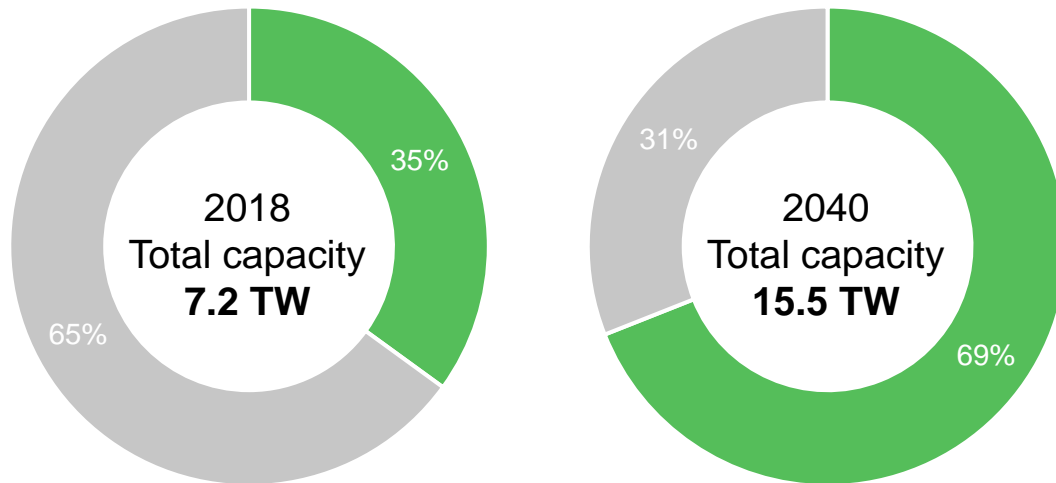# Our strategy: addresses dynamically the evolution of sector trends
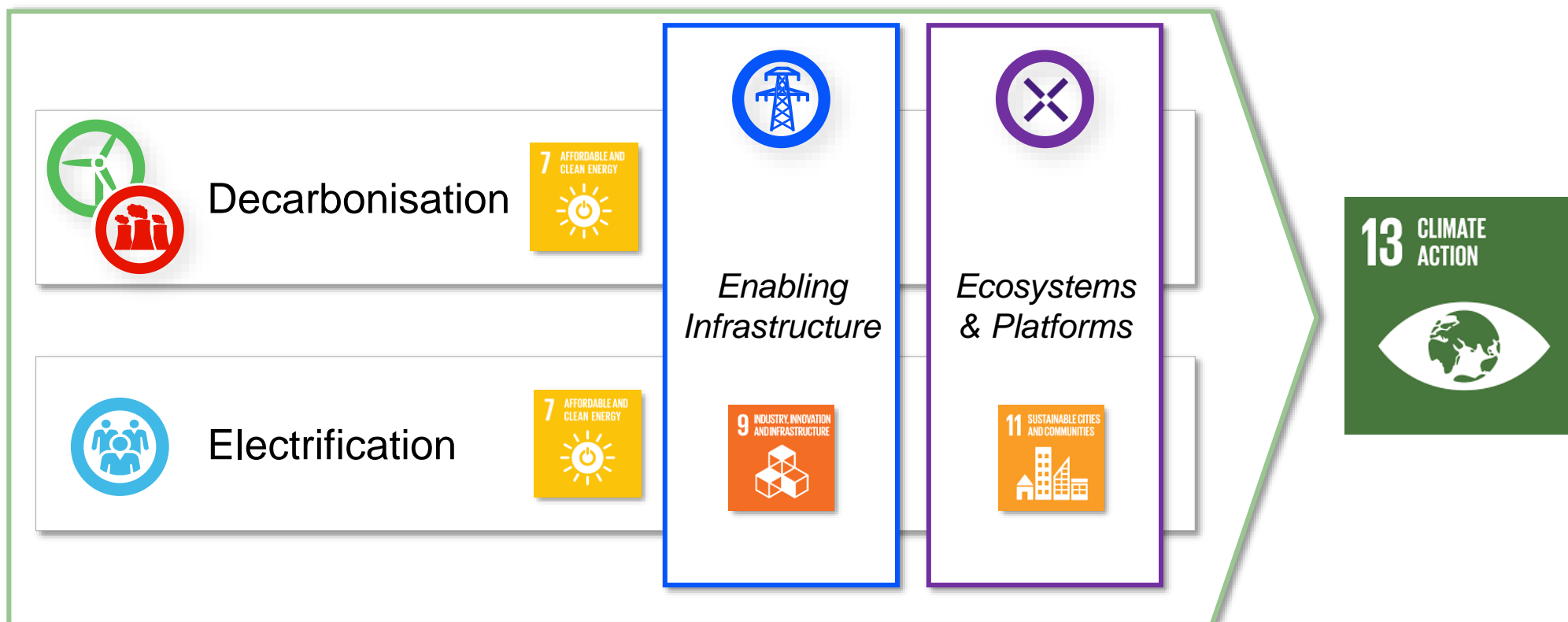
Our strategy: Generation

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Global outlook: decarbonisation through new renewable capacity

Our vision: full decarbonisation by 2050

Share of renewables on global capacity[1]

2018
Total capacity
7.2 TW

65%

35%

2040
Total capacity
15.5 TW

31%

69%

Global renewable installed capacity

4x

Scope 1 & Scope 3 CO_2 emissions evolution

13 CLIMATE ACTION

-70%

FULL decarboni-sation BY 2050

Scope 1[2]
(g CO_2/kWh)

2007	2017	2019	2020	2030	2050
465	411	296	254	125	

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Previous SBTi target

350 ✓

Scope 3[2]
(Mton CO_2)

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

16% indirect emissions reduction

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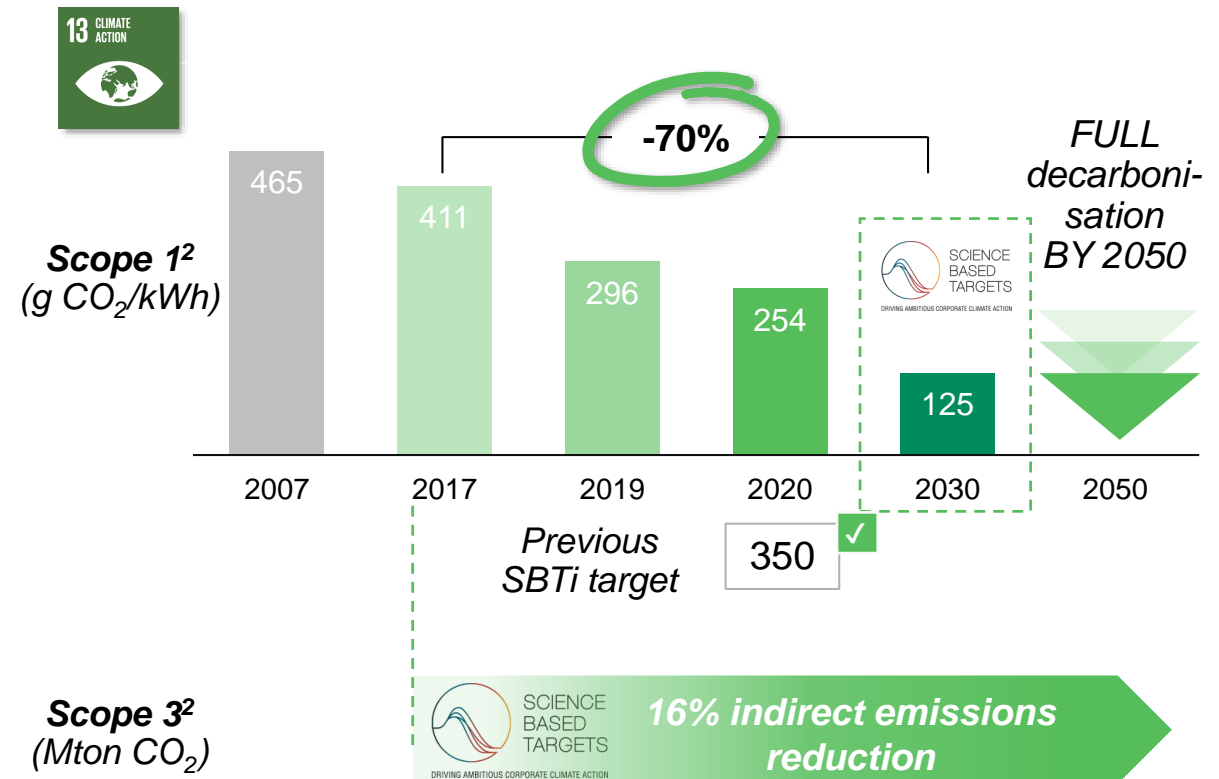
1. Source: IEA WEO 2019 SDS Scenario
2. Scope 1 by 2030, consistent with the Well Below 2C pathway of the Science Based Target Initiative and the IEA B2DS scenario
3. Scope 3 related to gas retail activities by 2030, consistent with the 2C pathway of the Science Based Target Initiative

✓ Target achieved

Our strategy: Distribution

Global outlook: networks as the backbone of a sustainable electric system

Energy system evolution

Aggregator

Wind/PV

DSO

TSO

Prosumer Prosumer Prosumer

Microgrids

Wind/PV
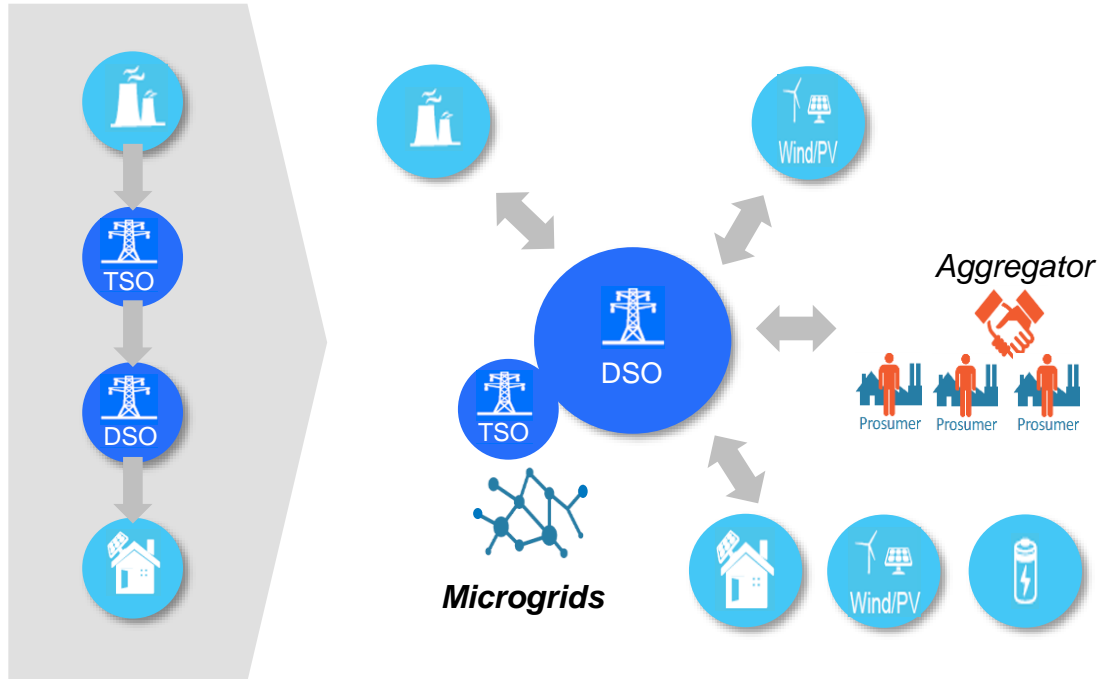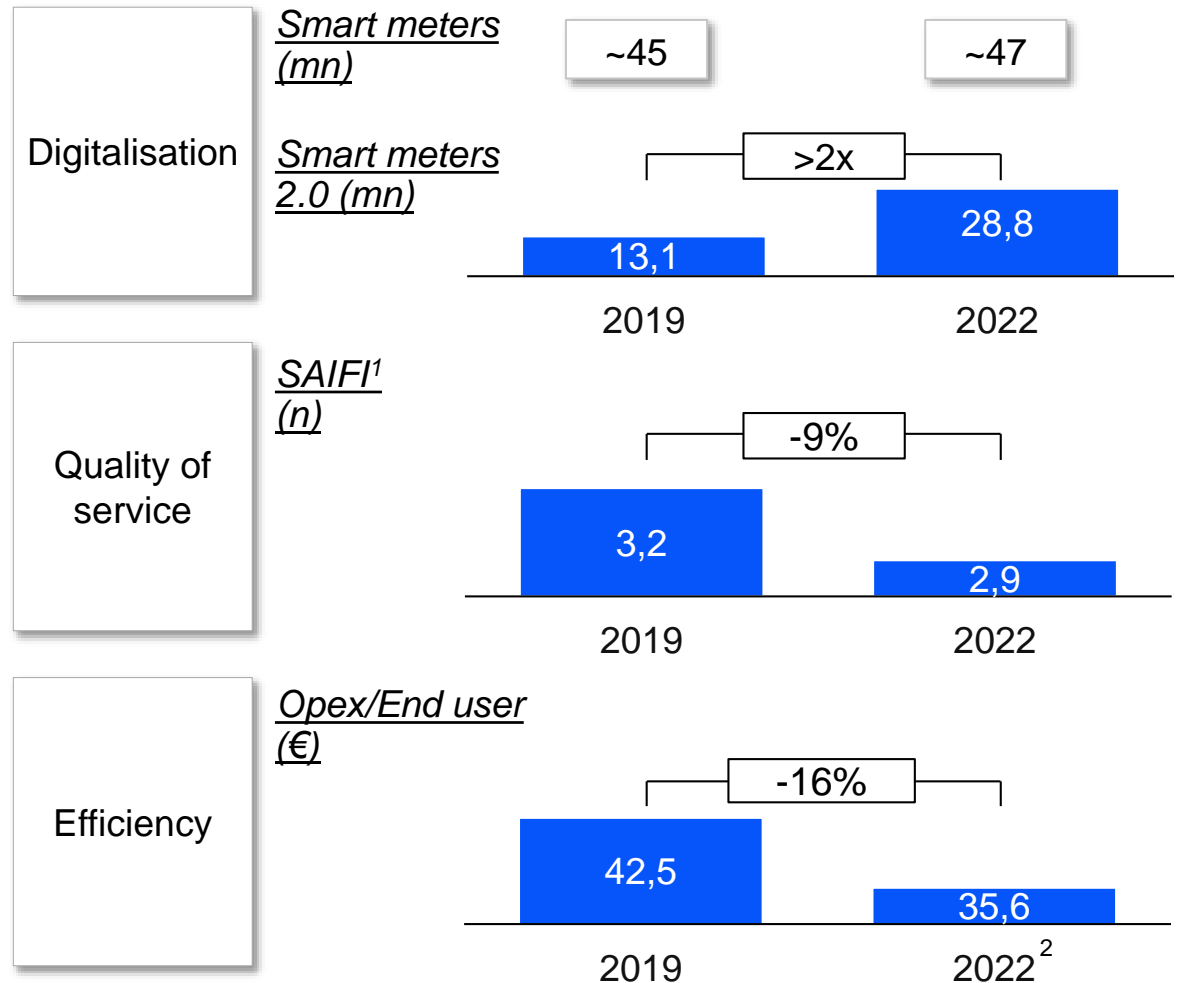
DSO role stands out as pivotal in the transition:
a key enabler and a unique value creation opportunity

Our vision: Development of Infrastructure & Networks centered on digitalisation, quality and efficiency

Digitalisation

Smart meters (mn)   ~45   ~47

Smart meters 2.0 (mn)   >2x

13,1   28,8

2019   2022

Quality of service

SAIFI[1] (n)   -9%

3,2   2,9

2019   2022

Efficiency

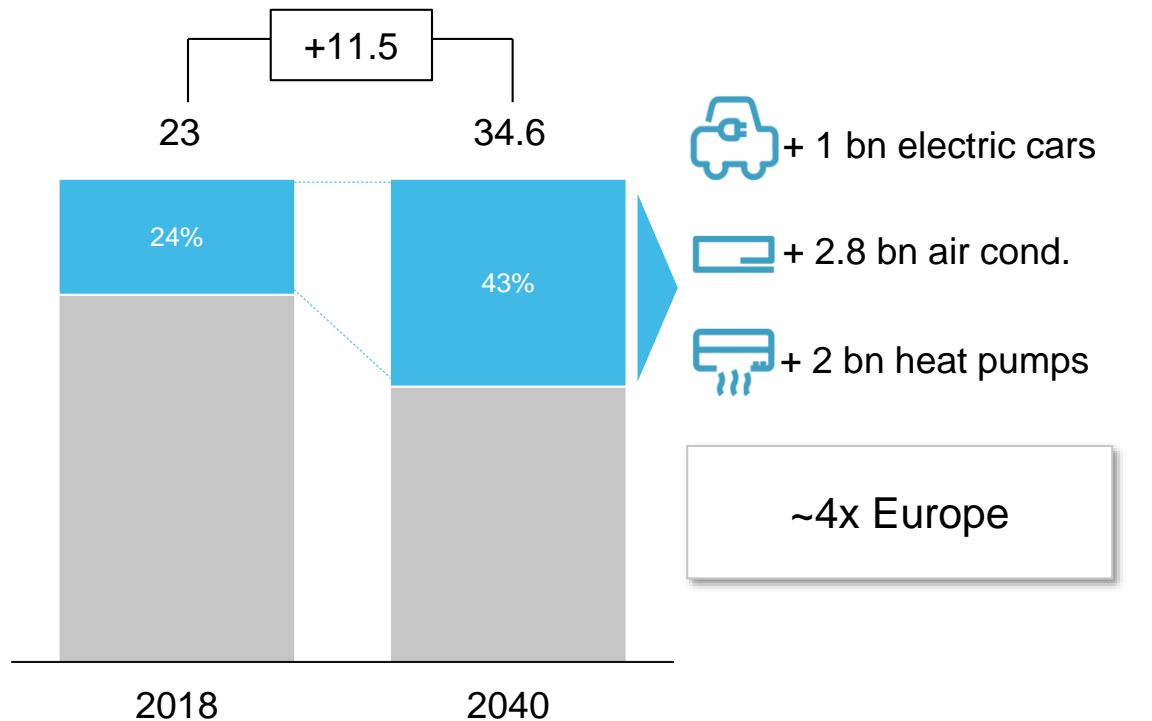*Opex/End user (€)*   -16%

42,5   35,6

2019   2022[2]

15

Our strategy: Sales

Global outlook: electricity is winning the energy battle

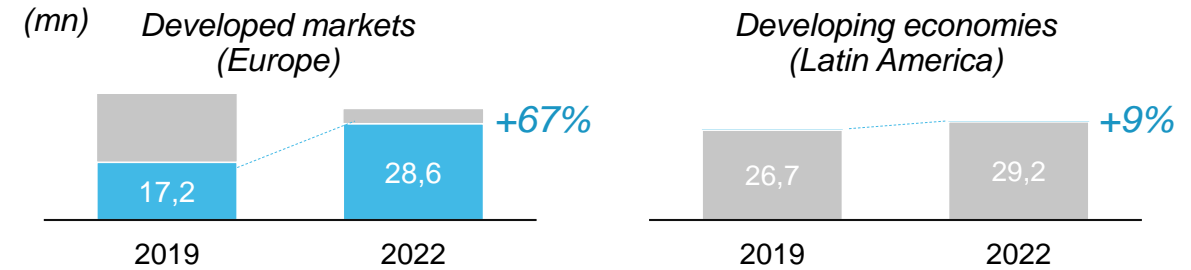Share of electricity on total final energy consumption[1]

('000 TWh)

+11.5

23 → 34.6

24% → 43%

+ 1 bn electric cars

+ 2.8 bn air cond.

+ 2 bn heat pumps

2018 — 2040

~4x Europe

Our vision: Retail will position ahead of electrification trends

Power customers

(mn)

Developed markets (Europe)

17,2 (2019) → 28,6 (2022) +67%

Developing economies (Latin America)

26,7 (2019) → 29,2 (2022) +9%

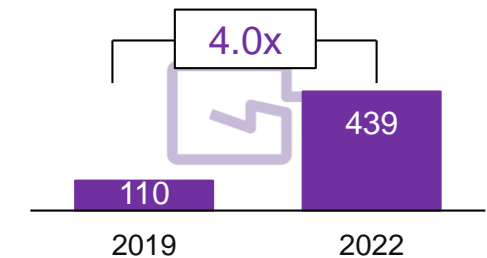## Our vision: New services enable decarbonisation and electrification of consumption

Decarbonisation through new services

Demand Response (GW)

1.6x

6,3 (2019) → 10,1 (2022)

Storage (MW)

4.0x

110 (2019) → 439 (2022)
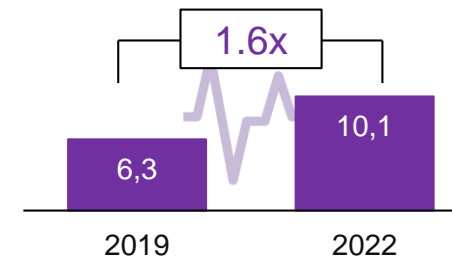
■ Free Power Market   ■ Regulated Power Market

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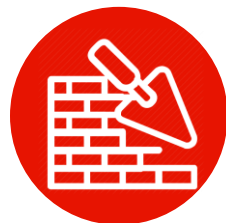# Enel digital journey started in 2016, now we focusing on platforms

Platforms
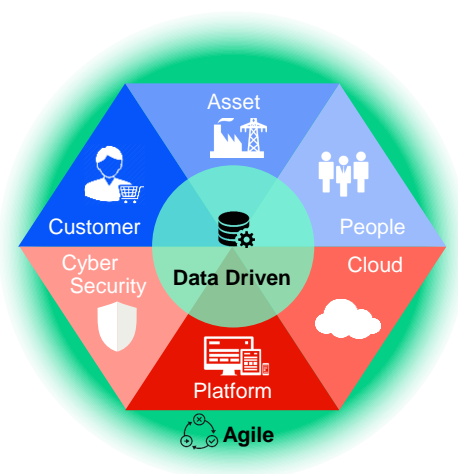*2019-2020*

Pillar and **Enabler**
2016

Agile and **Data Driven**
2017

Digital impact
2018

- **Platforms** to boost **digital impact and sustainable development**

- **Set the foundations** to enable Enel transformation

- **Digitalization at scale** to maximize the value

- **Defined** robust **digital strategy** and roadmap for digitalization

2016 diagram
Asset
Customer
People
Cyber security
Cloud
Platform

2017 diagram
Asset
Customer
People
Cyber Security
Cloud
Platform
Data Driven
Agile

2018 diagram
Asset
Customer
People
Cyber Security
Cloud
Platform
Digital impact
Data Driven
Agile

2019-2020 diagram
Asset
Customer
People
Agile
Cloud
Data Driven
Cyber Security
Platform

Enel digital strategy: results so far

enel
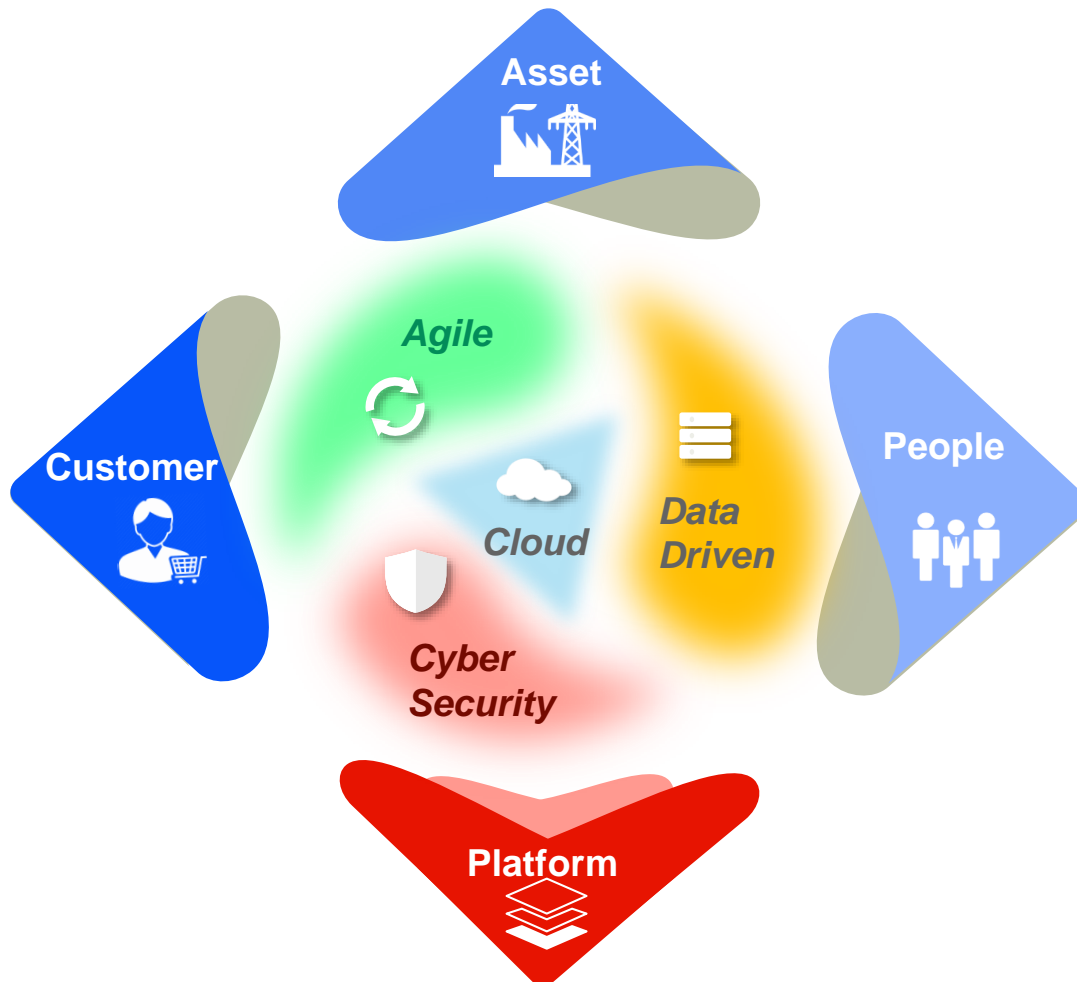
Full-digital customer operations and interaction channels (to provide info, sell new contracts, payments …)

Most digitized (**77%** of installed GW, **45 Mln smart meters**) allowing **real time control** and **remote intervention**

Re-design and dematerialization of main internal processes; strong **Unified Communication** and **Collaboration** based on platforms

Global **standard applications** to be locally **configured**

Full automation (more than 170 RPA and 150 AI models in production)
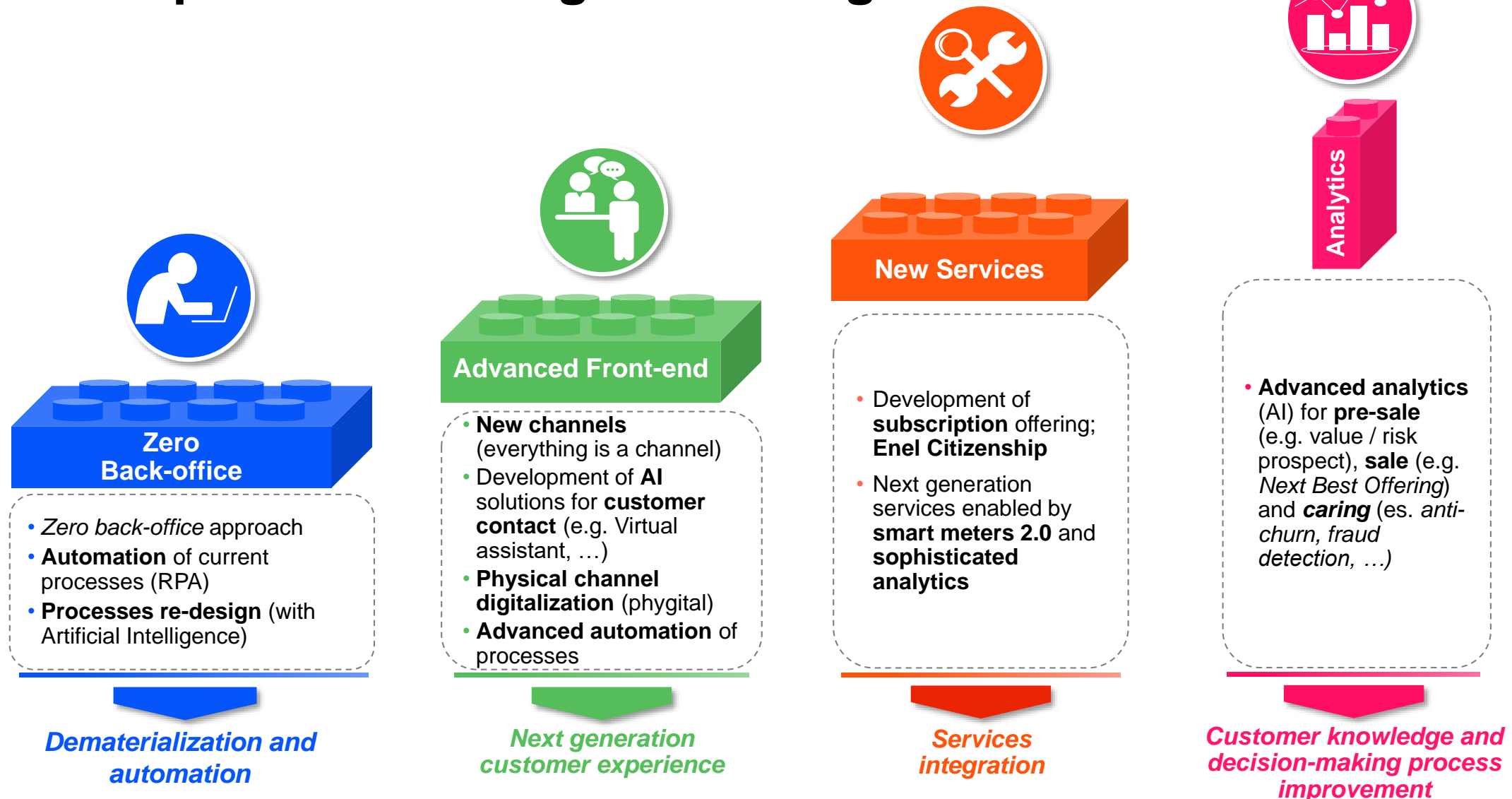
Agile **organization and development**

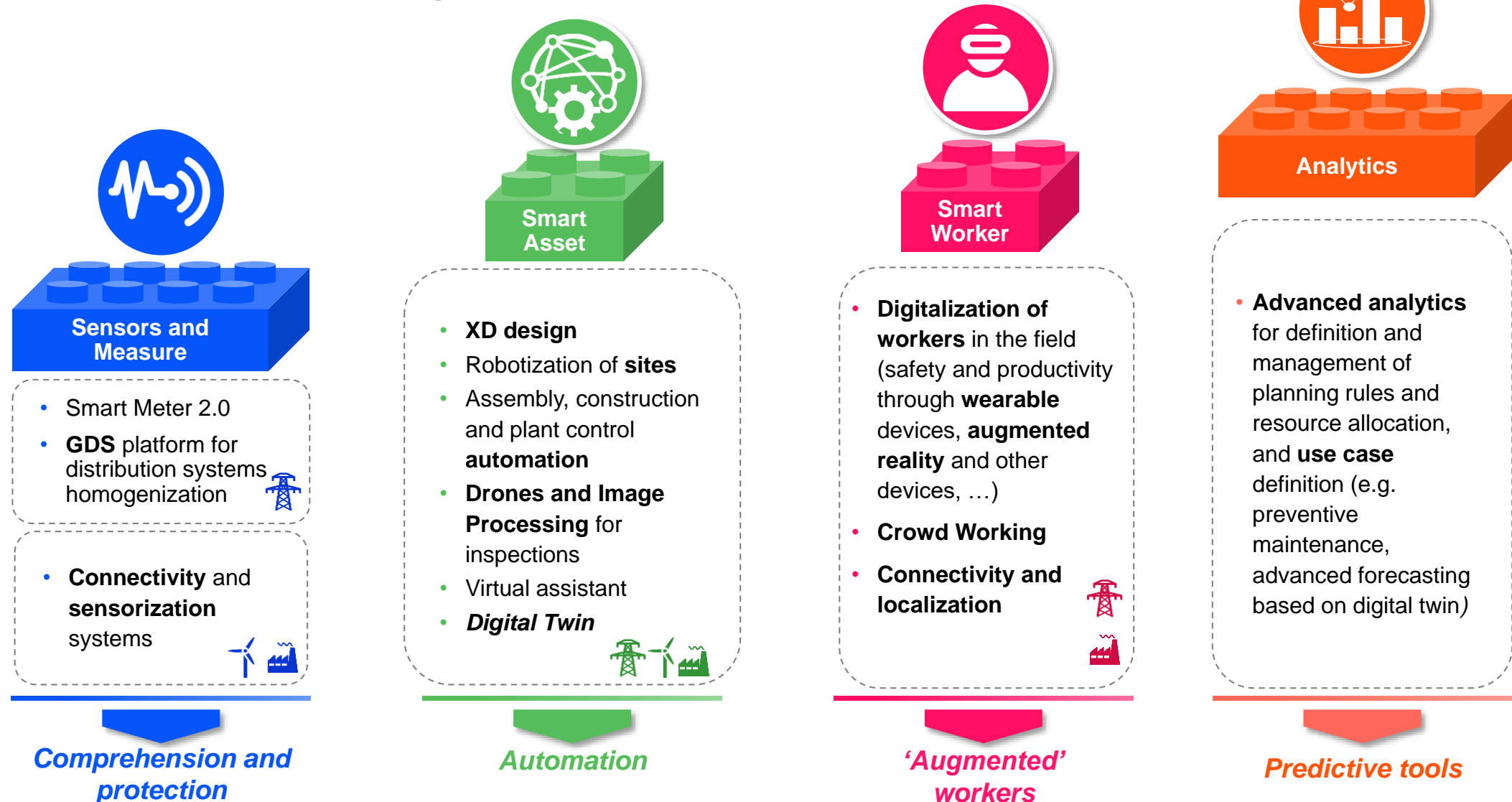**Cybersecurity by design** approach integrating **IT** and **OT**

Full cloud operating model (no server on premise); Cloud **TLC infrastructure based on SD-WAN; Full cloud contact center** infrastructure

RPA: Robotic Process Automation; AI: Artificial Intelligence

Customer: From CX redesign to the introduction of new personalized digital offerings

Zero Back-office

- *Zero back-office* approach
- **Automation** of current processes (RPA)
- **Processes re-design** (with Artificial Intelligence)

Dematerialization and automation

Advanced Front-end

- **New channels** (everything is a channel)
- Development of **AI** solutions for **customer contact** (e.g. Virtual assistant, …)
- **Physical channel digitalization** (phygital)
- **Advanced automation** of processes

Next generation customer experience

New Services

- Development of **subscription** offering; **Enel Citizenship**
- Next generation services enabled by **smart meters 2.0** and **sophisticated analytics**

Services integration

Analytics

- **Advanced analytics** (AI) for **pre-sale** (e.g. value / risk prospect), **sale** (e.g. *Next Best Offering*) and *caring* (es. *anti-churn, fraud detection, …*)

Customer knowledge and decision-making process improvement

20

Asset: From infrastructure set up to the creation of intelligent assets

Sensors and Measure

- Smart Meter 2.0
- **GDS** platform for distribution systems homogenization

- **Connectivity** and **sensorization** systems

Comprehension and protection

Smart Asset

- **XD design**
- Robotization of **sites**
- Assembly, construction and plant control **automation**
- **Drones and Image Processing** for inspections
- Virtual assistant
- *Digital Twin*

Automation

Smart Worker

- **Digitalization of workers** in the field (safety and productivity through **wearable** devices, **augmented reality** and other devices, …)
- **Crowd Working**
- **Connectivity and localization**

'Augmented' workers

Analytics

- **Advanced analytics** for definition and management of planning rules and resource allocation, and **use case** definition (e.g. preventive maintenance, advanced forecasting based on digital twin)

Predictive tools

People: From end user service model to E2E advanced automation

Zero Back-office

- **Automation** of current processes (RPA)
- **Processes re-design** (with Artificial Intelligence)

Dematerialization and automation

Advanced Front-end

- **Unique Front-end** personalized with access to all services
- **AI** solutions **on Front End** (e.g. Virtual Assistant, …)
- **Advanced automation**
- Collaboration **tools**

Employee experience improvement

New services

- **Extension and integration with other services related** to the People ecosystem (e.g. building services, internal mobility, kindergarten,…)
- **Virtual advisory** (from assistant to advisor)
- Innovative services based on **proximity marketing**

Employees involvement improvement

Analytics

- **Global platform of** people analytics, scalable and interoperable
- **Advanced analytics extension and predictive logic** (e.g. talent development, retention, …)

Employee knowledge and decision-making process improvement

Enel data driven journey to improve decision making process

3 *Full scale*

2 *Scale-up*

1 *Starting Point*

Launch of several **Advanced Analytics/Data Science** projects

Data Architecture: target model implementation

Data Governance: processes and roles definition, data catalog adoption

Data Culture: launch of data community, data communication and data training initiatives

Technology & Adoption: *Unified Virtual Data Lake* for all Group data and use cases development

Advanced approaches to decision making:

o **Advanced Analytics/ Data Science** spread in all Business Lines/Functions areas

o **Data driven approach** to get the most **throughout the value chain**

Today

✔ **Done**   ⋯ **In progress**

Enel is 100% over the Cloud, multi - cloud is the next step

Cloud Migration (2015-2019)

What's Next?

Transformation Results

From **weeks to hours** | *Provisioning time*

60% | *Automatic Service Request/ Total*

+152% | +136%
Computational capacity – volumes[1] | *Storage – volumes[1]*

-63% | -27%
Computing capacity – C.U.[1] | *Storage – C.U.[1]*

+0,2 p.p.
99,8% | *Service availability[1]*

-31% | *Reduction of energy consumption*

~ 500 | *Dismissed applications[1]*

Flexibility
Automation
Scalability
Efficiency
Reliability
Sustainability
Simplification

100% Cloud
from April 2019

Multi - Cloud

Seamless moving of instances between **different Cloud providers**

1. Variation referring to the period 2015 – 2019 1Q

Cybersecurity framework to provide Enel effective protection against attacks

Main Actions
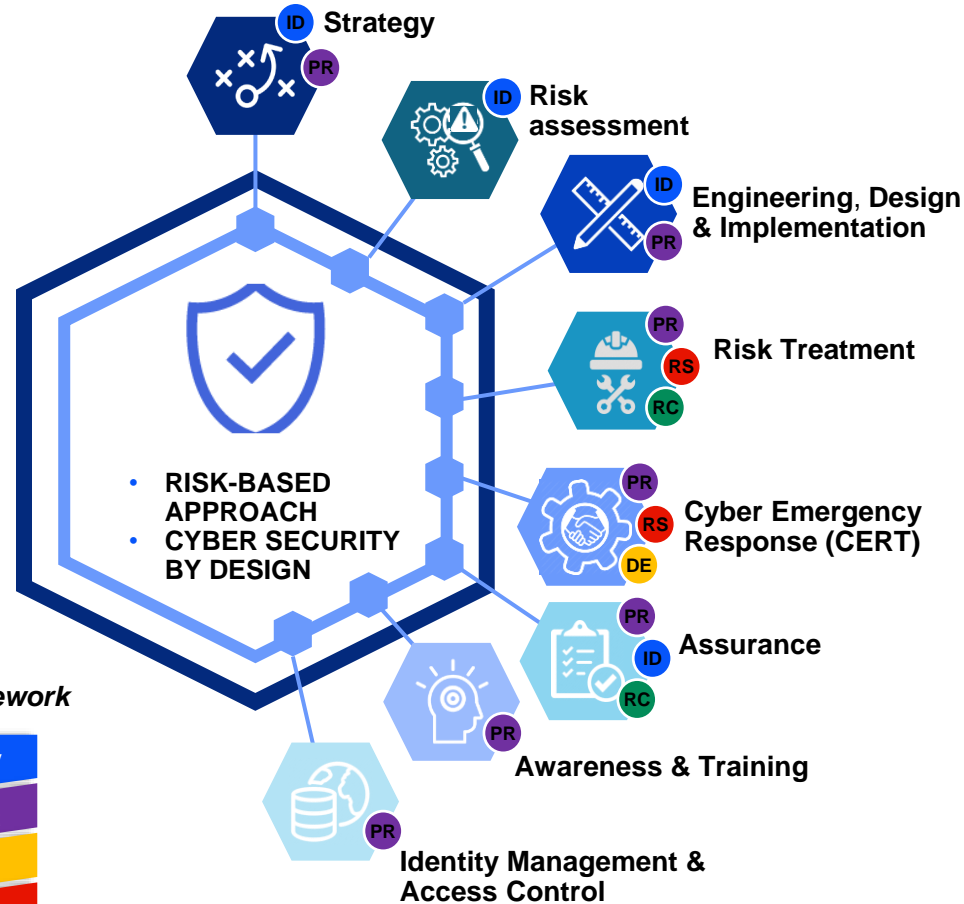
Strategy
- ✓ **NIS directive** compliance
- ✓ **Policy & Procedures**
- ✓ **Cooperation** with external stakeholder
- ➤ **KPIs**
- ➤ Cooperation **enforcement**

Risk assessment
- ✓ **+1000 /out** of 3800 BIA/RA
- ➤ **KPIs**
- ➤ **Enforcement of Ecosystem cooperation**

Engineering, Design & Implementation
- ✓ **Infr. Security measures**
- ➤ **OT Global Framework**
- ➤ **IT:** data driven protection

Risk Treatment
- ✓ **OT Treatment**
- ✓ **Basic remediation**
- ➤ **IT Treatment**

Cyber Emergency Response (CERT)
- ✓ **Global CERT**
- ➤ Faster **CERT adoption**

Assurance
- ✓ **~900** Ethical Hacking
- ➤ **Cyber Lab** empowerment

Awareness & Training
- ✓ **#15** awareness campaigns
- ➤ **Awareness platforms**

Identity Management & Access Control
- ✓ Identity **Mgmt. Platform**
- ➤ Empowerment of **identity controls**

- RISK-BASED APPROACH
- CYBER SECURITY BY DESIGN

NIST Framework

- Identify
- Protect
- Detect
- Respond
- Recover

Notes: NIST:National Institute of Standards and Technology; NIS: Security of Network and Information Systems; BIA: Business Impact Analysis; RA: Risk Assessment;
IMAC: Identity Management and Access Control System;

✓ *done*   ➤ *2020 Key actions*

Enel towards a platform company

DISTRIBUTION

RETAIL

ENEL X

Global Activities

Digital layer

Physical assets

Asset Owner

Asset Operator

Customer Management

Unique database & Network Digital Twin

Buy

Sell

Front End

Back end

Standardized Back Office

Customers

Prosumers

Suppliers & partners

Cities

Assets (e.g. charging stations)

Unique Customer Identity

Platformization process already started and will bring several benefits

Full Platform Business Model

Platform Operating Model

IT Platform

Pre-strategy Digital

...Enable...

Pre-strategy Digital
- Heterogeneous maps
- Local factories
- Customization
- Fragmented know-how and limited economy of scale

IT Platform
- Simplification
- Standards setting and enforcement
- Scalability
- Focus on re-use and configuration

Platform Operating Model
- Global solutions
- Global factories & capabilities orchestration
- Re-use, configuration
- Microservices, modular approach
- Know-how development

Full Platform Business Model
- "As a service" business model
- Value coming from product diffusion
- Infrastructure to enable exchanges between producers and consumers

Today

Digital is key for Enel sustainable development

Digital for energy transition

Asset
- Increase plants **productivity and safety**
- Increase **predictability** of production (es. from renewables)
- **Distributed assets orchestration** (generation and storage)

Customer
- **New services offering** (e.g. Demand Response Storage, …)
- Relationship **dematerialization** (paperless)

People
- **Smart working**
- **Dematerialization** (paperless)
- **Contact** and **collaboration virtualization Safety**

SDGs impacted

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES

13 CLIMATE ACTION

SDG: Sustainable Development Goals

Key Takeaways

- **Digitalization**, also boosted by Covid-19 crisis, **is accelerating** with relevant impact on countries, organizations and people

- Evolving towards a **platform company** is our goal to enhance **digital impact** and to promote **sustainable development**

- An **ecosystem of partners** is key: success is the result of a **continuous learning experience** carried out together

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Thank You

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1 Leading the energy transition

2 Procurement Challenges 2020

3 Focus on Global Digital Solution

Agenda

1 Leading the energy transition

2 Procurement Challenges 2020

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Our strategy addresses dynamically the evolution of sector trends

Decarbonisation

Electrification

Enabling Infrastructure

Ecosystems & Platforms

~ 95% of capex SDGs related
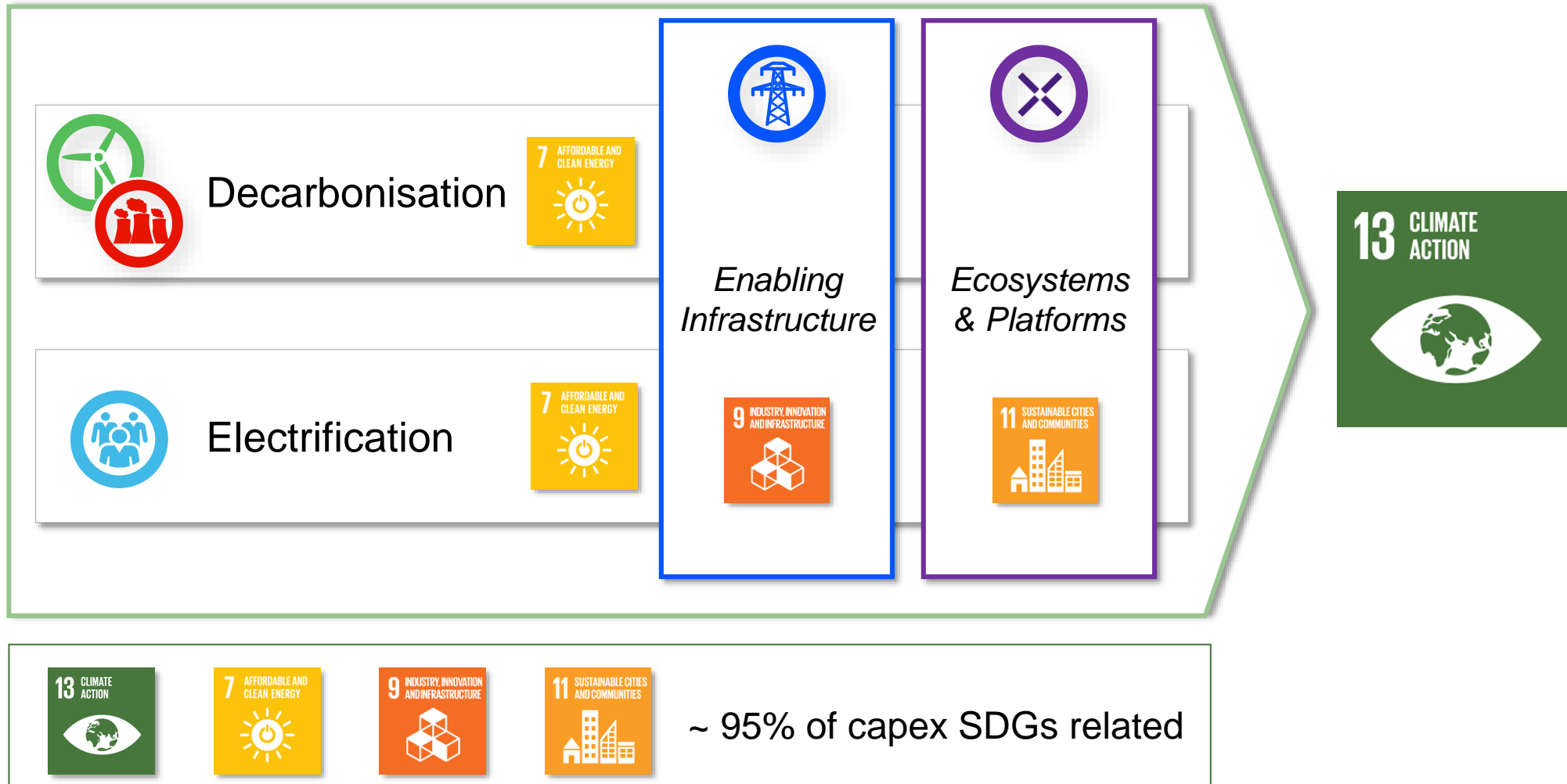
Enel's stock performance

2015-2020

Enel share price (€)

83 market capitalization in 2020 (bn€)

Enel launches the world's **first "general purpose SDG linked bond"**
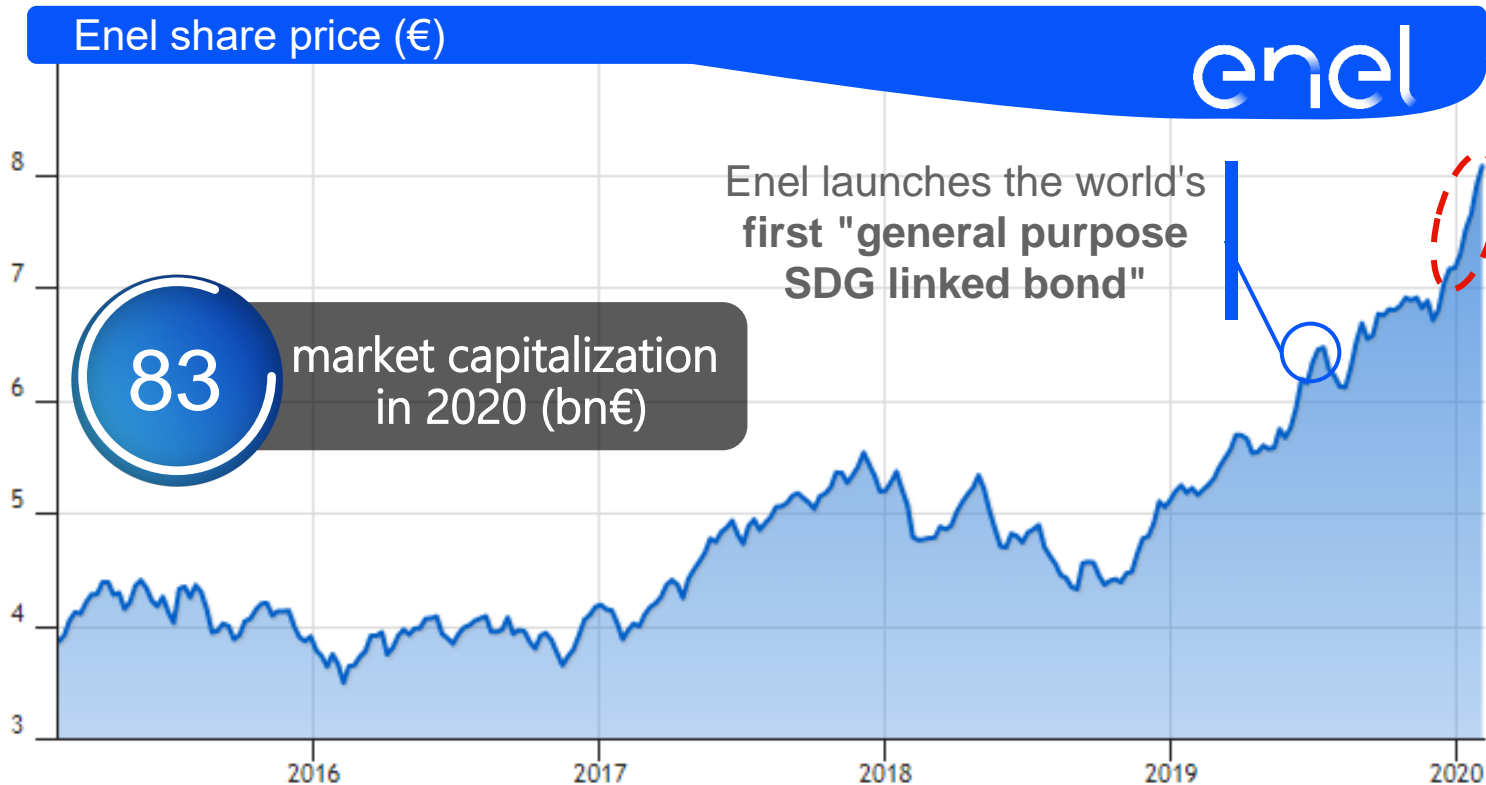
January YTD performance: +12%

CREDIT SUISSE
"Our analysis of ESG/SDG policies of Europe's utilities shows **Enel as a top performer**"
TP 8.0 €

Morgan Stanley
"ESG Matters: carbon and renewables impacting **capital allocation and valuations**"
TP 7.5 €

J.P.Morgan
"Energy transition brings a **multi-billion, multi-year growth opportunity**"
TP 7.6 €

BANK OF AMERICA
"Emission impossible? Climate change **threat becomes opportunity: >$2tn market in 2020s**"
TP 8.85 €

Goldman Sachs
"Towards net zero: reshape the economy and support rerating of **Climate Champions like Enel**"
TP 8.1 €

Enel's stock performance

Share price evolution vs main indexes

Legend: Enel, FTSE MIB, Euro Stoxx Util.

-12%
-14%
-27%
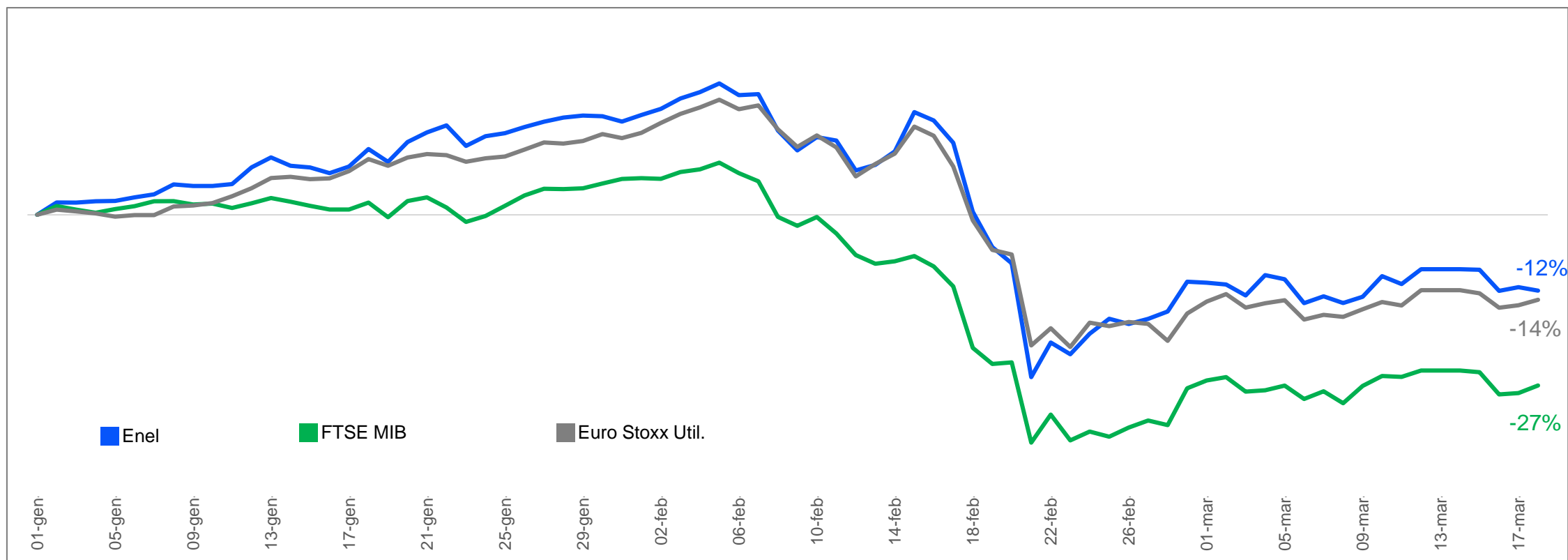
Enel strategy and the commitment on Sustainability

"There is a perfect alignment between values that we all share, economy that demands this and finance that wants this.

Our investments in the green and sustainable economy show that it is not only a good thing to do but also brings results "

" Sustainability = Value

Our delivery over time "

1	**Leading the energy transition**
2	**Procurement Challenges 2020**
3	**Focus on Global Digital Solution**

Agenda

What role we want to play as global procurement?

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Promoters and key players to extend Sustainability to the entire supply chain

Enel spending

~1%
Italy GDP
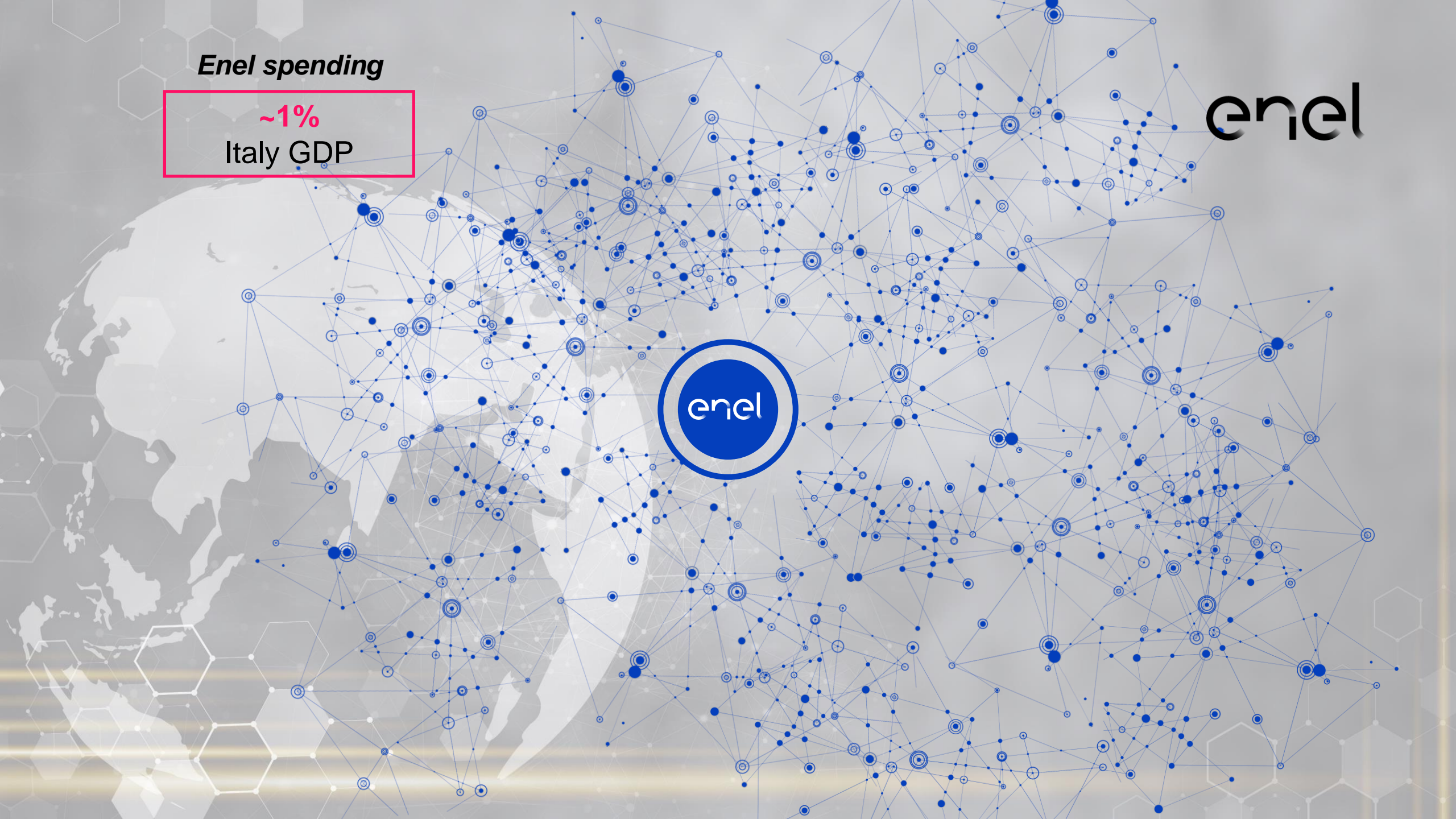
Enel + Tier 1 spending

~15%
Italy GDP

enel

Enel + Tier 1 + Tier 2 spending

~20%
Italy GDP

enel

Enel + Tier 1 + Tier 2 + Tier 3 spending

~25%
Italy GDP

enel
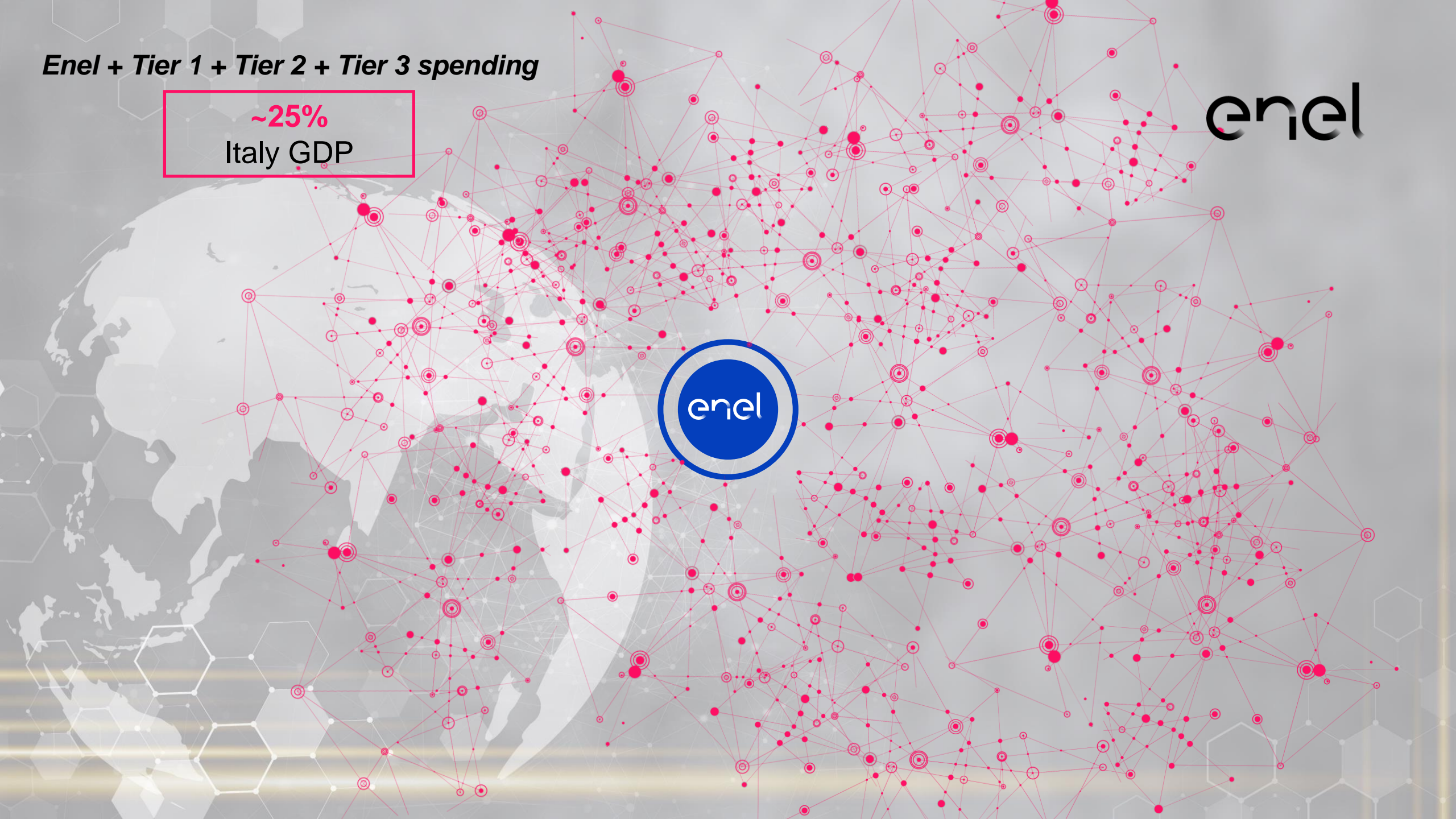
Our role for a sustainable supply chain

Coverage and Results – Global Procurement

Coverage

Contracts K references
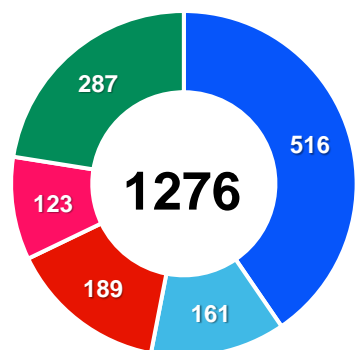
Total: **1276**

- 516 — Certification (blue)
- 161 — Health & Safety (light blue)
- 189 — Environment (red)
- 123 — Social (pink)
- 287 — Circular Economy (green)

Legend:
- Certification
- Health & Safety
- Environment
- Social
- Circular Economy

Coverage on contracts *
326 — 18%
contract with k

Coverage on amount
519 M€ — 43%
Amount with k

* Commitment rate suppliers ~80%

Contracts split by Global Business Line

Coverage on contracts

■ % contract #   ■ % amount
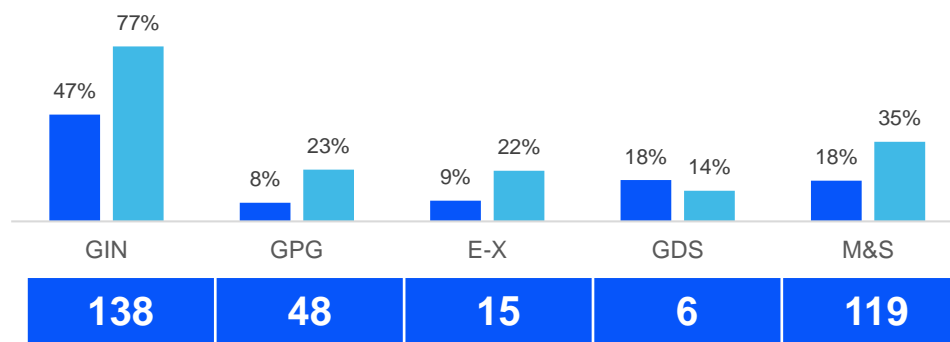
	GIN	GPG	E-X	GDS	M&S
% contract #	47%	8%	9%	18%	18%
% amount	77%	23%	22%	14%	35%
# Contracts with K	138	48	15	6	119

Tender on Going

- **995** # K
- **350** # Tenders with K
- **6,5B** Total Amount

Results

■ Results   ■ Potential   ■ Potential 2019

	Results	Potential	Potential 2019
AUTOCESTELLI	14		
REC. MATERIAL AND WASTE (ton)		65	
EPD		53	20
ISO37001/27001/20121	22	10	
OHSAS 18001	80	99	245
ISO14064-67	14	35	141
ISO 14001	101	52	260
ISO 9001	65	21	123
Others		64	
HIRED	609	88	554
CO2 red. (ton)	20	118	45932
TREE	300	4500	21590
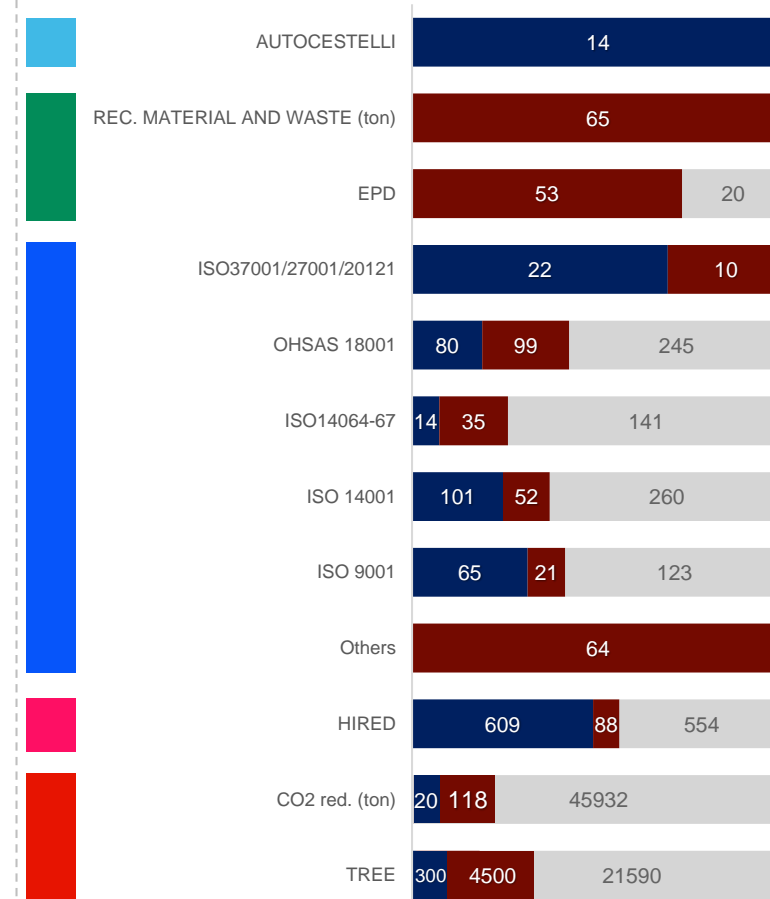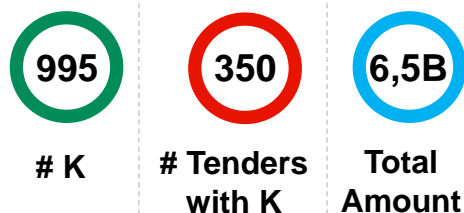
Our role for a sustainable supply chain

Coverage and Results – GDS

Coverage*

Contracts K references
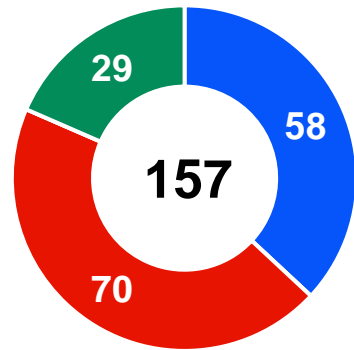
157

- 58
- 70
- 29

- ■ Certification
- ■ Health & Safety
- ■ Environment
- ■ Social
- ■ Circular Economy

Coverage on contracts

6 5,2%

contract with k

Coverage on amount

4 M€ 6,1%

Amount with k

Contracts split by Global Purchase Unit*

- ■ Coverage on Contracts
- ■ Coverage on Amount

Global	ITA	IBE	ARG	BRA	CHI	COL	PER	ROM
5	0	1	0	0	0	0	0	0

Contracts with K

Tender on Going

28

K

9

Tenders with K

703

Total Amount

Results**

- ■ Results
- ■ Potential

Cetification (#)	3
Circular Economy Projects (#)	1
plastic not used (Kg)	1037,5
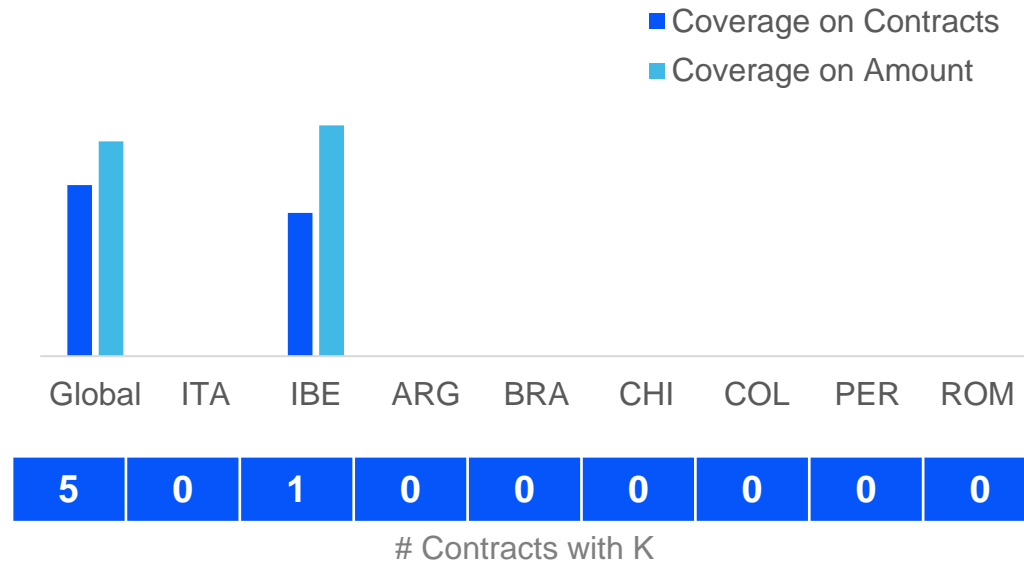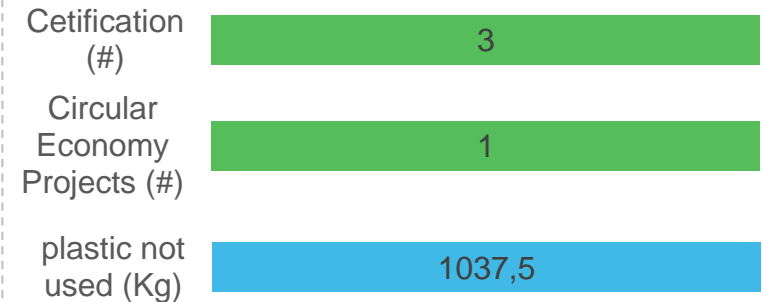
- ■ 3 Certifications received for Global Tenders.
- ■ 1 Circular Economy project for the Global Printing Service.
- ■ ~ 1 t will be reducing in electronic equipment packaging.
- ■ Social Inclusion commitment on: unemployed first job, gender mix, disabled, migrants.
- ■ Work life balance commitment: kinder garden at offices, smart-working.

*Processes awarded in 2020   ****Active contracts with any sustainability K with impact on 2020**

Supplier Performance Management - SPM

Scope

A Key element to strengthen Supplier Relation Management reducing risks while improving performance as well as rewarding excellences
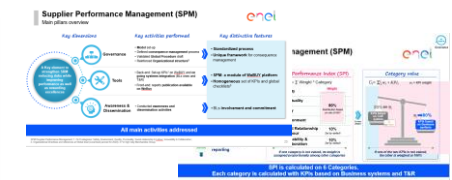
Dimensions

Supplier Performance Index (SPI) is calculated on 6 Categories.

Each category is calculated with KPIs based on Business systems and Track&Rate
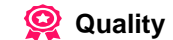
- Quality
- Environment
- Punctuality
- Safety
- Human Rights & Correctness
- Innovability & Collaboration

When it starts

SPI calculation started since Nov 2019 to fine tune the model

Consequence management starts on July 2020 after performance data publication on WeBUY

Consequence management

The performance is evaluated monthly based at contract level (short term) as well as considering last 12 months at MG level (long term)

In July the short term consequence management will start on contracts having at least 4 months of hystorical data.

Main challenges 2020

SUSTAINABILITY
Extend sustainability to the entire supply chain (sustainability K, Circular By design, Circularity)

DATA QUALITY
Focusing the organization on the sensitivity of the number and its quality

ENEL & SUPPLIER FOR SUSTAINABLE VALUE
Supplier Development Program and Supplier Journey

SUPPLIER PERFORMANCE MANAGEMENT
Extend use of Track & Rate across the entire supplier base
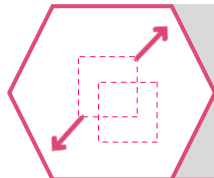
WeBUY
Complete the roll out of the System in all the countries according to the roadmap

1 Leading the energy transition

2 Procurement Challenges 2020

3 Focus on Global Digital Solution

Agenda

Global Player Role

Feedback & key messages

What we have done so far

- Internal multi functions meetings & pre-tender **meeting with Suppliers**
- Definition of **contractual standard models tailored** to each Country
- Indication by the bidder of the local company in each country **during the technical offer**
- **Acceptance of Local contractual standard during the tender** procedure
- For each country the **contract will be issued only to one legal entity**

Contract localization

Professional Services

- We've achieved the 2019 objective
- On average we're signing all contacts of Global / Regional tenders **within 2 months**.
- 8 tenders localized from 2018

**2018 I&N:
75 contracts localized
in 75 days**

**2020 Market Latam:
78 contracts localized
in 59 days**

TLC, SW & Platform

- On average we're signing all contracts of Global / Regional tenders in **more than 2 months.**
- 15 tenders localized from 2018

Actions needed to improve

What Enel expects from you

Enel is looking for suppliers that **act more as global players:**

- Involving all their branches/subsidiary during the tender
- supporting us with more force to improve both localization lead times and local translation in accordance to the global Framework (both as technical specifications and as T&C)
- managing all the issues in each country also during the contract execution

52

New Tendering Process

Results

Global Procurement

Lead time (dd)

- **-85%**
- **-65%**
- **-50%**

175 (Spot orders, 2017)
44 (Spot orders, 2019)
26 (Spot orders, 2020 ytd)

247 (Light tenders, 2017)
93 (Light tenders, 2019)
86 (Light tenders, 2020 ytd)

284 (Full tenders, 2017)
143 (Full tenders, 2019)
143 (Full tenders, 2020 ytd)

- 2017 (dd)
- 2019 (dd)
- 2020 ytd (dd)

Spot orders   Light tenders   Full tenders
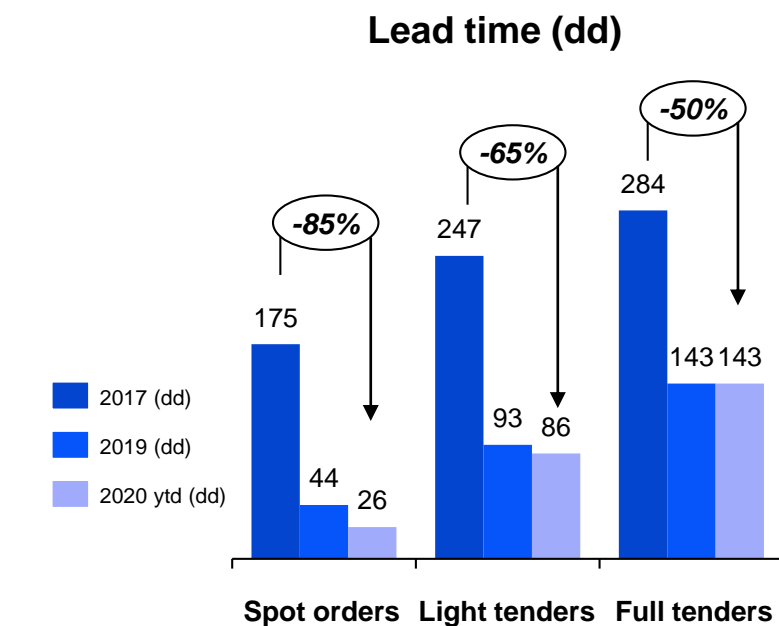
	Spot orders	Light tenders	Full tenders
# Tenders 2019	1144	1055	305
# Tenders 2020 ytd	488	621	253

Focus Global Digital Solution

Lead time (dd)

- **-65%**
- **-1%**
- **+41%**

77 (Spot orders, 2019)
27 (Spot orders, 2020 ytd)

125 (Light tenders, 2019)
114 (Light tenders, 2020 ytd)

180 (Full tenders, 2019)
254 (Full tenders, 2020 ytd)

- 2019 (dd)
- 2020 ytd (dd)

Spot orders   Light tenders   Full tenders
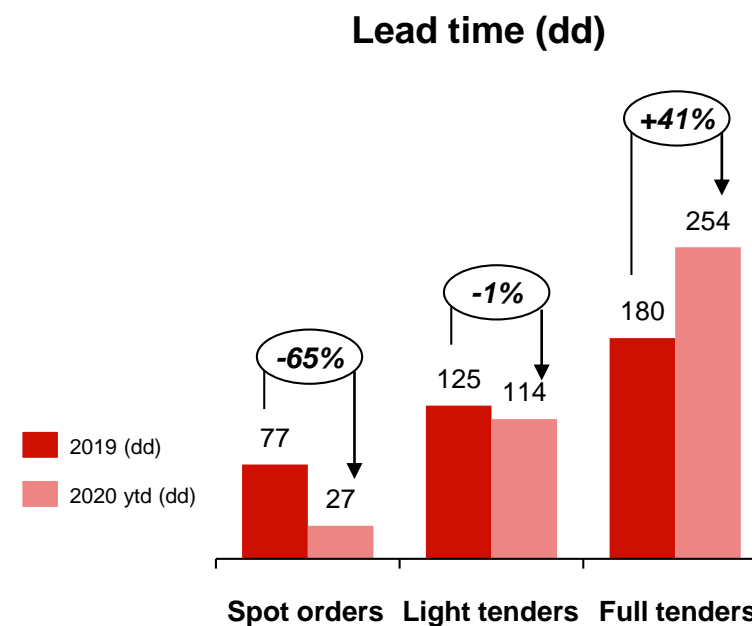
	Spot orders	Light tenders	Full tenders
# Tenders 2019	30	21	18
# Tenders 2020 ytd	13	10	6

Clear Lead Time reduction on Tenders. To work on GDS Full tenders (TLC and SW&PL)

New Qualification Process

Results

Global Procurement

Focus Global Digital Solution

Lead time (dd)

-78%

-61%

-42%

125   125   125

32   27   67   49   78   72

Fast track   **Standard**   **Advanced**

- 2017 (dd)
- 2019 (dd)
- 2020 ytd (dd)

of qualified

5172 suppliers (8985 RFQ) (7% rejected)

68 New Innovative Firms (avg LT: 22 dd)

MG qualification rollout

- # MG
- # MG qualified

1000

	650				
650	230	**615**	**554**	**681**	
350	420	142	20	20	680
		473	534	661	

set-18   feb-19   giu-19   set-19   dic-19   mar-20

Open MGs: **680** (incl. ~ 150 ex-scout.)

All MGs with qualification requirements

Lead time fast track (dd)

35

23

14

2018   **2019**   **2020 YTD**

Clear Lead Time reduction on Qualification. Objective 100% qualified suppliers

Supply Base Evolution
Focus on Global Digital Solution

What are we doing

1 **Review** the association **rules for the RTI** to ensure **greater participation** in the tenders.

2 Provide **reward mechanisms** in case of participation in association with **New Innovative Firms and / or Start up**.

3 Inclusion of **specific mechanisms** in some important tenders (Specific Lots, Integration rules) , for improving the SMEs participation.

4 **Review** of SW and Cloud **qualification requirements** to include small-medium size vendors.

Qualified Suppliers Evolution

TLC 17%
SW&PL 24%
PS 59%

<2018	2018	2019	2020YTD	actual
239	198	202	69	709
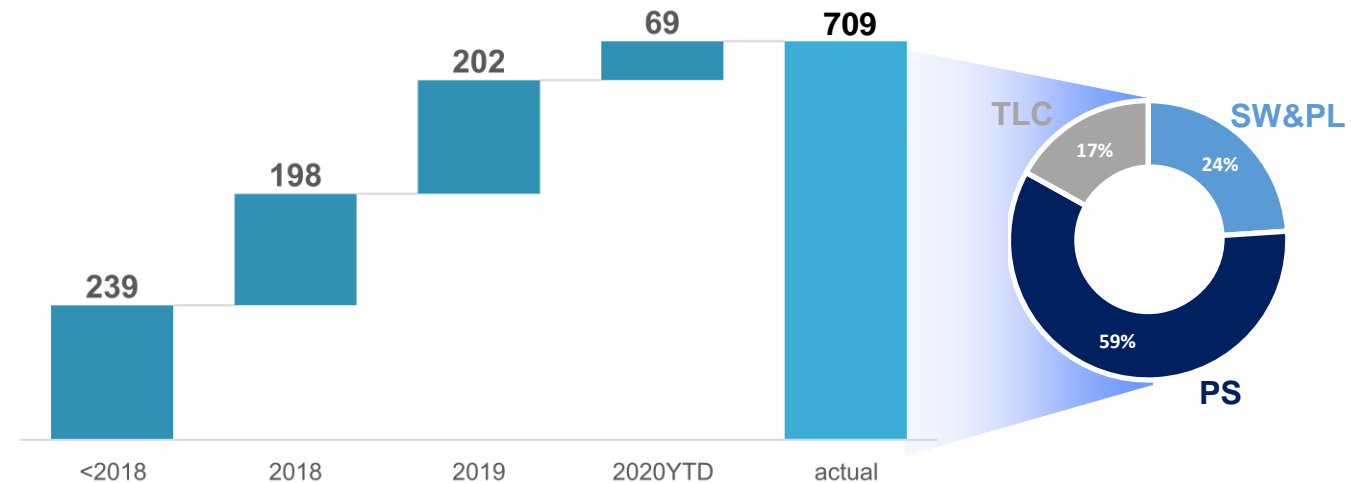
POC Contracts

24 Awarded   **10** To be launched

Innovative companies awarded for PS Tenders

10

Design To Value

Main 2019 Results

✔ **7 Projects Completed**

✔ **+20% Valid Offers**

✔ **Higher quality of technical offers: +6%**

✔ **Incremental Saving: ~5-10%**

✔ **More than 60 Workshops**

✔ **Plastic Reduction ~ 1 t**

D e s i g n t o V a l u e

Suppliers collaboration was the success lever to achieve the results.

2020

7 Projects Completed: 807 M€

5 Project to be launched & Ongoing: 276 M€

Example of on going tenders:
- Global Data Platform
- SalesForce - Global Customer
- SwF DS Iberia

✔ Lotting Strategy consistent with market capabilities.
✔ Rationalization of profiles.
✔ Rationalization of certifications.
✔ Inclusion of sustainability approach.

Thank you

Trend in negotiated amount by category

Economic trends

Number of Contracts

1.501   1.424   1.390   1.587   1.901

2015   **2016**   **2017**   **2018**   **2019**

Negotiated amount (M€)

○ **Telecommunications**   ○ **Software & Platform**   ○ **Professional Services**

821
- 27%
- 33%
- 40%

1.278
- 12%
- 27%
- 61%

953
- 26%
- 23%
- 51%

1.226
- 18%
- 18%
- 64%

1.462
- 15%
- 43%
- 42%
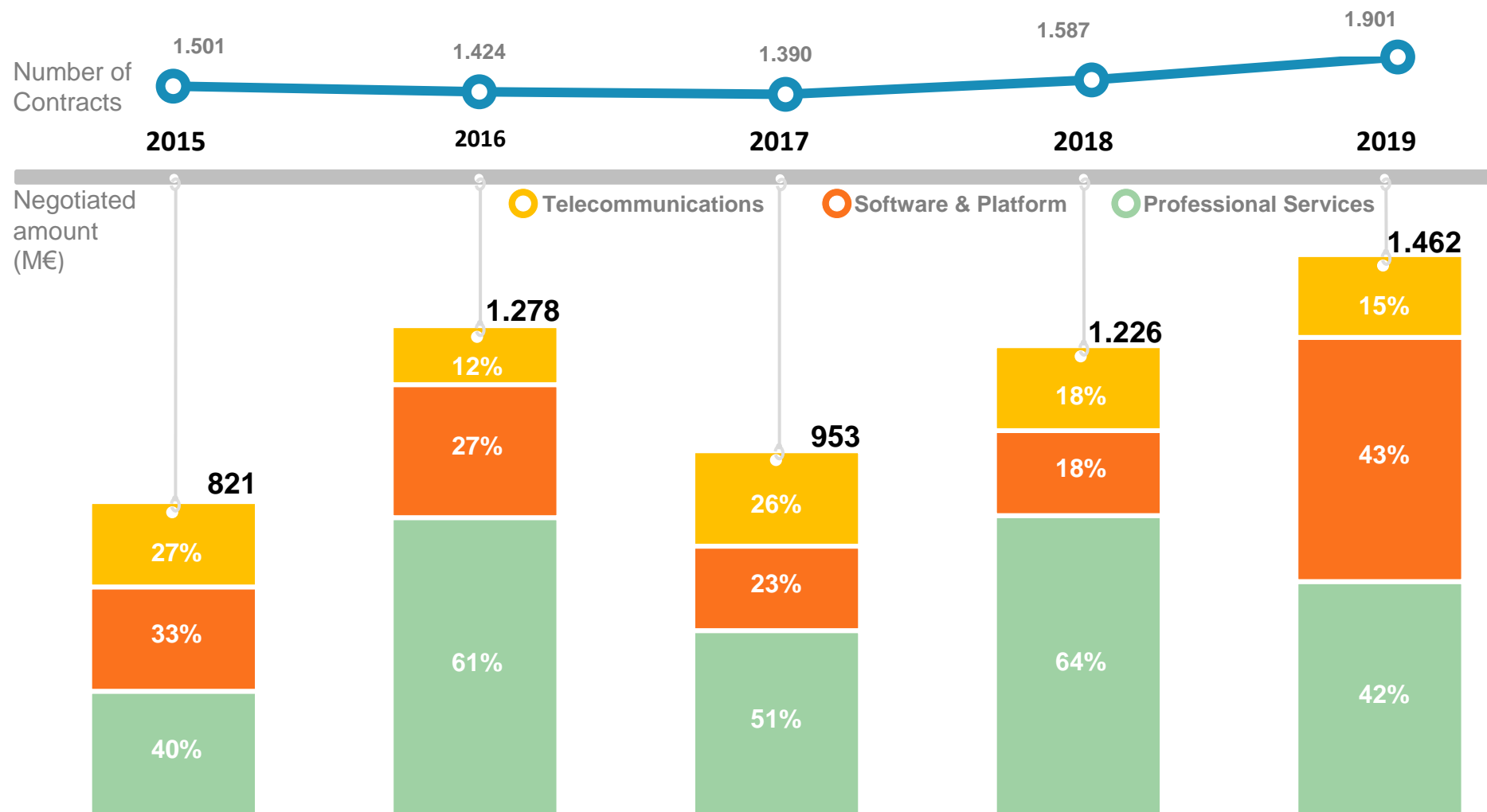
Global Digital Solutions Procurement

Planning view 2020

1.720 M€ Planned on 2020

PS 822 M€ 48%	
SW&Plat 469 M€ 27%	
TLC 429 M€ 25%	

Global 1.187 M€

Latin America Regional 20 M€

Argentina 14 M€

Colombia 16 M€

Italy 322 M€

Latin America 73 M€

Brazil 23 M€

Peru 10 M€

Spain 92 M€

Other Countries 26 M€

Chile 10 M€

Sourcing 2020
Global Digital Solutions overview

Main Tenders

PS	TLC	SW&Plat
ON GOING		
▪ **Global Data Platform (Global)** ▪ **SalesForce - Global Customer (Global)** ▪ **SWF DS Iberia (Spain)** ▪ **Fast Function Point Tender (Global)**	▪ **New Open Voice Tender (Global)** ▪ **Tender for the connectivity services (JOY) (Global)**	
TO BE LAUNCHED		
▪ **SAP IS-U professional services (Global)** ▪ **Gara RPA (Robotic Process Automation) -AI (Artificial Intelligent (Global)** ▪ **Open Technologies professional services (Global)**	▪ **P&M equipment DSO 4.0 project (Italy)** ▪ **SMS Gate (Italy)** ▪ **Radio links (Spain)** ▪ **Nozomi equipment (Italy)**	▪ **Personal Computers (Global)** ▪ **Global End User Support Services (Global)**

New Tender Model for Professional Services

1 *Increasing Supplier Participation*

2 *Lead Time Reduction*

3 *Innovation*

4 *Integration*

5 *Flexibility*

- Technical requirements revision
- Set aside mechanism
- RTI participation rules revision
- New Supplier Scouting

- Rationalization and evaluation simplification of CVs
- Test Introduction
- Projects Certification
- Localization process redesign

- K innovation for Start up /PMI innovative
- Agile approach
- Microservices Methodology
- Platformization

- Pretender Workshop
- Interfunctional team
- Follow up meeting
- Webinar

- Not committed quote
- Multi suppliers awardee
- Cross country Option
- Cross supplier option

Today

Main Results
17 Tenders

Awarded (MI €)	609
Contractualized Suppliers	38
Tenders with increasing Bids (%)*	71%
Rotation (n°)	65%
Tender Duration days (RFP-Awarding)	105
Innovative companies awarded	10

Applied Levers

47%	30%	100%
DtV	BCC	Should Cost
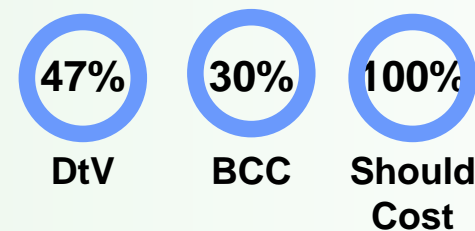
* Among recurrent tenders

Models of Engagement for Professional Services

Tender Strategies

Global

Global For Local

Local

Actions Implemented to involve to:

**Big Companies
SME
Innovative companies
Startups**

For business lines and services with a strong global component, the tenders include cross-global lots over all geographies.

Mixed models are used where design authority, governance, global development activities are on global lots and local developments and country specific customizations are on local lots.

Local tenders for local services.

Software & Cloud
Our priorities for a valuable relation

QUALIFICATION

- **vendor experience** Improvement
- alignment with the **market**

- *technical requirements simplification*
- *fast track and video tutorial for startups*

Continue to improve: monitor, listen vendors feedbacks, adapt

TERMS & CONDITIONS

- t&c negotiation **effectiveness**
- alignment with the **market**

- *t&c simplification: lead time reduction and decrease of #amendments (60% to 27%)*
- *structured process for t&c acceptance at early stage*

Continue to improve: monitor, listen vendors feedbacks, adapt

PAY-PER-USE FLEXIBILITY

- boost **adoption through discount** on volumes
- **yearly commitment,** enabling **true-up and true-down** mechanisms
- overcome enterprise /unlimited models (multi-years, predefined/upfront commitment)

Most of the relevant SW and Cloud services vendors are already valuing on this approach

Continue to transform the contract models as a pre-requisite for a long-term relation

JOY – Global Tender for the Connectivity Services

Global Connectivity Architecture

Abraham II Model

JOY Model
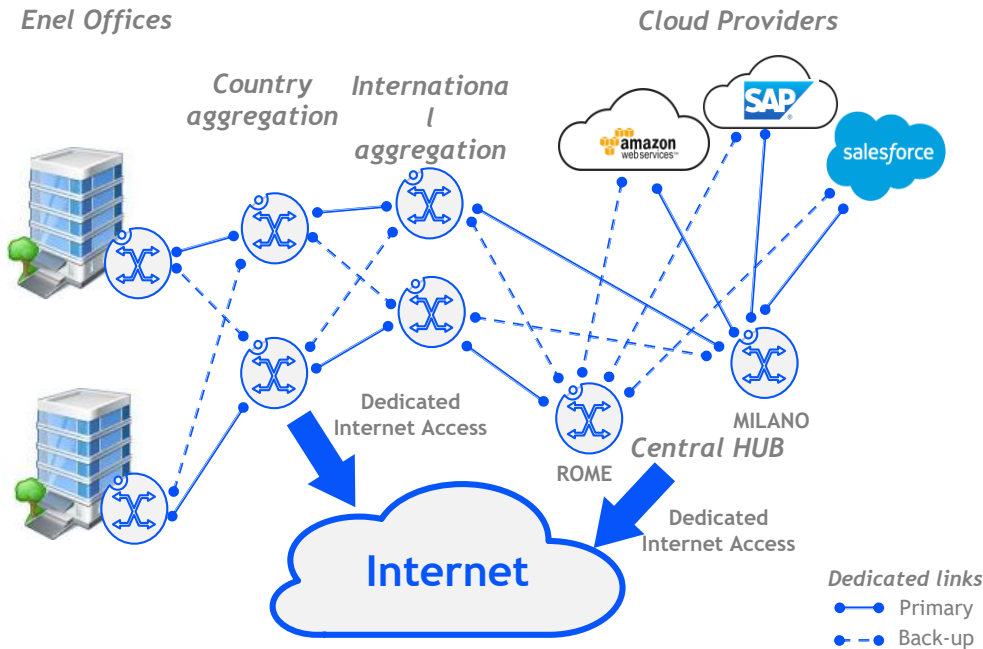
- Private connectivity for all the sites, only public connectivity for centralized Internet accesses at country level.

- Dedicated point to point links for interconnecting America with Europe, Spain with Italy and Italy with Cloud providers, making Italy a central HUB for the connectivity with the Clouds.
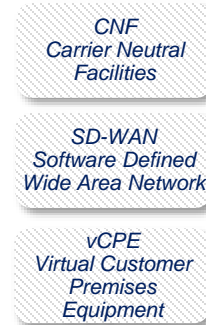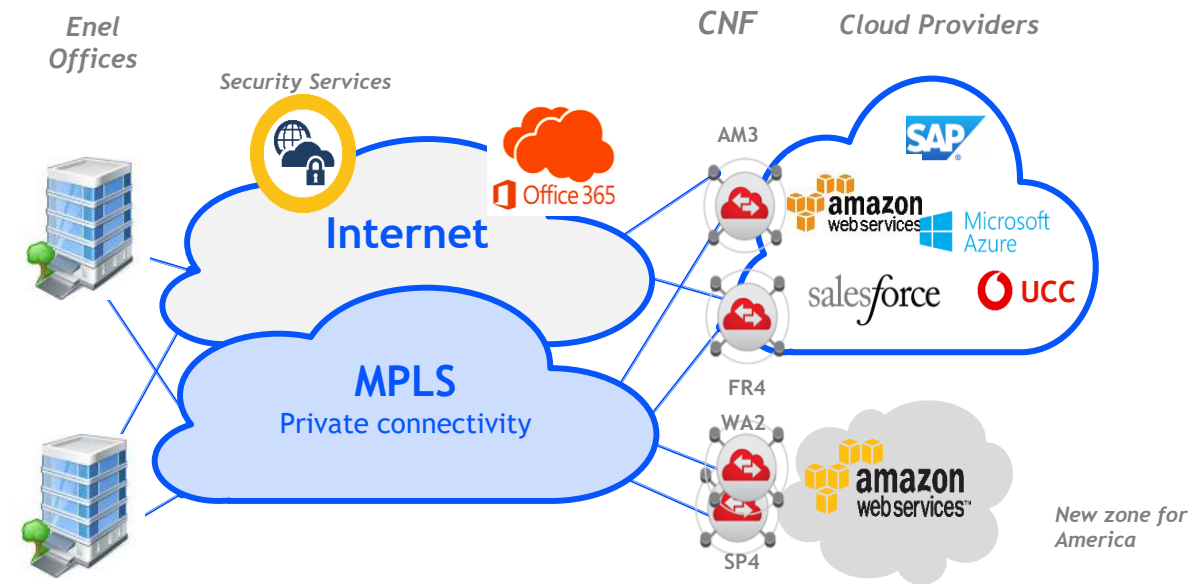
- Sites connectivity is a combination of private and public connectivity, allowing direct access from the sites to internal (private Clouds) and external (public Clouds) services.

- No dedicated point to point links.

- Use of Carrier Neutral Facilities in Europe and America for connection with the Cloud providers.

Closing Remarks

Global Digital Solutions

Vendor Day

Fabio Veronese - Head of DH Infrastructure & Networks

2020, June 18th

enel

Key elements for platform companies

Platform
Business
Model

Platform
Operating
Model

IT
Platforms

Platform features

Platform Strategy / Nonplatform Strategy

+ profitability

Many in the market…

…All in the company!

APIs

Value creation

Massive Adoption

As a Service

Controlled Environment

IT Intensive

Accountability
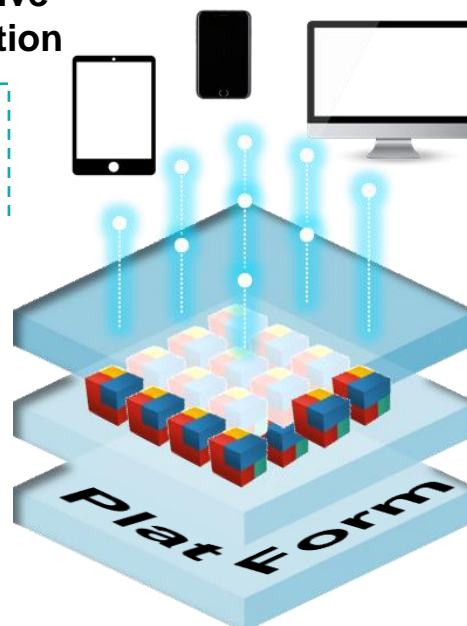
Microservices
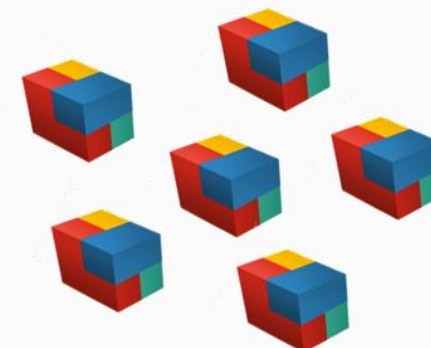
Plat Form

Platform Manifesto: key principles

Enable Decoupling

- **3 layers**: solutions, decoupling, domain
- **Services**: everything as a service
- **Processes**: as services composition
- **Interfaces**: as contracts between layers

2
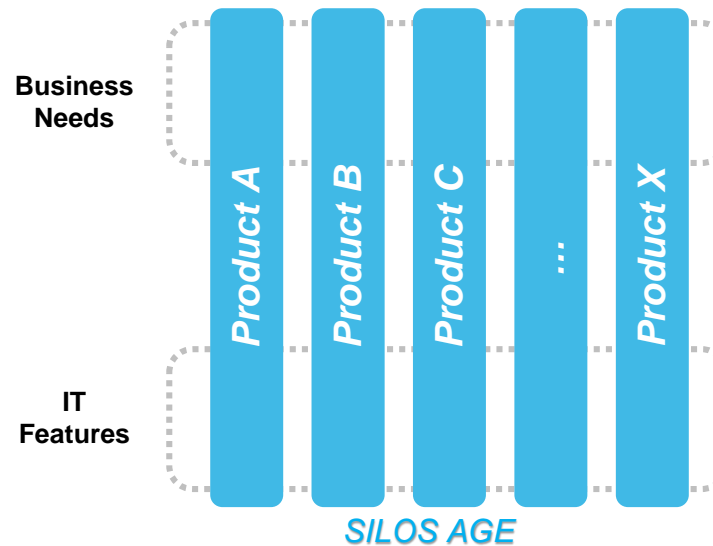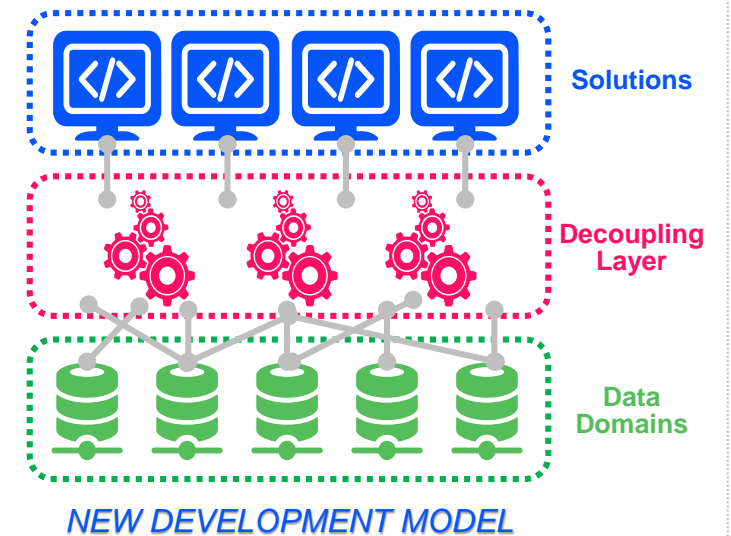
Democratize Data

Monolith ⟶ Platform

- **Model**: Domain Driven Design approach
- **Publish**: domain owned to avoid replicas
- **Access**: centrally accessible from anywhere

Monoliths

Product A ...

Data Integration needed

Platform

Data Integration by design
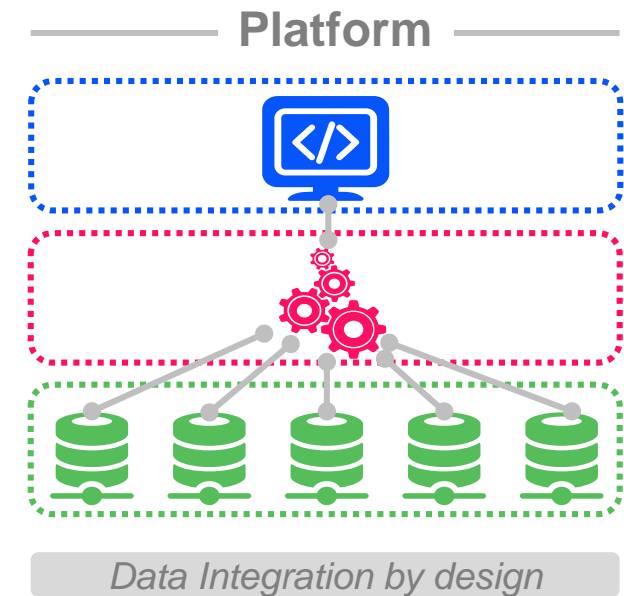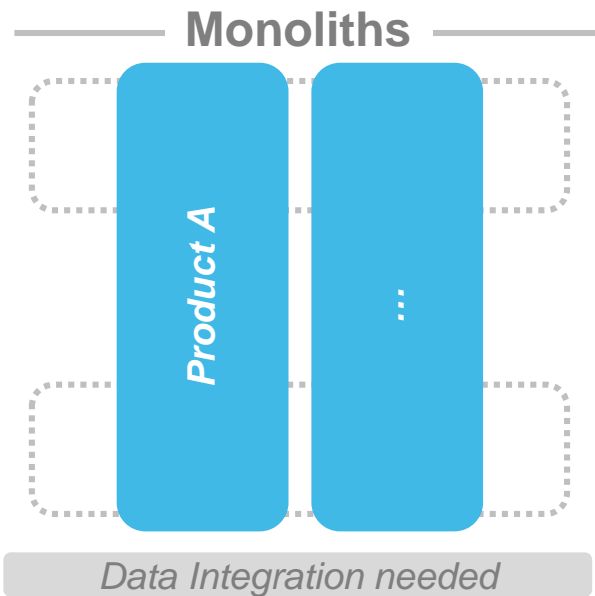
Platform Manifesto: key principles

Support Productivity

3

Support Productivity

- **Automation:** focus on value added activities
- **Standardization:** manage complexity
- **Efficiency:** better resources allocation
- **Safety:** improved release reliability through adoption of Test Driven Design
- **Security:** by design

Automation

	Traditional Approach	Infrastructure As A Code	GitOps
Infrastructure	Manual Provisioning	Resource Descriptor + Git Versioning	Resource Descriptor + Git Versioning
Code	Source Code + Git Versioning	Source Code + Git Versioning	Source Code + Git Versioning
Operations	Manual Deploy and Tuning	Semi-automatic Deploy and Tuning	Ops Descriptor + Git Versioning

■ Automation

Standardization

▶ **Template Repository** ensures compliance providing code base, performing tests and checks

▶ **Each element of the platform is associated with the templates** it's been generated from. At each time it is possible to check every microservice compliance against its template

▶ **Template provides code and restrictions** to resources provisioning

Efficiency
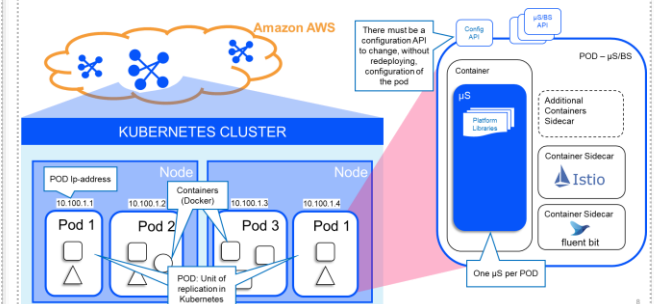
Platform Manifesto: key principles

Guarantee Sustainability

4

Guarantee Sustainability
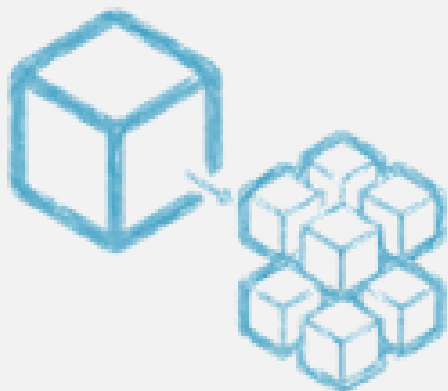
- **Complexity:** Linear correlation with platform size
- **Governance:** centralized over data and services
- **Scalability:** microservices oriented architecture

Complexity

Solution Development complexity

COMPLEX → SIMPLE

A Synchronous Coordinator	B Asynchronous Coordinator	C Synchronous Coordinator + SAGA	D Asynchronous Coordinator + SAGA	E Workflow BPM
Orchestration	Choreography	Orchestration	Choreography	Orchestration / Choreography
Without Failover		With Failover		Without Failover / With Failover

SIMPLE → COMPLEX

Business Service Development complexity

Governance & Scalability

Solution	Solution	Solution	Solution	Solutions/ Apps

Business Services

Business Service	Business Service	Business Service

Micro Services

Domain m

- Micro-Service
- Micro-Service

Domain Data

Common Services Domain

- Events Management System
- Audit
- Catalog
- Metrics
- Log
- Data Governance

External System

Existing System Silos & Products

Cloud IaaS/PaaSServices
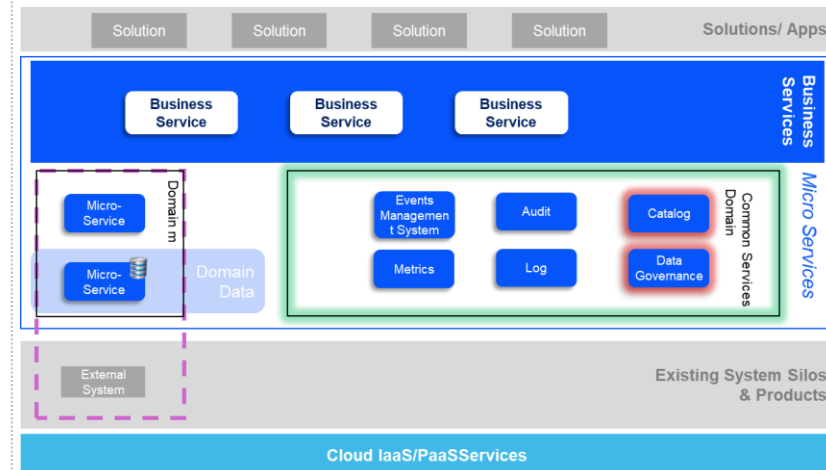
Platform Manifesto: key principles

Build a Community

5

Build a Community

- **People:** developers as Platform customers
- **Contribution:** as foundation for Platform growth
- **Collaboration:** as principle for people interaction
- **Sharing:** as metric for effectiveness

People

Contribution & Collaboration

Sharing
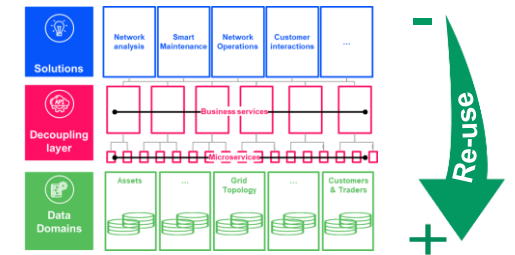
Platform Manifesto: key principles

Plan for Growth

6

Plan for Growth

- **Adopt:** incremental adoption of a revolutionary vision
- **Elevate:** foster people, processes and systems growth

Adopt

Revolutionary vision

Elevate
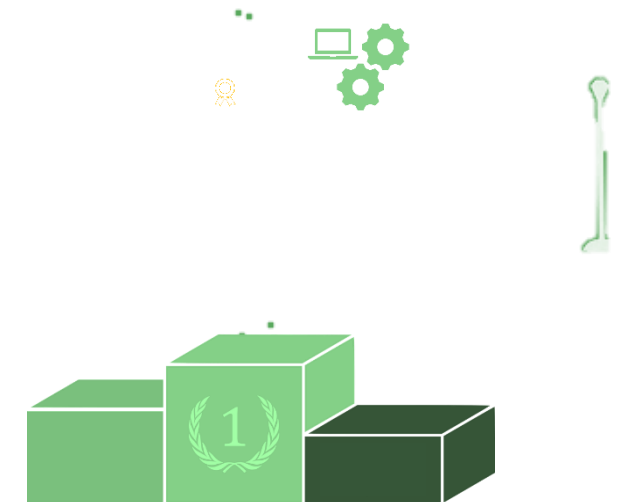
Platform Manifesto
Key operating principles

1 Enable Decoupling
- **3 layers**: solutions, decoupling, domain
- **Services**: everything as a service
- **Processes**: as services composition
- **Interfaces**: as contracts between layers

2 Democratize Data
- **Model**: Domain Driven Design approach
- **Publish**: domain owned to avoid replicas
- **Access**: centrally accessible from anywhere

3 Support Productivity
- **Automation:** focus on value added activities
- **Standardization:** manage complexity
- **Efficiency:** better resources allocation
- **Safety:** improved release reliability through adoption of Test Driven Design
- **Security:** by design

4 Guarantee Sustainability
- **Complexity:** Linear correlation with platform size
- **Governance:** centralized over data and services
- **Scalability:** microservices oriented architecture
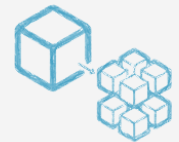
5 Build a Community
- **People:** developers as Platform customers
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6 Plan for Growth
- **Adopt:** incremental adoption of a revolutionary vision
- **Elevate:** foster people, processes and systems growth

The Platform

Solutions
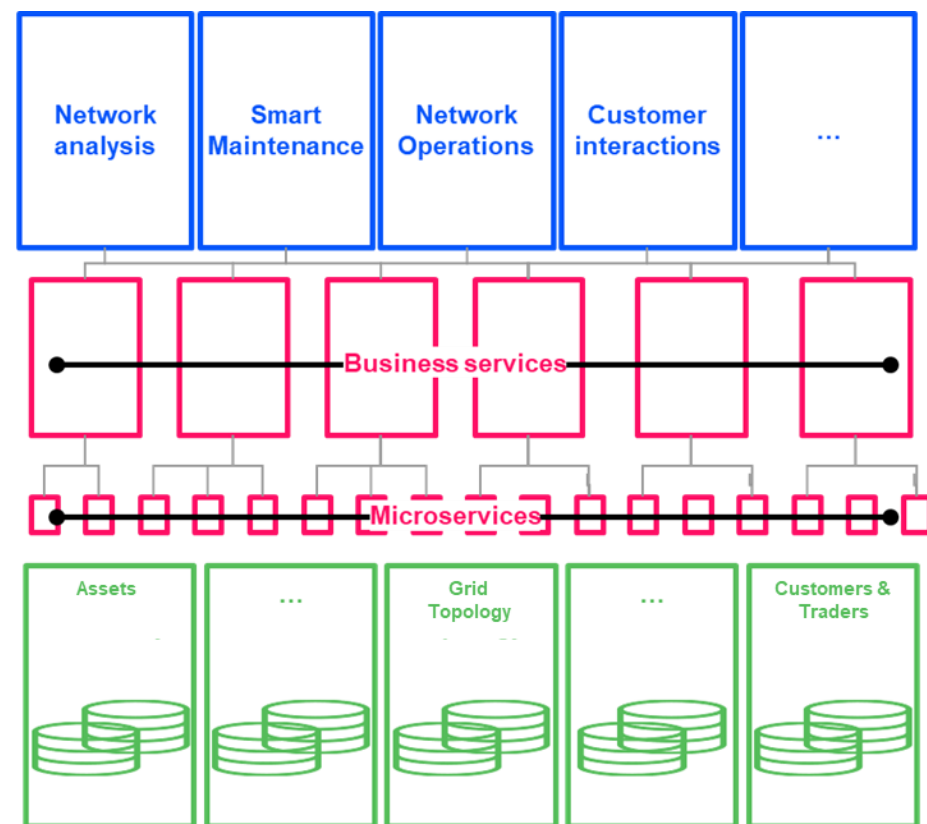
Decoupling Layer

Domains

The Platform

Solutions

Decoupling Layer

Domains

Value Creation

Velocity

Data Driven Approach

Thank You
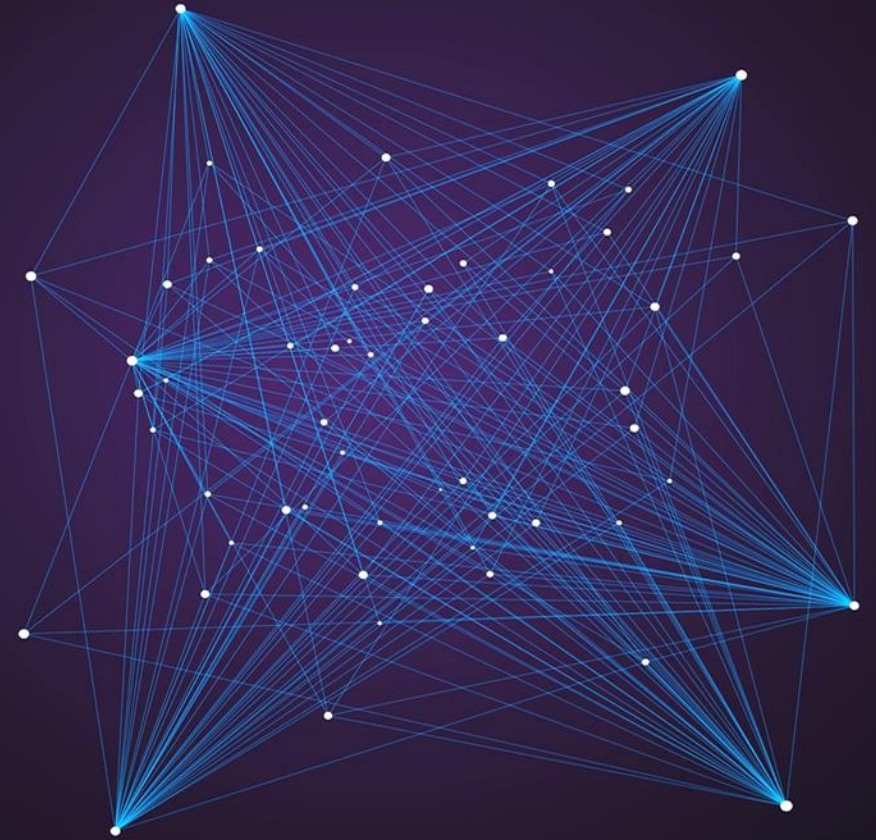
enel

Digitalisation is one of our strategic pillar…
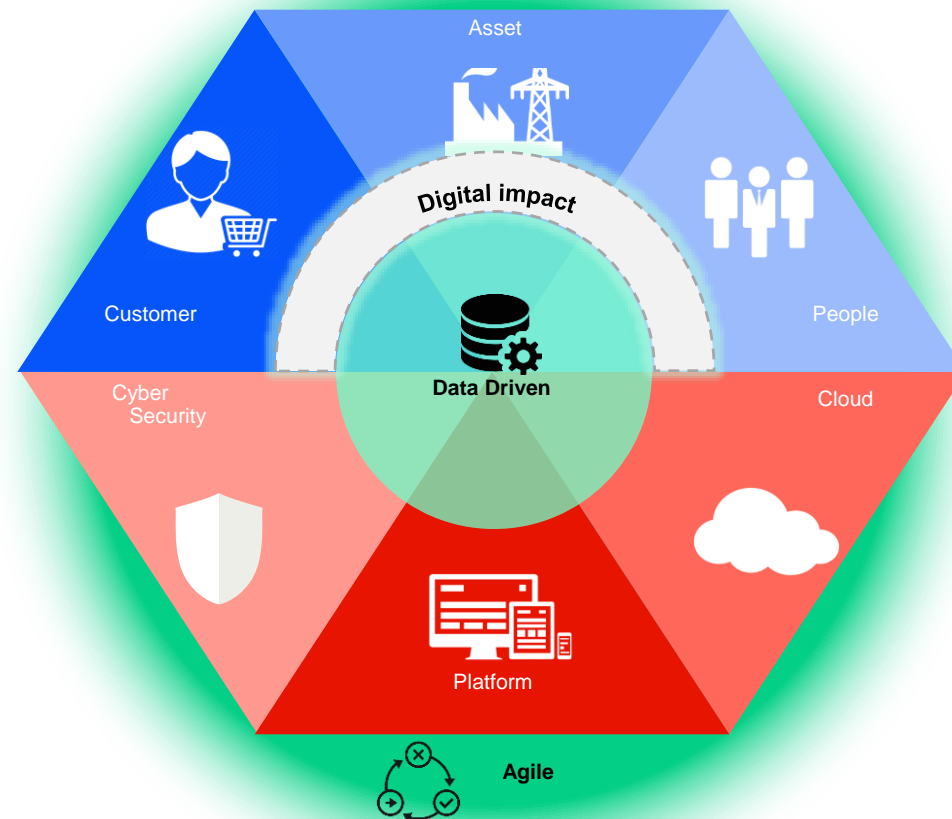
24 HOURS IN ENEL

Electric recharges — +2,2K

Multi-channel interactions — ~1,6M

Received invoices — +27,5K

Load measurement from smart meters — ~26B

CV applications — ~3,4K
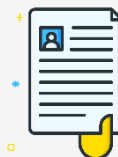
Renewable plants data records — ~40M

Web posts on Enel — 50K

... AND MUCH MORE DATA

THE TOTAL AMOUNT OF DATA HAS GROWN FAST
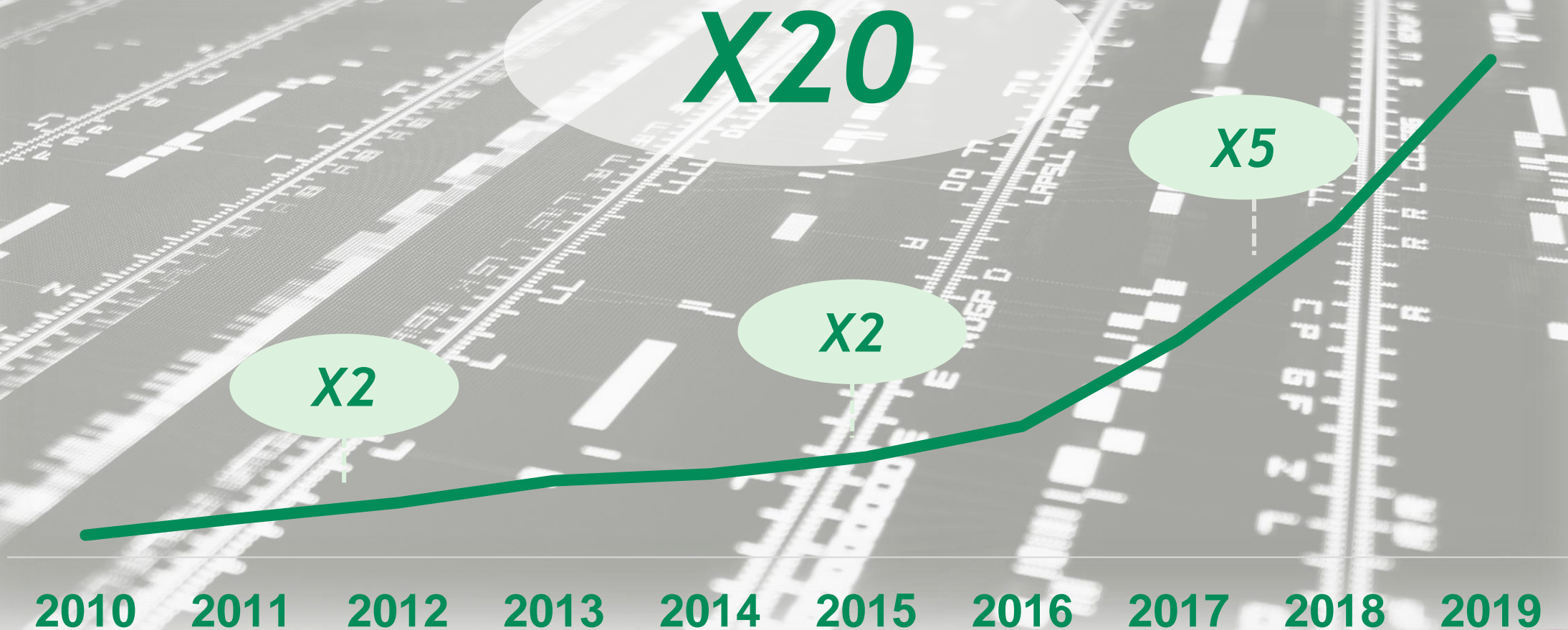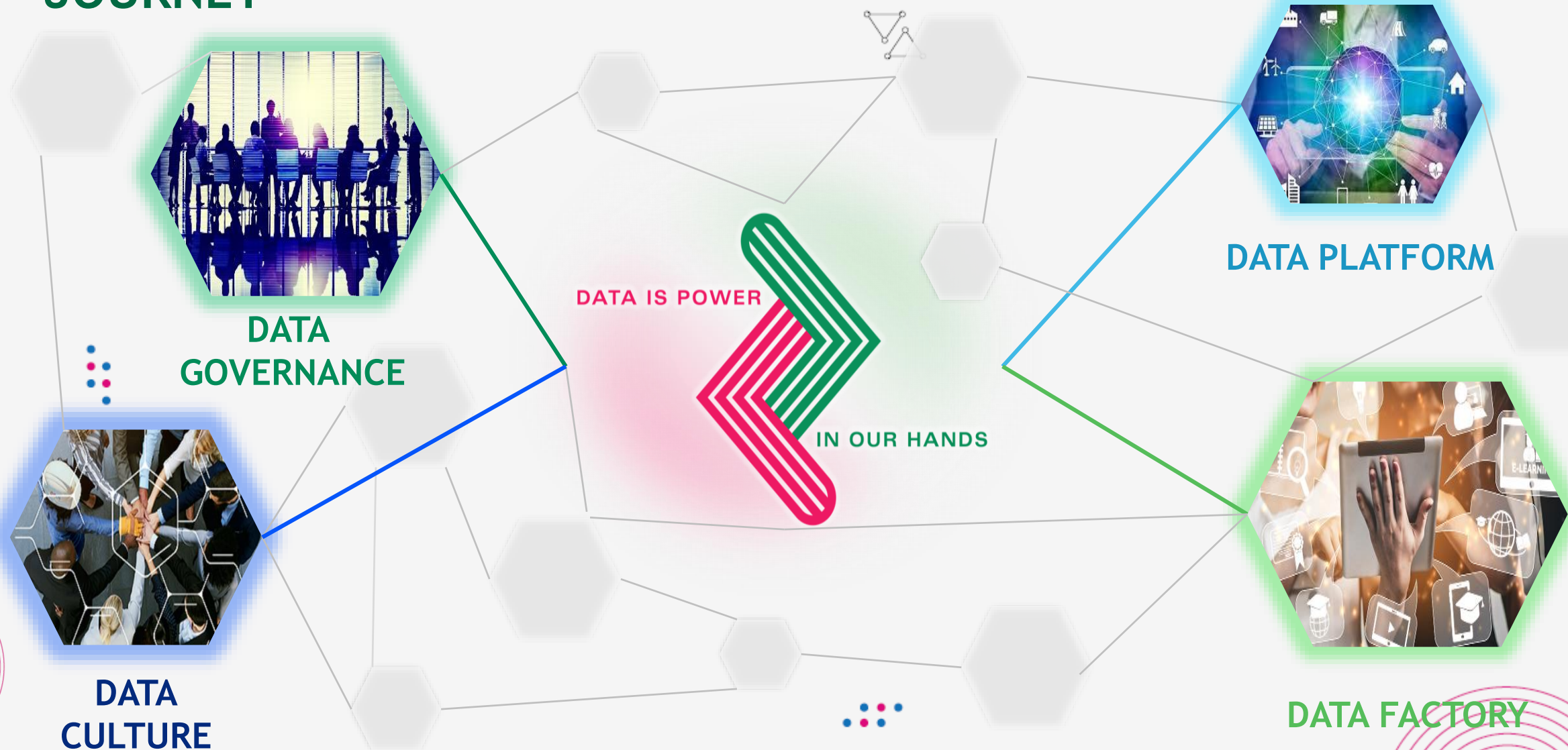
GOVERNANCE PROCESSES AND TOOLS TO ENSURE DATA AVAILABLITY AND QUALITY

DATA CATALOG

Data Sources | Entities | Attributes | Types

Home
Develop
Release
Operate
Alerts
Docs
Settings
Data Catalog

Filter

▼ Data Source   Clear

ID

Search ...

Name

Search ...

Description

Search ...

▶ Tags   Clear

Data Sources

Name ⇕	Description ⇕	Tags
RDMQ1C	Documental Inbound system Infrustructure & Networks Italy (e-Distribuzione)	
RAUI1E	Electrical Network Management System	
ARG4	Low Voltage Network Management System	
DWPHANA	Dashboard with main KPIs for Global I&N	ER
GIGA	Information system for e-distribucion	
RLMS3E	Integrated System For The Management Of Logistics	ER

DATA QUALITY

COMPLETENESS

ACCURACY

VALIDITY

CONSISTENCY

UNIQUENESS

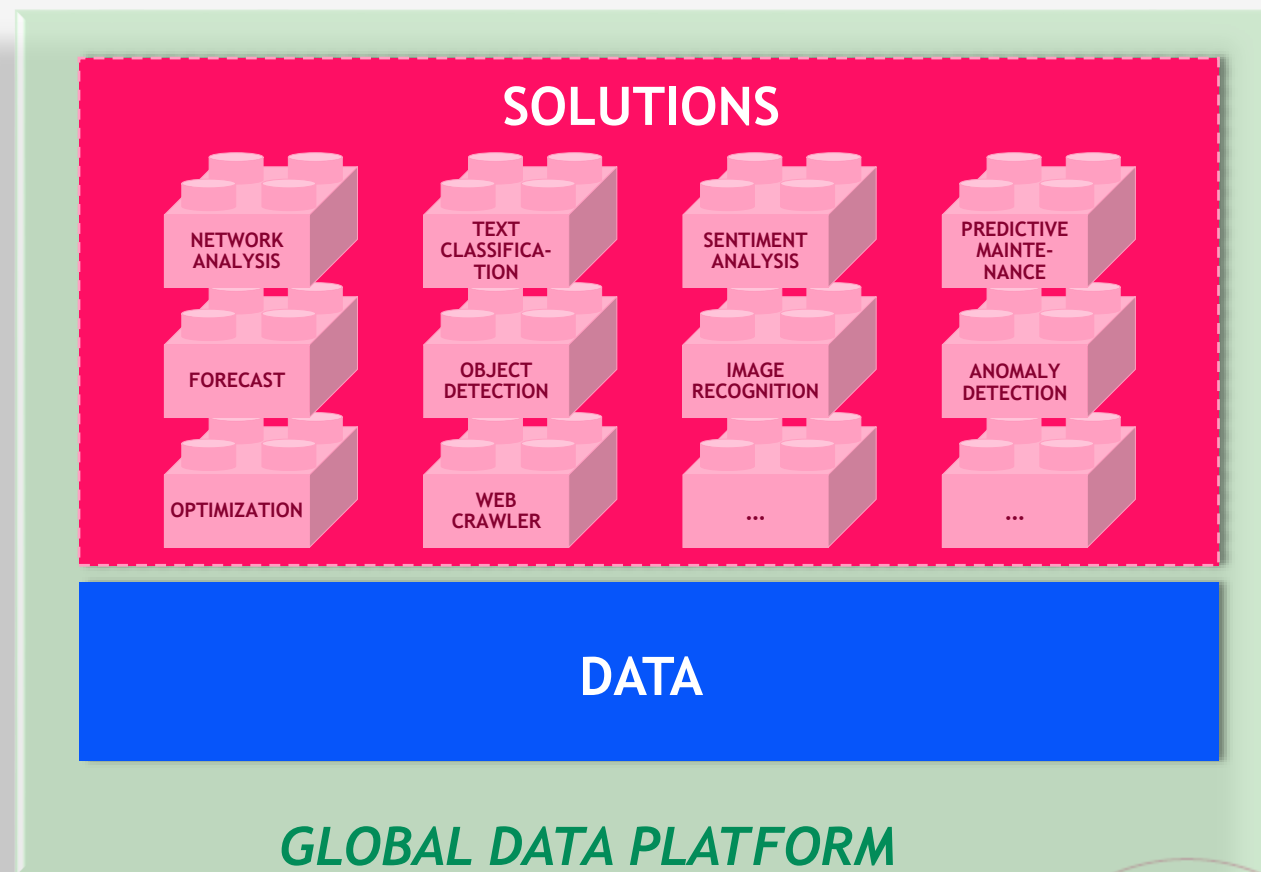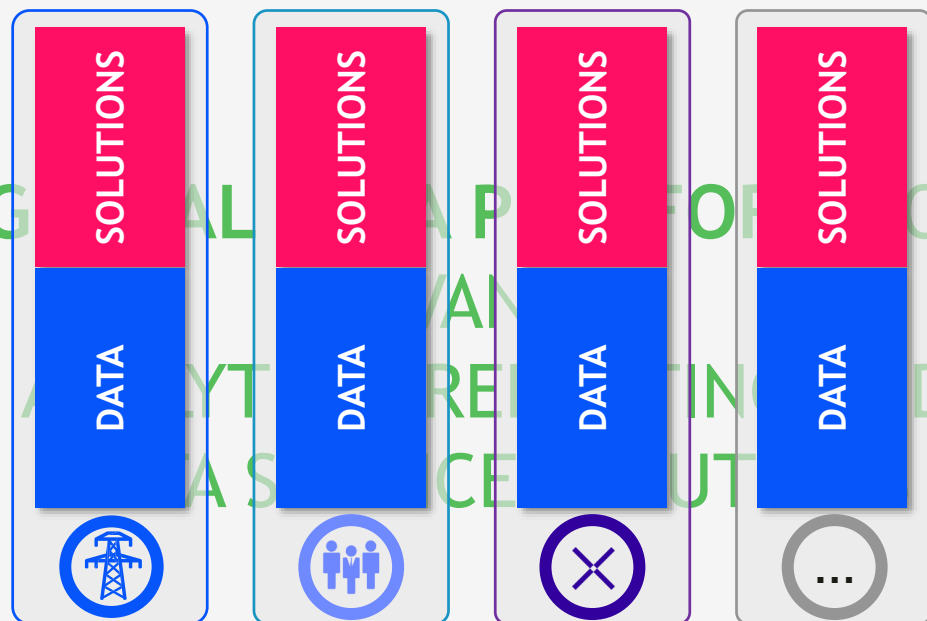TIMELINESS

A GLOBAL DATA PLATFORM AND A FLEXIBLE APPROACH

FROM...

....TO

SOLUTIONS

DATA

GLOBAL PLATFORM

ANALYTICS REPORTING AND DATA SERVICE OUT

SOLUTIONS

NETWORK ANALYSIS	TEXT CLASSIFICA-TION	SENTIMENT ANALYSIS	PREDICTIVE MAINTE-NANCE
FORECAST	OBJECT DETECTION	IMAGE RECOGNITION	ANOMALY DETECTION
OPTIMIZATION	WEB CRAWLER	...	...

DATA

GLOBAL DATA PLATFORM

AN OPEN ECOSYSTEM TO ENSURE TOP CLASS KNOWLEDGE

DATA FACTORY

enel

UNIVERSITIES

SUPPLIERS

DATA COMPETENCE CENTER

GLOBAL DATA FACTORY

START-UPS

INNOVATION HUBS

Why a New Tender

To further support and speed up **Enel path toward a Data Driven Company**, a new specialized approach to **professional services procurement** on Data Platform is required

Key Benefits

|	
Technical Competence Enhancement	Promotion of technical competences on **data framework enabling platformization through a global data factory**
Innovation	Spreading of **innovation on data capabilities**: data ingestion & governance, data science, advanced analytics, data quality, data services
Efficiency	Leveraging on service efficiency through **DevOps methodology, Decoupling** approach (reuse, standardization and AI marketplace) and new technologies (**microservices)** adoption
Technology standardization	Evolution towards a **data platform framework** at global level through software standardization, same **logical model**, marketplace reuse of data components
Sustainability	Promotion of **sustainability**, through proper technical evaluation criteria to assess the suppliers' performance

Target high-level architecture
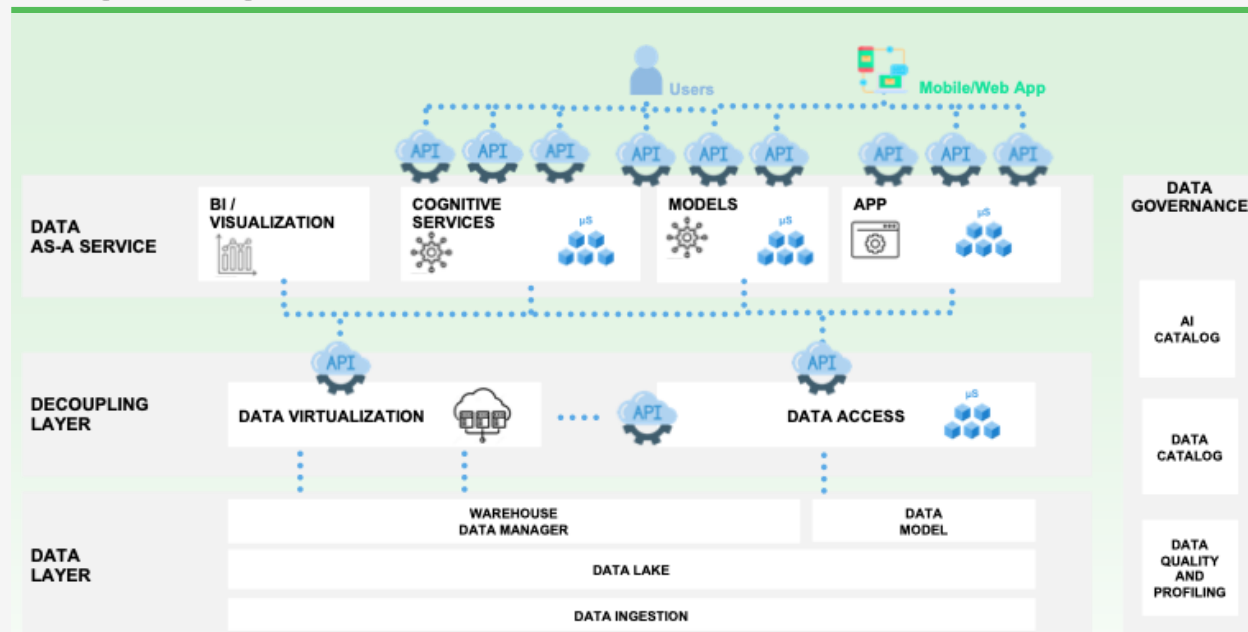
*AI Data Services to **spread data-driven solutions** across the company, **fostering scalability** and **adoption***
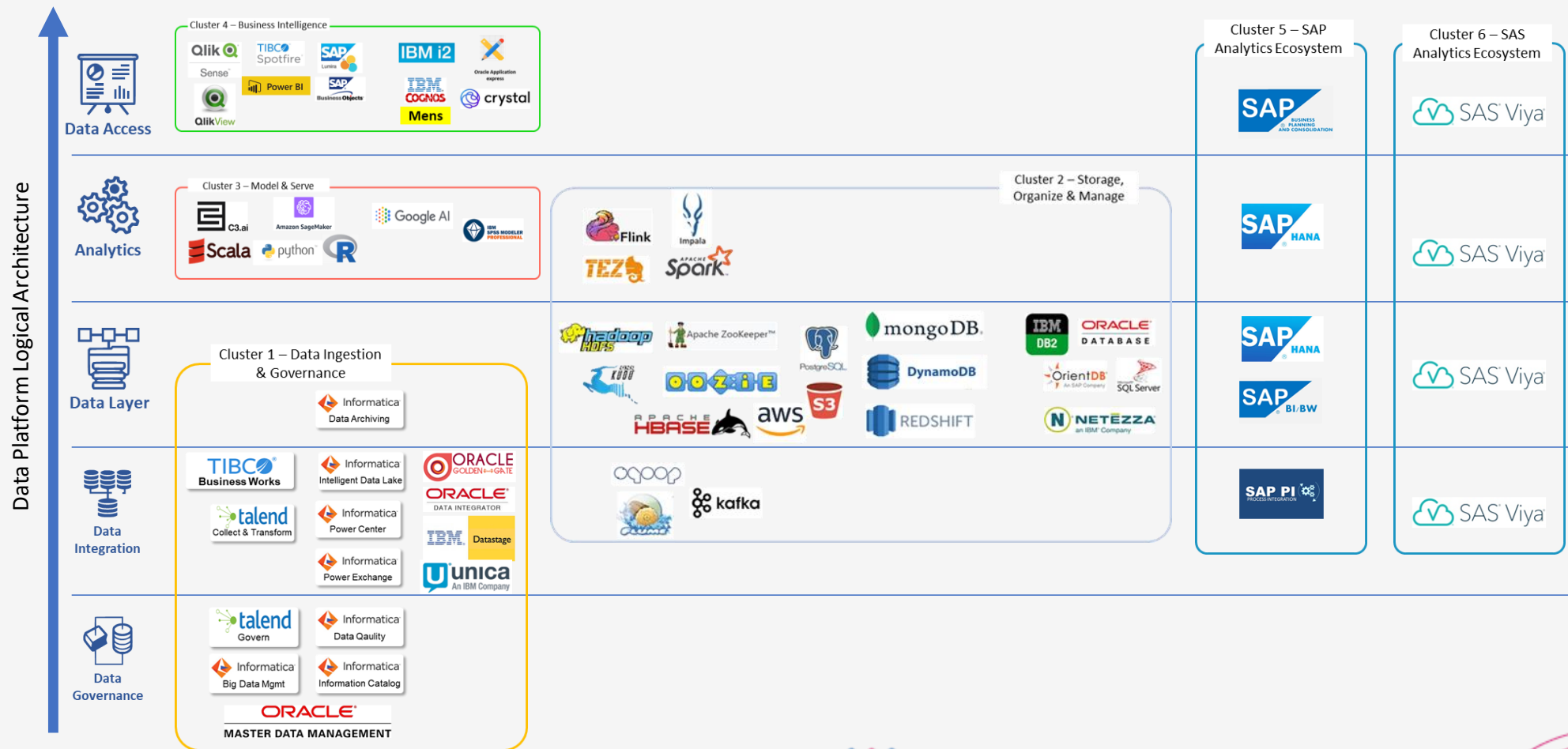
*Decoupling layer able **to manage** and **orchestrate** access to the underlying data, using virtualization and data sources data or accessing through tools*

*Data domains **optimized** by **the definition** of a **global technology framework** and **common data models** for each domain*
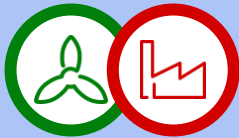
Application architecture

DATA DRIVEN IN ACTIONS

USING AI ALONG THE WHOLE VALUE CHAIN

Business Pillars

Assets

Customer

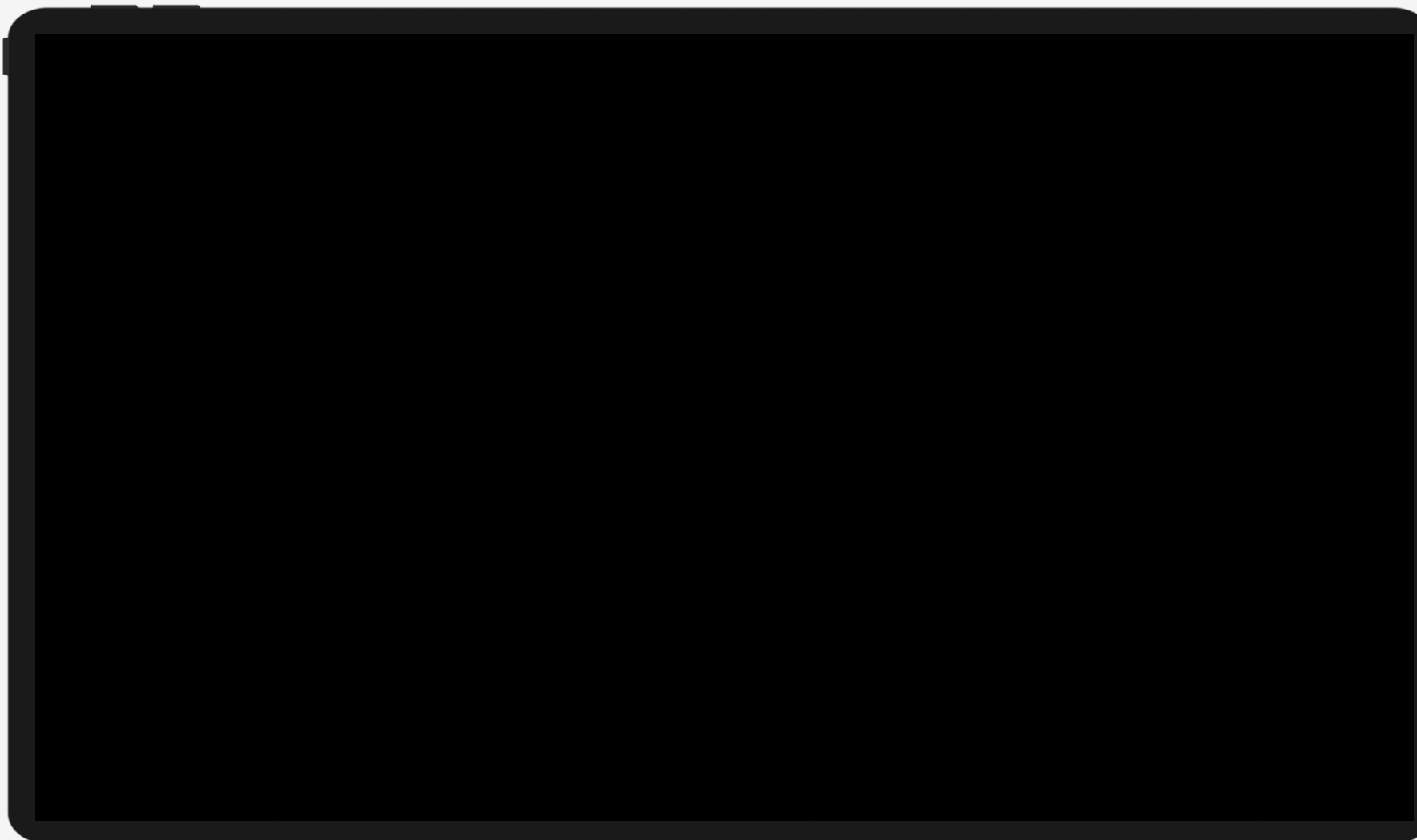### People

Use Cases

Assets
- Predictive Maintenance
- Production forecasting
- Market Forecasting
- Fraud detection
- Workforce Management
- Bidding strategies
- Risk management
- ...

Customer
- Anti-churn
- Segmentation
- Virtual Assistants & Chatbots
- Document management
- Billing & Payment forecasting
- Consumption forecast
- ...

People
- Financial forecast
- Sentiment analysis
- Recommendation systems
- Web crawler
- People interaction
- …

Thank You

enel

DATA IS POWER IN OUR HANDS!