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PHILIP MORRIS INTERNATIONAL

DECLARATION OF CARBON NEUTRALITY

MANUFACTURING ENTITIES CLUSTER 1





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List of factories:



0 Carbon Neutrality declaration

The **Qualifying Explanatory Statement** (QES) contains all the required information on the carbon neutrality of the given subject. All information provided within this report has been **reviewed by a third party** (SGS). If provided with any information affecting the validity of the following statements, this document will be updated accordingly to reflect the Cluster 1 (group of affiliates) current status towards carbon neutrality. This report is publicly available on a dedicated website:

https://www.pmi.com/sustainability/carbon-neutrality-declaration-year-2023-for-manufacturing-entities

In 2022, due to continuous growth of our community of factories that are joining our carbon neutral declaration process, we decided to cluster them under the same declaration of commitment and achievement.

This is the first declaration of achievement of carbon neutrality for the following list of factories that we will call in this document "Cluster 1", as per PAS 2060:2014 standard.

Reporting entity	Current Legal Entity
PT (TABAQUEIRA)	Tabaqueira Empresa Industrial de Tabacos S.A.
CH (PMP SA Neuch)	Philip Morris Products SA
LT (Klaipeda)	UAB Philip Morris Lietuva
CZ (Kutna Hora)	Philip Morris CR a.s.
AR LF (MASSALIN Lrm)	MASSALIN PARTICULARES SRL, Lerma
BR (Santa Cruz)	Philip Morris Brasil Industria e Comercio Ltda.
GR (PAPASTRATOS)	Papastratos Cigarette Manufacturing Company, S.A.
SN (Dakar)	Philip Morris Manufacturing Senegal S.A.R.L.
PK LF (PMPK Mard)	Philip Morris (Pakistan) Limited, Mardan Factory
ID (SAMP Sukorejo)	PT Hanjaya Mandala Sampoerna, Tbk. Sukorejo Plant
ID (PTSIS Sukorejo)	PT Sampoerna Indonesia Sembilan, Sukorejo Pasuruan
ID SKT (Malang SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Malang
ID SKT (Rungkut 1 SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Rungkut 1
ID SKT (Rungkut 2 SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Rungkut 2
ID SKT (Kraksaan SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Kraksaan
ID (PTPMI Karawang)	PT Philip Morris Indonesia Karawang International, Karawang
ID (SAMP Karawang)	PT Hanjaya Mandala Sampoerna, Tbk., Karawang Plant
AR (MASSALIN Merlo)	MASSALIN PARTICULARES S.R.L., Merlo
RS (DIN)	Philip Morris Operations a.d. Nis
JO (Amman)	Philip Morris Investments B.V. Jordan
RO (Bucharest)	Philip Morris Romania SRL

Carbon Neutrality of the Scope 1 and Scope 2 emissions under the direct operational control of Cluster 1, achieved by Cluster 1 in accordance with PAS2060:2014 at **31st December 2022** with a commitment to maintain to **31st December 2023** for the period commencing **1st January 2022**, SGS United Kingdom Limited Certified.

Certification letter from SGS can be found in Annex A.





1 Introduction

This document forms the Qualifying Explanatory Statement (QES) to demonstrate that Philip Morris International "Cluster 1" group of manufacturing affiliates has achieved **carbon neutrality** for the below mentioned manufacturing processes for the period starting 1st January 2022 and ending 31st December 2022 in accordance with PAS 2060:2014.

This has been achieved through:

- **Continuous carbon emissions reduction** through action plans under PMI direct controls: affiliates and fleet under affiliates' control (These reductions have been captured as part of the GHG inventory for 2022).
- **Compensation of remaining carbon emissions** for the period commencing 1st January 2022 and ending 31st December 2022.

This report includes the information which substantiates the declaration of PMI Cluster 1 achievement of carbon neutrality for this application period (under PAS 2060:2014) and commitment on carbon neutrality up to 2025 (3 years, from 2022 the reference year) in compliance with PAS 2060:2014 standard.

PMI affiliates grouped in Cluster 1 have also set up a **Carbon Management Plan** to **reduce the GHG emissions associated to the manufacturing processes** in order to demonstrate commitment to being carbon neutral in accordance with PAS 2060:2014 standard.

PAS 2060 Information requirement	Information as it relates to PMI Cluster 1 affiliates		
Entities making PAS 2060 declarations	Philip Morris Factories Cluster 1, including factories as per mentioned tabel in paragraph 0.		
Individual responsible for the evaluation and provision of the data necessary for the substantiation of the declaration (inc. preparing, substantiating, communicating and maintaining the declaration)	Gianluca Capodimonte		
Subject of PAS 2060 declaration	Carbon Neutrality of the Scope 1 and 2 emissions under the direct operational control of Philip Morris Cluster 1 Factories (complete list available in Annex C)		
Function of subject	Factories and stemmeries manufacturing conventional cigarettes and Smoke Free Products for PMI and its brands.		
Activities required for subjects to fulfil its function	The activities required within the manufacturing process are (note that not all the processes listed are		

1.1 General information





	 present in all the factories in scope for the Cluster 1): Manufacture of Tobacco Related Products; Flavour & Casing Processing; Improved Stem Processing; Cut Filler Processing; Guality Processing; Machine Cigarette Processing; Quality Control Laboratory Activities; Warehousing Activities; Stemmery Processes; Print Shop Activities; Manufacturing of Reduced Risk Products; Mentholated Inner Liner Processing; Cast Leaf Processing; Manufacturing of Heated Tobacco sticks; Manufacture of Hand-Rolled Cigarettes; Clove Processing; Reconstituted Tobacco Processing; Expanded Tobacco Processing; Expanded Tobacco Processing;
Rationale for selection of the subjects	PMI's ambition is to be carbon neutral for all of its direct operations (factories, fleet and offices) by 2025. In this journey, all subjects (factories) that have reached substantial emission reduction in the past years qualify to compensate residual emissions and become carbon neutral.
Type of conformity assessment undertaken	I3P-3 Independent third-party certification - unified
Reference date for PAS 2060 programme	1 st of January 2022
Achievement period	1 st of January 2022– 31 st of December 2022
Commitment period	1 st of January 2023 – 31 st of December 2025

Table 1.1 - General information

1.2 Scope

The **subject** for carbon neutrality is manufacturing entities grouped in the following Cluster 1 or group of entity.

Philip Morris International, Manufacturing entities grouped in Cluster 1:

	Production	
Reporting entity	Туре	Current Legal Entity





PT (TABAQUEIRA)	сс	Tabaqueira Empresa Industrial de Tabacos S.A.	
CH (PMP SA Neuch)	CC	Philip Morris Products SA	
LT (Klaipeda)	CC	UAB Philip Morris Lietuva	
CZ (Kutna Hora)	CC	Philip Morris CR a.s.	
AR LF (MASSALIN Lrm)	СС	MASSALIN PARTICULARES SRL , Lerma	
BR (Santa Cruz)	СС	Philip Morris Brasil Industria e Comercio Ltda.	
GR (PAPASTRATOS)	SFP (RRP)	Papastratos Cigarette Manufacturing Company, S.A.	
SN (Dakar)	СС	Philip Morris Manufacturing Senegal S.A.R.L.	
PK LF (PMPK Mard)	СС	Philip Morris (Pakistan) Limited, Mardan Factory	
ID (SAMP Sukorejo)	CC	PT Hanjaya Mandala Sampoerna,Tbk. Sukorejo Plant	
ID (PTSIS Sukorejo)	CC	PT Sampoerna Indonesia Sembilan , Sukorejo Pasuruan	
ID SKT (Malang SAMPOERNA)	СС	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Malang	
ID SKT (Rungkut 1 SAMPOERNA)	СС	PT Hanjaya Mandala Sampoerna, Tbk SKT Plant Rungkut 1	
ID SKT (Rungkut 2 SAMPOERNA)	СС	PT Hanjaya Mandala Sampoerna, Tbk., SKT Plant Rungkut 2	
ID SKT (Kraksaan SAMPOERNA)	CC	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Kraksaan	
ID (PTPMI Karawang)	СС	PT Philip Morris Indonesia Karawang International, Karawang	
ID (SAMP Karawang)	СС	PT Hanjaya Mandala Sampoerna, Tbk.,Karawang Plant	
AR (MASSALIN Merlo)	CC	MASSALIN PARTICULARES S.R.L. ,Merlo	
RS (DIN)	CC	Philip Morris Operations a.d. Nis	
JO (Amman)	сс	Philip Morris Investments B.V. Jordan	
RO (Bucharest)	SFP (RRP)	Philip Morris Romania SRL	

The main business activity is the manufacturing of conventional (CC is conventional cigarettes) and RRP/SFP (Smoke free products) products within PMI brands (as reported in Annex C).

In 2022, due to continuous growth of our community of factories that are joining our carbon neutral declaration process, we decided to cluster them under the same declaration of commitment and achievement.

Cluster 1 declaration includes *twenty-one* Manufacturing reporting entities (nineteen reporting entities are mainly defined as Conventional cigarettes sites and two reporting entities are mainly producing SFP/RRP).

During the reporting period, the definition of the subject(s) remained unchanged. In the case that material change occurs to the subject(s) in the future, the process of determination and substantiation of the subject(s) and associated GHG emissions shall be re-started on the basis of newly defined subject(s).





1.3 Boundaries of the subject

The system boundaries considered for the organizational carbon footprint of the subject are **all the activities** occurring **within the physical perimeter of the Cluster 1** and **under the affiliates's control** including:

- The manufacturing plant
- The office(s) and/or warehouse(s) included within the perimeter
- The fleet under the affiliate's control

GHG emissions associated with Cluster 1 of manufacturing affiliates entities within the defined boundary from the period of 1st January 2022 to 31st December 2022 have been quantified in accordance with GHG Protocol Corporate Accounting Standard (operational control), and verified by SGS.

The data for this application period has been **verified by an independent third party**, SGS, who certifies that the Carbon Neutral Declaration set out in this QES is appropriately reported in accordance with the requirement of PAS 2060:2014.

The assurance letter issued by SGS can be found in Annex A.





2 Quantification of carbon footprint

2.1 Emissions results

The total GHG emissions in scope 1 and 2 of Philip Morris International Cluster 1 of manufacturing entities during the **year 2022** (first application period) represent a total of **60587 tons of CO₂ equivalent**.

GHG scope	GHG emissions [tCO2eq]	Scope contribution [%]
CO2 Scope 1 Fuels (GHG emissions) – Manufacturing [t GHG]		
	58018.4	95.8%
CO2 Scope1 – Fleet emissions - Vehicles		
[t GHG]	855.7	1.2%
CO2 Scope 1 Emissions from DIET (GHG emissions) Expanded Tobacco		
[t GHG]	1712.9	3%
Sub Total [tCO2eq]	60,587	100%

Table 2.1 – Cluster 1 GHG emissions overall results

Biogenic CO₂ for some DIET Expanded Tobacco Process (in Indonesia plant) were accounted as zero as Biogenic CO₂ covered as per evidence in the Annex F.

1048 tonnes of CO_{2eq} related to Natural gas in 2022 are covered by green gas certificates in Lithuania (Klaipeda) plant as per evidence provided in Annex F.

2.2 Methodology

Total GHG emissions associated with PMI affiliates in Cluster 1, 1st January 2022 to 31st December 2022, have been quantified according to GHG Protocol, Corporate Accounting and Reporting Standard, following the operational control approach. This methodology was chosen as it represents best practice in terms of organization carbon footprint inventory and PAS 2060:2014 endorses it as being fully compliant with its requirements.

The types of greenhouse gases (GHG) included in the Kyoto Protocol to the United Nations Framework Convention on Climate Change are required for reporting under the GHG Protocol Corporate Standard and the below listed were covered in the calculations:

- carbon dioxide (CO₂),
- methane (CH₄),
- nitrous oxide (N₂O).





The inventory accounts for 100% of GHG emissions of business activities and operations in which PMI affiliates within Cluster 1 have direct operational control and the full authority to introduce and implement its operating policies.

All scope 1 and 2 greenhouse gas emissions relevant to the system boundary are included and quantified, in accordance with the GHG Protocol, Corporate Accounting and Reporting Standard, as confirmed by SGS verification.

2.2.1.1 Scope 1

GHG emissions related to scope 1 come from direct emissions from sources owned or controlled by each of the affiliates within Cluster 1. In PMI context, scope 1 emissions are:

- Stationary combustion:
 - Natural gas
 - LPG, Propane and Butane
 - o Diesel (fuel oil)
 - Heavy fuel oil
 - o Petrol
 - o Biomass
- Mobile combustion
 - o Petrol
 - o Diesel
 - o Biodiesel
 - o Bioethanol
 - Natural Gas (Compressed)

2.2.1.2 Scope 2

GHG emissions related to scope 2 come from indirect emissions from the generation of purchased electricity, steam, heat and cooling consumed by the affiliates in Cluster 1. In PMI context, scope 2 emissions are:

- Purchased electricity
- District steam
- District heating (inc. cooling)

2.2.1.3 Scope 3

GHG emissions related to scope 3 refer to all other indirect emissions as a consequence of the activities of affiliates in Cluster 1 that occur from sources not owned or controlled by by each of the affiliates within Cluster 1 and are out of scope.

2.3 Data sources

Primary and secondary data has been used for the Carbon Quantification process. Primary data is used where possible, only where primary data was not, secondary data was used to quantify emission. For scope 1 and 2,





primary data were exclusively used, with the exception of the calculation of emissions from fleet where secondary data was used only for UAB Philip Morris Lietuva, Philip Morris CR a.s., PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Rungkut 1 and Philip Morris Investments B.V. Jordan. For these four cases the fuel consumption and emissions have been determined by using the PMI available data for Fleet in the respective country. Taking the average fuel consumption per vehicle, this value has been multiplied by the number of vehicles in the factory. The total fuel consumption is then multiplied using DEFRA coefficient to determine the emissions.

1. Primary Data source related to all inputs and outputs corresponding to steps under the affiliates in Cluster 1 control were directly provided. This includes measured energy inputs for production.

2. Emission Factors were sourced from recognized databases (DEFRA and GHG protocol).

Data sources (e.g. invoices) were reviewed by SGS through the inventory verification, and certification against PAS 2060:2014 processes.

Source of data were reviewed by SGS through the GHG Protocol verification process and certification against the requirements of PAS 2060:2014.

2.4 Assumptions and estimations

All assumptions made to quantify the greenhouse gas emission of PMI affiliates in Cluster 1 were reviewed by SGS through the GHG inventory verification process. For scope 1 and 2, no assumptions were made. For fleet of the four reporting entities mentioned in 2.3 paragraph the fuel consumption and emissions have been determined by using the PMI available data for Fleet in the respective country taking the average fuel consumption per vehicle, this value has been multiplied by the number of per vehicles in the factory. The total fuel consumption is then multiplied using DEFRA coefficient to determine the emissions.

2.5 Exclusions

Annex C outlines all the inclusions and exclusions for GHG emissions. In order to ensure the coverage of any potential exclusions within the system boundary an additional 3% has been added to total Carbon Footprint to ensure the Carbon Neutrality program covers 100% of the GHG emissions.

2.6 Uncertainties

Generally, the use of secondary data throughout the assessment represents the major source of uncertainties on results. Actions taken to minimize these uncertainties are described below and were reviewed by SGS.

- Secondary emissions factors: uncertainty associated to the use of secondary emission factors is because they represent averages, rather than specific emissions. However, their use was appropriate, and care has been taken to use the best available datasets (DEFRA and GHG Protocol).
- No other secondary data has been used, except the fleet emission for four entities mentioned in paragraph 2.3.

Result of the uncertainty calculation is reported in Annex D.





2.7 Comparison with baseline period results

This section will be completed in the subsequent years as 2022 is the fist year for the PAS 2060:2014 certification for this Cluster 1 (Group of Manufacturing entities/factories as mentioned previously in paragraph 0).

SFP (RRP) products are converted to mio cigarette equivalent volumes using the relative efficiency in the 2022 year baseline period.

GHG scope	GHG emissions [tCO2eq]
CO2 Scope 1 Fuels (GHG emissions) -	
[t GHG]	58018.4
CO2 Scope1 - Fleet emissions -Vehicles [t GHG]	855.7
CO2 Scope 1 Emissions from DIET (GHG emissions) Expanded Tobacco	
[t GHG]	1712.9
Sub Total [tCO2eq]	60,587
3%	1818
Total Carbon footprint [tCO2eq] with 3% (rounded up based on the decimals)	62,405

	Emission Year 2021	Emission Year 2022
SFP (RRP) Intensity (CO2 t/mio Cig eq)	0.639	0.688
CC Intensity	0.129	0.101
Conversion factors	4.97	6.85
new Denumerator	463,628	590,236

New Intensity per Cluster 1 (CO2 t/ new Denumerator)	0.132	0.103
		22%





3 Carbon Management Plan

The carbon reduction management plan considers a 3 years period (2022-2025) with the aim of reducing emissions and energy intensity. Performance against target will be monitored annually to review whether anticipated reductions have been achieved.

In order to achieve the targeted reductions a series of project will be implemented.

Although PMI affiliates began its Carbon Management Programme for Carbon Neutrality in 2020, energy saving measures have been implementing since 2010 within the production plant. In 2022, due to continuous growth of our community of factories that are joining our carbon neutral declaration process, we decided to cluster them under the same declaration.

The following paragraphs explain in detail implemented (paragraph 3.2) and planned (paragraph 3.3) projects, that are mainly related to production plant GHG emissions reductions.

3.1 PMI best practice

In 2022, 38 out of 41 affiliates, 100% of electricity purchased came from renewable sources (electricity source for the affiliates in the carbon neutral factory certification are provided in annex F). Since 2017, we have gradually increased the uptake of green electricity (as showed in below table) and have a target to reach 100% green electricity purchases for all our affiliates by 2025. By investing in renewable energy electricity, PMI overall avoided emissions of **over 1,6 million ton of CO₂ equivalent.**

Indicator	2017	2018	2019	2020	2021	2022	Total Value
CO2 Scope 2 (GHG emissions) - Manufacturing - Market based [t GHG]	217.563	149.757	111.508	65.289	41.157	27.909	613.182
CO2 Scope 2 (GHG emissions) - Manufacturing - Location based [t GHG]	414.126	395.371	398.332	357.670	336.964	333.553	2.236.016
Cumulative difference between location based and market based	196.563	245.615	286.824	292.382	295.807	305.644	1.622.834

Table 3.1 - Green electricity increase





3.2 Implemented GHG emissions reduction project repository

At PMI, emissions reduction project governance and budget approval comes from two distinctive main streams; one driven from central functions and another by the local team. Table 3.2 shows project implemented in Cluster 1 in the last years, evaluated in 2022 Carbon Footprint assessment. For easiness of reading, the projects have been split by entity:

Table 3.2 - Implemented GHG emissions reduction projects

Philip Morris SA - Neuchatel

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Heat recovery from steam boiler stacks	Addition of heat recovery system on the steam boiler stacks to provide heat to the hot water system	2010	Gas	198000
Thermal insulation improvement in Steam boilers room	Replacement and improvement of the thermal insulation in the steam boilers room with Calonat (insulation blanket)	2011	Gas	57000
Heat recovery on Vacuum pumps	Additional heat recovery system on the Vacuum pumps to provide heat to the hot water system	2011	Gas	97000
Steam and hot water boilers O2 control	Addition of an O2 control on all our boilers in order to approach a stoichiometric combustion	2012	Gas	246000
Compressed air replacement and addition of a heat recovery system	Replacement of a Compressed air with up to date technology and addition of heat recovery system to provide heat to the hot water system	2013	Gas	101000
FTD/TSE Heat recovery	Addition of a heat recovery system on the FTD/TSE process	2014	Gas	535000
HVAC replacement phase 1 to 3	Replace old HVAC units by new units	2018/2021	Gas	130000
Heat pump on Lake water return	Addition of 2 heat pumps of 600kW each on the return pipe to the lake water to recover the heat from the cooling system to provide heat to the hot water system	2020	Gas	1000000
Flash steam heat recovery	Building H&R heat recovery to heat up sanitary hot water	2021	Gas	140000
Heat pump regulation optimization	Regulation optimization during winter period in order to increase the coverage rate against natural gas boiler	2022	Gas	60000





UAB Philip Morris Lietuva

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Central Vacuum system (OPP-011940)	Central Vacuum system - Centralized controller (ESv)	2021/2022	Electricity	18669
FTD (OPP-014675)	FTD heat recovery upgrade	2022	Fuel	8676
Hot water networks (OPP-013870)	Connection of HDS1 and HDS2 primary hot water networks	2021/2022	Electricity	3875
Chilled water (OPP- 017023)	Chilled water system upgrade - low dT control on AHU cooling coil (BMS dT control or simple stand- alone controller)	2021/2022	Electricity	21303
AHU flow (OPP-017176)	AHU flow rate optimization - Fresh air intake controlled based on actual dedusting system exhaust	2021/2022	Electricity	69911
ZOOM-HVAC (OPP- 018796)	ZOOM-HVAC Roll-out 2021	2022	Electricity	49991
HVAC (OPP-017185)	Baseload assessment and reduction - programmable schedule control for HVAC	2021/2022	Electricity	869
GEMT (OPP-017448)	Baseload assessment and reduction - GEMT level 0 and level 1	2021/2022	Electricity	32687
OPP-017450	Baseload assessment and reduction - automatic baseload reports in GEMT	2021/2022	Electricity	2746
Chilled water system (OPP-017446)	Chilled water system upgrade - Condenser temperature reset (wet/dry bulb temperature)	2021/2022	Electricity	19184
ACU3 (OPP-021518)	Idle/sleep mode in Secondary equipment (ACU3)	2022	Electricity/Fuel	14599
Compressed Air (OPP- 021533)	Compressed Air - stop water circulation in compressor cooling loop when compressor is not operating	2022/2023	Electricity	2309

Philip Morris CR a.s.

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Chillers Heat Recovery (Heat Pump)	Heat recovery system, based on Heat pump.Heat is used for HVAC heating. Saving is based on COP - high efficient heat generation.	2011	Fuel - Natural Gas	136 092





Air compressors heat recovery stage 1	Heat recovery from water cooled air compressors (water- to-air). Heat is used for preheating of fresh air inside AHU units.	2011	Fuel - Natural Gas	79 444
Heat Recovery from Dust Filters Bld.8	Heat recovery from dust collection (air-to-air). Heat used for preheating of fresh air inside AHU units.	2014	Fuel - Natural Gas	43 176
FTD sleeping mode	Installation of improved control software for FTD (low consumption mode).	2014	Fuel - Natural Gas	44 558
Adiabatic humidification Secondary	Installation of adiabatic humidification in Secondary HVAC instead of steam humidification.	2016	Fuel - Natural Gas	234 879
Boiler K2 Condensing Heat Exchanger Ventos	Installation of additional heat exchanger (fume gas - to - water, condensing) on steam boiler in boilerhouse.	2017	Fuel - Natural Gas	103 623
CA compressors heat recovery	Heat pump (water-to-water) for heat recovery from water cooled air compressors to HVAC heating system.	2018	Fuel - Natural Gas	69 082
Reverse Osmosis	Installation of reverse osmosis for boiler feeding water preparation in boilerhouse.	2019	Fuel - Natural Gas	34 541
ESI wave 2: Heat recovery - precooler for Economizer feed water	Installlation of heat exchanger (water-to-water) to decrease water temperature before boiler economizer, improving efficiency.	2021	Fuel - Natural Gas	70 603
ESI wave 3: Dust collection Heat Recovery (Heat Pump)	Heat recovery system returning waste heat from dust collection system back to heating grid.	2022	Fuel - Natural Gas	411 824





Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Energy Efficiency Plan 2010	The energy efficiency plan 2010 encompassed, i.e.: Compressed Air Leakage, Flash Steam Recovery, Variable Speed Drivers for Compressors, Steam Boiler Economizer 1, and Chiller Replacement	2010/ 2011	Electricity/Gas	780,817
Energy Efficiency Plan 2011	The energy efficiency plan 2011 encompassed, i.e.: Efficient LED Lightening, and VSD and Higher Efficiency Motors	2011/ 2012	Electricity/Gas	823,099
Energy Efficiency Plan 2013 and Renewable Electricity	The energy efficiency plan 2013 encompassed, i.e.: Heat recovery for Boiler House, and FTD Heat Recovery. Purchase of Green Electricity since June 2014	2013/ 2014	Electricity/Gas	5,587,121
Steam Boilers Replacement	Install one new boiler with higher energy efficiency and dimensioned according to planned future needs (10 Ton/h) replacing the boilers nº2 and nº3.	2014/ 2015	Gas	533,449
Renewable Electricity	Portuguese legislation requirement to have renewable electricity since 2014 – in 2019 was already 100% renewable and PMI energy efficiency/saving program	2014/ 2015	Electricity	2,168,545
Energy Efficiency Plan 2015	The energy efficiency plan 2015 encompassed, i.e.: Optimization of the combustion control system	2015/ 2016	Gas	1,007,358
Energy Efficiency Plan 2016	The energy efficiency plan 2016 encompassed, i.e.: Thermal Energy Recovery in the Exhaust Gases of the Steam Generator, Thermal Energy Recovery in the BBS Dryer, Thermal Energy Recovery in DCC Dryers for Heating the Air Supply of AHU12, Improvement of Energy Efficiency in the Steam Distribution Network	2016/ 2017	Gas	470,419
Energy Efficiency Plan 2017	The energy efficiency plan 2017 encompassed, i.e.: New Heat Changer	2017/ 2018	Gas	115,431

Tabaqueira - Empresa Industrial de Tabacos, S.A. (Tabaqueira EIT, S.A.)





	Recover for gas exhaust boiler nº2, and New thermal valve jackets isolation			
Shutdown Management	Implementation of a management system to optimize the operating periods of utility equipment, such as: AHUs and Steam Boilers.	2018/ 2019	Gas	237,349
Energy Efficiency Plan 2019	The energy efficiency plan 2019 encompassed, i.e.: Flash Steam Recovery, and Heat Recovery from CA Plant	2019/ 2020	Gas	188,899
Primary Process Optimization	Reduction of steam consumption through the resizing of the production line and implementation of new technologies.	2020/ 2021	Gas	407,000
Solar Park	Implemented photovoltaic solar plant, which covers an area of 5525 m ² with a production capacity of 1MW, which guarantees the integration of 7% of electric energy for self-consumption. This solar park also powers 12 own charging stations for plug in vehicles in Tabaqueira fleet.	2021/ 2022	Electrical	Avoid environmental footprint of CO2 emission in more than 800 t per year
Hydrogen plant	Memorandum of Understanding with Dourogas to study the feasibility of an hydrogen plant	2021	Gas	n/a
Carbon capture	Memorandum of Understanding with Dourogas to study the feasibility of a carbon capture solution for e-methane production	2021	Gas	n/a

Massalin Particulares S.R.L., Salta, Argentina

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
IREC-Renewable Electricity	Green electricity certificates purchasing process	2021	Electricity	2,690,688
		2022		2,981,664
Led Lighting	Replace all the common illumination to led technologies	2022	Electrical	2,213
Steam Pipe Insulation	Installation of 50 meters of 2" steam pipe insulation to avoid leakages. The steam piping at	2022	Gas	1,372





	the exit of the boiler up until line entry is completely insulated. Steam line from the entrance of the line to the flash dryer wasn't properly insulated.			
Line Upgrade	Reduction of equipment 4th, 5th stage and Press No. 2 – 4 fans, 2 separators and a thresher were eliminated from the line. A 3rd press was added the net balance in energy consumption lead to energy savings	2022	Electrical	122,040

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Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Energy reduction projects	Initiatives within Open+ routines and KPI verification.	2015	Electricity LPG Fuel Oil	1973122
Implementation Project GEMT / E-Sight	Tool to monitor our consumption	2015	Electricity LPG Fuel Oil	260601
Replacement of Nasch Vacuum Pumps by Busch	More efficient and lower-power vacuum pumps	2015	Electricity	372287
Heater Exchange to Boilers	Heat exchanger to heat boiler inlet water	2015	Fuel Oil	798426
Utility Automation / Boiler Automation	SCADA frequency inverter squees and optimization of inverters	2015	Fuel Oil Electricity	798426





VSD to PF 55	Frequency inverter for DIET process fan	2015	Electricity	1751
BMS Honeywell for CastLeaf Burners / Print Shop / DIET	Improvement in LPG burning system in dryers and furnace	2015	LPG	1479386
Energy reduction projects	Initiatives within Open+ routines and KPI verification.	2016	Electricity LPG Fuel Oil	1080990
Motor Replacement - PrintShop	Power optimization and frequency inverters	2016	Electricity	12376
Replacement of conventional lamps by LED	Power optimization due to more efficient lamps.	2016	Electricity	61634
Energy reduction projects	Initiatives within Open+ routines and KPI verification.	2018	Electricity LPG Fuel Oil	1498978
WWT Automation	Automation of the effluent treatment plant	2018	Electricity	8022
Energy reduction projects	Initiatives within Open+ routines and KPI verification.	2019	Electricity LPG Fuel Oil	931523
Replacement of Conventional Lamps by LED - Phase 2	Power optimization due to more efficient lamps.	2019	Electricity	31756
Ruby Project	Cast Leaf process was discontinued in Q1 2019, the Dryer fuel was LPG. The consumprion was 655 Ton/year	2019	Electricity LPG Fuel Oil	1925721





Biomass Boiler Project	Installation of one Biomass Boiler of 8 Ton/h steam capacity. Using wood chips as a fuel Emission reduction (Ton CO ² eq) ~ 2019/20 x 2021	2020 / 09	Fuel Oil	1012000
Energy reduction projects	Initiatives within Open+ routines and KPI verification.	2021	Electricity LPG Fuel Oil	375000
Photovoltaic initiative	Installation of 320 solar panels to supply electric energy to Biomass Boiler System Emission reduction (Ton CO ² eq)	2021	Electricity	12000
Biomass Boiler Project	~ 2019/20 x 2021 = ~ Installation of one Biomass Boiler of 8 Ton/h steam capacity. Using wood chips as a fuel Emission reduction (Ton CO ² eq) ~ 2019/20 x 2021	2021	Fuel Oil	4377000
Lighting LED	ES06.02 Efficient Lighting - T5 to LED	2022	Electricity	20696
Thermal insulation in Primary equipment	Installation of thermal jackets to avoid waste of energy in the steam network	2022	Fuel	17055
Baseload assessment and reduction - automatically cut-off Compressed Air supply valve when machine in not producing	Automatic closure of compressed air valves when machines are out of production	2022	Electricity	3572





Project name	Description	Year	Type of	Emission reduction
			energy used	[kg CO2 eq / year]
Electricity Green certificate	The acquisition of electricity green certificate on a yearly basis ensure that electricity consumed in the factory is produced by 100% renewable sources.	2017	Electricity	11,051,881
Installation of a new boiler	By installing an additional boiler with double capacity and higher efficiency is reduced the NG consumption for the same steam production	2018	Electricity/Gas	85,000
Installation of GEMT meters	Installation of energy meters Level 1 & 2	2016/2021	Electricity/Gas	110,000
Installation of condensate vent condensers	Returning condensates produce flash steam released to the environment. Steam condensers are saving energy and water.	2021	Water/Gas	40000 (actual emissions are less than theoretical calculations due to operational problems)
Boiler O2 & CO control	Installation of O2 and CO sensors can further optimize the efficiency of the boilers.	2021	Gas	16,000

Papastratos Cigarette Manufacturing Company, S.A.

Philip Morris Manufacturing Senegal S.A.R.L.

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Energy Improvement	Insulation of waterchilled piping Replacement for condensate decharge pipe for fan coil unit	2013	Electricity	2904
GEMT Level 2 -3	Global Energy Monitoring and Targeting project to reduce energy and water consumption	2014	Electricity	2899
Utilities Supervision and Alert System	Building Management System: i.e Electrical metring installation, Daily Analysis	2016	Electricity	3907





Utilities improvment	Compressed air replacement Vaccuum upgrade. Refrigerating dryers replacement	2018	Electricity	3216
Building & Utilities Maintenance project	Static UPS batteries replacement, LED lighting replacement	2019	Electricity	2678
STEAM Pressure reduction Initiatiaves	Steam pressure set point reduction from 8 bars to 6 bars Steam production optimization			
Energy Saving Initiatives	Air pressure reduction from 6.5 bars to 5.2 bars			
Diesel consumption reduction	Steam automatic shuting valve	2021		
Energy Saving Initiatives	Precooling adiabatic system	2021	Electricity	
	Fan cooling unit upgrade	2022	Electricity	
	Led Lighting revamp	2022	Electricity	
	Steam and cooling water piping insulation	2022	Fuel	

Green Leaf Threshing Plant, Philip Morris (Pakistan) Limited, Mardan Pakistan

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Energy Conservation Projects carried out in Line I & II	Execution of Piggyback CF system to reduce energy consumption CO2 emissions	2013	Diesel Oil	4,36,167
Project Line Optimization, 1 st Phase	 1st Phase executed, 1st two CF changed and during processing season single line is used, 	2014	Diesel Oil	1,36,554
	- DRF main ducting is redesigned in order to make system energy efficient and reduce CO2 emissions			





Project Line Optimization, 2 nd Phase	Complete Line upgraded, TP increased from 10Tons Per Hr to 14.7 Tons Per Hr, Energy efficiency achieved	2015	Diesel Oil	3,26,181
Energy Conservation	Replaced Pneumatic SL Transport with Manual Band Conveyor Energy Saving of 34KW Per Hr + Lighting system at Warehouses inside GLT upgraded in order to reduce energy consumption and reduce CO2 emissions	2017	Diesel Oil	4,28,823
Automation of Steam Control Valve at Stem redryer	Automation of Steam Control Valve at Stem redryer & Improvement to recover condensat heat, Pipe network improved	2020	Diesel Oil	91,999
LPG Boiler Fuel Conversion Project	LPG Boiler Fuel Conversion Project, Fuel of Boiler changed from HFO to LPG	2021	LPG	2,54,588
LPG Energy Saving- Loss Analysis	Installation of Air Pre Heater, Condensate Line Optimization, Insulation of Steam Line, Oxygen Analyzer	2022	LPG	78,118
Electricity & Diesel Energy Saving- Loss Analysis	Fixing of compressed air leakage points, Improvement of Generator Efficiency	2022	Electricity & Diesel Oil	18,238
Electricity Supply & Load Management during low throughput processing	Power shifting to local grid, Line load reduction, Stem packing in one shift only	2022	Electricity & Diesel Oil	248,006





PT. HM Sampoerna, Sukorejo Plant, Indonesia

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Air Pressure Distribution System	Pressurized air improvement with minimizing loss of energy as 50% or 155 kW per hour	2016/2020	Electricity	Minimize loss of energy to 50% or 155 kW per hour. Emission reduce to 50%- 50.5%
Subtitute the Chiller (Centralized AC) into AC Split	Reduce electricity consumption (the air conditioner) in Sampoerna Print Pack Office	2016/2020	Electricity	Reduced 58 kW per hour or decrease 49.67%- 50.5% the emission
Reuse the Residual Heat from Flash Tower Dryers (FTD)	Installing Plate Heat Exchanger (PHE) on the channel condensate to reuse residual heat from FTD	2016/2018	Gas	Additional hot water in the boiler will be reduce consumption (saving natural gas) less than 32.5 Nm ³ per hours. (Reduced emission 0-10%).
Blow Down System, Boiler Economizer, and oxygen control	Boiler installation economizer, O2 Trimming or oxygen management, and automatic blowdown can all help to improve boiler efficiency.	2016/2022	Gas	Emission reduction: 308,42 CO2 eq Reduced the energy to 1498,40 GJ / year
Optimizing Steam Piping System on the Primary Line and RTC	Relayout steam piping system on CP and Primary distribution to reduce steam pressure drop	2016/2020	Gas	Emission reduction: 27,41%-27,7%/year
Lighting Upgrade in Clove, Primary, and Secondary Process	Replacing non LED lights with Led Lighting	2016/2022	Electricity	Emission reduction: 6,62 CO2 eq Reduced the energy to 102,87 GJ / year
Trigeneration	Build the system that can produces 3 outputs (electricity, steam and water chiller)	2018/2020	Gas	Emission reduction: 13.910 Ton GHG
Solar Panel	Implementing renewable energy by using sunlight as a source of energy	2018/2022	Renewable Energy	Emission reduction: 18,51 CO2 eq Reduced the energy to 281,28 GJ / year
RTT Implementation	Increase the efficiency of utility equipment due to reduce energy consumption	2018/2020	Electricity	Reduced the energy to 5235 GJ / year
Ionizer for GEG	Install ionizer into the Gas Engine Machine to reduce energy consumption	2019/2022	Gas	Emission reduction: 143,76 CO2 eq Reduced the energy to 698,43 GJ / year





SteamPreassureReduction6.5 Bar - 6.0Bar	Reduce Boiler Steam Pressure related to reduce energy consumption	2019/2020	Gas	Reduced the energy to 584 GJ / year
Installing Magnetic Chiller Pump	Replaced all chiller motor pump with high efficiency motor pump type	2019/2022	Electricity	Emission reduction: 0,16 CO2 eq Reduced the energy to 0,775 GJ / year
Upgrade Compressor	Replaced the conventional compressor with high efficiency compressor	2019/2022	Electricity	Emission reduction: 147,89 CO2 eq Reduced the energy to 718,06 GJ / year
Cooling Improvement	Repair and maintenance the HVAC system	2020/2022	Electricity	Emission reduction: 0,031 CO2 eq Reduced the energy to 548,50 GJ / year
Install Compressed Air Auto Cut Off	Automatical valve installation in production area to reduce energy consumption	2020/2022	Electricity	Emission reduction: 23,59 CO2 eq Reduced the energy to 114,60 GJ / year
Controlling SKJ-AHU Fan Speed	Control the frequency of FAN AHU Motor using VSD (Variable Speed Drive) as an indicator of energy saving	2020/2023	Electricity	Emission reduction: 0,05 CO2 eq Reduced the energy to 840 GJ / year
Optimizing Chiller	Monitoring the running of electric chillers, chiller absorbers, CWP, CHWP, and Cooling Towers through SBO (StruXureware Building Operator) at SKM and PP in real time and through several devices	2020/2023	Electricity	Emission reduction: 0,0528 CO2 eq Reduced the energy to 924 GJ / year
Installing AHU EC FAN	Changing the AHU Fan from motor to EC Motor type	2022/2023	Electricity	Emission reduction: 37,91 CO2 eq Reduced the energy to 4995,02 GJ / year
Installing SKM Ripping Machine without using Steam	Eliminate steam consumption in riper engines	2022/2023	Gas	Emission reduction: 23,59 CO2 eq Reduced the energy to 2683,03 GJ / year





PT. Sampoerna Indonesia Sembilan – Sukorejo Plant, Indonesia

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Lighting Upgrade in Clove, Primary, and Secondary Process	Replacing non LED lights with Led Lighting	2016/2022	Electricity	Emission reduction were already calculated in SAMP Sukorejo as it is joint initiatives. Emission reduction in PT SIS Sukorejo is: 0,64 Ton CO2 eq
Installing AHU EC FAN	Changing the AHU Fan from motor to EC Motor type	2022	Electricity	Emission reduction were already calculated in SAMP Sukorejo as it is joint initiatives. Emission reduction in PT SIS Sukorejo is: 0,44 Ton CO2 eq

PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Malang

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Solar Panel	Implementing renewable energy by using sunlight as a source of energy (capacity 39 Kwp)	2020/2022	Renewable energy	Emission reduction: 26,58 Ton CO2 eq
Optimize Utilization of lighting & Air Conditioning	Enhance lighting & AC by installing timer/presence sensor at production unit Warehouse, Offices, Toilet, Server Room, Production.	2022	Electricity	
Optimize lighting at production area	Large power lamp replacement with more efficient	2022	Electricity	-
Optimize utilization of utility	Optimize running time of Exhaust Fan, Optimize room temperature for server room (25 ^o C), VSD (Variable speed drive) for exhaust > 5 KW	2022	Electricity	-





PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Rungkut-1

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Solar Panel	Implementing renewable energy by using sunlight as a source of energy (capacity 190 Kwp dan 39 Kwp)	2020/2022	Renewable Energy	Emission reduction: 5.19 Ton CO2 eq
Optimize Utilization of lighting & Air Conditioning	Optimize lighting & AC by installing timer/presence sensor at production unit Warehouse, Offices, Toilet, Server Room, Production.	2022	Electricity	Emission reduction: 1,27 Ton CO2 eq Reduced the energy to 5,91 GJ / year
Optimize lighting at production area	Large power lamp replacement with more efficient	2022	Electricity	Emission reduction: 1,11 Ton CO2 eq Reduced the energy to 5,17 GJ / year
Optimize utilization of utility	Optimize running time of Exhaust Fan, Optimize room temperature for server room (25 ^o C), VSD (Variable speed drive) for exhaust > 5 KW	2022	Electricity	Emission reduction: 0,8 Ton CO2 eq Reduced the energy to 3,69 GJ / year

PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Rungkut-2

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Solar Panel	Implementing renewable energy by using sunlight as a source of energy (capacity 155 Kwp)	2020-2022	Renewable Energy	Emission reduction: 129.48 Ton CO2 eq
Optimize Utilization of lighting & Air Conditioning	Optimize lighting & AC by installing timer/presence sensor at production unit Warehouse, Offices, Toilet, Server Room, Production.	2022	Electricity	Emission reduction: 9.51 Ton CO2 eq Reduced the energy to 44,15 GJ / year
Optimize lighting at production area	Large power lamp replacement with more efficient	2022	Electricity	Emission reduction: 8.32 Ton CO2 eq Reduced the energy to 38,63 GJ / year
Optimize utilization of utility	Optimize running time of Exhaust Fan, Optimize room temperature for server room (25 ^o C), VSD (Variable speed drive) for exhaust > 5 KW	2022	Electricity	Emission reduction: 5,94 Ton CO2 eq Reduced the energy to 27,59 GJ / year





Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Energy mapping	Study of skylight implementation	2021	-	-
Optimize Utilization of lighting & Air Conditioning	Optimize lighting & AC by installing timer/presence sensor at production unit Warehouse, Offices, Toilet, Server Room, Production.	2022	Electricity	Emission reduction: 1473,08 Ton CO2 eq Reduced the energy to 5303,08 GJ / year
Optimize lighting at production area	Large power lamp replacement with more efficient	2022	Electricity	Emission reduction: 1288,94 Ton CO2 eq Reduced the energy to 4640,19 GJ / year
Optimize utilization of utility	Optimize running time of Exhaust Fan, Optimize room temperature for server room (25° C), VSD (Variable speed drive) for exhaust > 5 KW	2022	Electricity	Emission reduction: 920,67 Ton CO2 eq Reduced the energy to 3314,42 GJ / year

PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) - Kraksaan

PT. Hanjaya Mandala Sampoerna Tbk, Karawang Plant, Indonesia

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Chiller improvement. Variable vacuum pump installation. Trigen installation.	Improvement targeted to increase utility system efficiency for chiller and vacuum system. Trigeneration system installation which produces less emission per energy generated compared to supplied electricity.	2017/2018	Electricity and Gas	1,503,178
Implementation of Run to Target (RTT).	Implementation of RTT system aimed at optimizing performance of utility system.	2018/2019	Electricity and Gas	98,895
Chiller pump VSD installation. Centrifugal compressor installation.	Installation aimed to increase efficiency of chiller system. Also, higher efficiency compressor type installation	2019/2020	Electricity	1,694,680
Green electricity	Buying green electricity from state owned electricity company.	2019/2020	Electricity	21,641,605





AHU (Air Handling Unit) improvement with Al. Steam shut off valve. Automatic shut off valve per link up.	Improvement aimed at reducing AHU energy by introducing AI backed control system. Reducing steam losses by installing shut off valve. Also, reducing compressed air losses at production area by installing automatic shut off valve for each link up	2020/2021	Electricity and Gas	3,732,775
VFD installation for every 5 KW and above motor. Motion sensor for AC (Air Conditioning) and lighting. Grouping lighting at clove and RTC (Reconstitute Tobacco & Clove) production. Temperature controlled exhaust fan for transformer room.	VFD and temperature- controlled exhaust installation aimed to reduce electricity consumption by increasing its efficiency. Motion sensor and lighting grouping reduce energy consumption by shutting off unneeded lighting and AC.	2021/2022	Electricity	1,347,891
Grouping secondary lighting for each link up. High efficiency chiller installation. VFD installation for reverse osmosis, raw water, and thermal oil pumps	lighting grouping aimed reduce energy consumption by shutting off unneeded lighting. Chiller and VFD installation aimed to increase utility system efficiency	2022/2023	Electricity	257,028

PT Phillip Morris Indonesia - Karawang Plant

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
Chiller improvement. Variable vacuum pump installation. Trigen installation.	Improvement targeted to increase utility system efficiency for chiller and vacuum system. Trigeneration system installation which produces less emission per energy generated compared to supplied electricity.	2017/2018	Electricity and Gas	3,181,161
Sollar Cell	Solar cell installation	2017/2018	Electricity	498,181
Chiller pump VSD installation. Centrifugal compressor installation	Installation aimed to increase efficiency of chiller system. Also, higher efficiency compressor type installation.	2019/2020	Electricity	1,854,624
Green electricity	Buying green electricity	2019/2020	Electricity	10,086,618





AHU (Air Handling Unit) improvement with AI. Steam shut off valve. Automatic shut off valve per link up.	Improvement aimed to reduce AHU energy by introducing AI back control system. Reducing steam losses by installing shut off valve. Also, reducing compressed air losses at production area by installing automatic shut off valve for each link up.	2020/2021	Electricity and Gas	2,788,685
VFD installation for every 5 KW and above motor. Motion sensor for AC (Air Conditioning) and lighting. Temperature controlled exhaust fan for transformer room	VFD and temperature-controlled exhaust installation aimed to reduce electricity consumption by increasing its efficiency. Motion sensor and lighting grouping reduce energy consumption by shutting off unneeded lighting and AC.	2021/2022	Electricity	21,910
Grouping secondary lighting for each link up. High efficiency chiller installation. VFD installation for reverse osmosis, raw water, and thermal oil pumps	Lighting grouping to reduce energy consumption by shutting off unnecessary lighting. Chiller and VFD installation aimed to increase utility system efficiency	2022/2023	Electricity	317,258

Massalin Particulares S.R.L, Merlo, Argentina

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq]
IREC Renewable Electricity	Purchase IREC Certificates Green Electricity	2018	Electricity	2462400
	Purchase IREC Certificates Green Electricity	2019	Electricity	5242997
	Purchase IREC Certificates Green Electricity	2020	Electricity	5067072
	Purchase IREC Certificates Green Electricity	2021	Electricity	5061600
Steam Boilers Replacement	Install a new boiler with higher energy efficiency and dimensioned according to planned future needs	2021	Gas	104889
Automatic cut off (compressed air + vacuum pumps)	Automatically cut-off Vacuum supply valve when machine in not producing	2022	Electricity	41040





Thermal insulation primary equipment	Insulation to return primary process area pipes and valves stations	2022	Gas	135011
Lighting efficiency	Install LED lighting fixtures in differente site areas to reduce electrical energy consumption during working hours.	2022	Electricity	35432
Free cooling for secondary AHUs	Implement free cooling logic into secondary process. AHU automation	2022	Electricity	78182
Lockers room air recirculation	Reduce fresh air intake	2022	Electricity	99551
Chilled water replacement	Install 3-way valves into 2-way valves that will modulate according to temperature area	2022	Electricity	28195
Transformer efficiency	Power transformer removal. Associated circuits will be relocated among the rest of the low voltage distribution cabinets	2022	Electricity	30240

Philip Morris Operations a.d. Niš

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq / year]
Free Cooling	Usage of outside Air for indirect cooling insid HVAC	2017	Electricity Natural gas	63,114 159,867
Installation of GEMT meters	Installation of energy meters Level 1 & 2	2012/2014	Electricity/Gas	49,875
Electricity Green certificate	Purchasing of green certificates for electricity on a yearly basis ensure that electricity consumed in the factory is produced by 100% renewable sources.	2018	Electricity	16,206,865
Adiabatic humidification	Usage of high pressurize water for air humidification	2018	Gas	650,655





	inside HVAC instead or steam			
LED light	Installation of LED light inside production BLD. & warehouses	2018	Electricity	319,197
HR on Atlas Copco vacuum pumps	Installation of plate heat exchangers inside vacuum pumps and usage of generated heat for sanitary water heating (instead usage of steam)	2019	Water/Gas	93,261
Dead band & AI in HVAC	New working pattern for AHU's	2021	Electricity	239,398
FTD Heat Recovery	Installation of heat exchanger on process air flof. Usage of produced hot water for heating of Administration building	2022	Steam	289,113

Phillip Morris Investment B.V.LTD Jordan

Project name	Description	Year	Type of energy used	Emission reduction [kg GHG / year]
Implement LPG system (liquefied petroleum gas)	Replace diesel boilers to LPG boilers	2020	Fuel	
Chilled water system upgrade	VFD (Variable Frequency Drive) installation on chiller pumps	2020	Electricity	254,301
Steam to Adiabatic Humidification	Steam humidification system change into adiabatic system	2020	Fuel	
steam reduction KTP implementation	Steam pressure reduction to 5.2 bar	2021	Fuel	
Dead Band	AHU operation optimization led to reduce running time	2021	Electricity	468,704





Compressed Air System	centralized controller for compressor operations	2021	Electricity	
CA& Vacuum Equipment	Heat recovery from vacuum system Automatic shut off valves	2022	Electricity	
HVAC	AHU fans controller installation	2022	Electricity	
Steam System	Steam piping insulation works	2022	Fuel	
Steam lines improvement	Reduce extra piping length in network	2022	Fuel	
Street lighting project	Replace 40 street (parking, gardening area etc) lighting units to LED	2022	Electricity	324,124
ESI Wave2- Ultrasonic Leakage detection camera making	Compressed air leakage detection equipment to support the maintenance procedures and ensure the mitigation of losses.	2022	Electricity	
Working Days optimization for CA (compressed air) chamber	Identification of tobacco types to be treated (ET) and ensure that chamber only operate with full batch quantity	2022	Electricity	
Green Electricity Certificates	Green certificates purchasing on a yearly basis for electricity	2022	Electricity	1377603 Kg GHG

Philip Morris Romania SRL

Project name	Description	Year	Type of energy used	Emission reduction [kg CO2 eq / year]
Electricity Green certificate	Purchasing of green certificates on a yearly basis ensure that electricity consumed in the factory is produced by 100% renewable sources.	2021	Electricity	9,142
Electricity Green certificate	Green electricity certificates purchasing on a yearly basis	2022	Electricity	10,889





ES08.02 Condensing ECO	A stack economizer is an exchanger designed to recover the heat contained in the hot flue gases from boilers; the heat is transferred to a hot water system	2021	Gas	350,966
Installation of GEMT meters	Installation of energy meters Level 1 & 2 for consumption monitoring and improvement	2016/2021	Electricity/Gas	110,000
Boiler O2 & CO control	Installation of O2 and CO Sensors can further optimize the efficiency of the boilers.	2021	Gas	16,000
Boilers stops w/o production	Implement automatic trigger in BMS based on critical conditions defined for boiler stop during no Cast Leaf production	2021	Gas	80,000
ES21 - Thermal insulation in Primary equipment	This project helps to conver the uninsulated surfaces from Primary Dryers both lines (heat exchanger, condensate traps, isolation valves).	2022	Gas	212,000
ES16.06 - Insulation of boiler surface	Coverage of front and back plates of the boiler that are curently uninsulated from Building Q (3 x Boilers). The insulation is manufactured by Robomatic, with easy acces in case of maintenance.	2022	Gas	12,000
Specific reduction steam CL process	Primary team initiatives to reduce the specific steam in Cast Leaf process tracking in Primary DDS	2021/2022	Gas	410,605
ES16.21 - Mutiple steam stations interconnection (Q-G Steam connection)	Scope of this project is to interconnect the 2 Steam productions stations, Digiprint production area (Building G and Building Q, keeping the possibility to be run as independent	2022	Gas	503,000





	stations; back-up solutions).			
ES05.15 Chiller Optimizer	Improve efficiency in the cooling station	2021	Electricity	51,945
ES31.12 CA Shutoff valves	Reduce the consumption of compressed air during no production demand (shutdown periods, and normal working period)	2021	Electricity	80,569
Interconect multiple cooling stations (BtoC2)	Increase cooling efficiency for building C2 cooling requirement by suppling the cooling energy from B station that has a higher technical performance	2021	Electricity	191,410
Specific consumption reduction Secondary RRP production	Improve performance of production equipment during normal production, focus on loss elimination	2022	Electricity	370,523
Specific consumption reduction Secondary CC production	Improve performance of production equipment during normal production, focus on loss elimination	2022	Electricity	37,277
Specific consumption reduction Primary RRP production	Improve performance of production equipment during normal production, focus on loss elimination	2022	Electricity	88,086
Specific consumption reduction DigiPrint production	Improve performance of production equipment during normal production, focus on loss elimination	2022	Electricity	229,804
Temperature setpoint optimization for AHU04 – Dryer Area	Increase energy efficiency by eliminating the need of excess cooling during normal production in line with Quality requirements (Quality limits 24 +/- 6 degrees, setpoint was set at 24 degrees, new setpoint 27 degrees)	2022	Electricity	7,838
ES06.02 - Efficient Lighting - T5 to LED	Reduce energy consumption used by lighting systems by	2022	Electricity	44,993




	replacing old T5 sources with LED			
ES05.14 - Adiabatic Humidification for Dry Coolers and Air Cooled chillers	Reduce energy consumption during summer period by precooling the air for the Air Cooled chiller	2022	Electricity	54,492
ES05.11.3 - low dT control replacement of three way valves with two way valves	increase energy consumption efficiency by replacing the 3-way valves with 2-way in order to maximize the heat transfer in AHU's heating/cooling coils.	2022	Electricity	16,306

3.3 Planned GHG emissions reduction initiatives

Table 3.3 shows main initiatives identified and their estimated reduction for the commitment period to 2023/2025 for PMI factories included in Cluster 1. For ease of reading, the initiatives have been split by entity:

Table 3.3 - Planned GHG emissions reduction initiatives in Cluster 1

Philip Morris SA – Neuchatel

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Pyrolysis installation	Addition of a Pyrolysis to treat on site biogenic waste (paper, tobacco, wood, tobacco) and generate syn gas to produce steam	2023	Gas	1500000
Primary insulation improvement	Insulate remaining steam pipes and valves in order to reduce heat losses	2023	Gas	
Car fleet	Conversion from diesel fleet to hybrid fleet and increase own charging stations.	2021/2024	Electricity and Diesel	





Steam Trap Monitoring System	Inline monitoring of the steam traps to reduce steam losses	2024	Gas	4000
Insulation of steam traps	Ensure proper insulation of steam traps to reduce losses	2024	Gas	4000
Two-tier control for staging of multiple boilers	Install a controller to ensure that boiler staging is linked to steam demand instead of pressure staging	2024	Gas	2000
Photovoltaic panels to produce renewable energy on site	Implement solar photovoltaic panels on the roofs of the Production and IDC buildings	2024	Electricity	0 (as per green electricy purchasing)

UAB Philip Morris Lietuva

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2 eq]
Heat recovery via Heat pump - On Secondary dedusting	Heat pump installation on dedusting system.	2025	Fuel	78784
Baseload assessment and reduction - installation of low load steam generator	Installation of gas type steam generator. Steam boilers use gas constantly, generators can turn on/off without preheating.	2025	Fuel	65449
Central Cooling - Filter Makers	Installation of centralized cooling system for production machinary.	2023/2024	Electricity	169034
Chilled water system upgrade - Cryogen X4 refrigerant loop cleaning	A cleaning process to clean chiller units and restore internal heat exchange capabilities, by removing oil sedements.	2023/2024	Electricity	141496
Operation optimization in Compressed Air and Steam system - Compressed	Air pressure reduction (to 6.0 bar)	2024	Electricity	72467
Central Cooling	Filter Makers central cooling	2024	Electricity	46954
Heat recovery via Heat pump	On Secondary dedusting	2024	Electricity/Fuel	76654





Baseload assessment	Installation of low load	2024	Fuel	55844
and reduction	steam generator			

Philip Morris CR a.s.

Initiative	Description	Year	Type of energy	Energy	Estimated
name		planned	used	reduction	reduction
				(GJ)	[kg CO2eq]
ESI wave 3:	Steam system equipment -	2023	Fuel - Natural	412	23 396
Insulation of	Insulation of boiler surface		Gas		
steam					
equipment					
ESI wave 3:	Steam system equipment	2023	Fuel - Natural	765	43 450
Insulation of	Insulation		Gas		
steam traps					
ESI wave 3:	Heat recovery in Steam System -	2023	Fuel - Natural	537	30 536
Deaerator Vent	Deaerator Vent Condenser		Gas		
Condenser					
ESI wave 2:	Remote control of chiller plant	2023	Electricity	387	0 (green
Chillers -	with help of optimizer.				electricity)
svstem	improvement of enciency.				
optimizer					
ESI wave 2:	Replacement of belt driven fans	2024	Electricity	to be	0 (green
AHU flow rate	in HVAC air handling units with			calculated	electricity)
optimization	EC fans. Improvement of fan				
	eniciency.				
ESI wave 2:	Installation of individual	2023	Electricity	to be	0 (green
meter per	meters per linkup. Evaluation of			Calculated	electricity)
secondary	individual KPIs and follow up				
machines	actions.				
HVAC Air	Modification of AHU equipment	2023	Electricity	1 011	0 (green
Bypass	in Secondary HVAC.				electricity)
ESI wave 3	New potential projects focused	2024-2025	Electricity + Fuel	to be	to be
2022-2025	on energy saving (electricity,			calculated	calculated
			_		
Photovoltaic	Photovoltaic powerplant	2024-2025	Electricity	to be	0 (green
powerplant				calculated	electricity)

Tabaqueira - Empresa Industrial de Tabacos, S.A. (Tabaqueira EIT, S.A.)





Initiative name	Description	Year	Type of	Estimated
		planned	energy used	reduction [kg CO2eq]
Car fleet	Exchange of the automobile diesel fleet for hybrid fleet and increase own charging stations.	2021/2024	Diesel	
Energy Efficiency Plan 2022 - 2025	Implementation of approximately 20 energy saving projects	2022/2025	Gas	750,000
Steam System Equipment Upgrade	Improvement of the steam production, transport and usage infrastructure to avoid thermal losses.	2022/2023	Gas	191,873
Venturi steam traps	Replacement of normal steam traps by Venturi technology in order to reduce the steam leackages to atmosphere	2023/2024	Gas	284,809
Adiabatic humidification	Implementation of direct area humidification via water atomization in order to reduce steam consumption for HVAC	2023/2024	Gas/Electricity	588,998
FTD heat recovery	Implementation of a heat exchanger on ehxaust gas from Flash Tower Dryier in order to reduce gas consumption	2023	Gas	25,505
Efficient Lighting	Replacement of indoor lighting for LED technology as well as implementing active controls	2022/2023	Electricity	261,865 (green electricity; 4,961,668 MJ saving)
Mechanical drives optimization	Replacement of electrical motors for more efficient technology	2023/2024	Electricity	31,661 (green electricity; 599,893 MJ saving)
Cryogen X4 refrigerant loop cleaning	Installation of nanotech within refrigerant loops of chilled water plants	2023	Electricity	24,024 (green electricity; 455,194 MJ saving

Massalin Particulares S.R.L., Salta, Argentina

Initiative name	Description	Year	Туре	of	Estimated reduction
		planned	energy used		[kg CO2eq]





LED Lighting	Replacement of lighting with LED technologies	2023/2025	Electrical	109,682
IREC-Renewable Electricity	Green electricity certificates purchasing process	2023	Electricity	2,771,234
Solar Park	Installation of solar panels. Estimated installed power 300kw and estimated surface 4500m2	2024/2025	Electrical	193,000
Steam Pipe Insulation	Installation of 200 meters of 2" steam pipe with insulation materials	2023/2024	Gas	5,490
Motor Replacement	Purchase and installation of more energy efficient motors.	2023/2025	Electrical	131,164

PHILIP MORRIS BRASIL IND. COM. LTDA

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Power Lab Shutdown Initiative	Optimization of the air conditioning system	2022/2023	Electricity and Fuel	15085
Optimization of administrative spaces	Optimization of administrative spaces	2022/2023	Electricity	1524
Baseload assessment and reduction - internal energy audits	Audits and daily control of KPIs via boards and PowerBi	2022/2023	Electricity	3852
Baseload assessment and reduction - Primary energy centerlines	Audits and daily control of KPIs via Boards and PowerBi	2022/2023	Electricity	3852





Baseload assessment and reduction - Secondary energy centerlines	Audits and daily control of KPIs via Boards and PowerBi	2022/2023	Electricity	4669
Baseload assessment and reduction - GEMT level 4 - Secondary Link-Ups	Audits and daily control of KPIs via Boards and Power Bi	2022/2023	Electricity	4669
Development E-Sight	Audits and daily control of KPIs via Boards and PowerBi	2022/2023	Electricity	17484
Installation of timed valves in the rotary valves of the biomass boiler	Compressed air valve opening timing	2022/2023	Electricity	3922
Shutdown of pressurizers on weekends	Shutdown of pressurizers on weekends	2022/2023	Electricity	To be estimated
Shutdown CAEs ADM das 11h-14h	Shutdown of air conditioning in administrative areas at certain times	2023	Electricity	17349
Case 4 - Print Shop	Automation of the operation of Uteco exhaust fans	2023	Electricity	901
Diet Fan - Power Reduction	Engine Replacement	2023	Electricity	7173
Case 1 - Print Shop	Changing motors of the printer's fans	2023	Electricity	4154
Case 2 - Print Shop	Replacement of pneumatic screwdriver with electric screwdriver	2023	Electricity	123
Case 3 - Print Shop	Automation of the operation of Lemanic exhaust fans to reduce consumption	2023	Electricity	852
Case 6 - Print Shop	Electropneumatic valve installation	2023	Electricity	295
Reduction cold water valve C1A and C1B	Centerline tuning	2023	Electricity	15812





Scraper Crusher	Study on scraper system	2023	Electricity	1694
	for paper.			

Papastratos Cigarette Manufacturing Company, S.A.

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq / year]
Air recirculation in QA building AHUs	Air recirculation instead of discharge, reduce energy consumption	2022 (as of September 22) /2023	Electricity/Gas	44,000
Adiabatic humidification	Traditional humidifiers work with steam. Adiabatic humidifiers work with electricity and consume less energy	2024	Gas	300,000
Steam insulation improvements	Replace or install insulation on the steam network.	2023	Gas	180,000
Venturi steamtraps	Reduce steam loss from regular steam traps.	2023	Gas	150,000
Zero carbon technology project	Installation of electric boiler and Heat pumps to reduce the fuel consumption	2025	Gas	9,500,000

Philip Morris Manufacturing Senegal S.A.R.L.

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Energy Saving Initiative	Adiabatic system implementation	2023	Electricity	Estimated reduction in Electricity consumption 0.39%
	Boilers to be switched from fuel gasoline to natural gas	2024	Fuel consumption	-
	Installation of new chiller & HAU	2023		2.88





	Installation of VSD (Variable Speed Drive) compressor, improving energy efficiency consumption	2023	Electricity	2.98
	Air Leakage detection project	2023	Electricity	2.23
	PV solar energy project	2025	Electricity	
	Energy meters level 3 implementation	2023	Electricity	
	Water piping revamp: put them all visible	2024	Electricity	
	Step waste water treatment revamp	2024	Electrictity	

Green Leaf Threshing Plant, Philip Morris (Pakistan) Limited, Mardan Pakistan

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Energy Purchase from WAPDA	Offsetting 25-70% (annual) electricity generation from Gensets via purchase from WAPDA	2023/2025	Diesel Oil	296,118 (estimated saving in 2023)
Solar Power Project	Generating 48% of daytime electrical energy via Solar Power	2024/2025	Diesel Oil & Electricity	70,800 (estimated saving in 2024)
Electricity conservation Initiatives	Replacement of remaining lights with LED SMD lights	2023	Electricity	4,751
Electricity conservation Initiatives	Automatic regulation of Cooling Hall temperature to avoid idle running of ventilation fans	2023/2025	Electricity	658 (estimated saving in 2023)
Electricity conservation Initiatives	Utilization of Motorized Pallet Trolley batteries during off-season for security lights	2023/2025	Electricity	3,175 (estimated saving in 2023)
LPG Conservation Initiative	Conversion of Boiler #1 on LPG – for low throughput grades	2023/2025	LPG	30,407 (estimated saving in 2023)
LPG Conservation Initiative	Installation of water heating jacket on Boiler	2023/2025	LPG	15,580 (estimated saving in 2023





LPG Conservation Initiative	Increase Storage Capacity of Feed Water Candensate Tank	2023/2025	LPG	7,713 (estimated saving in 2023)
LPG Conservation Initiative	Insulation of Steam control valves & condensate line and tank	2023/2025	LPG	4,627 (estimated saving in 2023)
LPG Conservation Initiative	Automation of Stem Dryer	2023/2025	LPG	7,713 (estimated saving in 2023)
LPG Conservation Initiative	Seat regeneration/repair of all steam control valves	2023/2025	LPG	4,627 (estimated saving in 2023)
Diesel Conservation Initiative	Diesel to Electricity Conversion Loss – Genset efficiency	2023	Diesel Oil	14,417
Diesel Conservation Initiative	Electricity Consumption Loss -at plant machinery (dynamic balancing of rotary equipment)	2023	Diesel Oil	2,855 (estimated saving in 2023)
Diesel Conservation Initiative	Separate cleaning air points and reduce air pressure to avoid losses and installation of no loss drain traps on air storage tanks	2023/2025	Diesel Oil	2,855 (estimated saving in 2023)
ECO Driving	ECO driving awareness through practical defensive & commentary drive training session	2023/2025	Petrol	800
Environment friendly vehicles procurement	Evaluation of GHG emissions of new vehicles to be procured as per emission caps of WLTP or NEDC mentioned in EHS.D.500	2022/2025	Petrol	1200
Engine idling monitoring	Reduction in fleet CO2 emissions through monitoring of fleet telematics engine idling violation	2022/2025	Petrol	500
ECO driving through telematics	Eco-driving Through Telematics -Training	2021/2025	Petrol	250





-Reporting		
-Communication		

PT. HM Sampoerna, Sukorejo Plant, Indonesia and PT. Sampoerna Indonesia Sembilan – Sukorejo Plant, Indonesia

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Biomass Boiler	Implementation boiler process to produce steam by using biomass fuels (wood palette as a source of boiler energy)	2023/2024	Wood palette	Reduce 50% energy consumption
Blow Down System, Boiler Economizer, and oxygen control	Boiler installation economizer, O2 Trimming or oxygen management, and automatic blowdown can all help to improve boiler efficiency.	2023/2025	Gas Energy	Emission reduction: 308,42 CO2 eq Reduced the energy to 1498,40 GJ / year
Lighting Upgrade in Clove, Primary, and Secondary Process	Replacing non LED lights become LED light, in order to reduce electricity consumption	2023/2025	Electricity Energy	Emission reduction: 6,62 CO2 eq Reduced the energy to 102,87 GJ / year
Solar Panel	Implementing renewable energy by using sunlight as a source of energy	2023/2025	Renewable Energy	Emission reduction: 18,51 CO2 eq Reduced the energy to 281,28 GJ / year
Ionizer for GEG	Install ionizer into the Gas Engine Machine to reduce energy consumption	2023/2025	Gas Energy	Emission reduction: 143,76 CO2 eq Reduced the energy to 698,43 GJ / year
Installing Magnetic Chiller Pump	Replaced all chiller motor pump with high efficiency motor pump type	2023/2025	Electricity Energy	Emission reduction: 0,16 CO2 eq Reduced the energy to 0,775 GJ / year
Upgrade Compressor	Replaced the conventional compressor with high efficiency compressor	2023/2025	Electricity Energy	Emission reduction: 147,89 CO2 eq Reduced the energy to 718,06 GJ / year
Cooling Improvement	Repair and maintenance the HVAC system	2023/2025	Electricity Energy	Emission reduction: 0,031 CO2 eq Reduced the energy to 548,50 GJ / year





Install Compressed Air Auto Cut Off	Install the automatical valve in the production area (compressed air auto cut off) due to reduce energy consumption	2023/2025	Electricity Energy	Emission reduction: 23,59 CO2 eq Reduced the energy to 114,60 GJ / year
Controlling SKJ- AHU Fan Speed	Control the frequency of FAN AHU Motor using VSD (Variable Speed Drive) as an indicator of energy saving	2023/2025	Electricity Energy	Emission reduction: 0,05 CO2 eq Reduced the energy to 840 GJ / year
Optimizing Chiller	Monitoring the running of electric chillers, chiller absorbers, CWP, CHWP, and Cooling Towers through SBO (StruXureware Building Operator) at SKM and PP in real time and can be accessed through several devices	2023/2025	Electricity Energy	Emission reduction: 0,0528 CO2 eq Reduced the energy to 924 GJ / year
Installing AHU EC FAN	Changing the AHU Fan from motor to EC Motor type	2023/2025	Electricity Energy	Emission reduction: 37,91 CO2 eq Reduced the energy to 4995,02 GJ / year
Installing SKM Ripping Machine without using Steam	Eliminate steam consumption in riper engines	2023/2025	Gas Energy	Emission reduction: 23,59 CO2 eq Reduced the energy to 2683,03 GJ / year
Wireless Steam Trap Monitoring System	Install steam trap monitoring system to reduce loss in steam usage	2023/2025	Gas Energy	Estimated reduction: 2737 GJ/year
VFD on every pumps above 5 kW	optimized pump based On Best Efficiency Point of Pump	2023/2025	Electricity Energy	Estimated reduction: 523 GJ/year
VFD on every fan above 5 kW	Install VSD to optimize electricity usage in pump	2023/2025	Electricity Energy	Estimated reduction: 1029 GJ/year
FTD O2 Monitoring system	Install O2 monitoring system in FTD burner to increase efficiency	2023/2025	Gas Energy	Estimated reduction: 84 GJ/year
Install Compressor Optimizer and Linkup pipe to SPP	Install Optimizer in Compressor to optimize compressor runing and install CA pipe to SPP (Optimize Compressor)	2023/2025	Electricity Energy	Estimated reduction: 3717 GJ/year

Initiative name	Description	Year	Type of energy	Estimated reduction
		planned		[kg CO2eq]





Lighting Upgrade in Clove, Primary, and Secondary Process	Replacing non LED lights become LED light, in order to reduce electricity consumption	2023	Electricity	Estimated Percentage of electricity saved in SIS Sukorejo is 1,70 %
Installing AHU EC FAN	Changing the AHU Fan from motor to EC Motor type	2023	Electricity	Estimated Percentage of electricity saved in SIS Sukorejo is 1,70 %

PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Malang, Rungkut 1, Rungkut 2, Kraksaan.

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Optimize Utilization of lighting & Air Conditioning	Optimize lighting & AC by installing timer/presence sensor at production unit Warehouse, Offices, Toilet, Server Room, Production,etc	2023	Electricity	-
Optimize lighting at production area	Large power lamps replacement with a more efficient ones.	2023	Electricity	-
Optimize utilization of utility	Optimize running time of Exhaust Fan, Optimize room temperature for server room (25 ^o C), VSD (Variable speed drive) for exhaust > 5 KW	2023	Electricity	-

PT Hanjaya Mandala Sampoerna Tbk, Karawang Plant, Indonesia

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Biomass Boiler	Biomass boiler implementation to produce steam by using biomass fuels (wood palette)	2023/2024	Wood palette	Estimated 1,031,355
Chiller Absorption	Chiller absorption installation which reuses heat from the new biomass boiler.	2023/2024	Wood palette	526
Steam Turbine	Steam turbine installation which uses steam from biomass boiler to rotate the turbine. Operated parallel with electricity	2023/2024	Wood palette	2,811





electricity company	supplied from state owned electricity company	
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PT Philip Morris Indonesia -Karawang International

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Biomass Boiler	Biomass Boiler installation to produce steam by using biomass fuels (wood palette)	2023/2024	Wood palette	1,031,355
Chiller Absorption	Chiller absorption installation that reuses heat from the new biomass boiler.	2023/2024	Wood palette	107
Steam Turbine	Steam turbine installation uses steam from biomass boiler to rotate the turbine. Operated parallel with electricity supplied from state owned electricity company.	2023/2024	Wood palette	291

Massalin Particulares S.R.L, Merlo plant, Argentina

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq]
Solar Park	Install photovoltaic solar plant	2024/2025	Electricity	370181
Steam traps	Steam system equipment upgrade. Installation of Venturi steam traps	2023/2024	Gas	105642
Flash steam recovery	Heat recovery equipment installation in condensate return line. This energy will be used to reheat boiler water (55° to 80°)	2023/2024	Gas	26341





Burner air preheating (Heat recovery vacuum)	Recover heat in vacuum systems exhaust. This energy will be recovered as boiler's burner air preheating. New pipes will be installed and automation will be implemented	2023	Gas	20972
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Philip Morris Operations a.d. Niš

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq / year]
Venturi steam traps	Venturi steam traps installation	2023/2025	Gas	151,820
Adiabatic humidification	Adiabatic humidifiers installation	2023/2025	Gas	173,508
New steam boiler	New steam boiler installation	2023/2025	Gas	455,459
Solar PV plant	Increase the efficiency of the boiler economizer and reduce fuel consumption.	2024/2025	Electricity	2,839,010
New centrifugal compressor	Monitoring the proper operation of steamtraps for timely maintenance and reduction of steam losses.	2024/2025	Gas	390,394

Phillip Morris Investment B.V.LTD Jordan

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg GHG / year]
Green Electricity Certificates	green certificates on a yearly basis purchasing for electricity	2023	Electricity	
Dust Collector VFD Activation	VFD (Variable Frequency Drive) installation to dust collector motors	2023/2024	Electricity	1072891





Primary package units	Primary package units engagement to chiller	Electricity
Reduce the CA (Compressed air) main pressure by 0.2 bar on stages	Reduce compressed ait pressure at 5.5 bar and eliminate leakages	Electricity
Supply Secondary Electrical room by central HVAC	Replace standalone HVAC in power room with ducting connected to Secondary AHU	Electricity
Ventilation systems consumption reduction (fresh/exhaust AHU's)	Replace fresh/exhaust AHU's with standalone ventilation fans	Electricity
Temperature & Relative Humidity (T & RH) equipment consumption optimization	Optimize storage areas of Cut Filler in Primary and switch off Bin filling station AC (Air Conditioning) unit	Electricity
Offices motion sensors	Installation of motion sensors in manufacturing offices	Electricity
Baseload Reduction initiatives	Reduce lighting units in yards Switch off power source inside Secondary during weekends Dismantle Hot Melt	Electricity
PV system implementation	PV system implementation	Electricity

Philip Morris Romania SRL

Initiative name	Description	Year planned	Type of energy used	Estimated reduction [kg CO2eq / year]
Specific reduction steam CL process	Maintain and improve good results on the project excuted in 2021/2022	2023	Gas	58,439
ES08.05 - Deaerator Vent Condenser and ES08.09 - Open	Recovery and usage of the energy from the flash steam from deaerator	2023	Gas	86,000





condensate tank Vent Condenser	and condensate tank through a recovery system for each equipment.			
Expand factory metering system	Installation of energy meters Level 2 & 3 for consumption monitoring and improvement	2023/2024	Electricity	108,853
Solar PV panels on rooftops and parking lot	Install solar PV panels on all factory rooftops and parking lot to produce electricity during the day	2024/2025	Electricity	1,135
Heat pumps	Installation of heat pumps to produce hot water for heating, replacing the current solution of steam	2024/2025	Gas	3,421,634
Specific consumption reduction Secondary RRP production	Improve performance of production equipment during normal	2023	Electricity	174,632
Specific consumption reduction DigiPrint production	elimination	2023	Electricity	65,080
Specific reduction Secondary CC production		2023	Electricity	18,493
Specific consumption reduction Primary RRP production		2023	Electricity	132,854
Buildings consumption reduction	Increasing awearnes of PMR employees regarding energy consumption	2023	Electricity	180,952

Actual emissions reductions will be measured in terms of intensity metrics relating to production output.





4 Carbon offset program

4.1 Offset program for the this application period

PMI has an offsetting program in place to support the carbon neutrality, based on quality criteria aligned with the most rigorous international standards and targeting social and economic benefits.

Carbon neutrality is achieved by reducing and compensating Greenhouse Gases (GHG) emissions through supporting the development of sustainable climate solutions in developing countries. Compensation projects bring social, environmental and economic benefits, which contribute to United Nations Sustainable Development Goals (SDGs) and are labelled by independent carbon standards such as **Standard (VCS)**¹, **Climate Community and Biodiversity Alliance (CCBA)**², **Gold Standard**³, **and other offsets as endorsed in PAS2060**.

To compensate 2022 GHG emissions, PMI has selected a set of carbon projects as described in paragraph 4.2.

Credits were retired by 5th and 6th October 2023

These projects are supported by publicly available project documentation on the <u>GSF Registry</u> (goldstandard.org)⁴) and on <u>https://registry.verra.org/</u>. The registry system is the central storehouse of data on all registered projects, and tracks the generation, retirement and cancellation of all credits. To register with the program, projects must show that they have met all standards and methodological requirements.

1 https://verra.org/

² http://www.climate-standards.org/

³ https://www.goldstandard.org/

⁴ <u>https://registry.goldstandard.org/projects?q=&page=1</u>t





4.2 Offsetting project(s)

Offsetting projects selected by PMI Cluster 1 for compensating the 2022 emissions are:

#	Project Name	Carbon allocation	credits	Official project link
		tons	%	
1	Jari/Amapa – VCS 1115 REDD+ Project located in the Brazilian Amazon state of Amapá	4,295	6.9%	https://registry.verra.org /app/projectDetail/VCS/ 1115
2	Rimba Raya – VCS 674 The Rimba Raya Biodiversity Reserve Project, an initiative by InfiniteEARTH, State/Province Central Kalimantan	24,852	39.8%	https://registry.verra.org /app/projectDetail/VCS/ 674
3	Manoa – VCS 1571 REDD+ Project is a partnership between Biofílica and Grupo Triângulo, located at Manoa Farm, city of Cujubim, state of Rondônia	13,695	21.9%	https://registry.verra.org /app/projectDetail/VCS/ 1571
4	Impact Carbon and myclimate Safe Water and Improved Cookstoves Global PoA – GS 2296 Safe Water and Improved Cookstoves Global PoA - Uganda VPA. The project reduces greenhouse gas emissions through the promotion of household and community level clean water technologies and improved cookstoves	9,250	14.8%	https://registry.goldstan dard.org/projects/details /314
5	WWF cookstove projects in China – GS 1094, GS 1095, GS 2429 The project reduces greenhouse gas emissions through the promotion of household and community level clean water technologies and improved cookstoves WWF Mamize Firewood-Saving Cook Stove Project I, WWF Mamize Firewood-Saving Cook Stove Project III and WWF Ningshan County High Efficient Cook Stove Project	10,313	16.5%	https://registry.goldstan dard.org/projects/details /69 http1s://registry.goldsta ndard.org/projects/detai ls/1672 https://registry.goldstan dard.org/projects/details /344 https://registry.goldstan dard.org/projects/details /314
Γ		62,405	100%	





The offsets are allocated to the individual entities as per following table:

Reporting Entity	Project chosen for compensation	Credits allocated for compensation (tons)	Vintage
LT (Klaipeda)	Rimba Raya	115	2016
CH (PMP SA Neuch)	Uganda water	1006	2016
PT (TABAQUEIRA)	Jari Amapa	4295	2016
CZ (Kutna Hora)	Uganda water	3309	2016
BR (Santa Cruz)	China Cookstove	2953	2016
GR (PAPASTRATOS)	Rimba Raya	9972	2016
AR LF (MASSALIN Lrm)	China Cookstove	5056	2016
SN (Dakar)	Rimba Raya	316	2016
PK LF (PMPK Mard)	Rimba Raya	2285	2016
ID (PTSIS Sukorejo)	Rimba Raya	20	2016
ID (SAMP Sukorejo)	Rimba Raya	6750	2016
ID SKT (Rungkut 1 SAMPOERNA)	Rimba Raya	50	2016
ID SKT (Rungkut 2 SAMPOERNA)	Rimba Raya	9	2016
ID SKT (Malang SAMPOERNA)	Rimba Raya	2	2016
ID SKT (Kraksaan SAMPOERNA)	Rimba Raya	12	2016
ID (PTPMI Karawang)	Rimba Raya	1009	2016
ID (SAMP Karawang)	Rimba Raya	4312	2016
AR (MASSALIN Merlo)	China Cookstove	2304	2016
RO (Bucharest)	Manoa	13695	2017
RS (DIN)	Uganda water	4638	2016
JO (Amman)	Uganda water	297	2016
	TOTAL	62,405	





4.3 Amount of credits purchased

Credits have been ordered by PMI for the period covering 1^{st} of January 2022 – 31^{st} December 2022.

The amount of credits purchased is **62405** tons of CO₂ equivalent, it is composed by two contributions:

- 60587 tons of CO₂ equivalent, amount evaluated for this application period
- 1818 tons of CO₂ equivalent, that represent an additional 3% of the baseline carbon footprint to cover all the exclusions (Annex C) and to preclude underestimation.

We can reasonably assume that PMI Cluster 1 Factories Carbon Neutral covers 100% of the GHG emissions.

PMI Cluster 1 Manufacturing entities portfolio offsetting credits is composed as per the table in paragraph 4.2

The Gold Standard and VERRA guarantee that the offsets **generated represent genuine**, additional GHG emission reductions. The projects are technically designed so as to enable the quantification of a specific number of emissions reductions/removals the carbon credits expected from each farm/forest. The Gold Standard and VERRA label also guarantee that the projects involved in delivering credits meet the criteria of additionality, permanence, leakage and double counting.

It also guarantee that the units were verified by an independent thid-party and that the credits were only issued after the emission reduction has taken place.

Retired credits certificates are attached on behalf of PMI for Cluster 1 of manufacturing entities, for offsetting unavoidable emissions, year 2022.

https://registry.goldstandard.org/batch-retirements/details/153634 https://registry.goldstandard.org/batch-retirements/details/153635 https://registry.goldstandard.org/batch-retirements/details/153638 https://registry.goldstandard.org/batch-retirements/details/153639 https://registry.goldstandard.org/batch-retirements/details/153640 https://registry.goldstandard.org/batch-retirements/details/153641 https://registry.goldstandard.org/batch-retirements/details/153642 https://registry.goldstandard.org/batch-retirements/details/153642 https://registry.goldstandard.org/batch-retirements/details/153643 https://registry.goldstandard.org/batch-retirements/details/153644

https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=220130 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=176265 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=220120 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=220119 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=220117 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=210938 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219938 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219932 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219932 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219933 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219933 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219933 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219934 https://registry.verra.org/myModule/rpt/myrpt.asp?r=206&h=219934





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Retired on behalf of Philip Morris Products SA [CH (PMP SA Neuch)] (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: Impact Carbon and myclimate Safe Water and Improved Cookstoves Global PoA - Uganda VPA

These credits have been retired, saving 1006 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

Retirement certificates are hosted on the Gold Standard Impact Registry, view your certificate.







We are delighted to confirm the retirement of 3309 Verified Emission Reductions (VERs) by Philip Morris Products S.A.

on 06/10/2023

Retired on behalf of Philip Morris CR a.s., CZ Kutna Hora (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: Impact Carbon and myclimate Safe Water and Improved Cookstoves Global PoA - Uganda VPA

These credits have been retired, saving 3309 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

Retirement certificates are hosted on the Gold Standard Impact Registry, view your certificate









We are delighted to confirm the retirement of 297 Verified Emission Reductions (VERs) by Philip Morris Products S.A.

on 06/10/2023

Retired on behalf of Philip Morris Investments B.V. Jordan (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: Impact Carbon and myclimate Safe Water and Improved Cookstoves Global PoA - Uganda VPA

These credits have been retired, saving 297 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard



Positive Action for Planet + People

We are delighted to confirm the retirement of 1851 Verified Emission Reductions (VERs)

> *by* Philip Morris Products S.A.

> > on 06/10/2023

Retired on behalf of MASSALIN PARTICULARES S.R.L., Merlo (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: WWF Mamize Firewood-Saving Cook Stove Project III

These credits have been retired, saving **1851** tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

Retirement certificates are hosted on the Gold Standard Impact Registry, view your certificate.







We are delighted to confirm the retirement of **453 Verified Emission Reductions (VERs)** by

Philip Morris Products S.A. on 06/10/2023

Retired on behalf of MASSALIN PARTICULARES S.R.L., Merlo (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: WWF Mamize Firewood-Saving Cook Stove Project I

These credits have been retired, saving 453 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

es are hosted on the Gold Standard Imp



Positive Action for Planet + People

We are delighted to confirm the retirement of 2687 Verified Emission Reductions (VERs)

> by Philip Morris Products S.A.

> > on 06/10/2023

Retired on behalf of MASSALIN PARTICULARES S.R.L., Province of Salta (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: WWF Mamize Firewood-Saving Cook Stove Project I

These credits have been retired, saving 2687 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

nent certificates are hosted on the Gold Standard Impact Registry, vie

60







We are delighted to confirm the retirement of **2369 Verified Emission Reductions (VERs)** by

Philip Morris Products S.A. on 06/10/2023

Retired on behalf of MASSALIN PARTICULARES S.R.L., Province of Salta (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: WWF Ningshan County High Efficient Cook Stove Project

These credits have been retired, saving 2369 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

rement certificates are hosted on the Gold Standard Impact Registry, view your certificate.



We are delighted to confirm the retirement of 2293 Verified Emission Reductions (VERs)

by Philip Morris Products S.A.

on 06/10/2023

Retired on behalf of Philip Morris Brasil Industria e Comercio Ltda. (manufacturing entities cluster 1), for offsetting unavoidable emissions, year 2022

Project: WWF Ningshan County High Efficient Cook Stove Project

These credits have been retired, saving 2293 tonnes of CO2 emissions from being released into the atmosphere. Thank you for investing in a safer climate and more sustainable world.

View retirement

Gold Standard

Retirement certificates are hosted on the Gold Standard Impact Registry, view your certificate







Project Name

Rimba Raya Biodiversity Reserve Project

VCU Serial Number

7056-367408869-367408918-VCU-263-VER-ID-14-674-01012016-31122016-1

Additional Certifications

01: No Poverty; 02: Zero Hunger; 03: Good Health and Well-being; 04: Quality Education; 05: Gender Equality; 06: Clean Water and Sanitation; 07: Affordable and Clean Energy; 08: Decent Work and Economic Growth; 09: Industry, Innovation and Infrastructure; 10: Reduced Inequalities; 11: Sustainable Cities and Communities; 12: Responsible Consumption and Production; 13: Climate Action; 14: Life Below Water; 15: Life on Land; 16: Peace, Justice, and Strong Institutions; 17: Partnerships for the Goals; CCB-Gold

Powered by APX



















VERRA
Verified Carbon Standard
Certificate of Verified Carbon Unit (VCU) Retirement
Verra, in its capacity as administrator of the Verra Registry, does hereby certify that on 05 Oct 2023, 861 Verified Carbon Units (VCUs) were retired on behalf of:
Tabaqueira Empresa Industrial de Tabacos S.A.
Project Name JARI/AMAPÁ REDD+ PROJECT
VCU Serial Number 11428-329168266-329169126-VCS-VCU-263-VER-BR-14-1115-15022016-14022017-1
Additional Certifications
CCB-Biodiversity Gold
Powered by APX







VERRA
Verified Carbon Standard
Certificate of Verified Carbon Unit (VCU) Retirement
Verra, in its capacity as administrator of the Verra Registry, does hereby certify that on 05 Oct 2023, 689 Verified Carbon Units (VCUs) were retired on behalf of:
Tabaqueira Empresa Industrial de Tabacos S.A.
Project Name JARI/AMAPÁ REDD+ PROJECT
VCU Serial Number 12390-408966196-408966884-VCS-VCU-263-VER-BR-14-1115-15022016-14022017-1
Additional Certifications
CCB-Biodiversity Gold
Powered by APX































4.5 Compensation programme for the subsequent application periods

For subsequent application periods, PMI will cancel the volume of carbon credits required once the emission calculations are completed for the period. The volumes of credits required by *PMI affiliates grouped in Cluster 1* will be confirmed upon completion of the greenhouse gas inventory audit for that Application Period. The portfolio composition and share among projects will be determined based on the volume of credits.





5 Annex A – Carbon Neutral Assurance letter



Verification Statement Number: CCP267919.PMI.2022.V2 2023.12.11

The Carbon Neutrality Declaration as presented in its Qualifying Explanatory Statement (QES), for the application period 01/01/2022 - 31/12/2022 of:

Phillip Morris International "Cluster 1" group of manufacturing affiliates (as defined in the scope section of this opinion)

has been verified by SGS United Kingdom Limited as conforming to the requirements of PAS 2060:2014: Specification for the demonstration of carbon neutrality (PAS 2060).

Lead Assessor: Lisa Gibson Technical Reviewer: Andrew James Collins

Authorised by:

CL 10

Pamela Chadwick

Business Manager SGS United Kingdom Ltd

Verification Statement Date: 11th December 2023

This Statement is not valid without the full verification scope, objectives, criteria and conclusion available on pages 2 to 3 of this Statement

SGS United Kingdom Ltd Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN. Tel +44 (0)151 350 6666 Fax +44 (0)151 350 6660 Climate Change Programme ukclimatechange@sgs.com www.sgs.com

Member of SGS Group

Registered in England No. 1193985 Registered Office: Rosamore Business Park, Elesmere Port, Cheshire. CH65 3EN






Schedule Accompanying Greenhouse Gas Verification Statement CCP267919.PMI.2022.V2 2023.12.11

Brief Description of Verification Process

SGS has been contracted by Philip Morris International for the verification of their Carbon Neutrality Declaration as presented in the Qualifying Explanatory Statement (QES) for "Cluster 1" group of manufacturing affiliates, for the application period 01/01/2022 – 31/12/2022, against the requirements of PAS 2060/2014: Specification for the demonstration of carbon neutrality (PAS 2060).

Roles and Responsibilities

The management of Philip Morris International (PMI) responsible for the organization's GHG information system, the development and maintenance of records and reporting procedures in accordance with that system, including the calculation and determination of GHG emissions information, preparation of reports, QES, and purchase and retirement of carbon offsets.

It is SGS' responsibility to express an independent opinion on the Carbon Neutrality Declaration as provided by the client for the application period 01/01/2022 - 31/12/2022.

SGS conducted a third-party verification following the requirements of ISO 14064-3: 2019 of the provided carbon neutral declaration and supporting QES during the period May to October 2023. The assessment was conducted via desk review. The verification was based on the verification scope, objectives and criteria as agreed between Philip Morris International and SGS.

Objectives

The purpose of the verification exercise was, by review of objective evidence, to independently review and confirm:

- That the carbon neutrality declaration and QES conform to the requirements of PAS 2060 .
- That the definition recently becaration and dec continue the requestions or P 2000
 That the emissions data reported in the QES are accurate, complete, consistent,
 transparent and free of material error or ornission and have been determined in accordance
 with WRI/WBCSD GHG Protocol, Corporate Accounting and Reporting Standard
 That evidence is available to support information reported within the QES including carbon
- offset purchases and retirements.

Level of Assure

The level of assurance agreed is reasonable.

Score

- This engagement covers verification of: The organizational boundary was established following the operational control consolidation approach for each of the manufacturing affiliates. Title or description of activities: Emissions for manufacturing facilities, warehousing, offices
 - and operator-controlled fleet.
 - Scope 1 & 2 emissions only
 - Location/boundary of the activities: as per list below First application period: Calendar Year 2022

Intended user of the verification statement; internal, customers, general public.







Manufacturing affiliates:

	•
Affiliate	Legal Entity
PT (TABAQUEIRA)	Tabaqueira Empresa Industrial de Tabacos S.A.
CH (PMP SA Neuch)	Philip Morris Products SA
LT (Klaipeda)	UAB Philip Morris Lietuva
CZ (Kutna Hora)	Philip Morris CR a.s.
AR LF (MASSALIN Lm)	MASSALIN PARTICULARES SRL, Lerma
BR (Santa Cruz)	Philip Morris Brasil Industria e Comercio Ltda.
GR (PAPASTRATOS)	Papastratos Cigarette Manufacturing Company, S.A.
SN (Dakar)	Philip Morris Manufacturing Senegal S.A.R.L.
PK LF (PMPK Mard)	Philip Morris (Pakistan) Limited, Mardan Factory
ID (SAMP Sukorejo)	PT Hanjaya Mandala Sampoerna, Tbk. Sukorejo Plant
ID (PTSIS Sukorejo)	PT Sampoerna Indonesia Sembilan , Sukorejo Pasuruan
ID SKT (Malang SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Malang
ID SKT (Rungkut 1 SAMPOERNA)	PT Hanjaya Mandala Sampoerna, TbkSKT Plant Rungkut 1
ID SKT (Rungkut 2 SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk., SKT Plant Rungkut 2
ID SKT (Kraksaan SAMPOERNA)	PT Hanjaya Mandala Sampoerna, Tbk. SKT Plant Kraksaan
ID (PTPMI Karawang)	PT Philip Morris Indonesia Karawang International, Karawang
ID (SAMP Karawang)	PT Hanjaya Mandala Sampoerna, Tbk.,Karawang Plant
AR (MASSALIN Merio)	MASSALIN PARTICULARES S.R.L., Merio
RS (DIN)	Philip Morris Operations a.d. Nis
JO (Amman)	Philip Morris Investments B.V. Jordan
RO (Bucharest)	Philip Morris Romania SRL

Materiality The materiality required of the verification was considered by SGS to be below 5%,

We planned and performed our work to obtain the information, explanations and evidence that we considered necessary to provide a reasonable level of assurance that the CO₂ equivalent emissions, carbon neutrality declaration and QES for the first period 01/01/2022 – 31/12/2022 are fairly stated.

SGS' approach is risk-based, drawing on an understanding of the risks associated with compiling and reporting GHG emission information and the controls in place to mitigate these risks. Our examination included assessment, on a sample basis, of evidence relevant to the voluntary reporting of emission information and carbon neutrality.

Conch

Philip Morris International provided their carbon neutrality declaration based on the criteria outlined above. The carbon neutrality declaration and QES for the application period 01/01/2022 – 31/2/022 are verified by SGS to a reasonable level of assurance, consistent with the agreed verification scope, objectives and criteria.

SGS concludes with reasonable assurance that the presented carbon neutrality declaration and supporting QES is materially correct and is a fair representation of the CO₂ equivalent data and information and conforms to the requirements of PAS2060 2014.





6 Annex B – Qualifying Explanatory Statements (QES) checklist







7 Annex C – Scope 1, 2 and 3 emissions inclusion and exclusion

Included and excluded emission sources related to the subject(s) are presented below, together with explanation for exclusions.

Scope	Emission source	Description	Inclusion exclusion	Justification of Exclusion
1.1	Stationary combustion	Combustion of fuels in boilers and furnaces for the generation of heat and steam, used for production processes and heating of buildings	Included	-
1.2	Mobile combustion sources	Transportation of employees and goods with cars under affiliate control.	Included	-
1.3	Process emissions	Emissions occurring during the production process (DIET)	Included	-
1.4	Fugitive emissions	Refrigerant gases losses	Excluded	Identified as below materiality threshold within the GHG inventory
2.1	Electricity consumption	Generation of purchased electricity	Included	-
2.2	Heat, steam and/or cold consumption	Purchase of heat, steam or cold energy not produced at operation site.	Included	-
3	Scope 3	All other indirect emissions	Excluded	Out of scope

Table 7.1 - Inclusions and exclusions





8 Annex D – Uncertainty calculation

8.1 Uncertainty calculation

Uncertainties around the quantification of the carbon footprint have been assessed throughout the assessment following the guidelines released by ISO and available in the "GHG Protocol's Measurement and Estimation Uncertainty of GHG Emissions tool" (supporting worksheet file "Uncertainty_Calculation_Tool")⁵; since the uncertainties are not known for all the parameters (activity data and emission factors), the IPCC Guideline for National Greenhouse Inventories Reporting Instructions (1996) was used:

- Activity data: 7%
- Emission factor: 7%

All information can be accessed in the below file attached:



Outcome of the uncertainty calculation (from uncertainty Cluster 1 attached file)

	Step 1+2				Step 3							
	۸	B	С	D	E	F	G	H	1	J	ĸ	L
	Activity Data (e.g. Quantity of fuel used)	Unit used to measure Activity Data	Uncertainty of activity data (a) (Confidence interval expressed in + percent)	GHG emission factor	Unit of GHG emission factor (for kg CO2!)	Uncertainty of emission factor (Confidence interval expressed in + percent)	CO2 emissions in kg	CO2 emissions in metric tonnes	Uncertainty of calculated emissions	Certainty Ranking	Auxiliary Variable	Auxiliary Variable 2
							A*D	6/1000	1= 1:+F		OH:D	¥2
Example: Source 1	1000.00	61	4/-5.0%	56.10	ka C027GJ	e/- 10.0%	56,100,00	56.10	4/- 11.2%	Good	6.27	39.34
Source description	1000.00	40		20.10	19002100	11 1010-1	70,100.00	20110	1 11424	4004	0.61	00.04
Natural gas	945524347.70	MJ	+/- 7.0%	0.06	kg CO2 / MJ	+/- 7.0%	53,545,043,81	53,545.04	+/- 3,3%	Good	=====	======
LPG	36942524.39	MJ	+/- 7.0%	0.06	kg CO2 / MJ	+/- 7.0%	2,364,321.56	2,364.32	+/- 9.9%	Good	234.06	54,782.16
Diesel or Fuel oil light EL	21302018.00	MJ	+/- 7.0%	0.08	kg CO2 / MJ	+/- 7.0%	1,537,651.35	1,597.65	+/- 3.3%	Good	158.16	25,014.40
Biomass	72388810.24	MJ	+7-7.0%	0.00	kg CO2 / MJ	+/- 7.0%	144,777.62	144.78	+/- 9.9%	Good	14.33	205.41
Fuel oil	3836472.58	MJ	+/- 7.0%	0.08	kg CO2 / L	+/- 7.0%	303,898.98	303.90	+/- 3.3%	Good	30.08	305.07
Fleet Biodiesel	60.00	L	+7-7.0%	0.17	kg CO27L	+/- 7.0%	10.08	0.01	+/- 3.3%	Good	0.00	0.00
Fleet Bioethanol	114.00	L	+/- 7.02	0.01	kg CO27L	+/- 7.0%	1.03	0.00	+/- 3.32	Good	0.00	0.00
Fleet Natural gas	0.00	L L	+/- 7.0%	1.16	kg CO27L	+/- 7.0%	0.00	0.00	+/- 3.3%	Good	0.00	0.00
Petrol	29426.82	MJ	+/- 7.0%	0.07	kg CO2 / MJ	+/- 7.0%	1,353.83	1.96	+/- 3.3%	Good	0.13	0.04
Electricity - Market based	314317300.20	kWh	+/- 7.0%	0.00	kg CO2 / kWh	+/- 7.0%	0.00	0.00	+/- 3.3%	Good	0.00	0.00
Fleet Fuel Diesel	72912.00	L	+1-7.0%	2.67	kg CO27L	+/- 7.0%	194,675.04	134.68	+/- 3.3%	Good	19.27	371.40
Fleet Fuel Petrol	302200.67	L	+/- 7.0%	2.16	kg CO27L	+/- 7.0%	653,357.85	653.36	+/- 3.3%	Good	64.68	4,183.39
CO2 in DIET Process (ID Plant Biogenic)	1521945.00	Kg	+/- 2.0%	0.00	kg/kg	+/- 1.0%	0.00	0.00	+1-2.2%	High	0.00	0.00
CO2 in Diet Process	1712600.00	Kg	+/- 2.0%	1.00	kg/kg	+/- 1.0%	1,712,600.00	1,712.60	+/- 2.2%	High	38.29	1,466.50
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
							0.00	0.00	+/- 0.0%	High	0.00	0.00
Note: For individual uncertainties greater than 60%, th	e results of the tool	are not valid			Sum COz ei	nissions (M):	60,518,297.14	60,518.30]	Aggregated Certainty Ranking		
					Step 4: Cumula	ted Uncertainty:	$\pm u = \pm \frac{\sqrt{\sum_{i=1}^{n} (k_i)}}{\sqrt{\sum_{i=1}^{n} (k_i)}}$	$\left(\frac{I_{i} + I_{i}}{M}\right)^{2}$	+ł- 8.8%	Good		



⁵ <u>https://ghgprotocol.org/calculation-tools</u>





1	2	3	4	5	
Gas	Source category	Emission factor	Activity data	Overall uncertainty	
CO ₂	Energy	7%	7%	10%	
CO ₂	Industrial Processes	7%	7%	10%	
CO ₂	Land Use Change and Forrestry	33%	50%	60%	
CH_4	Biomass Burning	50%	50%	100%	
CH₄	Oil and Nat. Gas Activities	55%	20%	60%	
CH₄	Rice cultivation	$\frac{3}{4}$	$\frac{1}{4}$	1	
CH₄	Waste	2/3	$\frac{1}{3}$	1	
CH₄	Animals	25%	10%	20%	
CH₄	Animal waste	20%	10%	20%	
N ₂ 0	Industrial Processes	35%	35%	50%	
N ₂ 0	Agricultural Soils			2 orders of magnitud	
N ₂ 0	Biomass Burning			100%	

Source: Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reporting Instructions

Table 8.2 - IPCC uncertainty data





9 Annex E – Voluntary offset program

In this annex, shortlist of projects chosen for compensation of 2022 emissions.

#	Project Name	Official project link
1	Jari/Amapa – VCS 1115 REDD+ Project located in the Brazilian Amazon state of Amapá	https://registry.verra.org/app/projectDetail/ VCS/1115
2	Rimba Raya – VCS 674 The Rimba Raya Biodiversity Reserve Project, an initiative by InfiniteEARTH, State/Province Central Kalimantan	https://registry.verra.org/app/projectDetail/ VCS/674
3	Manoa – VCS 1571 REDD+ Project is a partnership between Biofílica and Grupo Triângulo, located at Manoa Farm, city of Cujubim, state of Rondônia	https://registry.verra.org/app/projectDetail/ VCS/1571
4	Impact Carbon and myclimate Safe Water and Improved Cookstoves Global PoA – GS 2296 The projects reduces greenhouse gas emissions through the promotion of household and community level clean water technologies and improved cookstoves	https://registry.goldstandard.org/projects/d etails/314
5	WWF cookstove projects in China – GS 1094, GS 1095, GS 2429 The project reduces greenhouse gas emissions through the promotion of household and community level clean water technologies and improved cookstoves	https://registry.goldstandard.org/projects/d etails/69 https://registry.goldstandard.org/projects/d etails/1672 https://registry.goldstandard.org/projects/d etails/344

All the relevant project documentations can be found at the following link:

https://registry.verra.org/app/projectDetail/VCS/1115

https://registry.verra.org/app/projectDetail/VCS/674

https://registry.verra.org/app/projectDetail/VCS/1571

https://registry.goldstandard.org/projects/details/314

https://registry.goldstandard.org/projects/details/69

https://registry.goldstandard.org/projects/details/1672

https://registry.goldstandard.org/projects/details/344





10 Annex F – Renewable Energy Certificates

In this annex, captured all the certificates for green electricity for the group of sites included in Cluster 1.

Philip Morris Products SA







Kutna Hora- Philip Morris CR a.s.



The production and communption of removable electricity are certified by benergy Abstract Certifications, which electromes (eq. HECs, RECs, GOs, etc.) EACs are transford by the relevantbody for the region in control. They are in compliance with this quality criteria and by the Greenhouse Gas Protocol in the islant Score 3 guiderce document.











Papastratos Cigarette Manufacturing Company, S.A.

Sales	Key Account Custome	ers Section
Info :		To:
Georgios Theo	ocharidis	PAPASTRATOS CIGARETTES MANUFACTURING
T 6970005389		COMPANY S.A.
g.theocharidis	@dei.com.gr	
Monday, 24 Ap	oril 2023	
Subject:	GREEN PASS CERTIFICATION	N
It is noted that be issued from	ANUFACTURING COMPANY It certificates for July, Augus In DAPEEP. It for any legitimate use.	S.A. in Greece supplied by PPC S.A. st and September 2022 are expexted to
It is noted that be issued from This is granted	ANUFACTURING COMPANY It certificates for July, Augus n DAPEEP. d for any legitimate use.	S.A. in Greece supplied by PPC S.A. st and September 2022 are expexted b
It is noted that be issued from This is granted	ANUFACTURING COMPANY It certificates for July, Augus n DAPEEP. d for any legitimate use.	S.A. in Greece supplied by PPC S.A. st and September 2022 are expexted b





Philip Morris Lietuva























UAB Philip Morris Lietuva

is powered with

100% Renewable Gas Guarantee of Origin

5 698 MWh

from GGCS - Biomass

It is heavily confirmed that 100% of the solution as appointed above of the solution as appointed above Gaussingheses of Crigos (MCGO) for messeable energy according to the Genes Gaus Certification Scheme. For the quantity of Beneratable Gau Gaussinese of Crigits (MCGO) about on the Certificate, that encount of genes are vois injection late the grid.





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PHILIP MORRIS BRASIL IND. COM. LTDA.



termanifie allectricity are certified by Energy Attribute Certificates, which emorphisms in regional and realized extenses (e.g. HeECs, RECs, ODs, etc.): EACs are treaked by the relevant hody for the region or outerly. They are in compliance with the quality orients of by the Greenbrace Gas Proficed in the latest Scope 2 galance document.











PT Philip Morris Indonesia Karawang International







PT Hanjaya Mandala Sampoerna Tbk, Karawang Plant, Indonesia





SAMP Karawang

has sourced

100% RENEWABLE ELECTRICITY

34 213 MWh

From

Indonesia Geothermal

The revenuenties electricity production is certified according to the intermentant REC transford and documented by the laws of verified i HRCC. The HRCC system is an intermediately recipilized and relative electricity attribute tracking systems. It is an conclusion with the quality criteria act by the Grandwase Gas Protocol or the laket Scope 2 electronic document.











	4		S	
	TIGR Regi	stry Certificate of	f Retirement	
APX, Inc., in its capacity as operato ("RECs") have been retired in the T	r and administrator of tl IGR Registry on behalf	he TIGR Registry, hereby of:	certifies that the following Renewable Ener	gy Certificates
	PT Hanja	ya Mandala Samp	oerna Tbk.	
	Tota	al RECs Retired:	3.817	
Retirement Reason Details: Meet C	arbon Neutrality Goals		,	
Retirement Date: June 07, 2023	aroon ricoa antiy Coars			
Sub-Account Name	Project Name	Project Type	TIGRs Serial Numbers	Quantity
PT Hanjaya Mandala Sampoerna Tbk.	PLTA Bakaru - Bakaru	Hydroelectric – Run-of-River	TIGR-1287-ID-SN-08-2021-7035- 16061 to 19877	3,817
The Tradable Instrument for Global Rer for procuring and reporting purchases of environmental markets. For more inform	PLN (Persero) newables (TIGR) Registry f renewable energy. The F nation: www.apx.com	is an online platform purpos Legistry is developed and ma	se built to meet RE100 best practices guidelines a naged by APX, leveraging more than 15 years o	and CDP standards f experience in
		Energy Environment Market Integra		





Green Leaf Threshing Plant, Philip Morris (Pakistan) Limited, Mardan Pakistan







Massalin Particulares S.R.L., Salta, Argentina.







Massalin Particulares S.R.L., Merlo, Argentina.













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PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Kraksaan





Kraksaan SAMPOERNA

has sourced

100% RENEWABLE ELECTRICITY

264 MWh

From

Indonesia Geothermal

The renewable electricity production is profiled according to the intermetional REC standard and docursected by the issue of worlds (- HEC). The I-BEC explores is an intermedionally recording out of reliable electricity attribute tracking system. It is in compliance with the quadity utilizes as the Greenbocks Gas Protocol in the literal Scope J authore docursent.











Philip Morris Operations a.d. Niš



Philip Morris Investments B.V. Jordan







Philip Morris Romania SRL







PT HM Sampoerna



CERTIFICATE OF ORIGIN

This document confirms and/or certifies that PT Molindo Inti Gas supplies <u>Biogenic CO₂</u> to PT HM Sampoerna. The liquid CO₂ produced at our distillery is sourced from the fermentation of black strap molasses into bio-ethanol. No other materials or source have been used other than the above stated. Issued this 25th of October 2022.

Signed by,

Yohanes Kurniawan General Manager



Head Office : PT Molindo Inti Gas J. Samber Wess No. 273 Lowing 85218 Valary - Indonesia 2+62 341 425370 - 2 Hun = infatthresindoirtiges.com Distribution Office : PT MSIndo Link Gos Kavaara Industri M40300 J. Irian XI Bick L 33 Chitang Retwi 17300 - Industria witholitrolintointipauto/d Page 1 of 1







PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Rungkut-1







PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Rungkut-2





Rungkut 2 SAMPOERNA

has sourced

100% RENEWABLE ELECTRICITY

277 MWh

From

Indonesia Geothermal

The revewable electricity production is certified according to the informational HEL standard and accumentation HEL standard and refused HAC. The HELC yetters is at internationally recepted and refusive electricity attribute tracking sphere. Is a in compliance with the quality criteria set by the Greenbrocas Gai Production the Inter Scope 3 autorement.











PT. Sampoerna Indonesia Sembilan - Sukorejo Plant, Indonesia





has source

100% RENEWABLE ELECTRICITY

834 MW

From

Indonesia Geothermal

The semanation emotion's generation are a sensitived according in the semantized with a sensitived in the semantized with a sensitive and discontinuous by the capacity and with the sensitive of the semantized continuous and and the semantized continuous and and the semantized continuous and the first semantized taken between the time semantized taken between the time semantized taken between the time semantized accord a semantized accord as the semantized accord as t







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PT. HM Sampoerna - Sigaret Kretek Tangan (SKT) Malang







Philip Morris Manufacturing Senegal S.A.R.L.



Tabaqueira- Empresa Industrial Tabacos S.A.







DECLARATION OF CARBON NEUTRALITY

FOR CLUSTER 1 OF MANUFACTURING ENTITIES – YEAR 2023

Lausanne, 18th December 2023

Lausanne, 18th December 2023

Stephanie Thery Head of Sustainability - Global Manufacturing PMI Operations Michael Scharer VP Global Manufacturing PMI Operations