



enel

Zero Emissions Ambition

We empower
sustainable progress

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01 Let's get started

Executive summary

The planet needs renewable energy for a sustainable future.

We are leading the fight against climate change through our **commitment to total decarbonization**. By eliminating our direct and indirect greenhouse gas emissions and moving towards a sustainable electrification powered by renewable energy. We help ensure that our planet does not warm by more than 1.5°C, the maximum temperature increase to avoid a climate crisis as defined by the Paris Agreement.

By 2040 we aim to reach zero emissions - much earlier and ambitious than the global net zero goal for 2050. We are committed to eliminating emissions across all our direct operations, while also indirectly through our suppliers and customers. We will also exit the natural gas business so that all the energy we provide to our customers is renewable electricity.

We are building the path to zero emissions.

There is no doubt that the sustainability paradigm will disrupt global social, political and economic landscapes. However, in times of upheaval, there is also great **opportunity to reimagine and reshape the future**. Through innovative problem-solving and bold actions, Enel's climate strategy supports the planet and its people in a just transition¹ to a more sustainable future.

This report frames our **strategy towards zero emissions** within the context of the global energy transition to renewable sources and as a part of Enel's decades-long fight against climate change. We outline key aspects of our strategy in the short, medium and long-term, supporting our future goals with our current actions to promote the energy transition.

¹ See page 30 for more information.

Zero emissions roadmap

Zero emissions ambition



Renewable energy production and sales, and exit from gas value chain



2040

2050



World

Net-Zero

02

What's affecting the planet?

Climate change and the solutions to address it

The increase in atmospheric CO₂ levels

in the past **250 years** = in the previous **200,000 years**

36.3
gigatons (GT)

the energy-
related CO₂
emissions in 2021

1 Gt
of CO₂

the equivalent
weight of 200
million elephants

+1.1°C

increase of average
global temperature
since the pre-industrial
era (1850-1900).

250x
faster

the rate of increase
in CO₂ levels from
human activities vs
natural activities

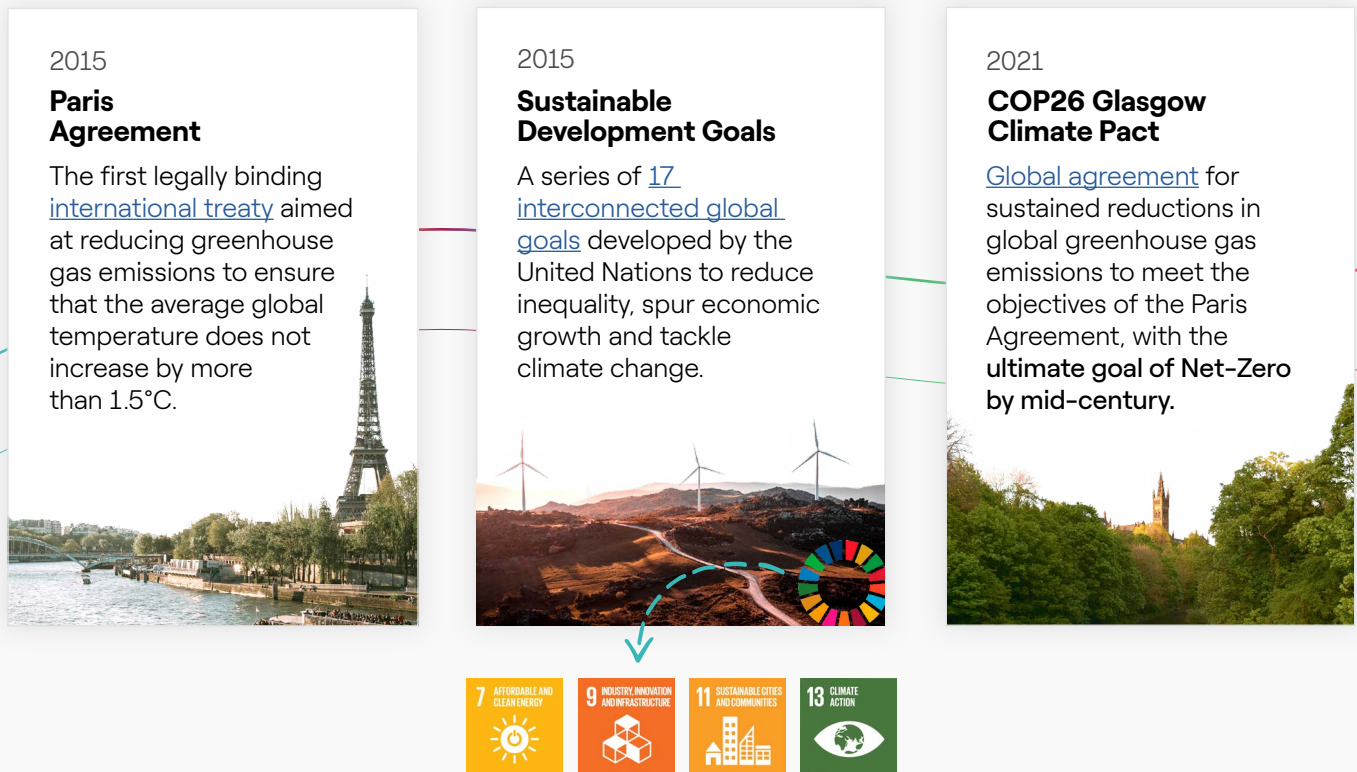
Climate change is accelerating...

Since the beginning of industrialization, **human activity has caused harmful CO₂ emissions to skyrocket**. Every year, we increasingly feel the impacts of our actions; rising sea levels, extreme weather events and record-

breaking temperatures form the basis for what is likely to become a global humanitarian crisis. Furthermore, scientific data and projections reveal that our current climate reality is just a taste of an **unprecedented future**.

The future of climate change is unpredictable, but one thing is certain: it will not stop on its own. This is a human problem that needs a human solution.

Milestones in climate change policy



...so we need to be faster.

We know where we need to go, and now we must [act quickly to get there.](#)

Sustainability is not a passing trend, and ad-hoc actions are not enough to solve the problem of climate change. That's why at Enel, we believe in a **fundamental paradigm shift to achieve a sustainable future**. This mindset is built into everything we do and has led us to redesign our business model

and value chain to guide the **energy transition**. By continually collaborating with government, corporate partners and consumers, we are empowering sustainable progress through innovative technologies and new methods of **electrification** and **decarbonization**.

The decade of electrification

The transition to renewable energy sources is already underway, propelled by changing consumer habits and cutting-edge technologies. **Global electricity consumption is due to triple in the coming decade**, and as such, the energy sector is poised to lead the paradigm shift towards a sustainable future.

Increased **electrification** is coupled with **increasing eco-consciousness**, as consumers are more aware of the energy consumption associated with the products they buy. At the same time, electrification efforts are supported by **digitalization**, improved **infrastructure** and advancements in **renewable energy storage**.



Francesco Starace

Chief Executive Officer and
General Manager of Enel

“We will see electricity taking on a leading role, even in sectors where it had never previously been present”.

Sustainable energy: the key to decarbonization

Decarbonization and sustainable energy go hand-in-hand. Renewable energy will fuel the carbon-free future. That's why the **energy transition** from fossil fuels to renewable sources like solar, wind and hydropower is a cornerstone in the fight against climate change.

The shift to sustainable energy, however, is more complex than simply abandoning fossil fuels all at once – which may also result in premature interruption of vital services. The **decarbonization process requires management that guarantees grid stability, resilience and efficiency** to ensure clean, affordable energy for all and a more efficient use of energy.

Enel is leading the fight against climate change through a **comprehensive strategy that prioritizes both people and the planet**.

Electrification

The process of replacing technologies that use fossil fuels (such as coal, oil and natural gas) with technologies that run on electricity.

The benefits of electrification include cutting greenhouse gas emissions, increasing energy efficiency and security, ensuring affordability through renewables, improving urban air quality, creating new jobs and, of course, helping to fight climate change.

Decarbonization

The process of removing or reducing carbon emissions from the energy supply system, leading to fewer greenhouse gas emissions and a greener planet.



1
Electrification



2
Decarbonization



3
Less greenhouse
gas emissions



4
Greener, more
sustainable planet

Zero Emissions Ambition

We empower sustainable progress



03

What is Enel doing about it?

Our sustainability journey

Zero Emissions Ambition

We empower sustainable progress

Enel's milestones on climate action

Our 2040 ambition towards zero emissions is the natural next step in our decades-long fight against climate change. Over the years we have positioned ourselves as leaders in the energy transition, collaborating with international organizations and advocacy groups to promote sustainability.

2008

Enel Green Power

Incorporates all of Enel's activities in the wind, solar, geothermal, run-of-the-river hydroelectric and biomass fields in Europe, North, Central and South America into a single company to promote the development of renewable energy.

2017

Enel X

Creates a global business line to accelerate innovation and drive the energy transition using advanced solutions like energy management and financial services, technological innovations for decarbonization and electrification and alternative, sustainable business models for people, communities, institutions and companies.

2015

2050 Decarbonization Pledge

Pledges to decarbonize Enel's energy mix by 2050, coinciding with the launch of the United Nations SDGs and the Paris Agreement. Announces its first science-based target to limit direct greenhouse gas emissions by 25% by 2020, as compared to 2007.

2018

100 TWh of renewable output per year

Celebrates its tenth anniversary as a renewable company with groundbreaking results: 100 TWh of power generation, a growth rate of 3 GW of capacity per year and over 1,200 operating plants in 30 countries.



Francesco Starace

Chief Executive Officer and General Manager of Enel

The world shall accelerate action against climate change. For this reason, we made a radical choice: we eliminated the word "net" from our commitment and we now focus on ensuring that we will be zero carbon. To do this, we must electrify as much as possible and we have to do it by promoting renewables and energy efficiency, supporting our customers and suppliers in their decarbonization efforts, as the only way to reach zero emissions across our entire value chain.

2019

Sustainability Linked Bonds

Launches the world's first general purpose SDG-linked bonds in US markets for \$1.5 billion and in European markets for €2.5 billion, embedding its climate strategy into its sustainable finance model.

Business Ambition for 1.5°C

Becomes the first Italian company to join the United Nations business campaign to limit the maximum global temperature increase to 1.5°C from pre-industrial levels and achieve Net-Zero emissions by 2050.

2021

Gridspertise

Launches a company dedicated to the digital transformation of power grids to become a trusted partner for all types of Distribution System Operators (DSOs). Rolls out integrated smart grid solutions, the primary facilitator of decarbonization and electrification targets.

2040 Zero emissions Commitment

Brings forward its decarbonization commitment from 2050 to 2040. In addition, Enel sets a new record with more than 5 GW of global renewable capacity, while Enel Grids reaches one million prosumers (producer + consumers) connected to its network.

2020

ESG and Climate Leaders

Included in the MSCI ESG Leaders index after receiving its first AAA rating by leading ESG provider MSCI ESG Research, due to an accelerated ambition for its decarbonization roadmap. Was also featured in the prestigious 'A List' for climate change released by CDP.

2022

Enel X Way

Launch a new company dedicated to simplifying the world of electric transport and making e-mobility easily accessible to everyone, leveraging the Group longstanding expertise in the field.

Decarbonization commitment: Climate Science-Aligned

Launches new mid and long term targets to mitigate its direct and indirect emissions across its entire value chain, validated by SBTi in coherence with limiting global warming to 1.5°C.



04

What is Net-Zero?

RESIDUAL EMISSIONS

-

CARBON REMOVALS

NET-ZERO

Zero Emissions Ambition

We empower sustainable progress

Net-Zero is the point at which global warming stops

To put it simply, Net-Zero refers to the balance between residual and inevitable global greenhouse gas emissions produced by human activities and the removal of such emissions to ensure net zero overall emissions.

Net-Zero is a cornerstone of the sustainability paradigm. It is crucial to averting an irreparable climate and humanitarian crisis and promoting sustainable development.

As such, international organizations and experts have agreed that the world must be Net-Zero by 2050. However, there are sectors that can progress even faster and further. This is the case of the power sector, which can be fully decarbonized – as technology is already available – while maintaining reliability and affordability. Actually, many States are pursuing ambitious decarbonization goals for the power sector.

Enel is ten years ahead of the global standard, showing an ambition that moves beyond: we aim to achieve zero emissions by 2040.

To limit the global temperature increase to 1.5°C, as compared to the pre-industrial era (1850-1900), the world needs to:



1 Reduce the greenhouse gas emissions that people generate.

This is our priority! We will mitigate all our direct greenhouse gas emissions, while reduce our indirect emissions as much as possible given current global technological constraints.



2 Neutralize the impact of any residual emissions by permanently removing the equivalent volume, as a very last resort mechanism and much limited.

Getting to Zero emissions isn't as easy as it seems

The world is entering an unprecedented landscape and must adapt to **new environmental, social and political realities**. While it is impossible to predict the future, we have identified **key risks and opportunities** to guide our stratagem.

Current and future challenges are related to **two phenomena:**



Physical

Changes in the environment.



Transitional

Social, economic and political shifts related to the energy transition.

Physical phenomenon

Changes in the environment directly affect **electricity demand & renewable energy generation.**

Transition phenomenon

The transition to renewable energy will cause **complexities throughout the value chain.**

Chronic physical changes

Average global temperature
Sea levels
Rainfall
Solar radiation

Acute physical changes

Heat waves
Flooding
Hail
Windstorms
Lightning

Socioeconomic changes

Lack of coordination in carbon pricing policies

Ineffective incentives or regulatory systems

Volatile market dynamics

Slowdowns and interruptions to the raw materials in the supply chain

Greenhouse gas emissions scopes

How do you measure greenhouse gas emissions?

The following three scopes are internationally recognized categories for **measuring the different kinds of greenhouse gas emissions** a company produces in its operations and value chain. It includes the following gases, measured as carbon dioxide equivalent (CO_{2eq}): CO₂, CH₄, N₂O, HFCs, PFCs, SF₆.

Scope 1

Direct emissions

The greenhouse gas emissions a company produces directly by running its facilities, machinery and vehicles. In the case of Enel, this is related to the energy we produce for our customers.



Company facilities



Company vehicles

Scope 2

Indirect emissions from electricity

The emissions that are produced from the energy that a company uses in its operations.



Purchased electricity, steam, heating & cooling for own use

Scope 3

Other indirect emissions

This is the most comprehensive scope, as it involves all indirect emissions produced across a company's value chain. This ranges from the emissions by suppliers to the use of its products by end consumers.



Capital goods



Leased assets



Fuel and energy related activities



Processing of sold products



Transportation and distribution



Use of sold products



Waste generated in operations



Employee commuting



Business travel



Franchises



Investments



End-of-life treatment of sold products

05

How do we reach Zero emissions?

Our strategy for a
carbon-free future



Do all roads lead to a carbon-free future?

While Net-Zero is the widely agreed-upon goal, there are different ideas on how to get there and progress even further.

Governments, industries and consumers want to decarbonize while also ensuring fair practices and prices. As such, we need a clear strategy that takes into account both people and the planet.

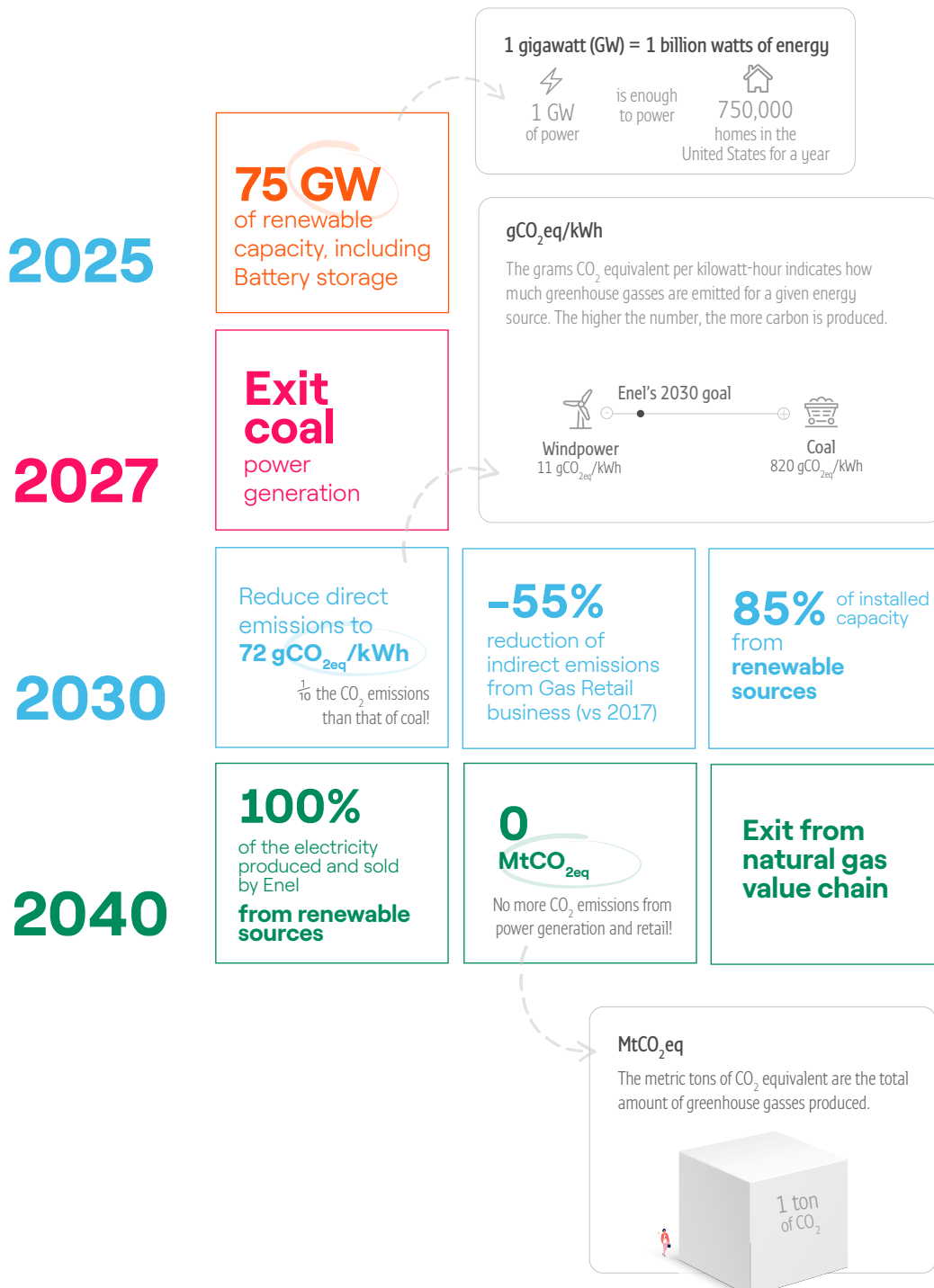
Enel's comprehensive and ambitious strategy guides the pathway to go even faster and beyond: to be zero emissions across our entire value chain by 2040.

Zero emissions Roadmap



We have accelerated our targets

We have brought forward **our zero emissions commitment** both for direct and indirect emissions by 10 years, from 2050 to 2040, through a complete shift to **100% renewable sources**.



We define all our targets in line with the **Science Based Targets initiative (SBTi)**, which establishes scientific goals, criteria and recommendations to achieve Net-Zero.

The SBTi is a partnership between the Carbon Disclosure Project (CDP), the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF).

They enable private organizations to set science-based emissions reduction targets to reduce the impacts of climate change.

Our mid and long-term decarbonization targets embedded into our business strategy and covering our direct and indirect emissions have been certified by the SBTi per their methodologies and standards.

Key characteristics of our strategy



Frameworks for risk identification, analysis and mitigation



Awareness and flexibility for different future climate scenarios



Positive impacts on both people and the planet



Scalability and adaptability to economic and environmental changes



Measurements over the short, medium and long-term

How are we going to achieve zero emissions?

Becoming zero emissions by 2040 requires a strong acceleration in the development of renewables and energy efficiency, accompanied by a complete overhaul of our investment planning and economic models.

We have adopted an integrated approach by reducing both direct and indirect emissions to decarbonize our value chain.

How will we reduce **direct emissions?** The greenhouse gasses Enel produces

How will we reduce **indirect emissions?** The greenhouse gasses that our supply chain produces



Producing electricity exclusively from renewable sources



Increasing sales of renewable electricity to end customers



Switching customers from natural gas to electricity



Purchasing renewable electricity for Enel's consumption



Electrifying fleets and buildings



Reducing electricity technical losses of the grids



Engaging suppliers to decarbonize their products and services



Promoting a circular economy for new assets and manufactured components



Replacing and installing SF6-free components



Creating standards for sustainable construction sites



Digitalizing assets and processes



Promoting teleworking and remote operations

Our unique approach

What makes our strategy different?

Our plan for mitigating carbon emissions encompasses high-impact elements that create value. Some of the core elements of our strategy include:

Cutting out, not compensating

Instead of aiming to offset our carbon emissions through carbon removal technology or nature-based solutions, our strategy gets to the root of the problem. **We will transition entirely to renewable energy throughout our value chain** and for our end-consumer, thereby exiting from the coal and natural gas value chains.

Ambitious and pragmatic

Our business model is in line with the maximum ambition of Paris Agreement objectives to limit the global average temperature increase to 1.5°C. In fact, **we are ten years ahead of global standards**. To define this strategy, we have conducted risk mitigation analysis across different climate scenarios to ensure that our approach takes into account foreseen eventualities, while maintaining the flexibility needed for resilience during unpredictable circumstances.

Consumers benefit

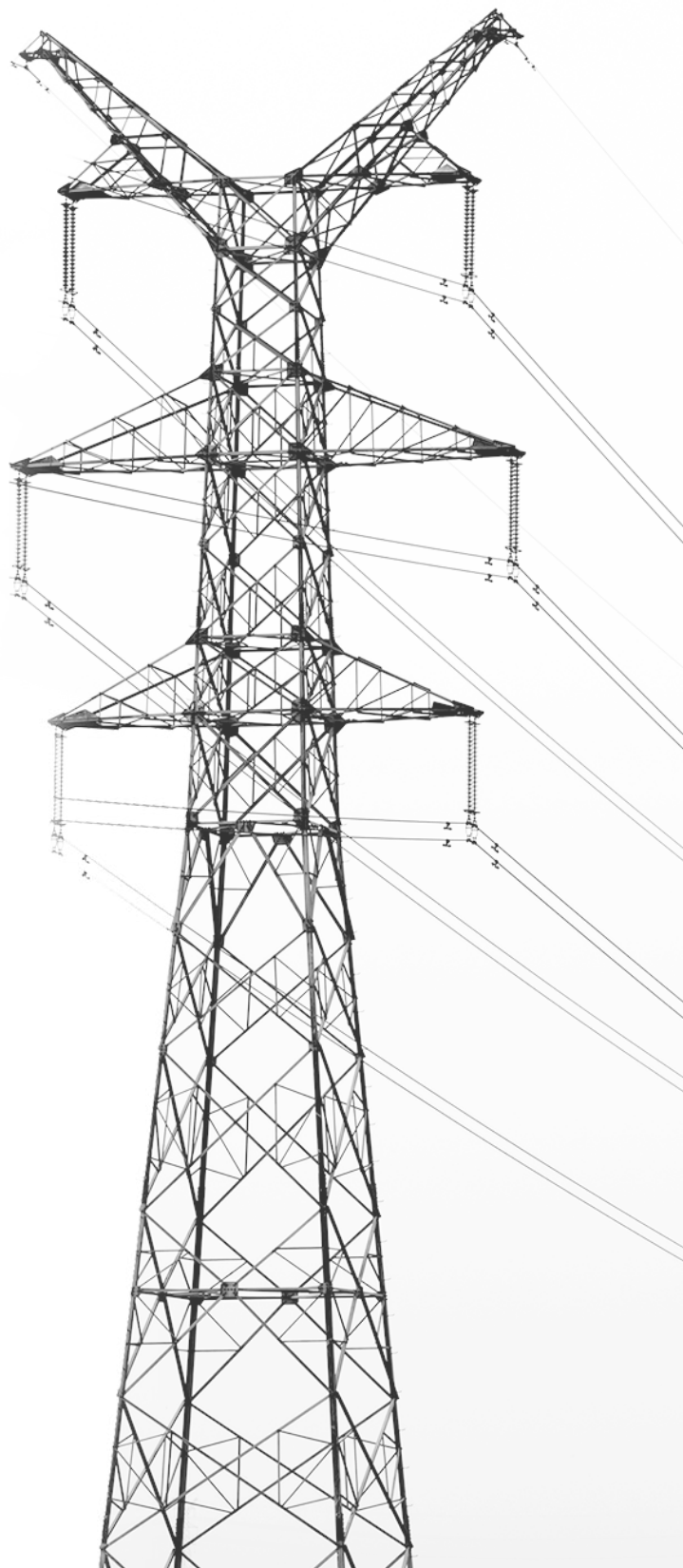
Our business strategy is customer centric. By increasing electrification, efficiency and availability of renewable energy, we will provide clean, inexpensive and reliable electricity supply and services. Looking ahead to 2030, **our consumers will see a 40% drop in their energy bills, and up to an 80% reduction in their carbon footprint**.

Comprehensive impact

Our holistic strategy spans **3 scopes of direct and indirect emissions**, as a way of categorizing the different kinds of carbon emissions we produce (see page 23 for more information).

Worldwide recognition

Sustainability has been built into our business model since our founding, which is why we **collaborate with international organizations** like the United Nations to not only shape our goals, but also to help set international industry standards.



Electrifying our way to Zero Emissions

Electrification is a cornerstone of Enel's Zero emissions ambition

To tackle the challenges posed by climate change, we must...

Generate more and more electricity from renewable sources.

Transfer the benefits of a decarbonized electricity carrier to other sectors, such as transportation and construction.

Transform today's power grids into smart grids to manage increasingly decentralized generation, two-way energy flows and a growing demand for electricity.

Electrification's benefits go beyond decarbonization.

In addition to reducing greenhouse gas emissions, electrification also:

- Enhances energy efficiency and circularity through increased flexibility of the energy system.
- Empowers customers.
- Maximizes affordability and security of supply through highly resilient power grids.
- Improves air quality, particularly in cities.
- Creates quality jobs emerging from a well-planned just transition.

This evolution requires flexible and open systems in which customers, retailers, aggregators, energy generators and new stakeholders can operate and collaborate to accelerate the energy transition.

Our global, customer-oriented industrial approach to electrification is being led by three core business lines: Enel X, Enel X Way and Enel Grids.

Enel X and Enel X Way

New sustainable business solutions for everyday use

Spurred by artificial intelligence and data analysis, **the new ways we use energy opens up countless opportunities.** Enel X and Enel X Way enable people to live and move smarter and more sustainably. By responding to ever-changing needs through simple, innovative and scalable solutions, we generate radical improvements in everyday life for people, businesses, and cities.



People

Transforming homes to make them smarter, more comfortable and sustainable, putting people in control of their home environments.



Businesses

Unlocking new value through simple, scalable and innovative solutions, with new opportunities and lower costs.



Cities

Transforming urban environments to improve quality of life by developing solutions for smart lighting and energy use, connectivity and mobility.

Enel Grids

Innovative infrastructure for sustainable development

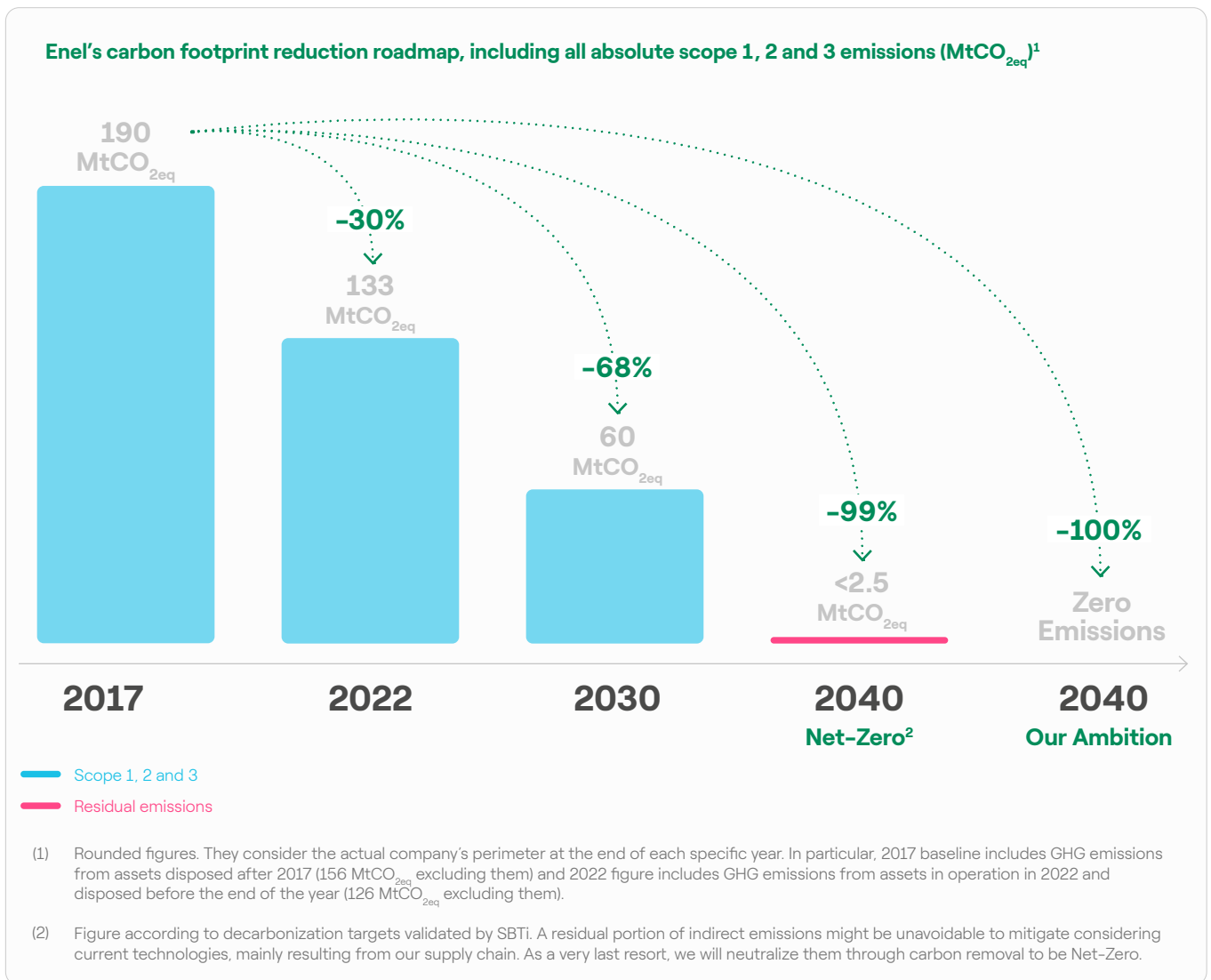
Guided by our Grid Futurability® strategy, we have adopted **a customer-oriented industrial approach to renew, reinforce and expand our grids** over the coming years. By strategically deploying technologies, we will make better use of existing power networks and build fully digital smart grids. We will also combine robust infrastructure with advanced technological solutions to increase grid resilience, participation and sustainability, both in urban and rural areas.

How can we ensure these grids will be sustainable? Fundamental components of the distribution network such as transformers, panels, switches and cables will be **constructed with circular economy models**, thereby maximizing the use of recycled material along the supply chain. This harmony of short-term and long-term strategic priorities boosts benefits and stakeholder satisfaction, while lowering the carbon footprint of our network assets.

Reducing our greenhouse gas emissions to zero

In 2022, Enel drew up a **new decarbonization roadmap** that envisages reducing all its direct and indirect greenhouse gas (GHG) emissions across its entire value chain. Indeed, the Group **aims to achieve a 100% reduction across all its GHG emissions by 2040 compared to 2017**.

Current targets foresee an overall 99% reduction, beyond the 90% threshold expected by global standards such as SBTi, as several exogenous factors shall be overcome in the short to medium term to reach such ambitious milestone. These factors include the development of new carbon-free technology solutions in the supply chain at large-scale, while also the change of certain market conditions and policies to enable zero emissions business models.



Decarbonizing across our business lines

We have defined four concrete targets to decarbonize our business activities, all them certified by the Science-Based Targets initiative (SBTi) and in line with keeping global warming within 1.5 °C.



Power generation

Scope 1

Greenhouse gas emissions from the thermoelectric power plants that we use to produce energy.



We will produce 100% renewable energy by 2040.



Integrated power

Scopes 1 and 3

Greenhouse gas emissions from the combination of the energy we produce (Scope 1) and from the energy we purchase to other producers to be sold to our customers to satisfy their energy demand (Scope 3).



We will sell 100% renewable energy by 2040.



Gas retail

Scope 3

Greenhouse gas emissions from the use of the natural gas we sell to end-customers.



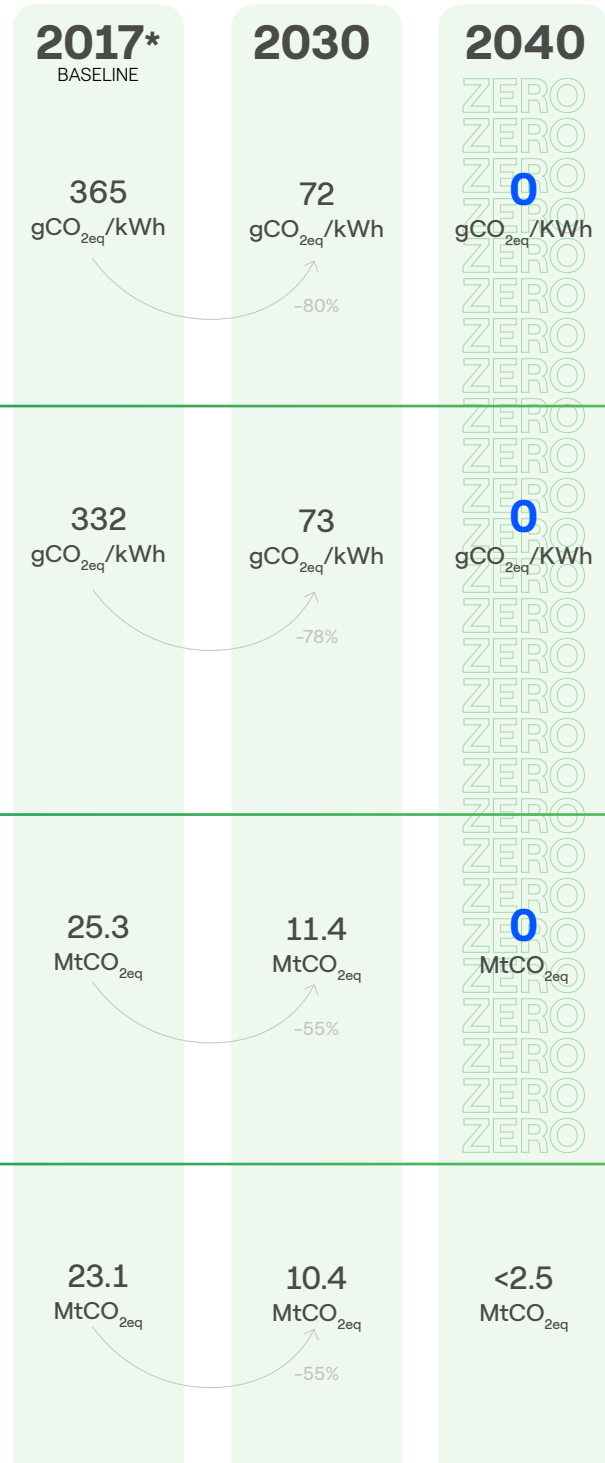
We will exit the gas retail business by 2040 and convert all our sales to electricity.



Additional emission sources

Scopes 1, 2 and 3

Greenhouse gas emissions from supply chain, fuel supply, fleets and buildings, SF₆, network losses and electricity consumption and network losses.



*2017 figures have been restated to exclude GHG emissions from assets disposed in 2017-2022 period in accordance with SBTi guidelines.

Working together

Global challenges need global solutions

We are dedicated to promoting sustainability within and outside of our company through national and international advocacy. Our **advocacy objectives** to support the energy transition and decarbonization include:



Promoting more ambitious climate policies



Collaborating with suppliers to support their decarbonization



Public carbon pricing policies



Accelerating the use of renewable technologies



Developing and upgrading infrastructure through smart grid technologies



Electrification as a means for decarbonizing energy end-uses

Carbon pricing

A policy tool to lower CO₂ emissions by shifting the costs of the emissions to producers. This can take the form of a carbon tax (a price per ton of emissions) or a cap-and-trade system (an auction of emission permits).

To achieve these objectives, **we collaborate with over 20 international associations**, including the United Nations Global Compact (UNGC), World Business Council for Sustainable Development (WBCSD) and The European Association for Storage of Energy (EASE), among others.

By engaging **with a wide range of stakeholders**, we work to promote **decarbonization**, drive forward the **clean energy sector** and create a **long-lasting sustainable and inclusive energy transition**.



Results that matter

In 2022, we took great strides towards decarbonization by developing key aspects of renewable energy and energy efficiency, including:

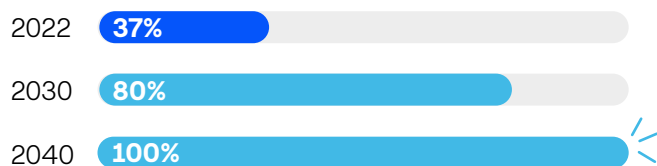
Renewable energy generation

In 2022 energy produced from renewable sources accounted for 49.4% of total consolidated generation.



Direct emissions reductions

Our direct greenhouse gas emissions from power generation (measured in $\text{gCO}_{2\text{eq}}/\text{kWh}$) decreased by 37% in 2022 compared to 2017.



Sustainable construction sites

We achieved 100% renewable construction sites.

Demand Response Capacity

We increased our demand response capacity in 2022 up to 9 GW.

Digitalization

Through our efforts to digitalize the electricity grid, the total number of end users with active smart meters has reached 45.8 million.

Electric mobility

Our network of publicly owned charging points for electric vehicles has expanded to 22.6 thousand.

Further information on our climate and sustainability strategy and performance is available in our 2022 Sustainability Report



We are well on our way towards zero emissions

Between
2023-2025
we will invest

~17 billion
euros in renewables

Our investments for 2023-2025

~94%
are aligned with
the **United Nations**
Sustainable
Development Goals

>80%
are aligned with the
European taxonomy



06

How are we impacting people?

A human-centric
approach



We empower people to thrive in the energy transition

Decarbonizing economy is a monumental step in promoting the well-being of both the planet and its people. As such, the challenges posed by the social and economic impacts of decarbonization shall be resolved by practices that promote **inclusion** and **equality**.

Just transition

In order to tackle pressing environmental challenges like climate change, pollution and plummeting biodiversity, nations and businesses need to transition to greener, resilient and climate-neutral economies and societies.

A just transition means **“greening” the economy in a way that is fair and inclusive** by creating decent work opportunities for all. To do so, we must maximize the social and economic opportunities of climate action, while minimizing challenges by cultivating effective social dialogue and respecting fundamental labor principles and rights.

These principles are not exclusive to specific sectors, development levels or regions, but rather, transverse all aspects of the transition.

Change means challenge, and also opportunity

Significant social, economic and political transitions are inherently disruptive. However, within a state of flux there is also the chance to redesign antiquated systems and **anticipate the needs of tomorrow**.

Innovation and sustainability are integral to our strategy, as is the spirit of service and care for our communities. Enel's zero emission ambition strategy supports a just transition to ensure that no one gets left behind. This reflects the Group's broader commitment to respecting human rights across the entire value chain.

The transition to a decarbonized economy has the potential to **accelerate growth and technological advancement within the energy sector**. In order to take full advantage of these opportunities, we need pioneering policies that balance the right to a safe, clean, healthy and sustainable environment with the rights of relevant stakeholders.

At Enel, we have created programs to **develop the new skills and workforce competencies** needed in the shift to a decarbonized economy. These include both enhancing existing skills to improve one's current role performance (upskilling) and learning new skills (reskilling). While some jobs may be lost, others will be created in their place. It is our responsibility to ensure everyone is prepared.

These programs also **involve our suppliers in confronting** the challenges of the energy transition. By sharing ideas and innovations, we help them integrate resilience into their path of change and growth.

Empowering customers to gradually convert their energy consumption to electricity – while simultaneously improving spending, efficiency, emissions and price stability – will be crucial in the upcoming decade. This entails improving and maintaining access to electricity in the most disadvantaged areas and among low-income populations.



We have a responsibility to the people, businesses and society in the areas in which we operate. Understanding their priorities and helping to fulfill their needs is essential to innovation and the **development of competitive, inclusive and sustainable business models** that benefit society.

All our actions are based on the principles **of social and environmental sustainability**. Every investment decision is made by engaging the main external and

internal stakeholders in order to raise awareness, develop a constructive dialogue and co-create development opportunities for the region and its people.

We are reducing carbon emissions to give the planet and its people a more sustainable future. We have embarked on our zero emissions ambition roadmap, taking bold steps guided by a clear and robust strategy to support us now and for the years to come.

The future is innovative. The future is sustainable.

The future is Zero Emissions.

enel