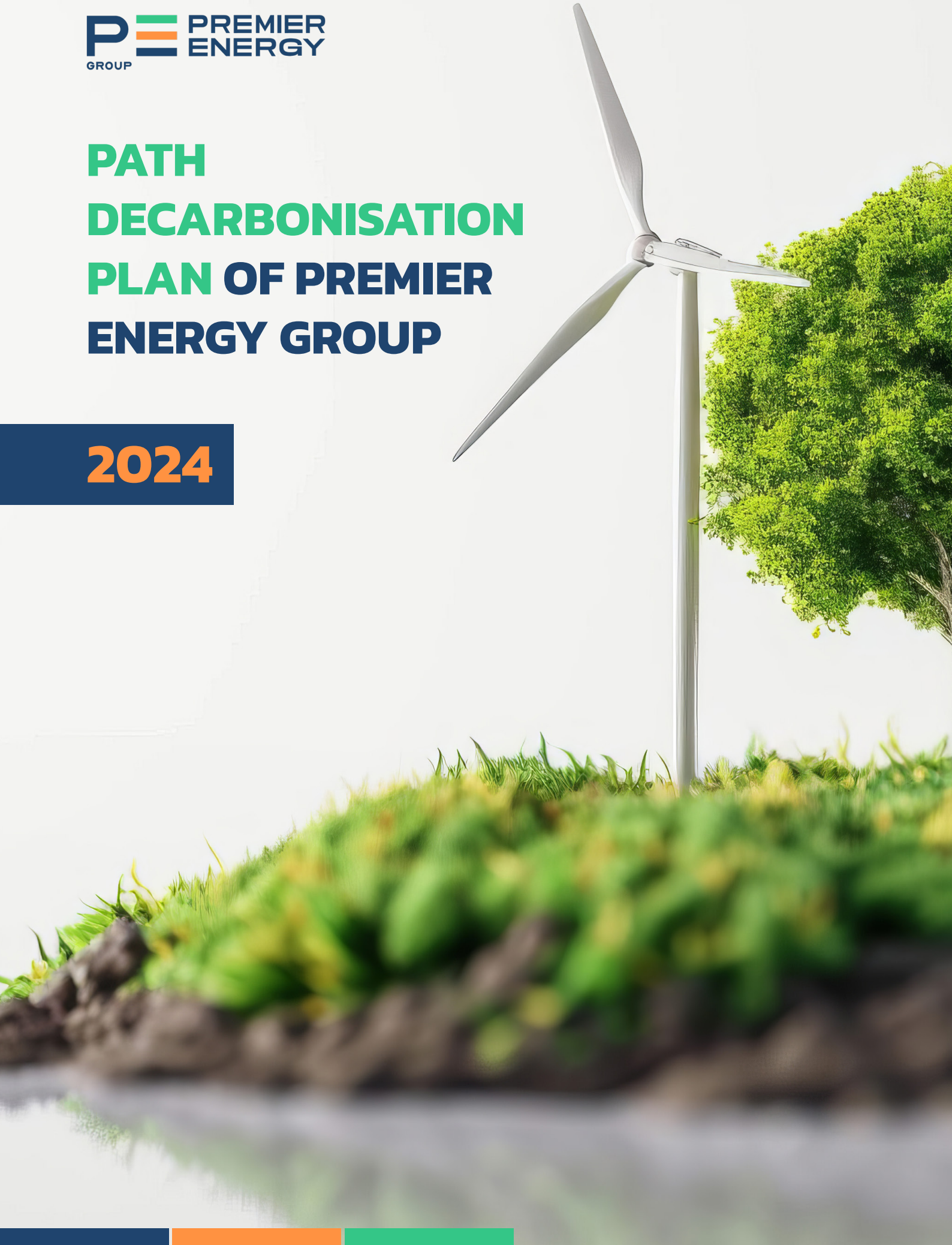
PREMIER ENERGY GROUP

PATH DECARBONISATION PLAN OF PREMIER ENERGY GROUP

2024



Disclaimer

This Decarbonisation Plan (the "Plan") of Premier Energy Group (hereinafter "PE") is provided for informational purposes only and is subject to various assumptions and external factors that may impact its accuracy, completeness, or future feasibility. The Plan outlines PE's ambitions related to its environmental performance and proposed decarbonisation interventions, but these should not be interpreted as guarantees or commitments.

The forward-looking statements contained herein, including but not limited to targets for carbon neutrality by 2045, reductions in Scope 1, 2, and 3 emissions, and the implementation of hydrogen blending, electric vehicle transitions, and grid decarbonisation, are based on assumptions and projections regarding future events, external regulatory approvals, technological advancements, and market conditions. These assumptions and projections are subject to significant uncertainties and risks, many of which are outside of PE's control.

External Factors

The Plan is heavily reliant on external factors such as the regulatory environment, the pace of decarbonisation in the Moldovan and Romanian national grids, the advancement of hydrogen infrastructure, and market conditions for renewable energy. Premier Energy Group cannot guarantee that such factors will develop as anticipated, nor can it control the speed or scale of these changes. Any delays or changes in these external developments may impact the Company's ability to achieve the stated targets within the projected timeframes.

Forward-Looking Statements

The Plan includes forward-looking statements, including but not limited to: (i) expected future emissions reductions or carbon neutrality targets, expected impact of regulatory changes, (ii) anticipated technological advancements (e.g., hydrogen blending, renewable energy adoption), (iii) estimates of operational performance as well as (iv) plans for infrastructure upgrades such as grid improvements. These statements involve known and unknown risks, uncertainties, and other factors that may cause the PE's actual performance or achievements to be materially different from those expressed or implied in the forward-looking statements.

Factors that could cause actual results to differ materially include but are not limited to: (i) economic, political, and regulatory conditions in Moldova, Romania, and globally; (ii) technological advancements and market adoption of hydrogen, renewable energy, and electric vehicles; (iii) changes in energy supply and demand, and (iv) actions by governmental and regulatory bodies.

The forward-looking statements contained in this Plan speak only as of the date of this document. Premier Energy undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise.

Investment considerations

This Plan is not intended to provide the basis for any investment decision, nor should it be considered as a recommendation by Premier Energy Group or other parties mentioned in this report, including but not limited to AtkinsRealis, to purchase, hold, or sell securities. The information provided in this document is not to be construed as financial, legal, tax, investment, or other advice. Investors should conduct their own investigations and evaluations of the Company's business prospects and the assumptions contained in this Plan before making any investment decision.

Premier Energy Group is a publicly listed company on the Bucharest Stock Exchange, and the information contained in this document should not be relied upon as an indicator of future financial performance or operational success. Any investment in PE's securities involves risks and uncertainties, and investors are urged to review the PE's filings with the Bucharest Stock Exchange and other publicly available materials, including, but not limited to: Listing Prospectus, Annual and Periodical Financial reporting, for a more comprehensive understanding of these risks.

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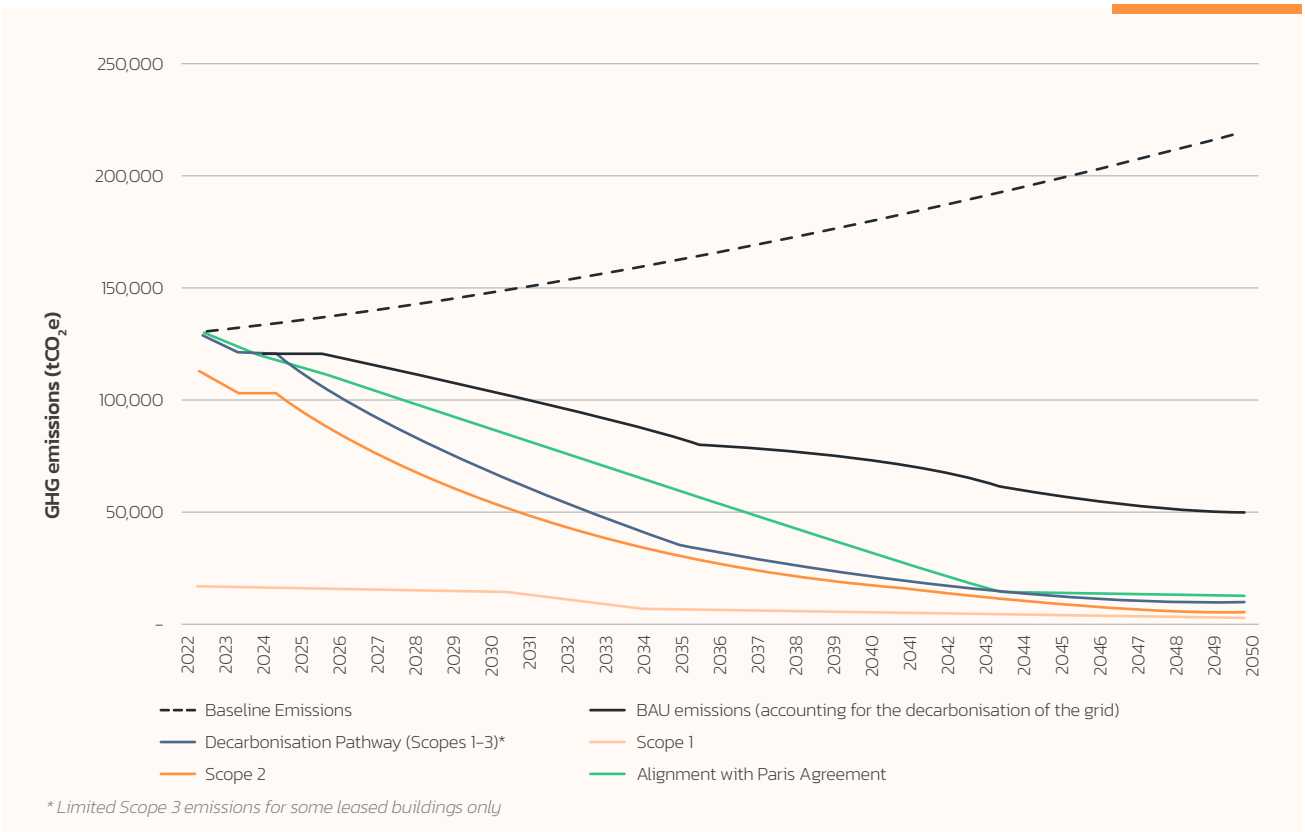
Executive Summary

Premier Energy Group (hereafter "PE") is proactively seeking to become carbon neutral by 2045. To support this ambition, this document outlines the Decarbonisation Plan for PE in line with the Paris Alignment of Counterparties (PATH) framework. This plan incorporates an emissions baseline, the Business-as-Usual (BAU) scenario and the measures PE can adopt to reduce greenhouse gas (GHG) emissions, considering a mid-term quantitative emissions target and longer-term commitment to carbon neutrality. These elements are used to generate a decarbonisation pathway, which seeks to align with the Paris Agreement whereby, analysis of emission reduction scenarios[1] suggests global emissions need to fall by at least 4.2% on an annual linear basis from 2020 in order to limit the annual mean global temperature increase to 1.5°C

To understand the current emissions trajectory of PE, a baseline quantification of Scope 1, 2 and limited Scope 3 (for leased buildings) emissions is provided. A BAU scenario is modelled to project how the emissions of PE will change over time assuming no effort is made to decarbonise, which considers factors such as customer growth and network expansion. Following this, a combined decarbonisation pathway across Scopes 1, 2 and leased buildings (scope 3) is presented to outline how PE can holistically decarbonise their operations. This pathway consists of a range of carbon reduction interventions that were agreed during a series of workshops with relevant experts from across PE operations.

Following implementation of the programme of carbon reduction interventions developed within this study, alongside external grid decarbonisation, PE could see their annual emissions fall from a 2022 baseline of 129,356 tCO2e to 8,179 tCO2e (6% residual emissions) by 2050, as illustrated in Figure 1-1.

Figure 1-1 - Decarbonisation roadmap of the PE's emissions to 2050, following the modelled programme of interventions, with BAU for reference.



[1] Science Based Targets, 2019, Foundation of Science-based Target Setting: Available at: foundations-of-SBT-setting.pdf (sciencebasedtargets.org)

As identified in Figure 1-1, Scope 2 emissions present the biggest challenge in PE's decarbonisation journey as they contribute 87% of the 2022 baseline. The majority of scope 2 emissions are due to the inherent nature of losses occurring from power distribution networks. These losses are not possible to remove completely, and the associated emissions are challenging to reduce due to the early maturity of net zero initiatives across Moldova and strict regulatory environment. Whilst noting these limitations, PE have been implementing and are committed to future measures to reduce these losses where practical, as well as investing significantly in the generation of renewable energy across their business.

Suggested interim and long- term targets to be adopted by PE are Scope 1 and 2 GHG emissions reductions of 50% by 2035 and 90% by 2050 compared to the 2022 baseline. These targets and the proposed decarbonisation pathway are in close alignment with Paris Agreement. It is important to note that PE's target of achieving operational net zero, or carbon neutrality by 2045 can be met based on the modelled decarbonisation trajectory. However, given the highly regulated sector in which PE operates, the ambition to achieve carbon neutrality by 2045 is contingent upon external developments and the successful implementation of its decarbonisation initiatives.

01

Background and Introduction

PE is a leading vertically integrated energy and power infrastructure entity in Southeastern Europe[2] with a primary focus on providing reliable energy and services to customers across Romania and Moldova.

PE's core activities encompass renewable energy generation, electricity and natural gas distribution and supply and associated services for both household and non-household consumers. PE holds a significant market share, supplying **70%** of Moldova's electricity and ranking as the third largest natural gas distributor in Romania[2].

Over the past decade, PE has undertaken significant modernisation work on Moldova's power network, investing approximately 15 million euros annually to upgrade infrastructure. Additionally, PE promotes renewable energy adoption in the regions it serves. During 2023, in Moldova 6% of the electricity supplied by PE was sourced from renewable energy production. In Romania, alongside operating the gas network, PE has a renewable energy generation capacity of more than 1000 MW either owned, managed or indevelopment, as well as continued expansion plans including Battery Energy Storage Systems.

PE is committed to sustainability and environmental stewardship, actively contributing to efforts to reduce GHG emissions, as demonstrated in their Annual Corporate Social Responsibility (CSR) reports[3]. As part of these efforts, PE is looking to develop a more detailed understanding of their impact on the climate and the steps they can be taken to mitigate this impact through development of a target-based decarbonisation plan.

The Decarbonisation Plan for Premier Energy plans to drive emissions reductions and strengthening resilience to climate change in line with the Bank's Paris Alignment of Counterparties (PATH) framework. This requires the Decarbonisation Plan to incorporate the following elements:

1. A mid-term, rolling, quantitative emission reduction target
2. Options over a longer time horizon to achieve carbon neutrality towards mid-century.

Following an initial context review, this document incorporates the following sections to align with the PATH requirements:

- The emissions baseline, which demonstrates the current emissions performance of PE;
- The business-as-usual (BAU) scenario, which illustrates the projected trajectory if no interventions are implemented;
- Short and mid-term quantitative emission reduction interventions and proposed high level measures required to enable long-term decarbonisation;
- A decarbonisation pathway and alignment to the Paris Agreement;
- A mid-term, rolling, quantitative emission reduction target; and
- A long-term proposed target and options to reach carbon neutrality by 2050.

[2] Emma Capital, Premier Energy. Available at: https://www.emmacapital.cz/premier-energy
[3] Premier Energy, Corporate Responsibility Policy. Available at: https://premierenergy.md/cunoaste-ne/politici/politica-de-responsabilitate-corporativa/

02 Context Review

2.1 Policy Landscape

Table 2-1 outlines key documents related to decarbonisation efforts in Moldova and Romania, along with a brief context for each. These policies are subsequently reflected, as relevant, in following sections of this report.

Table 2-1 - Policy Landscape

Document	Context
Paris Agreement[4]	The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. The agreement entered into force on 4 November 2016. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels". Subsequently the Intergovernmental Panel on Climate Change (IPCC) (jointly established by the UN and the World Meteorological Organization (WMO)), warned global warming must not exceed 1.5°C to avoid the worst impacts of climate change. Both Romania and the Republic of Moldova are fully committed to the Paris agreement's objectives.
European Climate Law[5]	In 2021 the EU adopted its first European Climate Law. The European Climate Law sets a legally binding target of net zero greenhouse gas emissions by 2050.
European Green Deal[6]	Strategy by the European Union to achieve climate neutrality by 2050 and drive sustainable growth. Targets include a 55% reduction in GHG emissions by 2030 compared to 1990 levels and zero (neutral) emissions by 2050.
Renewable Energy Directive (EU)[7]	The Renewable Energy Directive is the legal framework for the development of clean energy across all sectors of the EU economy, supporting cooperation between EU countries towards this goal. It contains a binding renewable energy target of at least 42.5% by 2030.
Integrated National Energy and Climate Plan [Draft]	Sets out Moldova's long term energy objectives, including targets for renewable energy deployment of electricity from renewable sources as well as commitments to ban pure-diesel vehicles starting in 2040 and promote the uptake of hybrid and electric vehicles.
Integrated National Energy and Climate Plan of Romania 2021 -2030[8]	Outlines Romania's strategy for energy transition including a target of 40% domestic reduction in GHG by 2030, compared to 1990 and a target of 32 % renewable energy consumption in 2030 as well as commitments for increasing the adoption of electric vehicles and expanding charging infrastructure.

[4] United Nations, Paris Agreement, Available at: https://unfccc.int/process-and-meetings/the-paris-agreement
[5] European Commission, European Climate Law. Available at: Regulation - 2021/1119 - EN - EUR-Lex (europa.eu)
[6] European Commission, The European Green Deal. Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/story-von-der-leyen-commission/european-green-deal_en
[7] European Commission, Renewable Energy Directive. Available at: https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en
[8] The 2021-2030 Integrated National Energy and Climate Plan. Available at: https://energy.ec.europa.eu/system/files/2020-06/ro_final_necp_main_en_0.pdf

03 Emissions Baseline and BAU Scenario

An emissions baseline was established for PE's GHG emissions for the financial year 2022. At the time of data collection this was the latest complete dataset available. This baseline serves as a starting point from which the organisation's performance can be measured and also provides the basis for generating the BAU scenario.

3.1 Emissions Boundaries

Organisational boundary

The organisational boundary includes all businesses and operations that constitute PE for the purpose of managing their direct GHG emissions (scope 1) and indirect GHG emissions from the use of electricity (Scope 2). It includes all directly owned assets of which PE has operational control and is therefore solely responsible for in terms of acknowledgement and management of the totality of these assets' GHG emissions. A list of all operations and buildings that are included in PE's organisational boundary is provided in Figure A-1, Appendix A.1.

Operational boundary

PE's operational emissions are split into three internationally recognised scopes. These relate to the extent of which an emissions source is directly or indirectly under the organisation's primary control and whether the emission source is purchased by or used within their classified organisational boundary.

A description of the scopes from the Greenhouse Gas Protocol is found below, with the term GHG emissions referring to the carbon dioxide equivalent (CO_2e) of the seven GHG emissions identified in the Kyoto Protocol, the most prevalent of which are carbon dioxide, methane and nitrous oxide.

- **Scope 1** covers direct GHG emissions which occur from sources that are owned or controlled by PE, such as gas and diesel consumed through heating systems and owned vehicles or gas losses through the operation of gas distribution network in Romania.
- **Scope 2** covers GHG emissions from the generation of purchased electricity for owned buildings as well as electrical losses through the operation of the electricity distribution network in Moldova.
- **Scope 3** covers all other indirect emissions as a consequence of their activities but occurring from sources not owned or controlled by PE (value chain emissions), such as the electricity or natural gas consumed on leased buildings (both downstream and upstream).

Scope 3 emissions are excluded from this study with the exception of upstream and downstream leased assets where data has been provided (see Appendix A for the list of leased buildings considered)

3.2 Scope 1-3 Emissions

The 2022 emissions baseline broken down per scope is presented in Table 3-1. From the table, scope 2 emissions represent the greatest proportion of total GHG emissions for PE, making up 86.5% in the baseline year.

As presented in Table 3-1, electricity distribution losses represent 86.0% (111,267 tCO2e) of the total PE GHG emissions in the baseline year, while gas losses, associated with the operation of gas distribution network account for 11.6% (15,024 tCO2e). Fuel used for vehicles and owned buildings makes up 2% (2,671 tCO2e) and the remaining 0.3% is attributed to natural gas and electricity consumption for leased buildings (scope 3 emissions).

Modelling Assumptions for the baseline are detailed in Appendix D.1.

Table 3-1 – Total GHG scope 2-3 emissions (tCO2e) for the baseline year, 2022

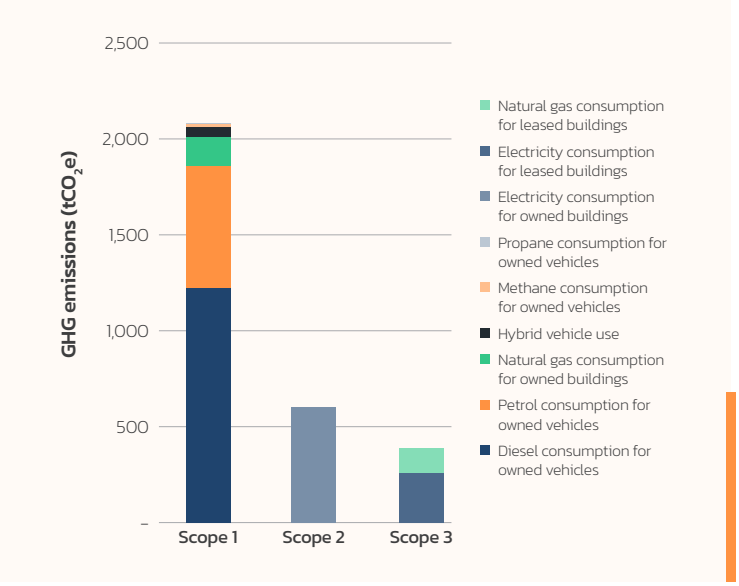
Scope	Source	GHG Emissions (tCO2e)	% of total
Scope 1	Gas losses (recorded and estimated unrecorded leaks)	15,024	11.6%
	Diesel consumption for owned vehicles	1,222	0.9%
	Petrol consumption for owned vehicles	647	0.5%
	Natural gas consumption for owned buildings	139	0.1%
	Hybrid vehicle use	48	<0.1%
	Methane consumption for owned vehicles	8	<0.1%
	Propane consumption for owned vehicles	3	<0.1%
	Total Scope 1	17,091	13.2%
Scope 2	Electricity distribution losses	111,267	86.0%
	Electricity consumption for owned buildings	604	0.5%
	Total Scope 2	111,871	86.5%
Scope 3*	Electricity consumption for leased buildings	266	0.2%
	Natural gas consumption for leased buildings	128	0.1%
	Total Scope 3	395	0.3%
	Total **129,356**		

**Data only captured for leased buildings assets; no further scope 3 categories modelled to date.*

Emissions from Buildings and Vehicles

Figure 3-1 below provides an overview of the baseline GHG emissions from buildings and vehicles. The total emissions associated with the operation of buildings and vehicles during 2022 was 3,065 tCO2e, out of which 67% is attributed to the fuel consumption from owned buildings and vehicles (scope 1), 20% to the electricity consumption from owned buildings (scope 2) and 13% to the electricity and natural gas consumption from leased buildings (Scope 3). A further breakdown per country is provided in Appendix B.1.1 and B.1.2.

Figure 3-1 - 2022 baseline GHG emissions from buildings & vehicles



Emissions from Electricity and Natural Gas Distribution

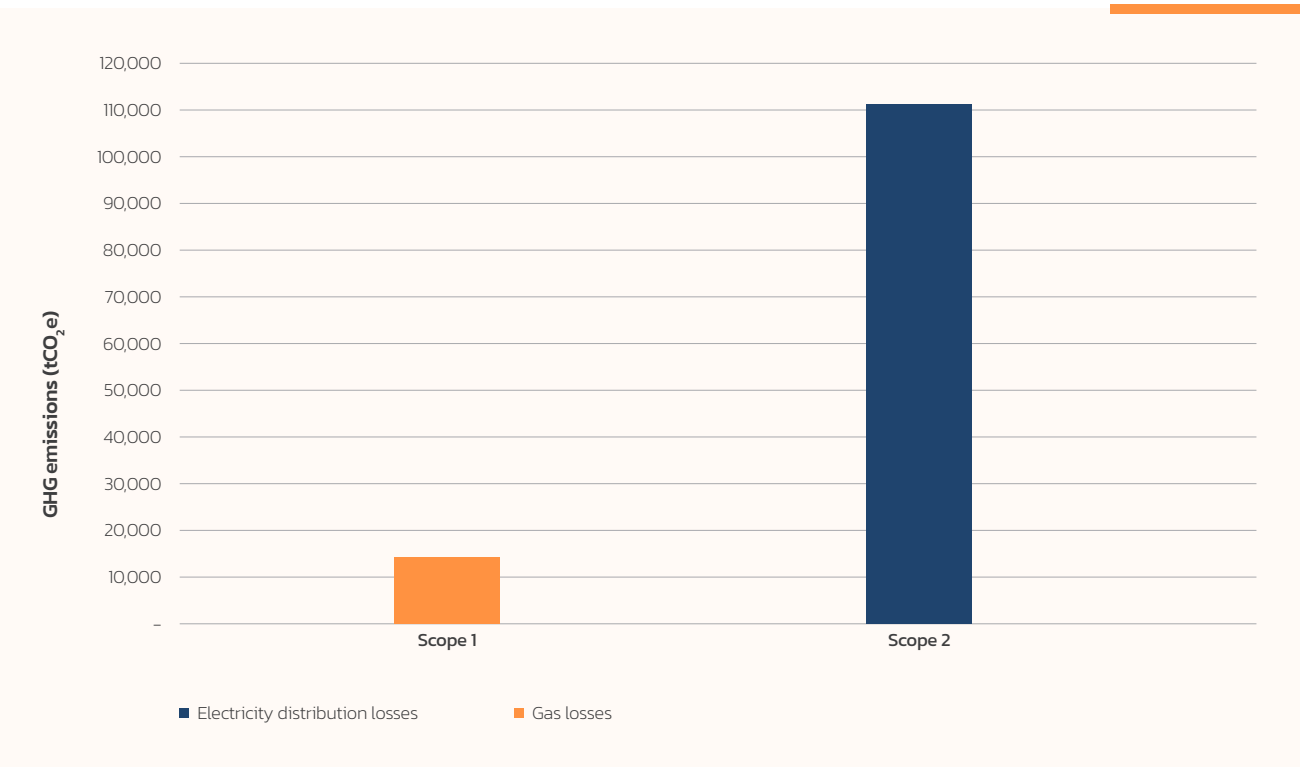
Figure 3-2 provides a breakdown of GHG emissions associated with electricity and natural gas distribution and supply.

For gas losses, emissions estimates were based on the significant recorded leakage incidents provided by PE plus estimated leakage based on the total length of polyethylene and steel piping operated by PE. The recorded data provided information on number of recorded incidents from pipeline surveys and public reporting, location of leak (above ground or underground), and estimated duration of leakage. For the per km of piping leakage rate, a typical leakage rate based on Independent Gas Transporters (IGT) test[9] data of polyethylene and steel pipelines was used. Combining these two sets of data, the total estimated pipeline baseline leakage per annum, and therefore methane emissions, was determined.

For the electrical losses, the installed capacity at each voltage level was initially used to calculate associated losses across the network; however lack of data on utilisation or load/diversity factor, led to unreliable estimates for losses for each line. The key learning from this exercise was that the majority of losses occur in the low voltage distribution lines at 0.4kV.

Instead of estimating emissions based on individual line losses, total electrical losses figures were estimated based on the official measurement on injections in PE Distribution System Operator (DSO)'s Network registered by the Transmission System Operator (TSO) (Moldelectrica) and the actual load consumption from metered data provided by PE (audited by the National Agency for Energy Regulation of the Republic of Moldova – ANRE). These figures are high-level and do not provide a breakdown of losses per voltage level.

Figure 3-2 – 2022 baseline GHG emissions from the electricity and natural gas distribution and supply networks



[9] https://www.gasgovernance.co.uk/sites/default/files/ggf/2023-11/PE%20leakage%20estimate%20for%20INA%20%28final%29.pdf

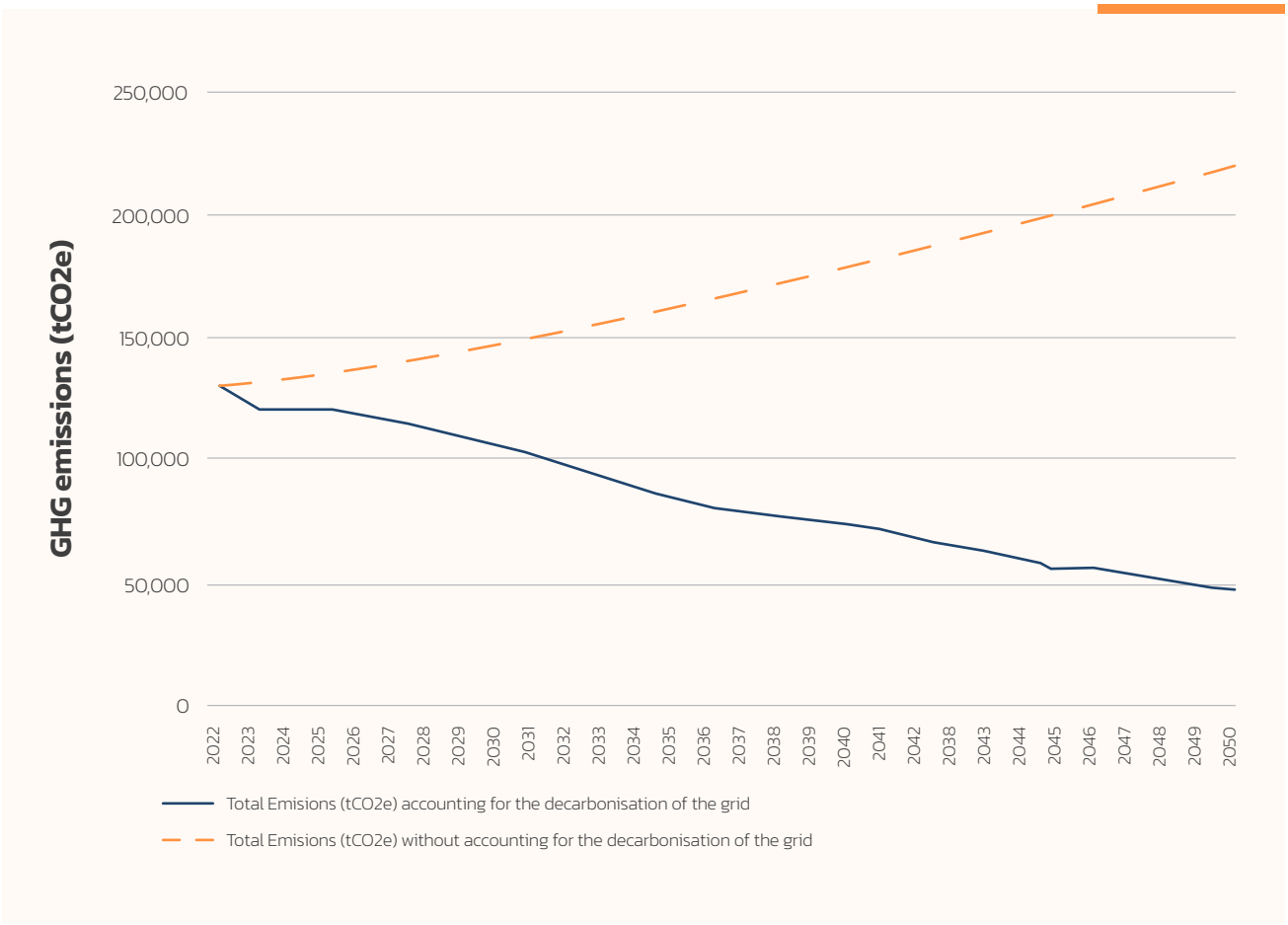
3.3 Business As Usual (BAU)

Figure 3-3 below presents the BAU graph of PE's GHG emissions. The BAU scenario projects PE's GHG emissions to 2050 if no action is taken beyond the financial commitments already made or government policy commitments, in this case comprising the projected decarbonisation of the electricity grids across Moldova and Romania. It should be noted that PE has only a very small influence over this and it primarily outside PE's control, albeit they are committed to growth in renewable energy supply (RES) and are the largest RES operator in both countries. Further illustration of the BAU scenario is provided in Appendix C, with separate figures showing scope 1,2 and 3 BAU emissions. Assumptions for the BAU are detailed in Appendix D.2

In the baseline year 2022, total scope 1-3 emissions amounted to 129,356 tCO_{2e} (as further detailed in Table 3-1), with projections indicating a decrease to 48,566 tCO2e in 2050 when accounting for the decarbonisation of the grid. Conversely, projections of business growth show an increase to 218,459 tCO_{2e} without considering the decarbonisation of the grid (as presented in Figure 3-3 below).

The projected decarbonisation of the national electricity grid accounts for a 78% reduction in emissions from the BAU in 2050, or 62% reduction if compared not to the BAU but the 2022 baseline.

Figure 3-3 – BAU Projections in tCO2e for PE's operations from the baseline year 2022 to 2050



04 Decarbonisation Scenario

PE has recently announced a long-term ambition of achieving net zero operational emissions across Scopes 1 and 2 by 2045, which would meet the European Union's target of carbon neutrality by 2050, as set out in the Green Deal. The decarbonisation pathway developed in this study considers these ambitions.

Definitions

This report considers decarbonisation in respect of the definition of net zero that exists for corporations within the SBTi (Science Based Targets initiative) Net Zero Standard[10], as endorsed by the PATH framework, which consists of:

a. **"Reducing scope 1, 2 and 3 emissions to zero or a residual level consistent with reaching net-zero emissions at the global or sector level in eligible 1.5˚C scenarios or sector pathways".**

and

b. **"Neutralizing any residual emissions at the net zero target date – and any GHG emissions released into the atmosphere thereafter."**

The SBTi standard notes that residual emissions should only account for those emissions that cannot be eliminated, must not exceed 10% and neutralisation of these residual emissions should be through carbon removals.

Carbon neutral, as outlined in the PAS 2060 standard, differs from net zero in reflecting a less prescriptive approach to balancing emissions – including scope 3 emissions being encouraged but not mandated, emissions reductions not aligned to a particular trajectory and carbon avoidance offsets accepted to achieve neutral status.

PATH Decarbonisation Requirements

To achieve decarbonisation goals in alignment with definitions of net zero endorsed by the PATH framework, PE would need to reduce emissions by at least 90% (compared to the baseline) by 2050. It is important to note however that this study focuses only on Scope 1 and 2 emissions, with limited assessment of scope 3 emissions from leased buildings, therefore the decarbonisation pathway in this study will drive towards carbon neutrality, or net zero operational emissions, rather than SBTi net zero. Once PE quantifies all scope 3 emissions, an update will be required to evaluate the total reduction, aligning to the SBTi.

[10] Science Based Targets, 2024, SBTi Corporate Net-Zero Standard Version 1.2. Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf

Decarbonisation Pathway Development

To support PE in reducing their emissions, a decarbonisation pathway has been developed in which a range of carbon reduction interventions are applied to the BAU scenario for Scope 1 and 2 emissions. The decarbonisation interventions proposed in this pathway were derived through a series of workshops and meetings with PE, run by AtkinsRéalis, whereby an initial long list of interventions were reviewed and prioritised to produce a short-list of interventions, subsequently modelled within this roadmap. The workshop attendees were chosen to ensure the required technical insight as well as senior-level buy-in and included representatives from teams across Moldova and Romania.

The majority of interventions within this study are modelled to have achieved their full carbon reduction potential by 2050, aligning the PATH recommendations for carbon neutrality by mid-century and reflecting broader government commitments. This commitments include grid decarbonisation through increasing the share of renewables in the electricity generation mix, expanding the use of hydrogen in the European energy mix, and phasing out internal combustion engine (ICE) vehicles.

4.1 Decarbonisation Interventions

A range of decarbonisation interventions have been agreed for implementation by PE over different timescales, spanning from short to medium and long-term from now until 2050. Short-term interventions cover up to 2035, medium-term interventions extend until 2040 and long-term interventions are planned from 2040 onwards. The sections below present a comprehensive list of interventions grouped under gas network, electricity network, vehicles and buildings, along with their relative contributions to GHG emissions reductions.

4.1.1 Gas Network (operated in Romania)

The following interventions as presented in Table 4-1 have been assessed to decarbonise the operations of the gas network.

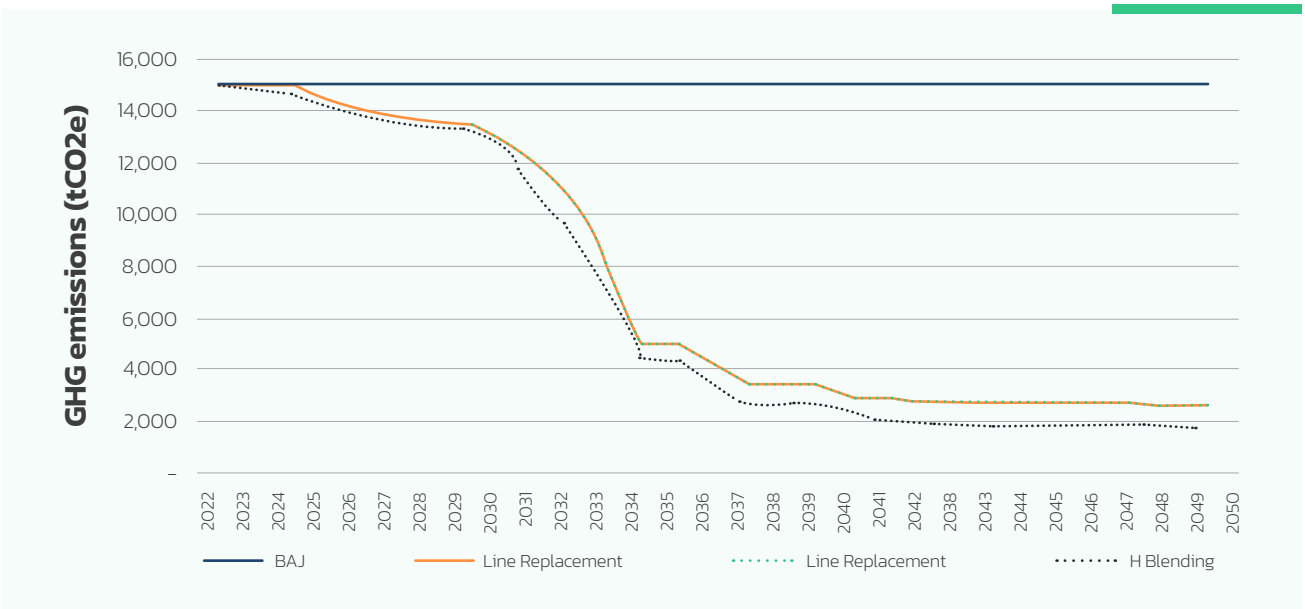
Table 4-1 – Interventions aimed at decarbonising the operations of the natural gas distribution network

Intervention	Description	Details	Implementation period
Replacement of Steel Piping with Polyethylene	Either pro-actively or at end of service, replace steel piping with polyethylene piping.	PE provided their planned replacement timeline for their steel piping.	Short – Long term
Hydrogen blending	PE's network is 80% hydrogen ready. This initiative depends on the maturity of H2 supply, technology, infrastructure and regulatory approval, so it is limited to a 15% blend rate.	5% H2 blend from 2031, increased to 10% from 2036 and 15% from 2041. The targets are indicative and might have to be adjusted according to market and regulatory conditions.	Medium – Long term
Improved Gas Leak Detection	Increase the frequency of pipeline surveys, focussing on areas with known higher leakage rates (older steel piping).	1% annual reduction in recorded leakage duration, plus 1% annual reduction in leakage rate per km of piping	Short – Long term

The most impactful emissions reduction interventions is the replacement of steel piping with polyethylene, which is estimated by the IGT to have a leakage rate of 1-2% of that of steel.

The organisational emission reduction against the baseline is shown in Figure 4-1. An 89% decrease from the baseline could be achieved through the implementation of these interventions, leaving 11% (1,727 tCO2e) residual emissions in 2050.

Figure 4-1 – GHG emissions savings from the listed interventions related to the operation of the gas network



4.1.2 Electricity network (operated in Moldova)

The following interventions as presented in Table 4-1 have been assessed to decarbonise the operations of the electricity network.

Table 4-2 – Interventions aimed at decarbonising the operations of the electricity distribution and supply network

Intervention	Description	Detail	Implementation Period
Increase conductor size	Losses reduction	By increasing the cross section of conductor size, the current carrying ampacity can be increased with reduced impedance, the losses can be reduced, subsequently reducing emissions.	Short – Long term
Upgrading transformers	Losses reduction	Replacing transformers across the network with newer/upgraded transformers to reduce transformer load losses.	Short – Long term
"Cold" reserve of the power transformers	Losses reduction	Reduction of losses by switching to "cold" reserve of the power transformers in the substations 35kV and 110kV.	Short – Long term
Optimal decoupling of 35kV networks	Losses reduction	Technical measures to optimize certain nodes in the 35 kV network	Short – Long term
Increase in PE renewable supply to their electricity network*	Emissions reduction	Commencing in 2025, there will be a 10% increase in renewable energy supplied to the PE grid, gradually increasing to 75% by 2050	Medium – Long term

** This intervention reflects a commitment by PE to increase renewable energy over and above the BAU model reflecting decarbonisation of the Moldovan electricity grid*

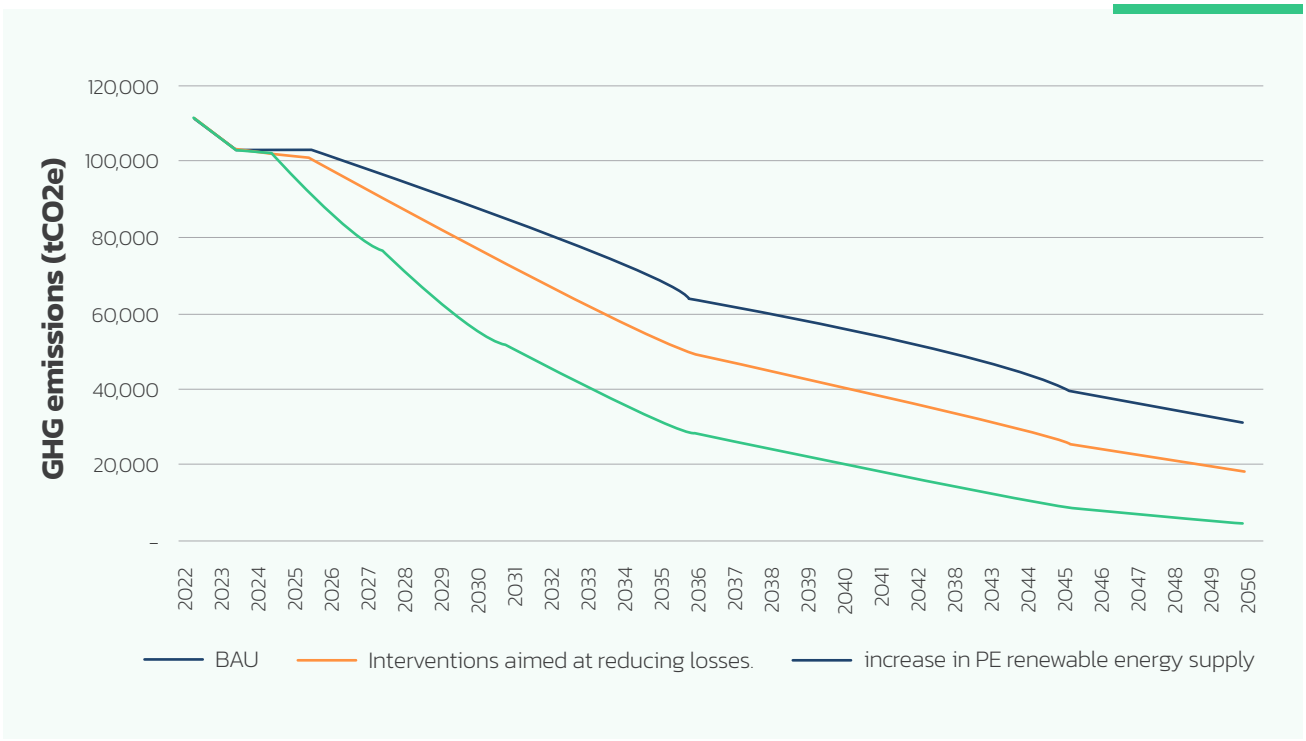
The total emissions reductions modelled reflect PE's recommended ambition through the implementation of the four "losses reduction" interventions, along with the addition of the emissions reduction through renewables, as described in Table 4-2. The first of these interventions, increasing conductor size, is particularly relevant to low voltage lines at 0.4kV, where it is expected that the majority losses occur.

To deliver the projected 75% increase in renewables, PE aims to utilise market provisions to directly contract electricity from low carbon sources, thereby shifting away from gas-based energy supply. The electricity market in Moldova allows electricity distributors to sign direct contracts with producers owning power plants up to 5MW, which enables this intervention to be met. In this case, contracting mechanisms are not anticipated to include purchase of Guarantees of Origin to offset scope 2 emissions losses by PE. It should be noted that whilst PE is committed to growing their renewable energy capacity, this commitment is not directly correlated to the plan to increase PE renewable energy in their distribution network by 75%.

The pace of implementation of these interventions is planned to achieve PE's losses reduction targets as presented in Appendix E.

The emission reduction against the 2022 electricity network baseline is shown in Figure 4-2. A 96% decrease from the baseline could be achieved through the implementation of these interventions, leaving only 4% (4,610 tCO_2e) residual emissions in 2050.

Figure 4-2 - GHG emissions savings from the listed interventions related to the operation of the electricity distribution and supply network



Note: Purple line includes the effects of interventions aimed at reducing losses

4.1.3 Vehicles

Moldova

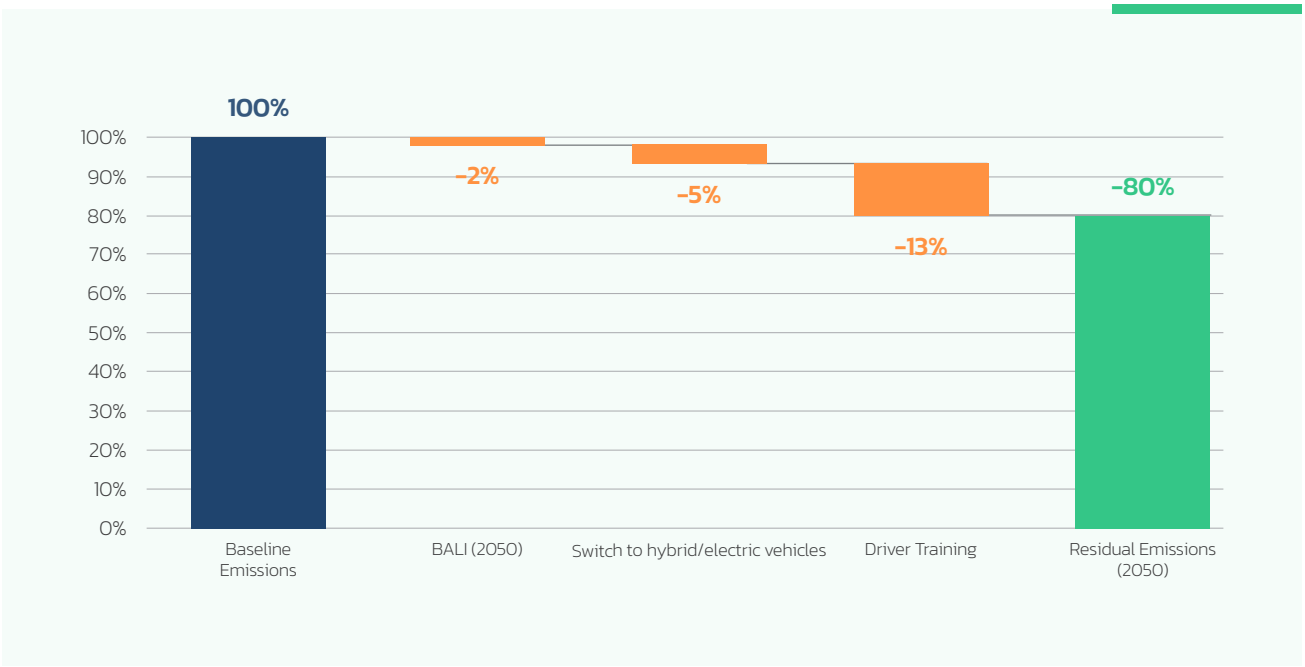
The following interventions have been assessed to demonstrate the potential reduction in carbon emissions from vehicles in Moldova.

Table 4-3 – Interventions aimed at decarbonising the car fleet in Moldova

Intervention	Description	Details	Implementation period
Switch to hybrid vehicles (fleet)	Targets for a proportion of the fleet to be hybrid vehicles	Transition 55 petrol cars to hybrid, with the condition that the costs will be approved by the Regulator, between 2025–2045	Short – Long term
Switch to electric vehicles (fleet)	Targets for a proportion of the fleet to be EV vehicles	Transition 20 petrol cars to electric, with the condition that the costs will be approved by the Regulator, between 2025–2035	Short – Long term
Driver training	Driver training academy to improve efficiency in driving to enable reduction in fuel use	All drivers of vehicles to undertake training	Medium – Long term

The organisational emission reduction against the baseline is shown in Figure 4-3. A 20% decrease from the baseline could be achieved through the implementation of these interventions, leaving (1,029 tCO2e) of residual emissions in 2050.

Figure 4-3 – GHG emissions savings from the listed interventions related to the vehicle operation in Moldova



Romania

The following interventions have been assessed to demonstrate the potential carbon reduction from vehicle-based solutions in Romania.

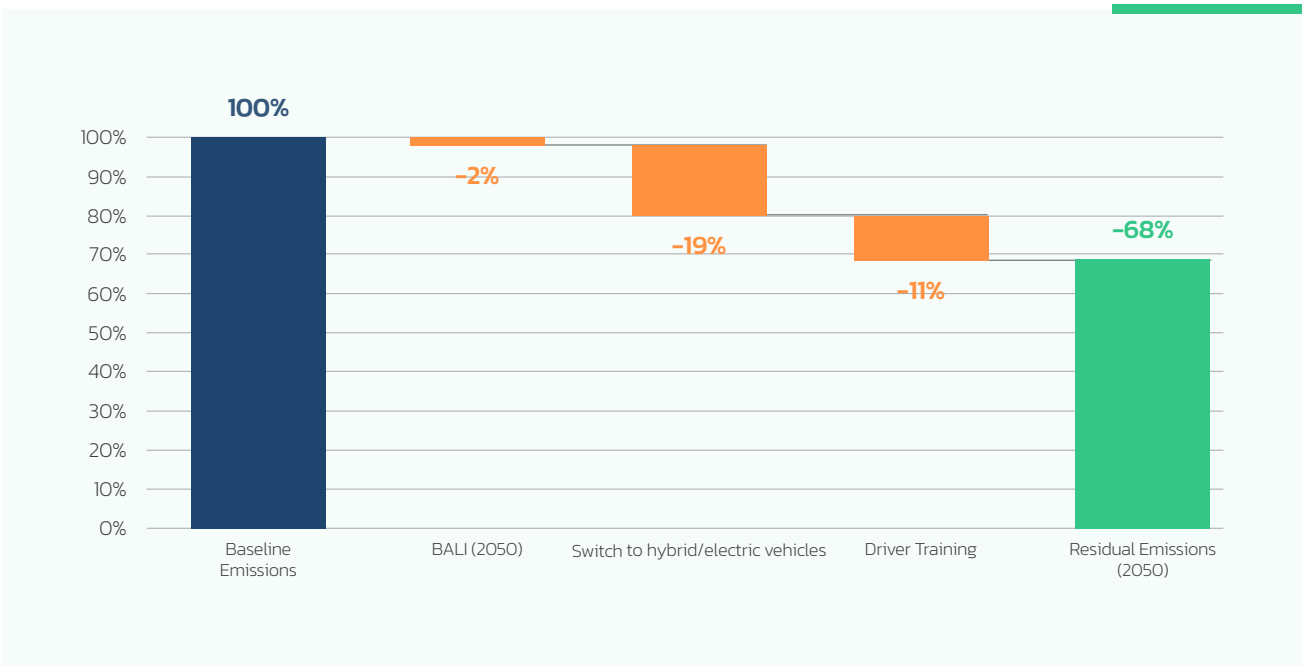
Table 4-4 - Interventions aimed at decarbonising the car fleet in Romania

Intervention	Description	Details	Implementation Period
Switch to hybrid vehicles (fleet)	Targets for a proportion of the fleet to be hybrid vehicles	Replace 67 diesel cars with hybrid, and 33 petrol cars with hybrid, from 2025-2029	Short – Medium term
Switch to electric vehicles (fleet)	Targets fo a proportion of the fleet to be EV vehicles	Replace 10 diesel cars with electric, and 10 petrol cars with electric, from 2025-2029	Short – Medium term
Driver training	Driver training academy to improve efficiency in driving – can lead to significant reduction in fuel use	All drivers of vehicles to undertake training over course	Medium – Long term

Note: By 2050, 30 cars will be retired, 19 new cars will be acquired, and 15 cars will transition from diesel to petrol. This will leave the fleet with 10 diesel vehicles and 25 petrol vehicles.

The organisational emission reduction against the baseline is shown in Figure 4-4. A 32% decrease from the baseline could be achieved through the implementation of these interventions, leaving 438 tCO2e of residual emissions in 2050.

Figure 4-4 - GHG emissions savings from the listed interventions related to the vehicle operation in Romania



4.1.4 Buildings

Moldova

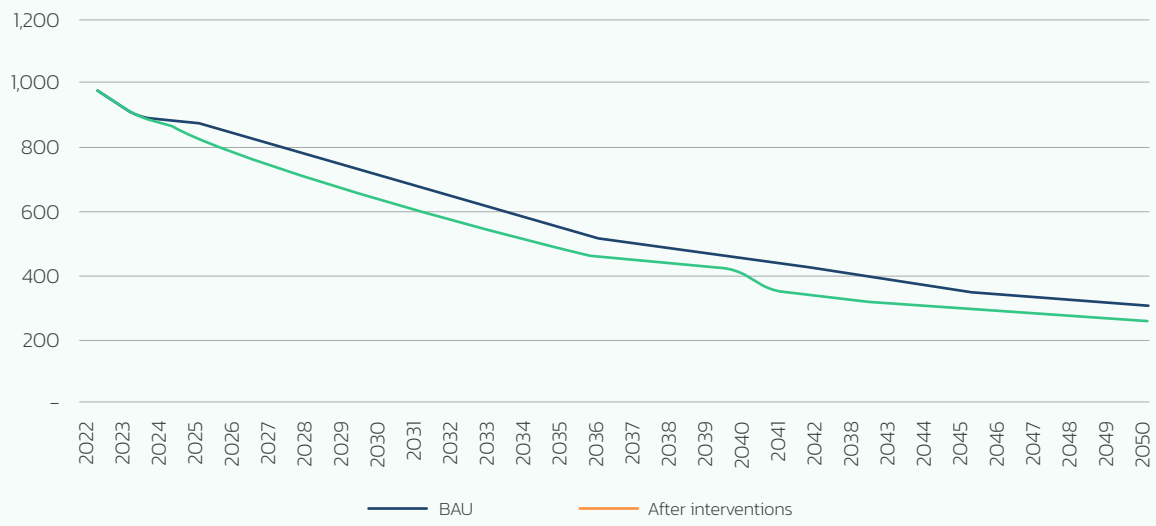
The following interventions as presented in Table 4-5 have been assessed to decarbonise the operations of the buildings in Moldova.

Table 4-5 – Interventions aimed at decarbonising buildings (Moldova)

Intervention	Description	Details	Implementation period
LED lighting	Upgrading from conventional lighting to LED technology	Applied to all buildings in Moldova except for Chișinău as LED lighting has already been installed	Short term
Lighting controls	Use of occupancy sensors, dimming, photocells, sun tracking devices	Applied to all buildings in Moldova except for Chișinău as lighting controls have already partially been installed	Short term
Replacing older boilers and upgrading heating systems	Upgrade older, inefficient boilers with newer, more efficient and lower	All drivers of vehicles to undertake training	Medium – Long term
carbon equivalents. Enhance heating by insulating system piping and balancing radiators.	Six boiler replacements are planned in the short term, including three gas and three electric units. Over the next decade, the remaining heating systems are expected to be replaced	Short-medium term	
Heating/ cooling controls	Implement automatic thermostatic control for each area of the building, linked to occupancy, to maintain a minimum comfortable temperature	All buildings except Chișinău, as heating/cooling controls has already been installed	Short-medium term
Submetering	Enhance energy/electricity and emissions tracking in buildings by installing submetering systems	All buildings except Chișinău, as submetering has already been installed	Medium term
Loft insulation	Enhance insulation to reduce energy consumption	Relevant for Orhei and Chișinău in the medium term	Medium term
Improve Glazing	Minimise heat loss through windows by adding additional glazing layers such as double, secondary or triple glazing	Double glazing is already installed. Replacement is only applicable where the condition is poor due to expense, with a long payback period	Long term
On site renewable energy	Installation of solar panels	For central office (Chișinău) only	Long term

The organisational emission reduction against the baseline is shown in Figure 4-5. A 74% decrease from the baseline could be achieved through the implementation of these interventions, leaving 255 tCO2e of residual emissions in 2050.

Figure 4-5 – GHG emissions savings from the listed interventions related to the operation of buildings in Moldova



Romania

The following interventions as presented in Table 4-6 have been assessed to decarbonise the operations of buildings in Romania.

Table 4-6 – Interventions aimed at decarbonising buildings (Romania)

Intervention	Description	Application	Implementation Period
Lighting controls	Use of occupancy sensors, dimming, photocells, sun tracking devices	All warehouse spaces in Romania	Short term
Submetering	Enhance energy/electricity and emissions tracking in buildings by installing submetering systems	75% of the buildings in Romania	Short term
Reduce building use	Closing buildings where use levels are low	25% reduction	Short term

Figure 4-6 - GHG emissions savings from the listed interventions related to the operation of buildings in Romania

The organisational emission reduction against the baseline is shown in Figure 4-6. A 30% decrease from the baseline could be achieved through the implementation of these interventions, leaving 120 tCO2e of residual emissions in 2050.

4.2 Decarbonisation Pathway

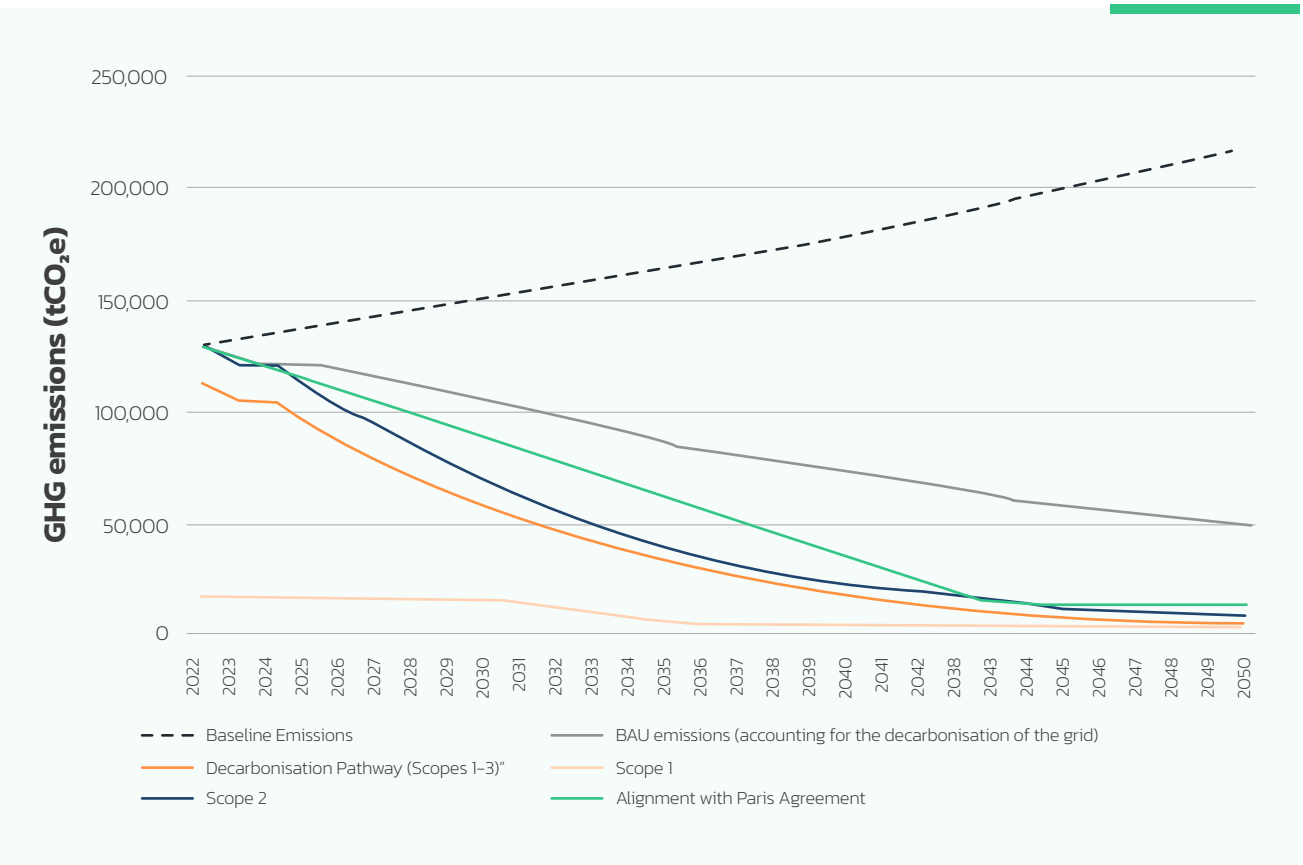
Following the implementation of the interventions proposed in this study, the decarbonisation trajectory shows a gradual decrease in PE's GHG emissions to 2050. By 2050 the interventions modelled within this roadmap are projected to reduce PE's GHG emissions by 94% (an emissions reduction of 121,277 tCO2e) with a resulting 6% (8,079 tCO2e) of residual emissions. This is compared to an emission baseline in 2022 of 129,356 tCO2e and a BAU of 48,566 tCO2e in 2050.

The decarbonisation projections confirm that by 2050 most of the PE's Scope 1 emissions will be reduced to close to zero as a result of the reduction in gas losses across the gas distribution network PE operates in Romania, as well as limited impact from the reduction of natural gas and diesel/petrol used in buildings and fleet. Scope 2 emissions similarly reduce to close to zero, the remaining emissions beyond 2050 due to incomplete decarbonisation of the national electricity grid in Moldova and emissions associated with inherent losses from electricity distribution, with minimum continuing emissions association with use of electricity in buildings. The limited Scope 3 emissions from use of energy in leased buildings in Romania reduce slightly, by 30% over the period.

Figure 4-7 shows PE's decarbonisation journey to 2050 across all emissions scopes modelled (noting the scope 3 emissions are not illustrated separately due to their negligible value). PE's decarbonisation pathway is plotted against a decarbonisation scenario aligned to the Paris agreement, as described in following section.

Appendix D.3 details the modelling assumptions, and Appendix F provides a summary of the data underlying Figure 4-7 below.

Figure 4-7 - Decarbonisation roadmap of the PE's emissions to 2050, following the modelled programme of interventions, with BAU for reference.



** Limited Scope 3 emissions for some leased buildings only*

(Note as Scope 3 emissions are negligible, they are incorporated into scope 1 and 2 within Figure 4-7.)

4.3 Scope 3 emissions

While leased assets constitute minimally to PE's total GHG emissions, developing a comprehensive corporate GHG emissions inventory, including scope 3 emissions, would provide valuable insights into the full emissions impact across the value chain. Scope 3 emissions include those from upstream activities such as gas extraction and electricity generation, as well as downstream emissions from the use of sold products by customers. Additional emissions from business activities including business travel, employee commuting and procurement of goods and services can also be significant contributors to scope 3 emissions. A full scope 3 assessment would allow PE to focus efforts on further influencing GHG reductions and achieving the highest standards of environmental responsibility, as presented in PE's Corporate Responsibility Report[3].

For reference in terms of scale of scope 3 emissions, in UK, Wales and West Utilities, a Gas Distribution Company serving 7.5m customers, reported approximately 90,500 tCO2e upstream scope 3 emissions in the financial year 2022/23, equating to 25% of the total scope 1 and 2 emissions. These scope 3 emissions accounted for various activities including purchased goods and services, capital goods, fuel and energy related activities, upstream transportation, waste generated in operations, business travel, and employee commuting[11]. Similarly, Southern Gas Networks (SGN), a network operator distributing gas to around 5.9m homes and businesses across UK, presented 31,859 tCO2e upstream scope 3 emissions accounting for 47% of total GHG emissions as presented in organisations Environment Strategy[12]. Neither company currently reports on downstream emissions from use of sold products i.e. natural gas used by consumers.

PE's 2022 Corporate Responsibility Report for the Electricity Distribution Company3, includes quantification of waste generation, water consumption and materials use, although these amounts are not quantified in scope 3 emissions terms, but could be used to generate an early picture of these scope 3 elements. If scope 3 emissions due to the use of natural gas by consumers (use of sold products) were included, it is estimated that these would equate to approximately 234,000 tCO2e in 2022 (based on an annual sale of 1,284,000 MWh gas). These figures only serve as an indication of scale of scope 3 emissions that PE may expect. It should be noted that PE operates in an industry sector where emissions are more challenging to abate, in particular the use of natural gas by consumers is expected to remain during the longer transition from higher carbon intensive fuels such as coal, ultimately to lower carbon options such as hydrogen.

By conducting a materiality assessment in the first instance, PE can gain further insights into their overall carbon footprint and expand this decarbonisation plan by developing strategies to mitigate emissions across the value chain. A summary of steps involved in scope 3 accounting and reporting is presented in Figure 4-8 and more detailed guidance on each of the steps can be found in Greenhouse Gas Protocol Guidance "Corporate Value Chain (Scope 3) Accounting and Reporting Standard"[13]

Figure 4-8 - Overview of steps in scope 3 accounting and reporting

[11] WWU 2023, Annual Environmental Report 2022/23. Available at: annual-environmental-report-2022-23.pdf (wwutilities.co.uk)
[12] SGN, 2021, Building a shared net-zero future – SGN Environment Strategy. Available at: https://sgn.co.uk/sites/default/files/media-entities/documents/2021-04/SGN%20-%20Building%20a%20Shared%20Net%20Zero%20Future%20-%20April%202021_0.pdf
[13] Greenhouse Gas Protocol, Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Available at: https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf

05 Alignment to PATH Framework

5.1 Paris Agreement

As described in Section 2.1, the Paris agreement requires the pursuit of reduction of GHG emissions in line with a maximum annual mean global temperature increase of 1.5°C. Emissions reduction in line with a 1.5°C warming scenario, as analysed by the Science Based Targets initiative (SBTi)[14], propose emissions need to fall by at least 4.2% on an annual linear basis from 2020. The PATH framework notes that "this value is considered as a valid reference point to benchmark a corporate target and that if a corporate is planning to decarbonise at that rate, or more quickly, this suggests the corporate is broadly on track to become aligned".

The SBTi Net Zero Standard[15] defines that in addition to a linear reduction pathway of 4.2%, for an organisation to align with net zero requirements, it must reduce absolute emissions across Scope 1, 2 and 3 by 90% prior to the year 2050. Any remaining emissions (not exceeding 10% of baseline emissions) must be neutralized through carbon removals.

A decarbonisation scenario aligned to the SBTi approach and therefore meeting the Paris Agreement, is illustrated in Figure 4-7 alongside the PE decarbonisation pathway (for Scope 1 and 2 emissions). Comparison demonstrates compliance to the objectives of the Paris Agreement for the PE emissions modelled for all but 2 years (2043 and 2044).

It is noted that should full compliance be sought to SBTi requirements, an assessment and inclusion of Scope 3 emissions would be required.

[14] Science Based Targets, 2019, Foundation of Science-based Target Setting. Available at: foundations-of-SBT-setting.pdf (sciencebasedtargets.org)
[15] Science Based Targets 2024, SBTi Corporate Net-Zero Standard. Available at: https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf

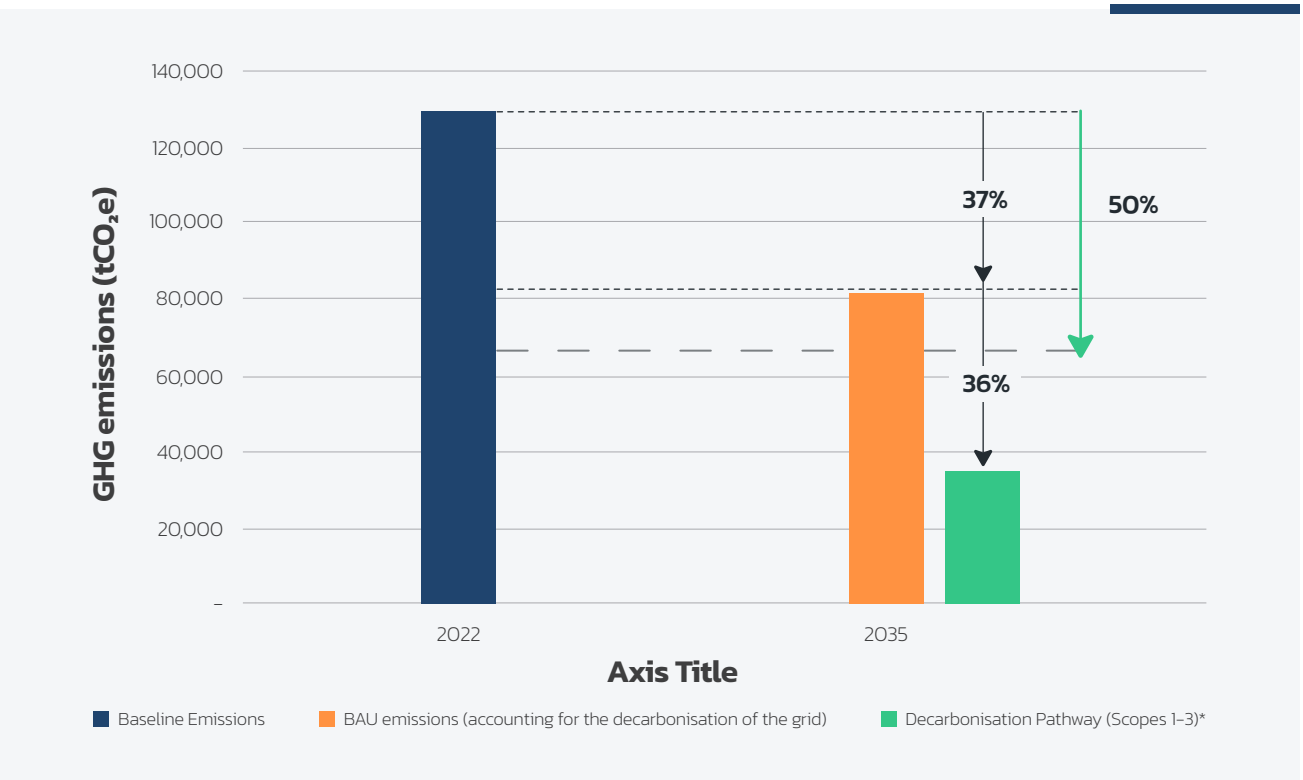
5.2 Mid-Term Decarbonisation Targets

It is proposed that, as required by the PATH framework, a mid-term rolling decarbonisation target for PE is adopted to focus efforts on the realisation the short to medium term interventions proposed, as well as ensuring decarbonisation in the medium term aligns to the Paris-aligned pathway.

A mid-term target of 50% reduction in GHG emissions by 2035, compared to a 2022 baseline is presented as a sufficiently ambitious target, requiring significant commitments to decarbonisation by PE, whilst allowing for a level of uncertainty associated with investment in these commitments and the forecast for growth. This target assumes decarbonisation of the Moldovan electricity grid as modelled, however these external policy actions materialise at a significantly slower pace than assumed, the targets should be reviewed.

While the target is set against the 2022 baseline, Premier Energy's growth trajectory may result in further opportunities for emissions reductions relative to projected 2035 BAU levels.

Figure 5-1 - Proposed GHG emission reduction targets - Mid Term 2035



** Limited Scope 3 emissions for some leased buildings only*

The decarbonisation initiatives enabling the realisation of the target illustrated, as outlined in Section 4, are summarised as follows:

- Replacement of steel piping with polyethylene and enhanced gas leak detection in the gas distribution network
- Upgrading transformers, increasing conductor size and optimising 35kV networks to minimise electrical losses in the electricity distribution network
- Transitioning to hybrid and electric vehicles while phasing out of conventional vehicles
- Implementing energy saving measures to buildings, including LED lighting, boiler upgrades and systems enhancements to reduce energy demand.

The mid-term target should be updated every 5 years at least, to ensure continued relevancy based on changes such as shift in business operations, updates to policy or improved data through realisation of interventions. This rolling update to the mid-term target is a requirement of the PATH framework.

Looking towards the long-term, this plan sets ambitious goals for achieving carbon neutrality by mid-century, resulting in at least a 90% GHG emissions reduction by 2050, which is the suggested long-term target. Based on the current decarbonisation pathway, the target of 90% carbon reduction would just be met by 2045, in line with PE's operational net zero target. This will be achieved through continued implementation of the aforementioned interventions, alongside additional measures such as increasing renewable energy supply, hydrogen blending, driver training programs, improved glazing and on-site renewable energy generation.

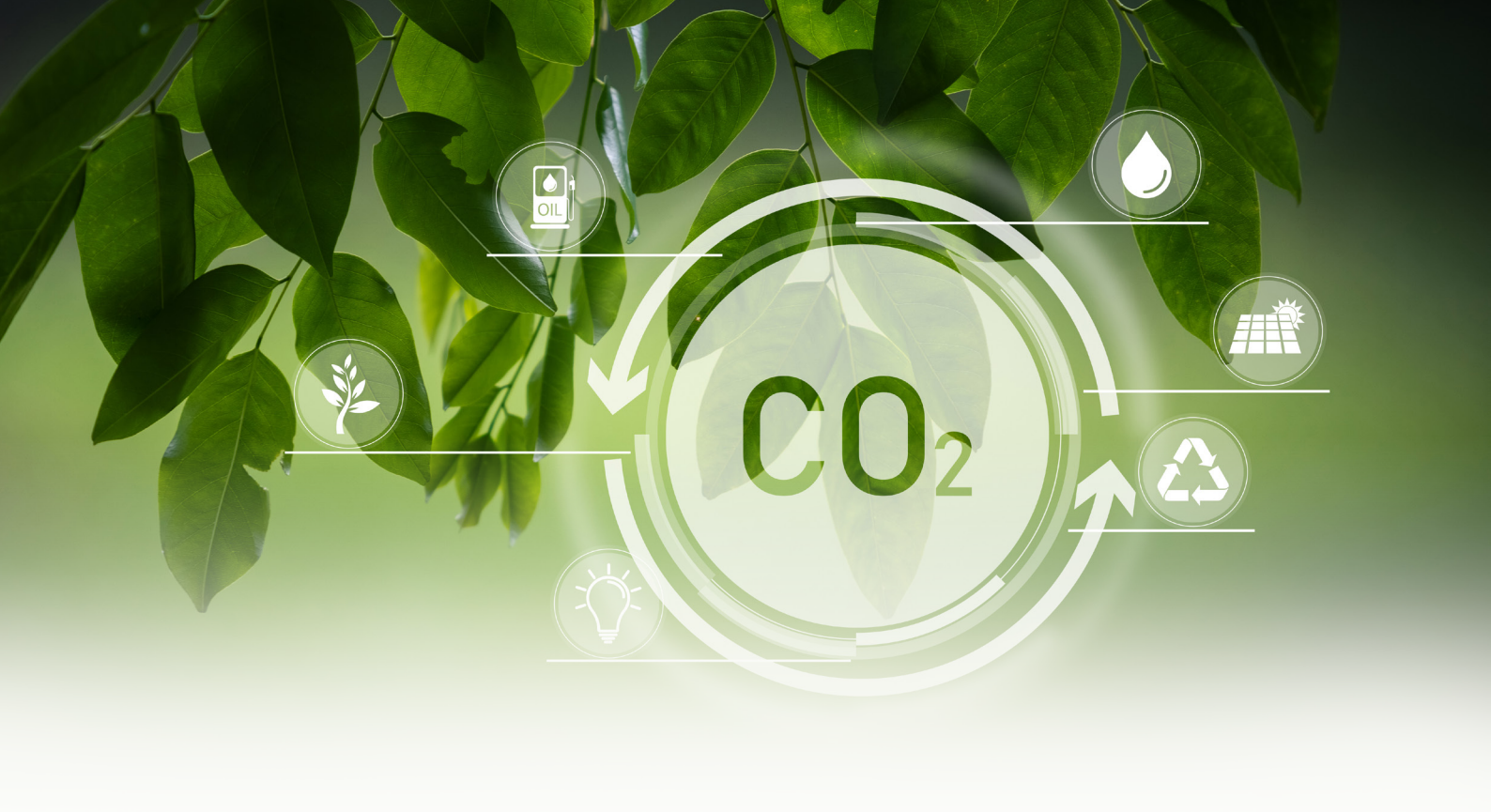
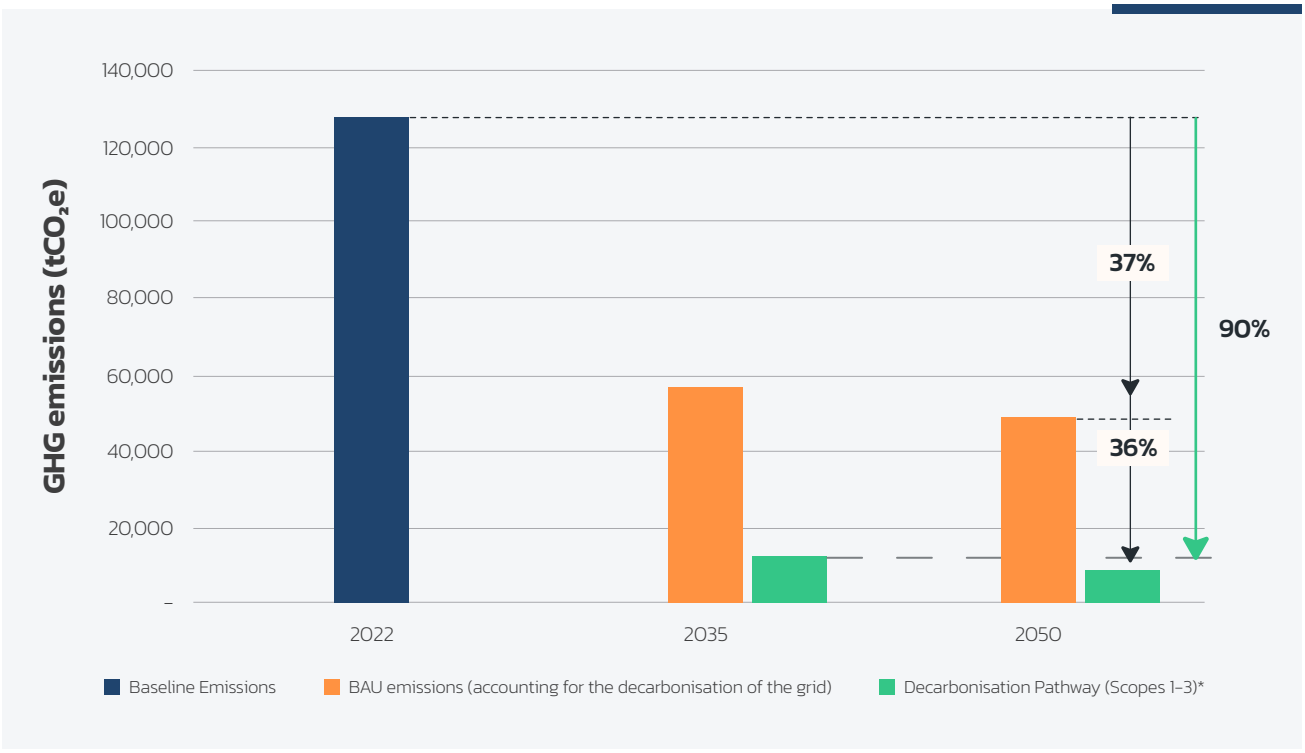


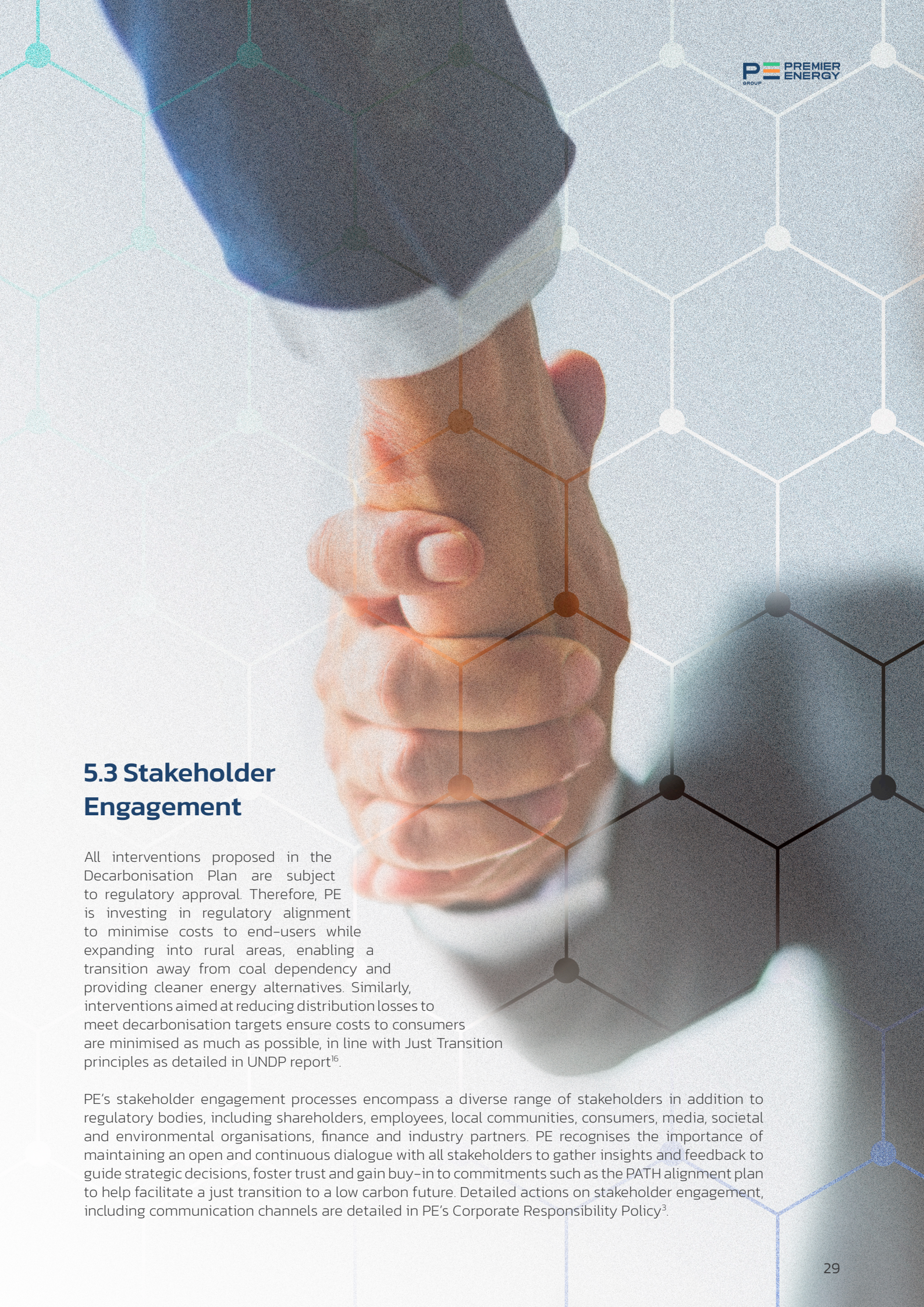
Figure 5-2 – Proposed GHG emission reduction targets – Long Term 2050 (and illustrating PE 2045 target)



** Limited Scope 3 emissions for some leased buildings only*

These mid-term and long-term targets ensure consistent alignment with the Paris Agreement's vision of a sustainable future as highlighted above.

[16] UNDP, How just transition can help deliver the Paris Agreement. Available at: https://climatepromise.undp.org/sites/default/files/research_report_document/Just%20Transition%20Report%20Jan%2020.pdf



5.3 Stakeholder Engagement

All interventions proposed in the Decarbonisation Plan are subject to regulatory approval. Therefore, PE is investing in regulatory alignment to minimise costs to end-users while expanding into rural areas, enabling a transition away from coal dependency and providing cleaner energy alternatives. Similarly, interventions aimed at reducing distribution losses to meet decarbonisation targets ensure costs to consumers are minimised as much as possible, in line with Just Transition principles as detailed in UNDP report[16].

PE's stakeholder engagement processes encompass a diverse range of stakeholders in addition to regulatory bodies, including shareholders, employees, local communities, consumers, media, societal and environmental organisations, finance and industry partners. PE recognises the importance of maintaining an open and continuous dialogue with all stakeholders to gather insights and feedback to guide strategic decisions, foster trust and gain buy-in to commitments such as the PATH alignment plan to help facilitate a just transition to a low carbon future. Detailed actions on stakeholder engagement, including communication channels are detailed in PE's Corporate Responsibility Policy[3].

06 Conclusions

This decarbonisation plan has sought to identify the actions PE should take to enable reduction in corporate emissions from their business operations, to meet the requirements of the PATH framework. This framework outlines a requirement to align decarbonisation plans to the Paris Agreement, set an interim decarbonisation target and identify long term decarbonisation options towards carbon neutrality by mid-century.

The majority of PE's GHG emissions, 86%, stem from Scope 2 emissions from losses in the distribution of electricity in Moldova, with a further 12% from gas losses through distribution of natural gas in Romania. The remaining 2% of emissions originate from energy use in buildings and vehicles. Scope 3 value chain emissions have not been quantified as part of this study, outside minimal emissions stemming from use of leased buildings.

The commitment by the Moldovan government to decarbonise the national electricity supply network through connection with the EU and investment in renewables, significantly contributes to the decarbonisation of PE's emissions account due to the dependency on scope 2 emissions. This Moldovan policy commitment leads to a BAU scenario that shows an emissions reduction by 2050, from the 2022 baseline of 62% or allowing for growth, a 78% reduction from the 2050 BAU emissions.

The key initiatives proposed to decarbonise PE operations beyond BAU include several measures to reduce losses in low voltage electricity distribution including increasing conductor size, particularly on 0.4kV lines, where majority of emissions occur; as well as reduction in natural gas losses from distribution through replacement of steel piping with polyethene, which has a leakage rate of 1-2% of equivalent steel piping.

The programme of PE interventions, alongside external grid decarbonisation, could result in PE emissions falling steadily from a 2022 baseline of 129,356 tCO2e down to 8,179 tCO2e by 2050, leaving a residual of 6%. The reduction pathway largely correlates with the decarbonisation scenario proposed by the SBTi to align with the Paris Agreement, endorsing the pursuit of actions to limit global warming to 1.5°C. It is suggested that further work is completed to further align to SBTi's approach to net zero through future quantification of Scope 3 emissions and inclusion in the decarbonisation pathway.

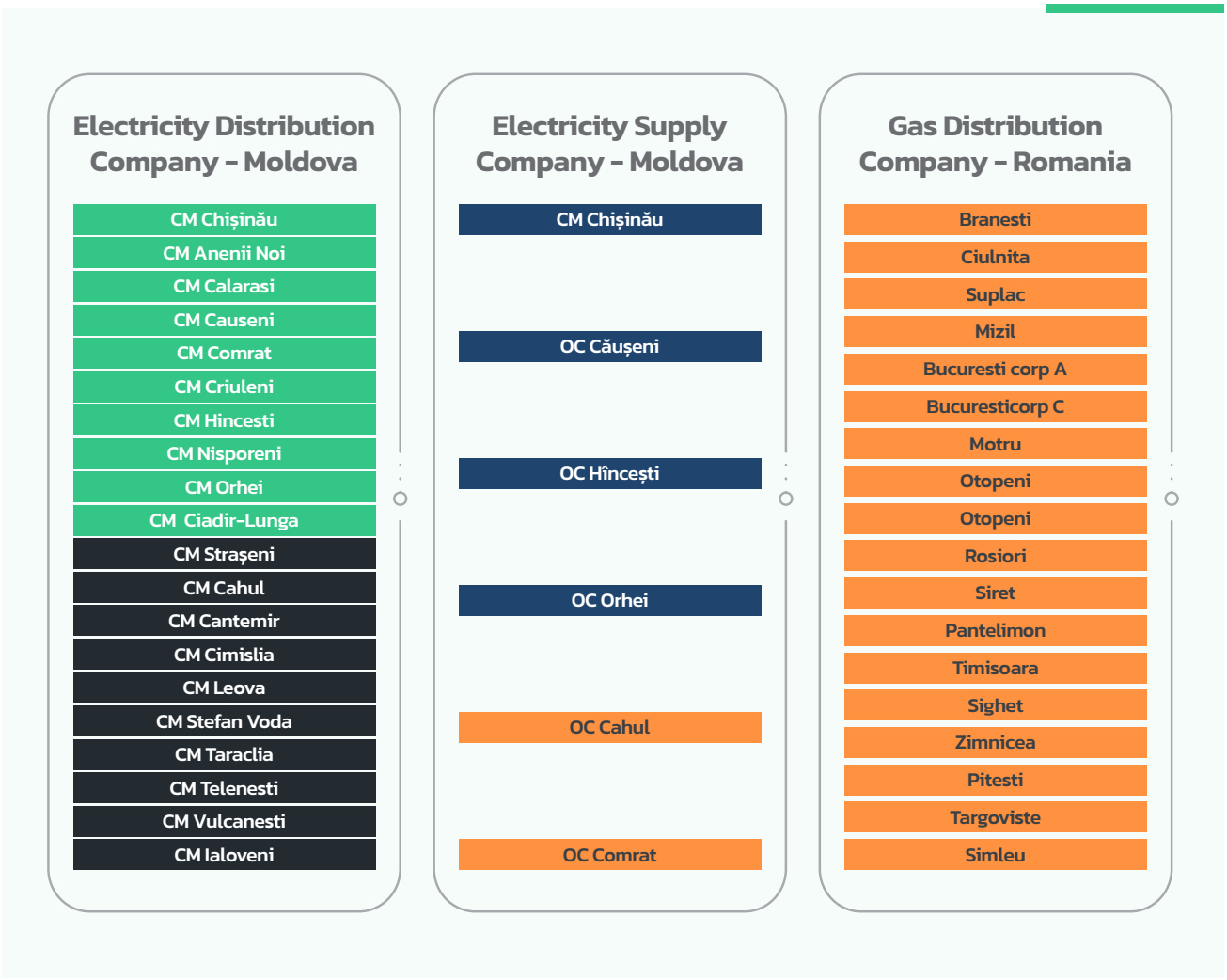
It is proposed that the realisation of the proposed decarbonisation pathway is enabled through the adoption of mid-term target to reduce GHG emissions could be reduced by 50% by 2035, as well as longer term commitments to reduce emissions by at least 90% by 2050, compared to the 2022 baseline. It is important to note that PE's target of achieving operational net zero by 2045 can be met, based on the decarbonisation trajectory achieving 90% carbon reduction by this date. The adoption of these targets and related commitments to act on the decarbonisation interventions outlined, enable PE to align to the requirements of the PATH framework.

Organisational boundary

APPENDIX A

A.1 Building List

Figure A-1 - Building List



Note: For Romania Matca, Odorhei, Bolintin, Snagov, Moieciu, Orlesti, Bucuresti archives buildings have not been included in the assessment, since the Group does not have control over the expenses related to these locations and consequently, these do not have a negative impact on the decarbonization plan.

- Owned buildings
- Owned buildings, used by others
- Owned by PE, used by other business segments
- Owned by others and rented by PE

Baseline Emissions

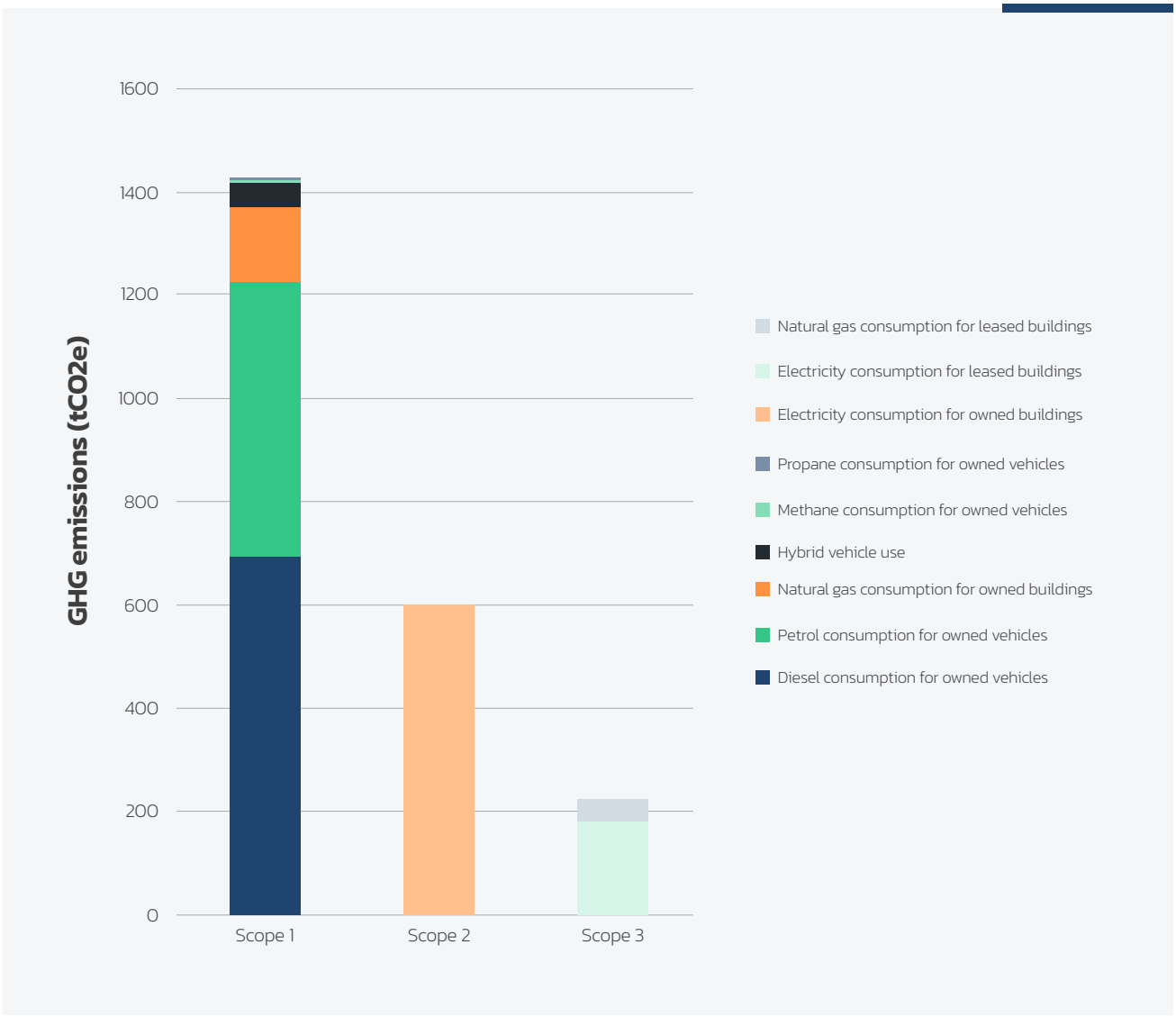
APPENDIX B

This section provides further breakdown of baseline emissions.

B. 1.1 Buildings & Vehicles Overview for Moldova

Figure B-1 below provides an overview of the baseline GHG emissions from buildings and vehicles in Moldova. The total emissions associated with the operation of buildings and vehicles during 2022 was 2,254 tCO2e, out of which 63% is attributed to the fuel consumption from owned buildings and vehicles (scope 1), 27% on the electricity consumption from owned buildings (scope 2) and 10% from the electricity and natural gas consumption from leased buildings (Scope 3)

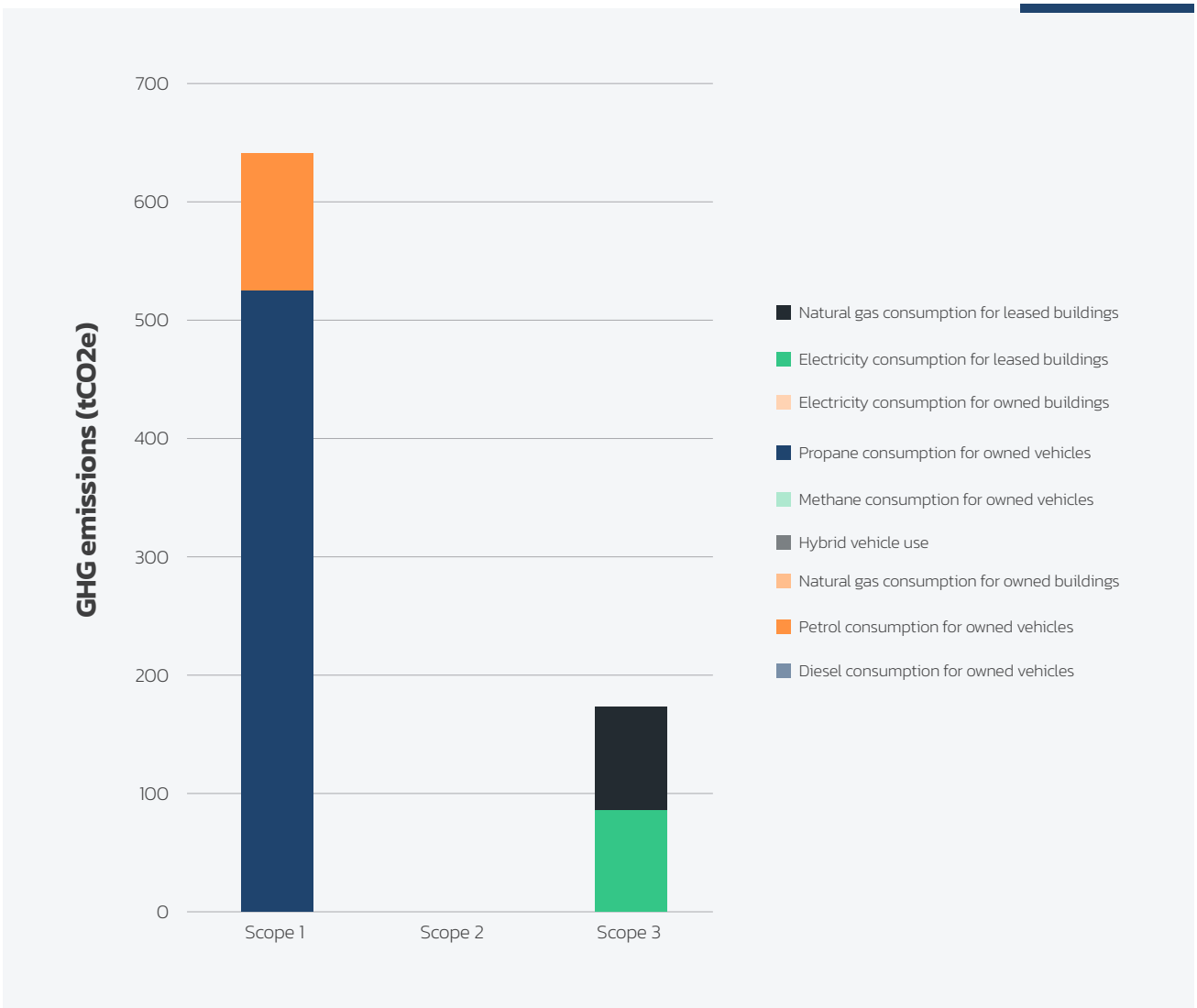
Figure B-1 - 2022 baseline GHG emissions from buildings & vehicles in Moldova



B.1.2 Buildings & Vehicles Overview for Romania

Figure B-2 below provides an overview of the baseline GHG emissions from buildings and vehicles in Romania. The total emissions associated with the operation of buildings and vehicles during 2022 was 811 tCO2e, out of which 79% is attributed to the fuel consumption from owned vehicles (scope 1), 21% from the electricity and natural gas consumption from leased buildings (Scope 3). There are no scope 2 emissions associated with this segment of the business, as PE does not own any buildings of electric vehicles in Romania. Therefore, electricity consumption and GHG emissions for scope 2 are zero. The transition to electric vehicles could potentially generate scope 2 emissions if vehicles are being changed in PE's premises.

Figure B-2 – 2022 baseline GHG emissions from buildings & vehicles in Romania



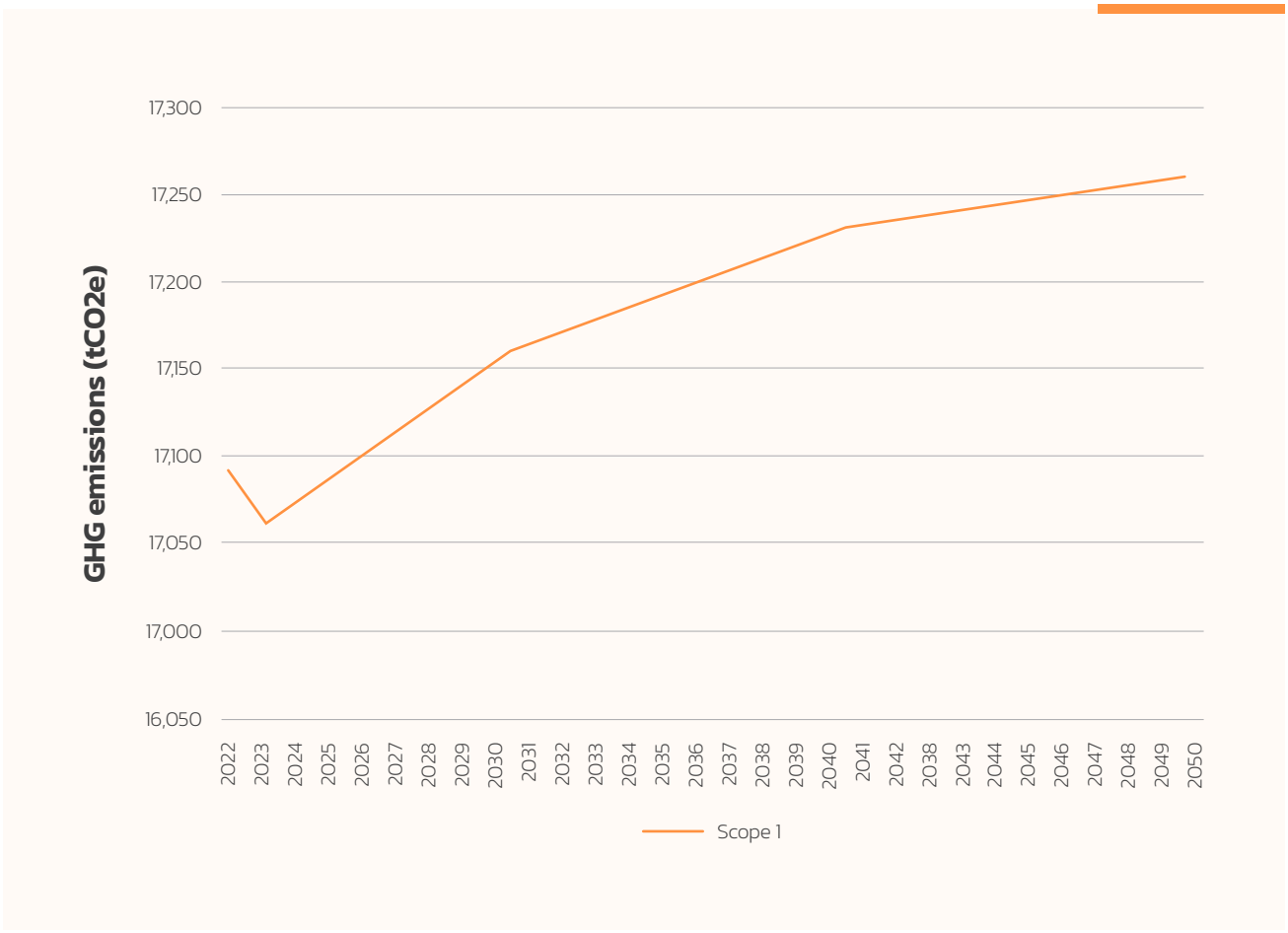
Business As Usual (BAU)

APPENDIX C

C. 1 Scope 1

Figure C-1 below presents the BAU graph illustrating PE's scope 1 emissions. The BAU scenario projects PE's GHG emissions until 2050, assuming operational practices continued without intervention. Since there are no planned financial commitments for buildings and vehicles, GHG emissions from these areas remain steady until 2050.The projected decrease in 2023 is attributed to changes in carbon factors, while the projected increase from 2024 to 2050 reflects anticipated growth in the gas network as part of the company's expansion plans.

Figure C-1 – Scope 1 BAU projections in tCO2e for PE's operations from 2022 to 2050

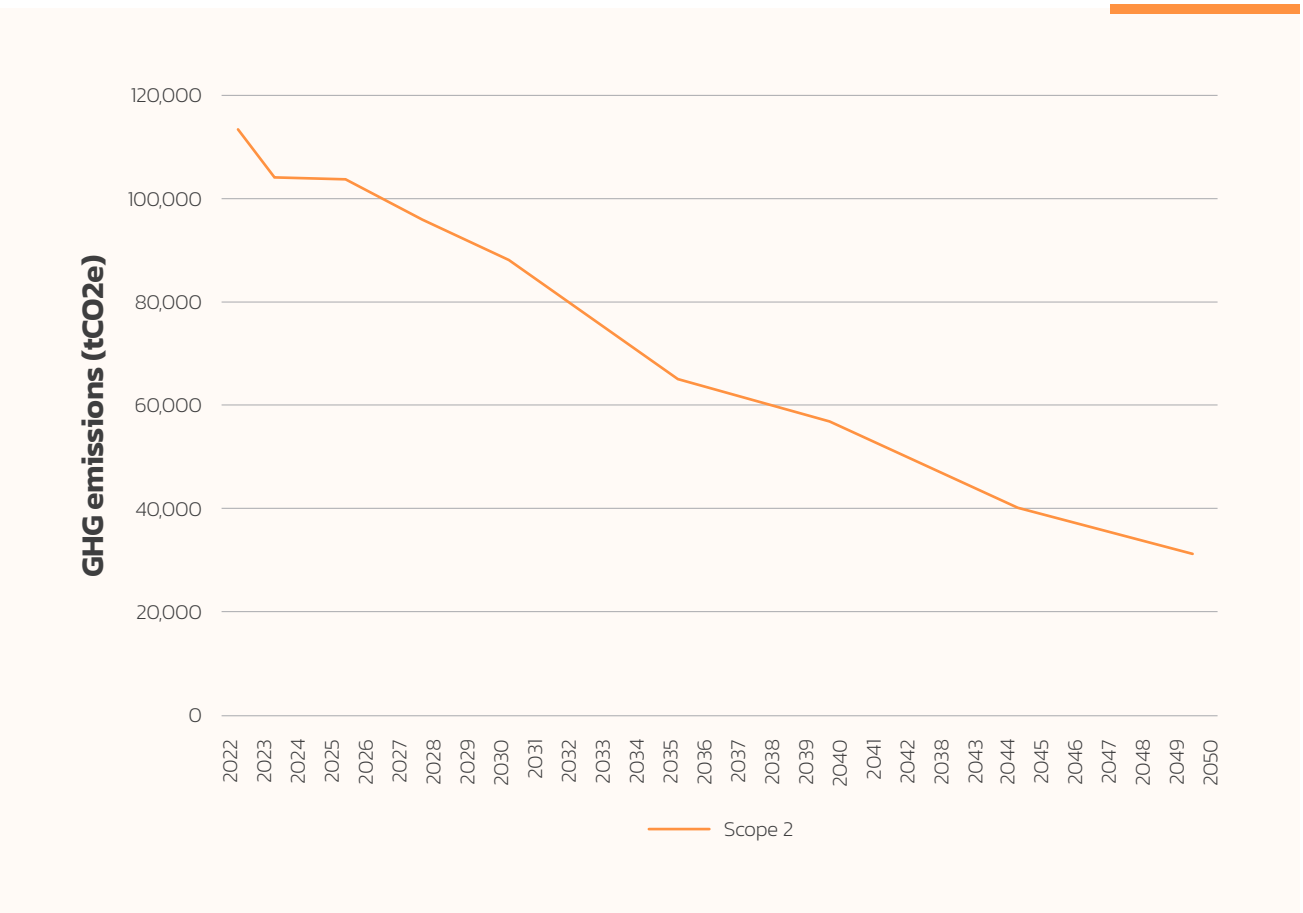


C. 2 Scope 2

Figure C-2 below presents the BAU graph illustrating PE's scope 2 emissions. The BAU scenario projects PE's GHG emissions until 2050, assuming operational practices continued without intervention. Since there are no planned financial commitments for buildings, GHG emissions from these areas remain steady until 2050. For the electricity network, alongside the 1% increase in consumption of electricity on an annual basis (based on the projected 1% growth from PE), the electricity losses themselves increase based on a percentage applied, which considers an increment to the line and transformer losses. The transformer losses increase annually at 2.5% and line losses increase annually at 1.68-1.81%, based on data provided and calculations. The aforementioned percentage takes the interpolation of the two and gives the average percentage which is then used to obtain the overall increase in all network losses. For the electricity network, losses increase on annual basis due to increase in annual power demand of as communicated by PE.

The projected decrease until 2050 accounts for the decarbonisation of the Moldovan and Romanian grid (the latter in relation to use of electricity in leased buildings or for electric vehicle charging), as more renewables are integrated into the electricity generation mix.

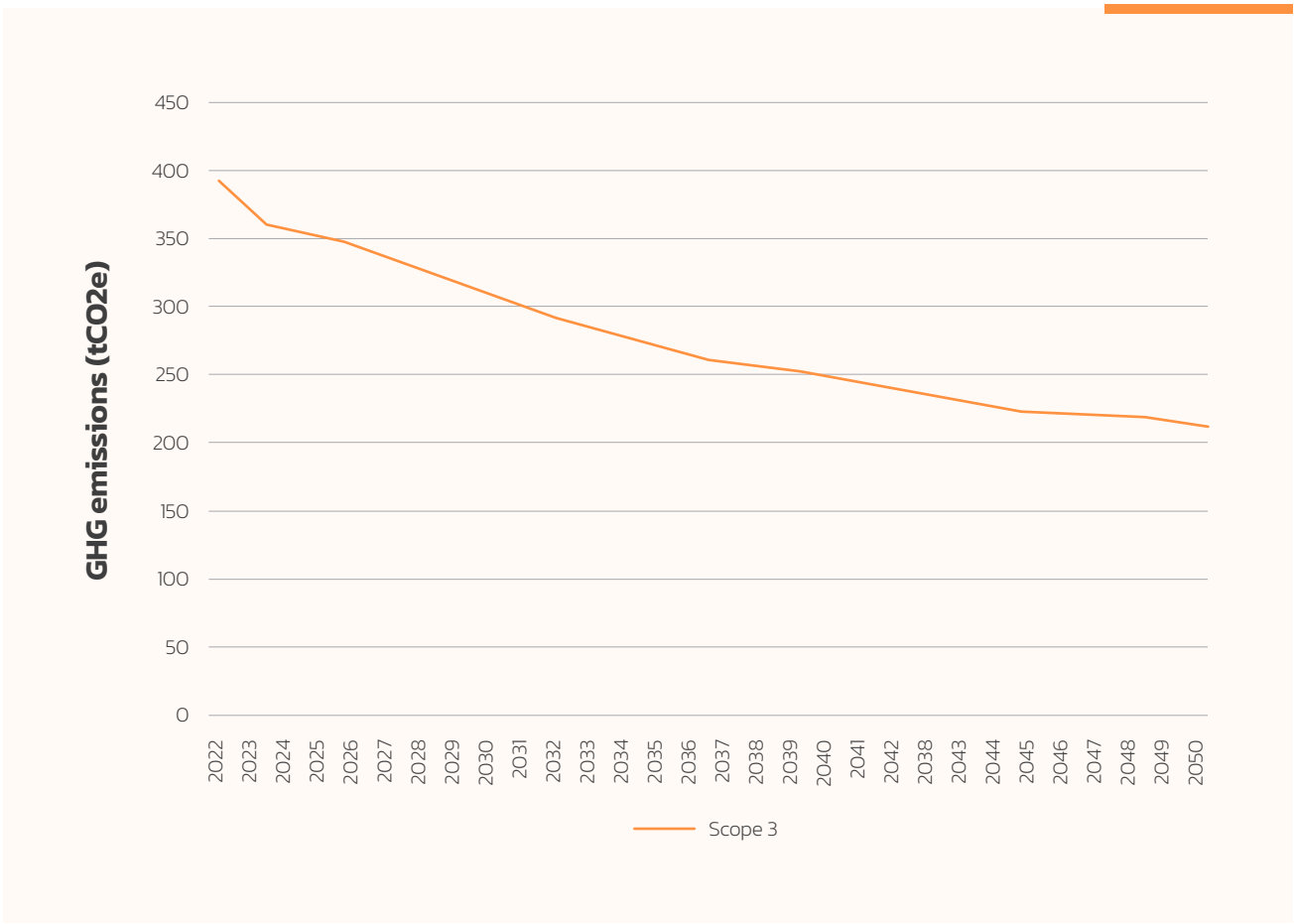
Figure C-2 - Scope 2 BAU projections in tCO2e for PE's operations from 2022 to 2050



C.3 Scope 3

Figure C-3 below presents the BAU graph illustrating PE's scope 3 emissions. The BAU scenario projects PE's GHG emissions until 2050, assuming operational practices continued without intervention. As there are no planned financial commitments for leased buildings, consumption from these areas remain steady until 2050. The projected decrease in GHG emissions is attributed to changes in carbon factors, resulting from the decarbonisation of the Moldovan and Romanian grid, as more renewables are integrated into the electricity generation mix.

Figure C-3 - Scope 3 BAU projections in tCO2e for PE's operations from 2022 to 2050



Modelling Assumptions

APPENDIX D

D.1 Baseline

Scope	Category	Assumptions/Exclusions
Scope 1	Car fleet	For the baseline year 2022, we have used the below UK Government Green Book[17] conversion factors for different types of fuel to CO2 equivalent: For petrol consumption: 2.16185 $kgCO_{2e}$/litre petrol For diesel consumption: 2.55784 $kgCO_{2e}$/litre diesel For propane consumption: 1.54354 $kgCO_{2e}$/litre propane For hybrid vehicle use: 0.12004$kgCO_{2e}$/km travelled
	Buildings and Gas Network	For natural gas use, we have used the UK Government Green Book conversion factor21 for Natural Gas to CO2 equivalent; 2.01574$kgCO_{2e}/m^3$.
	Gas Network	The reference leak rate is determined from the recorded leakages provided by PE plus an assumed leak rate per distance of piping (in order to capture un-reported leakages). For the recorded data provided, each incident is assumed to be represented by a 1mm pinhole leak, and the gas leakage calculated accordingly based on EN-ISO-5167-2:2003. Pipeline pressure, location and duration of leak were all included in the calculation. For the unreported leakage, Polyethylene and Steel pipeline leak rates have been estimated based on the report "Calculation of PE Leakage; PE distribution main leakage estimation for Independent Gas Transporters" for the Independent Networks Association, by DNV.GL. Report no. 10175924-1 Rev 2 (6th January 2021). Premier Energy have provided the pipeline lengths for their network, including material and diameter.
Scope 2	Buildings and Electricity Network	For electricity use, we have used conversion factor for electricity consumption to CO_2 equivalent; 0.48800 $kgCO_{2e}$/kWh for Moldova and 0.41400 $kgCO_{2e}$/kWh for Romania.
	Electricity Network	Total losses for the electricity network has been provided by PE based on metered data.
Scope 3	Leased buildings	Conversion factors for electricity and natural gas use as per the ones detailed under Scope 1 and 2 above

[17] GOV.UK, Government conversion factors for company reporting of greenhouse gas emissions. Available at: https://www.gov.uk/government/collections government-conversion-factors-for-company-reporting

D.2 Business-As-Usual (BAU)

Scope	Category	Assumptions/Exclusions
Scope 1	Car fleet	For Moldova, replacement of older vehicles (10-13 per year) is assumed to be like for like and therefore has not been modelled in the BAU modelling For Romania, there are no financial commitment for the car fleet.
	Buildings	No financial commitments for both Moldova and Romania.
	Gas Network	To align with increasing customer connections, PE plans to expand its polyethylene piping network progressively over time, with installation rates adjusted to match growth and operational needs from 2023 through 2050
Scope 2	Electricity Network	To align with the increase in Power demand, 1% load incremental factor has been assumed till 2050.
	Electricity	Carbon factors for electricity have been projected to 2050, considering government commitments to increasing the share of renewables in the electricity mix. For Moldova, targets up to 2050 committed by the Republic of Moldova in the National Energy and Climate Plan of Moldova under the "With Planned Measures" scenario have been used. For Romania, the EU's binding renewable energy target for 2030 to a minimum of 42.5% with a stretch target of 45%[20] has been used as a reference. Carbon factors projections to 2050 will require review based on government commitments.
Scope 3	Leased buildings	No financial commitments for both Moldova and Romania. Details for buildings acquired in 2023 and 2024 have been provided at a later stage and have not been included in the assessment.

D.3 Decarbonisation Pathway

Category	Assumptions/Exclusions
Car fleet	The electric cars km per kWh is assumed to be 5km. It is assumed that all emission factors for Moldova and Romania are the same, except for electric cars which are based on BAU estimated grid factors. Petrol car fuel efficiency assumed to be 18.5 km/litre[19]. Diesel car fuel efficiency assumed to be 20 km/litre[18]. Propane car fuel efficiency assumed to be 16.7 km/litre. Methane (CNG) fuel efficiency assumed to be 14 km/m^3. Annual travel distance per vehicle (for each vehicle type) is assumed to be the average of 2022 travel distances. Moldova Propane and methane-powered gas cars assumed to contribute roughly 50% each to total gas car use (hence, emissions factor is an average of the respective factors). No change to use of gas or diesel vehicles. Romania 15 new petrol cars will be purchased in 2030.
Buildings	For both Moldova and Romania, we assume that 26% of building electricity is used for lighting. Additionally, it is assumed that submetering is applicable for electrical use only. It is assumed that 30% of energy used is for heating, this is relevant to interventions in Moldova that relate to energy savings from heating. BMS systems reduce overall energy requirements by 10% therefore we assume that heating controls are half as efficient as a full BMS therefore we have assumed that heating controls reduce overall energy requirements by 5%.
Gas Network	Leakage data is assumed to reduce in line with the replacement of steel piping (leakage rates shown to be many factors higher in steel piping). Frequency and duration of leaks in the remaining Polyethylene piping is assumed to reduce towards industry expectation but remain higher based on the limit of the gas leak detection intervention agreed to (1% + 1%). H2 blending assumed to be available at up to 5% in 2030, 10% in 2036, and 15% in 2040. A wide range of external factors, outside of PE's influence, will impact this timeline. Leaked H_2 assumed to have zero GHG emissions i.e. H_2 from renewable energy sources.
Electricity Network	A target of 5.84% for losses by 2050 compared to the 7.2% in 2022 as provided by PE has been used to estimate the losses and carbon reduction potential. As the agreed interventions do not align with the trajectory towards achieving 5.84% losses by 2050, it is understood that PE will take additional measures not detailed in this study to meet this commitment.
Electricity Network	Targets for the increase in the percentage coverage of losses from renewable energy sources by 2050, as provided by PE, has been used to calculate the carbon reduction potential. Starting in 2025 10% of losses are targeted to be covered by renewables, with this figure increasing to 75% by 2050.

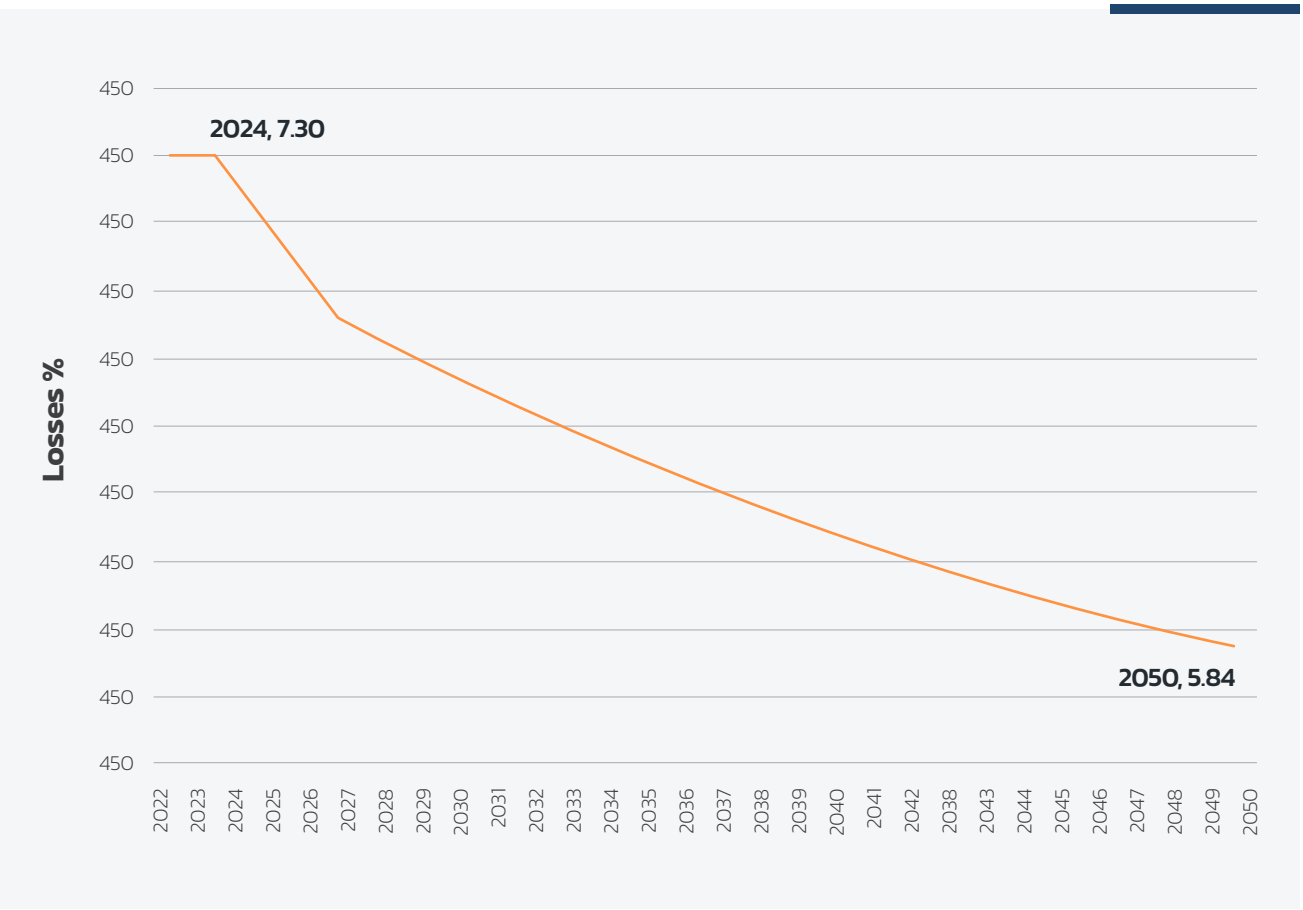
[18] European Commission, Renewable Energy Targets. Available at: https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-targets_en
[19] https://www.statista.com/statistics/780748/new-car-fuel-consumption-great-britain/

Electrical losses targets

APPENDIX E

The projected losses reduction across the PE electricity network has been provided by PE (Figure E-1), based on their expectations of investments and effectiveness of the same. Further information on the losses across the PE network has been provided to AtkinsRéalis in a report entitled: "Study on the evaluation of the energy efficiency potential of the electrical distribution networks of Premier Energy Distribution S.A" (2020).

Figure E-1 - Projections of electrical losses targets to 2050 (Shared by PE)



Decarbonisation Roadmap

APPENDIX F

Table D-1 – Decarbonisation roadmap of the PE's emissions to 2050, following the modelled programme of interventions, with BAU for reference.

Year	Baseline Emissions(tCO2e)	BAU emissions (accounting for the decarbonisation of the grid) (tCO2e)	Decarbonisation Pathway (tCO2e)
2022	129,356	129,356	129,356
2023	131,619	121,212	121,545
2024	134,008	121,054	119,719
2025	136,446	120,844	107,648
2026	138,937	117,916	98,944
2027	141,480	114,821	91,705
2028	144,083	111,557	82,417
2029	146,740	108,113	74,486
2030	149,460	104,489	66,672
2031	152,231	100,359	59,737
2032	155,068	96,021	53,138
2033	157,965	91,464	46,680
2034	160,930	86,683	39,630
2035	163,957	81,669	35,124
2036	167,061	79,967	31,711
2037	170,230	78,165	28,517
2038	173,467	76,258	26,505
2039	176,780	74,246	24,570
2040	180,164	72,122	21,862
2041	183,624	69,369	19,661
2042	187,157	66,474	17,760
2043	190,774	63,435	15,732
2044	194,469	60,244	14,066
2045	198,243	56,896	12,318
2046	202,108	55,399	11,369
2047	206,057	53,819	10,459
2048	210,099	52,157	9,612
2049	214,232	50,407	8,936
2050	218,459	48,566	8,179

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