IEE Japan EU Japan Center for Industrial Cooperation

New Trends in the European Electric Power Business
- Suggestions for Japan -

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Eneco

Personal introduction Hiroshi Sakuma

- 2020 Member of Management Board of Eneco
- 2019 Corporate Advisor, Mitsubishi Corporation
- 2014 EVP, Group CEO, Global Environment & Infrastructure Group, Mitsubishi Corporation
- 2012 Senior Vice President, Division COO, New Energy & Power Generation Div., Mitsubishi Corporation
- 2007 General Manager, Power Generation & Marketing, International Unit, Power & Electrical Systems Div., Mitsubishi Corporation, Tokyo, Japan
- 2002 President, Diamond Generating Corporation, Los Angeles, U.S.A.
- 1980 Joined Mitsubishi Corporation (Power Systems International Dept.), Tokyo, Japan

New Energy sub-committee member, METI (2014-2017)

Agenda

Brief introduction of Eneco in European context, followed by Eneco strategy

Introduction

- History
- Development since 2007
- Shareholders Mitsubishi Corporation and Chubu

European energy market

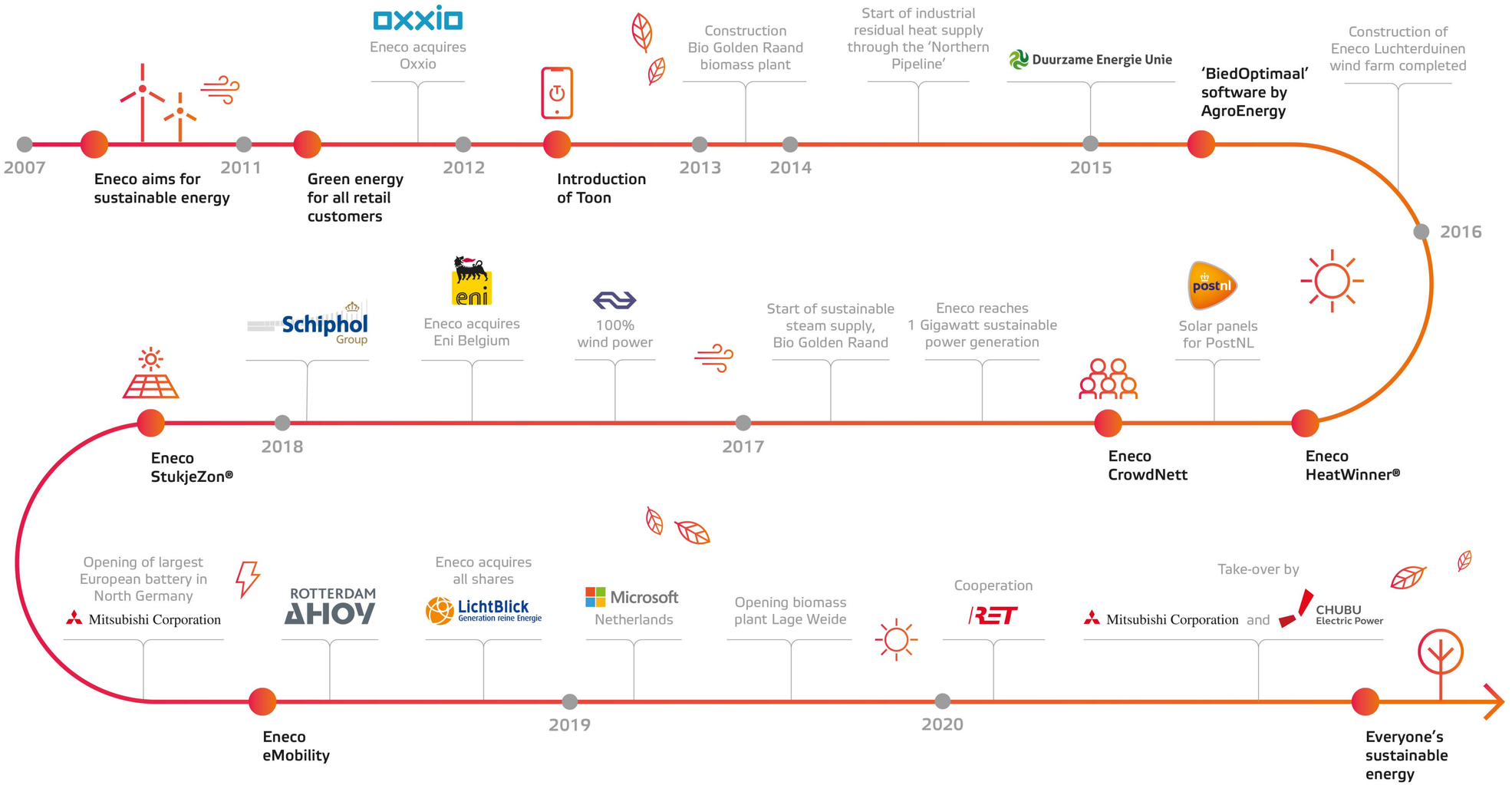
- Market characteristics
- Regulation & lessons learned
- Future developments

Strategy

- Strategies & portfolio
- One Planet targets
- Strategy execution: examples

Eneco | ahead of change

Customer centric renewable strategy starting in 2007



Eneco at a glance

Eneco activities in NL; DE; BE and UK, headquarter in Rotterdam NL (figures YE 2020)

FTE average
c. 3,000

Total revenues
c. € 4,148 million

Customers
c. 5.9 million

EBIT
c. € 163 million

Active in 4 countries
The Netherlands, Belgium, Germany and The United Kingdom

Eneco acquisition by Mitsubishi Corporation and Chubu

25 November 2019: announcement of acquisition by MC (80%) and Chubu Electric Power 20%); Eneco previously held by 44 municipalities

- Acquisition rationale highlights:
  - Europe is frontrunner in energy transition; Eneco is frontrunner in Europe
  - Eneco is a vertically integrated company so balanced risk profile as well as learnings that can be leveraged across the value chain
  - Similar chemistry of MC and Eneco

European energy market | characteristics

- High level of electricity market integration in NW-Europe due to high level of cross-border interconnection capacity and market harmonization
- Competitive and liquid electricity market with marginal price setting (so no explicit Capex coverage in market price)
- Rapidly declining cost of renewables and increasing corporate demand

Source: TSC net

European energy market | lessons learned

Theme	Aspect	Lessons learned
Decarbonisation: increasing share and cost reduction of renewables	• Joint efforts of renewables development by policy makers and developers • EU ETS carbon trade mechanism	• Efficient risk distribution, e.g., substation and subsea cable offshore wind NL pre-installed by TSO reduces risk and hence cost of offshore parks • Develop resilient carbon markets (e.g., market stability reserve) to avoid ineffective price levels
Affordability and role of distributed assets	• Rooftop solar is attractive for customer but also costly to suppliers • Low voltage grid issues	• Netting as in NL is effective to accelerate rooftop solar but hard to reverse • New grid tariff structures incentivizing consumers to shift their peak load (e.g., in Belgium) to manage grid costs
Security of supply and reliability	• Energy efficiency of demand side • Grid development	• EU 2030 energy efficiency targets are structurally lagging; joint effort by policy makers, energy suppliers society and customers is required • Grid: very high investment required amidst planning challenges (see e.g., N-S corridor Germany)

European energy market | future developments

More ambitious carbon targets requiring more system integration (physical and contractual)

Key system challenges 2020 – 2030: how to balance the system?

1. **Increasing volatility** short term, due to increasing share of renewables and limited electrification of energy demand; by 2030 most conventional electricity demand is sourced from renewables
2. **Missing money** challenge for all (flexible) power technologies (under current market conditions)
3. **System integration** of renewable assets and consumption to decarbonize other energy demand segments
4. **Improved demand and supply forecast**
5. **Congestion** in the power grid that slows down demand side electrification and renewable growth
6. **PPA market growth** to facilitate integration and offset merchant risk of renewable electricity production

EU direction

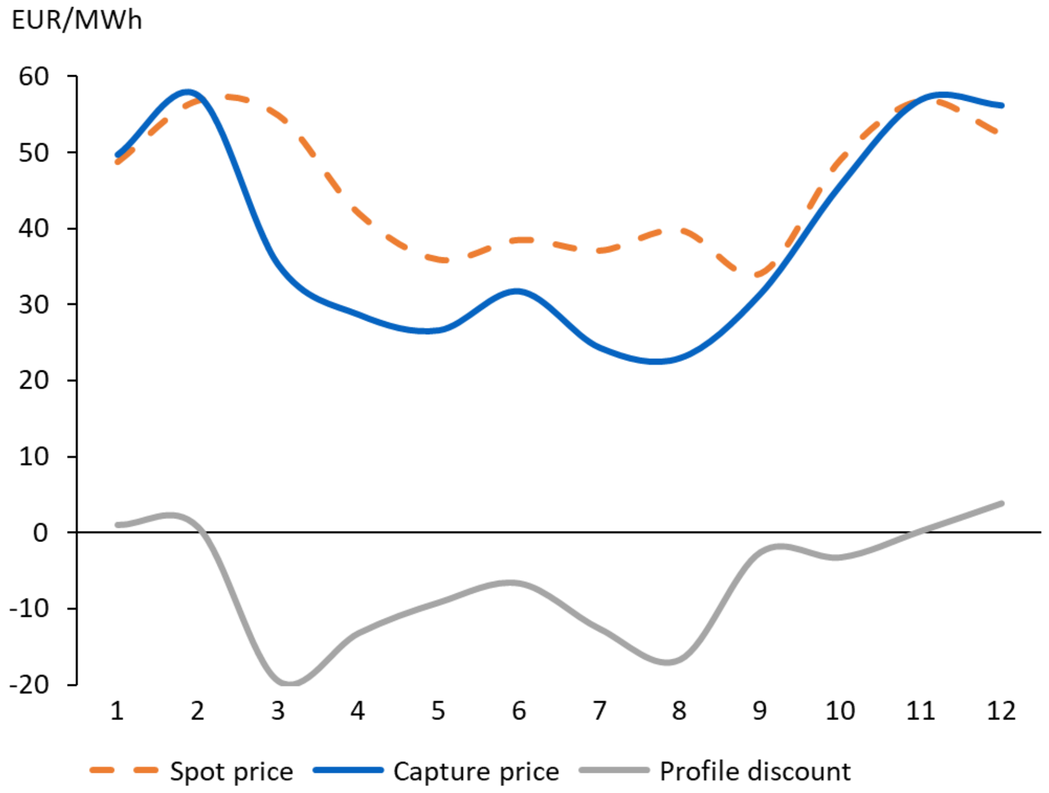
- Last month: EU CO2 reduction target of 55% reduction vs. 1990 levels, a substantial increase from previous 40% reduction target
- Increasing emphasis on system integration to attain decarbonisation targets (e.g., power to X); implementation of revised Renewable Energy Directive II
- July 2021: announcement of binding national targets for renewables (wind and solar); current drafting by European Commission

Source: EC; Reuters; image: Euractive

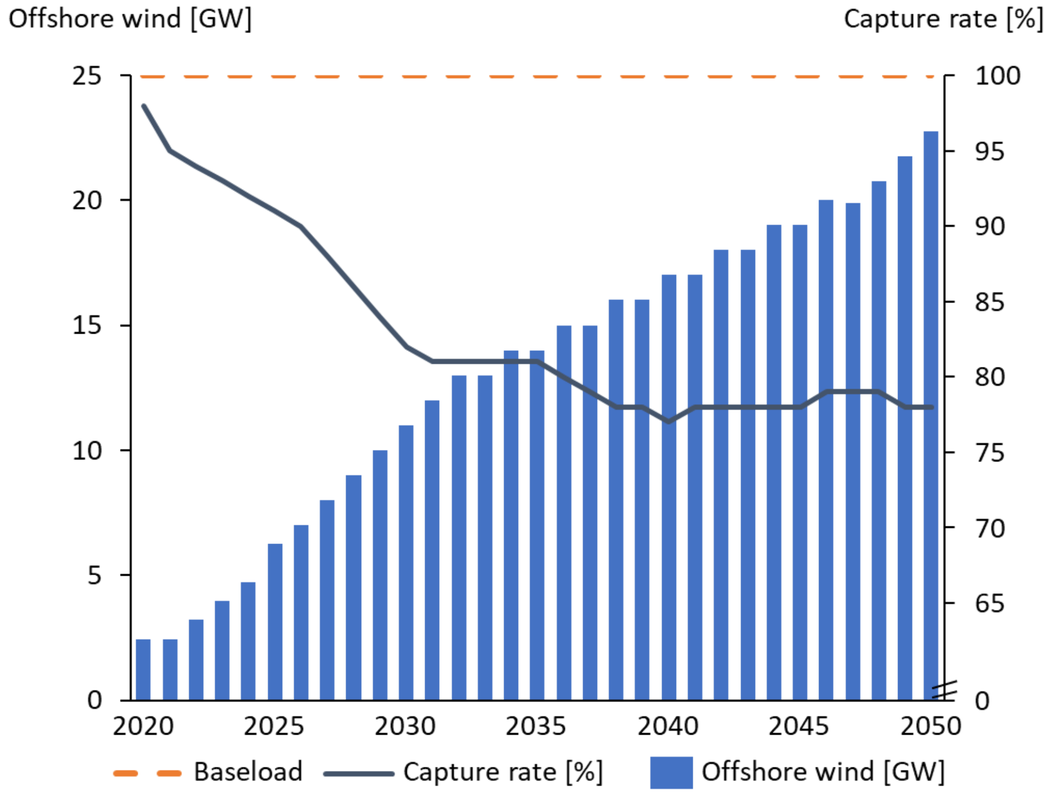
European energy market | profile effect

Capture rate determined by deducting seasonality and covar from average prices

12-month renewable capture rate offshore wind



Long term offshore wind capture rate development



Source: Eneco Fundamental Analysis; AFRY EZK study

European energy market | imbalance

Imbalance driven by renewables and consumption deviations, with future uncertainties resulting in wide range of imbalance projections

Uncertainties on key drivers…

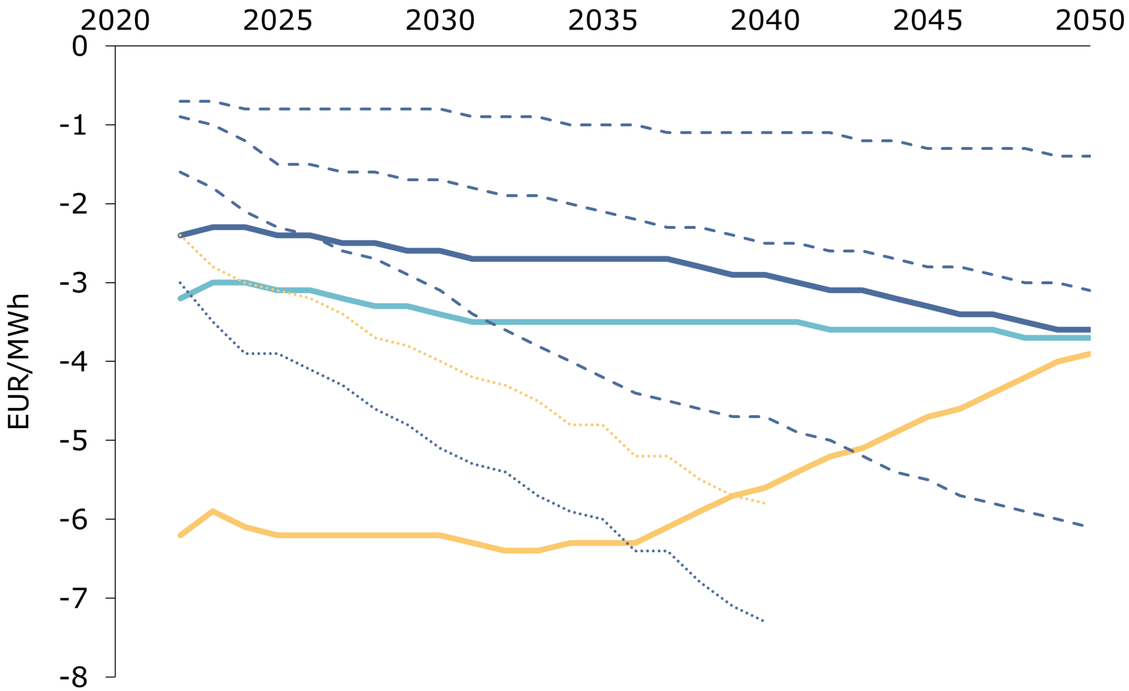
Imbalance inducing factors

- Renewable production deviation vs forecast
- Demand consumption vs forecast
- Regulatory/ market rules limiting flexible capacity

Imbalance resolving factors

- Curtailment of renewables
- New flexible demand such as e-boilers and EV
- (battery) storage

…results in a wide range of imbalance cost projections (various external scenarios)



Source: Eneco Fundamental Analysis and external expert projections

Offshore wind market trends

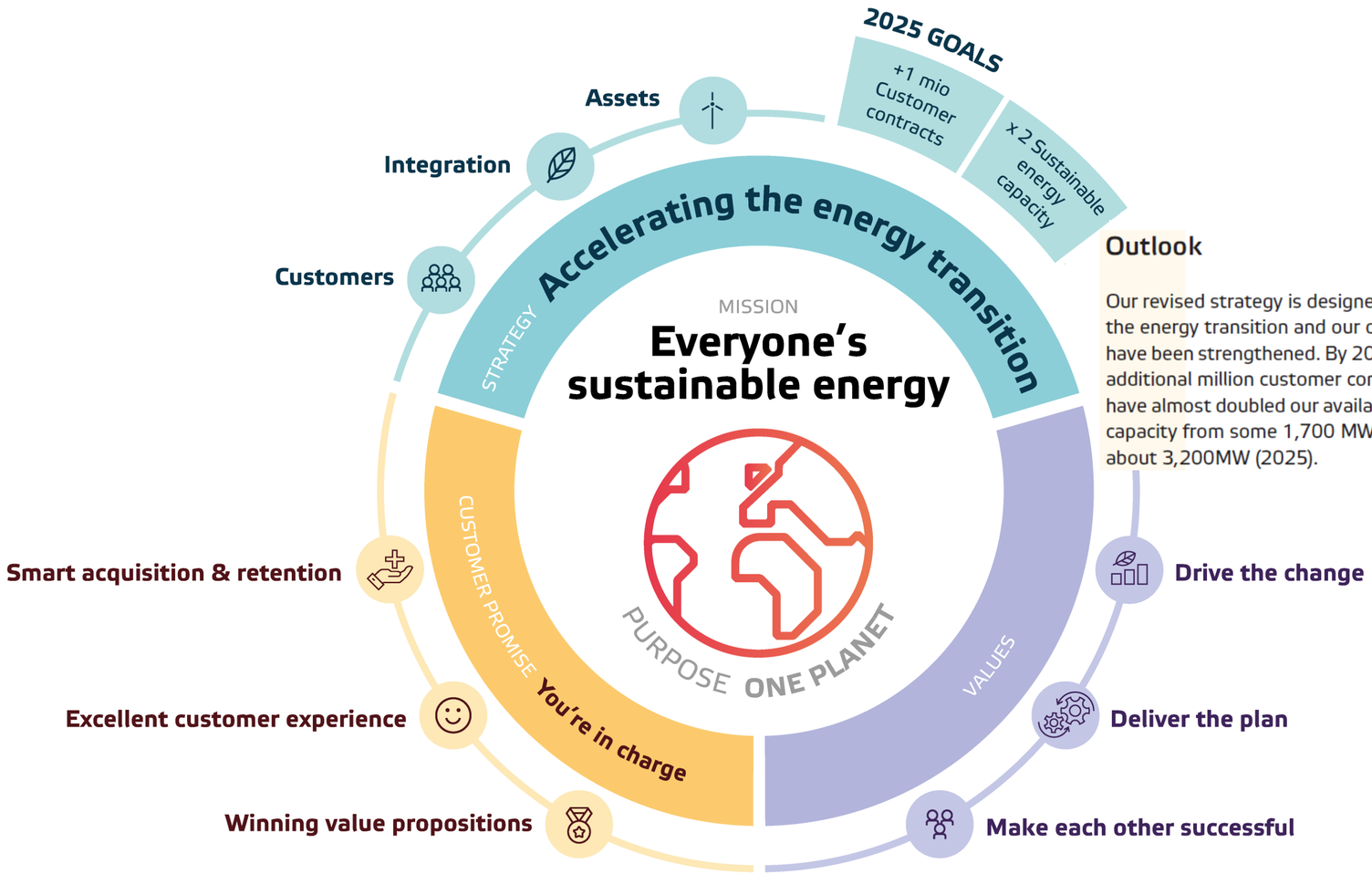
Some observations

- Bigger turbines, larger project size, unclear turbine cost prospects
- Towards pay-to-build instead of subsidies
- More diverse equity holders including power companies, private equity funds, oil majors, and industry players (see Hollandse Kust South example) reflecting industry maturity as well as system integration
- Alignment of 4GW/year supply chain with 10GW/year of demand

Source: Luchterduinen windpark

Business Strategies & Portfolio | Overview

Our goal is to accelerate the energy transition by putting our customers in charge, with a strategy that is structured along three axes: Customers, Integration and Assets



Outlook

Our revised strategy is designed to accelerate the energy transition and our own targets have been strengthened. By 2025 we want an additional million customer contracts and to have almost doubled our available sustainable capacity from some 1,700 MW (2020) to about 3,200MW (2025).

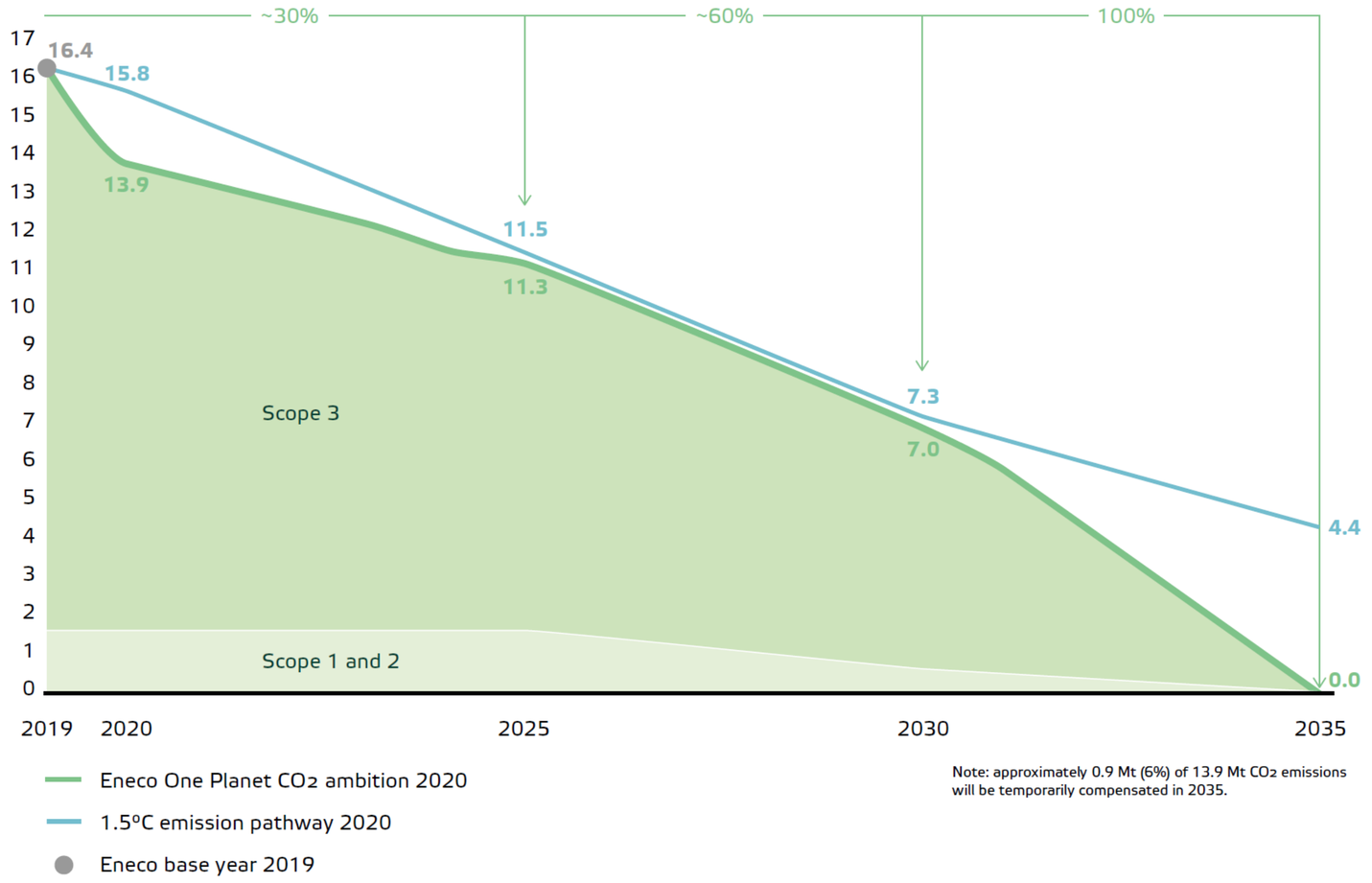
Eneco One Planet Plan: **climate neutrality in 2035**

Climate neutral operations and supply of energy to our customers

- Provide power to our customers using only solar and wind energy
- Phase- out natural gas by converting or closing our gas-fired power stations at the latest in 2035 and making natural gas-fired homes and buildings more sustainable with insulation, (hybrid) heat pumps and heat grids
- Accelerate sustainable heat through innovation and investment in renewable sources

One planet: emission trajectory

Emissions scope 1, 2, 3 (Mt CO2)



Milestones & details

1. **30% reduction in 2025**
2. **60% reduction in 2030**
3. **100% reduction in 2035**

- Base year: 2019
- 90% of emissions is scope 3
- Close cooperation with customers and significant co-investment will be required

Source: Eneco OPP whitepaper

Strategy execution: example 1/3

Amazon corporate PPA allows Eneco to invest in zero subsidy offshore wind

- Zero subsidy offshore wind in NL; total asset size 759MW in JV with Shell
- 130MW contracted by Amazon
- COD 2023

Source: Eneco corporate website

Strategy execution: example 2/3

Heat-pump with waste-water source to decarbonize district heating

- Heat pump using waste-water as heat source for Utrecht district heating
- 25MW thermal capacity; enough to heat 10.000 homes
- COD 2022/ 2023

Strategy execution: example 3/3

2022: lease of 48MWh battery developed by Giga Storage

- 24MW/ 48MWh; location Flevoland NL
- Long term lease by Eneco
- Developed by Giga Storage

Thank you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