PetraDiamonds

ANNUAL GHG EMISSIONS REPORT- FY 2020

Abstract

Climate change is a harsh reality that will eventually impact all of us if mitigating measures are not implemented. As a responsible diamond mining company, Petra Diamond places great emphasis on its GHG emission monitoring, recording, verification and reporting in order to decrease its GHG emissions. This report serves to document relevant data and information regarding this process in line with the GHG Protocol principles of relevance, completeness, consistency, transparency and accuracy and as required by the ISO 14064 – 1 standard. THIS REPORT IS BASED ON UNAUDITED DATA AND WILL BE UPDATED WITH AUDITED FIGURES WHEN AVAILABLE.

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1. Introduction and background

Petra Diamonds Limited ("Petra Diamonds" or the "Company") is a diamond mining company listed on the London stock exchange and which operates in South Africa (three underground mines: Cullinan, Finsch and Koffiefontein) and Tanzania (one open-pit mine: Williamson). Petra Diamonds is committed to responsible mining practices across all areas of its business and it has identified Climate Change and Energy Usage as one of its most material environmental issues. The Company has a number of initiatives in place to limit its greenhouse gas ("GHG") emissions – one of the main contributing factors to climate change.

These initiatives are based on the quantification, monitoring, reporting and verification of GHG emissions and removals, in line with the *ISO 14064-1 standard: Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removals, 2006*. Initiatives implemented include amongst others, several energy saving activities[1] and the implementation of a key performance indicator to decrease GHG emissions per carat by 1% year on year. Petra Diamonds started recording its GHG emissions in FY 2013 and has since succeeded in achieving this target each year up to FY 2019. The target was not achieved in FY 2020, mainly due to a significant decrease in carats produced due to the impact of the COVID-19 pandemic, but over a five-year period the saving of 12% has surpassed the target of 5%.

Petra Diamonds voluntarily reports its GHG emissions on several forums, such as the Carbon Disclosure Project ("CDP"), as it believes that "through disclosure, companies can benchmark themselves and demonstrate to investors their commitment to address their environmental risks and their ability to adapt to the risks and opportunities that exist." (CDP, 2019). Petra Diamonds reports on Scope 1, Scope 2 and Scope 3 emissions. Since 2013, Petra Diamonds' CDP score has improved year-on-year to a 'B' level of disclosure (the 'management' band), which is above average for both its industry and region.

In line with the principles of the *Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised 2004)*, Petra Diamonds put several measures in place to ensure that GHG data reported is relevant, consistent, complete, transparent and accurate. These measures include internal verification of operational data and sign-off on operational reports by the Mine/General Manager, Health, Safety and Environment ("HSE") Manager and Environmental Specialist at each operation. Internal verification of consolidated Data is the responsibility of the Health, Safety, Environment and Quality ("HSEQ") Group Data Analyst. Annual third-party verification is also conducted.

[1] Annexure 2: Energy consumption reduction initiatives

2. Scope

2.1 Organisational boundaries

Petra Diamonds has selected a 100% organisational control approach to consolidate its GHG emissions as it has full authority to introduce and implement operating policies at the following organisations and offices that have been included in its GHG inventory boundary:

- Operational mines in South Africa: Cullinan Diamond Mine ("CDM"), Finsch Diamond Mine ("FDM") and Koffiefontein Diamond Mine ("KDM")
- Operational mine in Tanzania: Williamson Diamonds Limited ("WDL")
- Administrative offices in Johannesburg, South Africa and London, UK

The following operations and facilities have been excluded from the Petra Diamonds Limited GHG Inventory:

- Explorations projects in Botswana and South Africa, as no data is available and its GHG emissions are considered immaterial
- Game farms at CDM, FDM and KDM, as they are managed by independent committees

2.2 Operational boundaries

Petra Diamonds accounts for and reports on the following Scope 1, Scope 2 and Scope 3 emission sources:

Scope 1: Direct emissions through

- Mobile combustion (diesel and petrol use for Company owned/controlled vehicles; jet fuel use for Company owned jet)
- Stationary combustion (diesel use for generation of electricity; combustion of LPG in workshops)
- Fugitive hydrofluorocarbon (HFC) emissions from air conditioning (R134a, R410a, R404 and R507)
- Process emissions (treatment of domestic effluent in mine controlled Waste Water Treatment Works)

Scope 2: Indirect emissions through electricity purchased from

- Eskom in South Africa
- Tanesco in Tanzania
- Suppliers in London, UK

Scope 3: Indirect emissions through

- Business travel: employee commute, car hire, business flights (air lines), chartered jet
- Paper use
- Waste disposed to landfill (general, hazardous, non-biomass)
- Scrap metal for recycling

- Potable water use (pumping)

R-22 is reported on separately as required by the GHG protocol.

Types of GHGs:

Petra Diamonds accounts for and reports on the following GHG gases:

- Carbon Dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)

All sources excluded from the GHG Inventory, as well as assumptions on which the GHG inventory are based, are further discussed in paragraph 4.

3. GHG emissions: FY 2020

In this section more detail is provided on the GHG emissions of Petra Diamonds Limited for the **period I July 2019 to 30 June 2020 ("FY 2020")**. Except where specifically indicated, all graphs and other GHG emission figures (total and intensity) are based on Scope 1 + Scope 2 + Scope 3 emissions, including the Group Offices' (Johannesburg and London) emissions due to potable water use, electricity use, mobile fuel consumption and paper use.

It is to be noted that the GHG Inventory currently does not account for any GHG sinks or reservoirs.

Petra Diamonds Limited calculates and reports its GHG emissions as Total GHG emissions in tonnes CO_2-e, as well as the following intensity ratios:

- tonnes CO_2-e/carat
- tonnes CO_2-e per tonne treated
- tonnes CO2-e per USD Revenue

Table 1 provides the intensity measure values that were used to determine the intensity ratios for Petra Diamonds Limited, as well as the operating mines. Although the number of employees is currently not used as an intensity measure, it is a very useful parameter for comparative purposes or assumptions on GHG emissions that are directly related to number of people, e.g. domestic waste water treatment.

Table 1: Intensity Measures

	Tonnes treated	Carats	Employees	Contractors
Cullinan	4,230,231	1,578,400	1,307	222
Finsch	2,930,930	1,643,568	1,036	713
Koffiefontein	891,705	69,077	633	42
Williamson	4,283,005	298,130	542	338
Johannesburg	0	0	167	0
Petra Diamonds SA	12,335,870	3,589,176	3,685	1,315

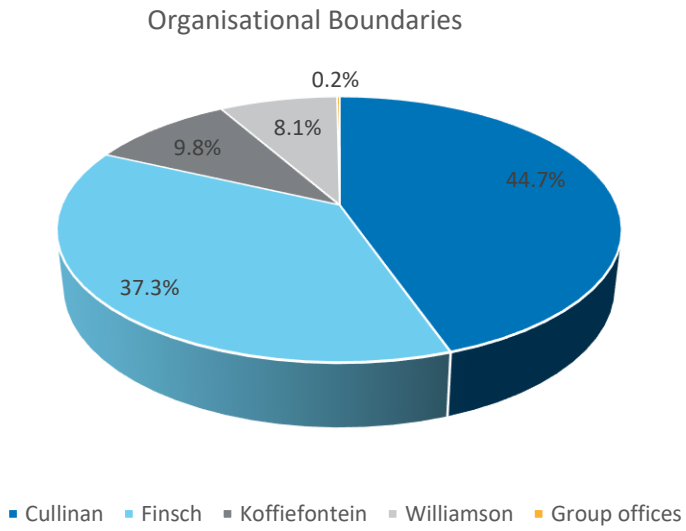
The Cullinan Mine is the biggest contributor to the total GHG emissions of Petra Diamonds. The Finsch and Cullinan Mines are comparable in terms of total GHG emissions as these two mines are the biggest in terms of carat production and employees. However, when the preferred intensity ratio (tonnes CO_2e/ carat) is compared, the Koffiefontein Mine has the highest intensity, mainly as a result of lower carats produced and the use of older electricity intensive equipment and machinery.

The GHG emission contribution of the Group Offices in Johannesburg and London can be considered as immaterial (0.2%), but are included in the total GHG emissions of Petra Diamonds for completeness and to generate awareness by office based employees, so they are motivated to minimise their electricity, water and fuel use.

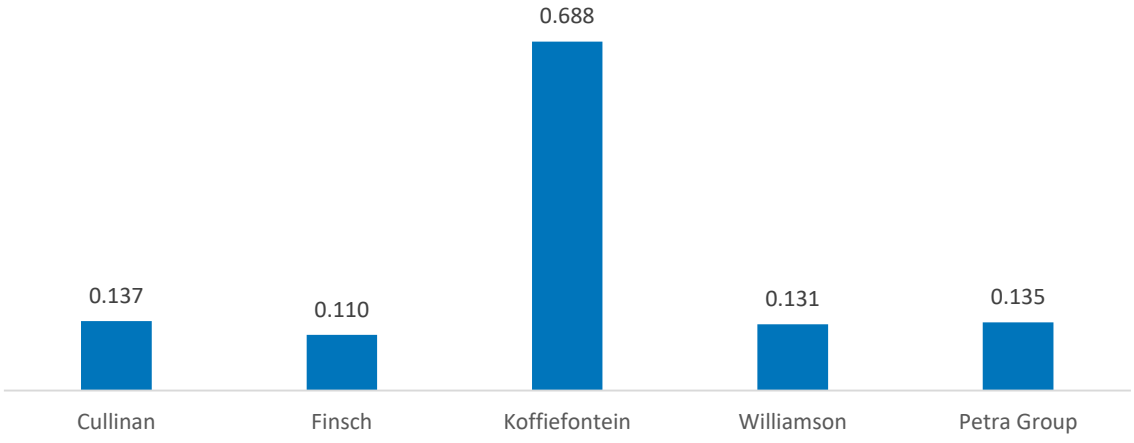
Table 2: GHG Emissions

	Tonnes CO_2e	Tonnes CO_2e/ tonne treated	Tonnes CO_2e/ carat	TonnesCO_2e/ USD million
Scope 1 + 2				
Cullinan	215,850.46	0.0510	0.1368	1,852
Finsch	179,749.56	0.0613	0.1094	1,779
Koffiefontein	47,307.61	0.0531	0.6848	1,841
Williamson	36,802.08	0.0086	0.1234	701
Group offices (Johannesburg /London)	643.87	0.0001	0.0002	3
Petra Diamonds including Group office	480,353.59	0.0389	0.1338	1,624
Petra Diamonds excluding Group office	479,709.723	0.0389	0.1337	1,624
Scope 1 + 2 + 3				
Cullinan	216,320.64	0.0511	0.1371	1,856
Finsch	180,409.63	0.0616	0.1098	1,785
Koffiefontein	47,555.49	0.0533	0.6884	1,851
Williamson	38,986.71	0.0091	0.1308	743
Group offices (Johannesburg /London)	909.46	0.0001	0.0003	3
Petra Diamonds including Group Office	484,181.93	0.0392	0.1349	1,624
Petra Diamonds excluding Group Office	483,272.48	0.0392	0.1346	1,624

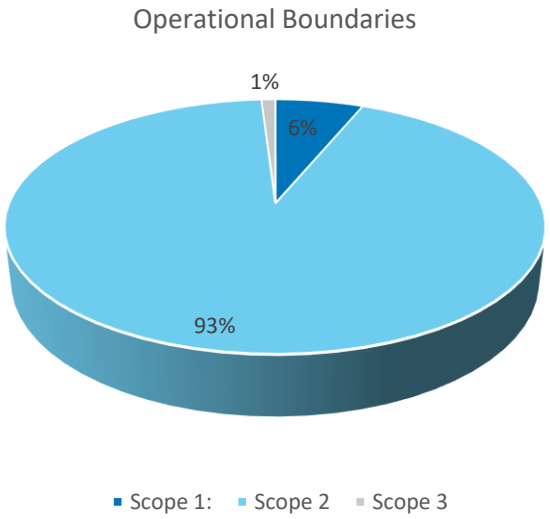
Graph 1: Total GHG Emission Contribution by Organisation



Graph 2: GHG Emissions (tCO_2e/Ct.)



Graph 3: GHG Inventory Boundaries by Scope



Scope 1 GHG emissions are direct emissions from sources that are owned or controlled by the reporting company (GHG Protocol).

The Williamson Mine has a relatively large Scope 1 contribution to its total GHG emissions in comparison to the other mines as it is an open pit operation with higher fuel use (trackless mobile machines) and lower electricity use as a result of no hoisting from underground.

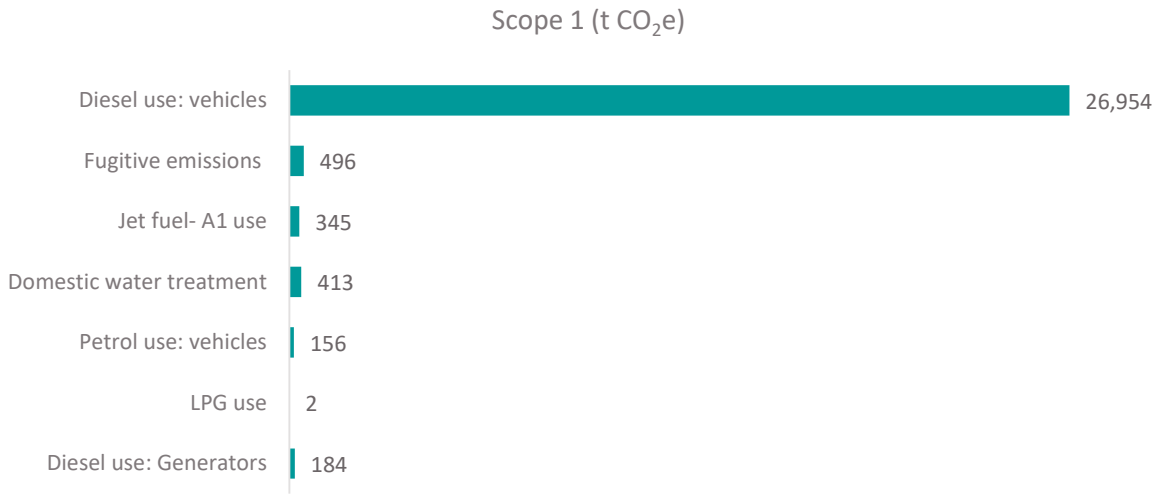
Process emissions in FY 2020: Domestic water treatment was accounted for as a Scope 1 emission source (Direct emissions) as the Water Treatment Works at the Cullinan, Finsch and Williamson Mines are under operational control of the mines. Pre- FY 2020 it was accounted for as a Scope 3 emission source. Fugitive emissions as a result of the use of R-404 have also been included in the FY 2020 GHG inventory for the first time.

Table 3: Scope 1 (Direct) emissions

Scope 1 emissions (tCO_2-e)	Cullinan	Finsch	Koffie-fontein	William-son	Head office	PETRA (Group office in)	PETRA (Group office out)
Stationary combustion							
Diesel use Generators	11.43	2.18	3.99	166.49	0.00	184.09	184.09
LPG use	0.28	0.70	0.14	1.05	0.00	2.17	2.17
Mobile Combustion (Company and company controlled vehicles)							
Diesel	6,913.86	5,316.41	1,780.89	12,762.30	180.68	26,954.15	26,773.47
Petrol	34.71	53.65	4.66	38.96	24.38	156.35	131.97
Jet fuel-A1: Company jet	86.31	86.31	86.31	0.00	86.31	345.23	258.92

Fugitive emissions (Refrigerants)							
R134A	0.29	2.86	0.00	0.00	0.00	3.15	3.15
R404A	0.00	117.66	0.00	0.00	0.00	117.66	117.66
R410A	84.15	114.84	0.00	12.53	0.00	211.51	211.51
R507	0.00	163.39	0.00	0.00	0.00	163.39	163.39
Process emissions							
Effluent treatment	63.85	172.29	0.00	176.72	0.00	412.86	412.86
TOTAL	7,194.87	6,030.28	1,875.98	13,158.04	291.37	28,550.54	28,259.17

Graph 4 : Scope 1 Emissions Petra Diamonds Limited



Scope 2 GHG emissions are the emissions associated with the generation of electricity, heating/ cooling, or steam purchased for own consumption.

In South Africa, electricity is purchased from Eskom while electricity in Tanzania is purchased from Tanesco. Eskom's electricity is mainly generated from coal, although wind, solar and nuclear generated electricity also contribute to the total electricity grid (Eskom annual report 2020). Tanesco's electricity grid comprises primarily of hydroelectricity, natural gas and liquid fuel (Tanzania invest, 2019). The London office uses an immaterial amount of electricity generated in the UK.

Petra Diamonds Limited's GHG emissions consist mainly of Scope 2 emissions, as electricity use is the highest source of GHG emissions at all the mines.

Table 4: Scope 2 (Indirect) Emissions

Scope 2 emissions	Cullinan	Finsch	Koffie-fontein	William-son	Group office	PETRA (Group office included)
Electricity purchased	208,655.60	173,719.28	45,431.63	23,644.04	352.50	451,803.05

Scope 3 GHG emissions are "other indirect emissions that are a consequence of the reporting company, but occur at sources owned or controlled by another company" (GHG Protocol).

Petra Diamonds is continuously refining its methodology to improve its Scope 3 emission calculations and reporting. In FY 2020 the following additional Scope 3 emissions were included:

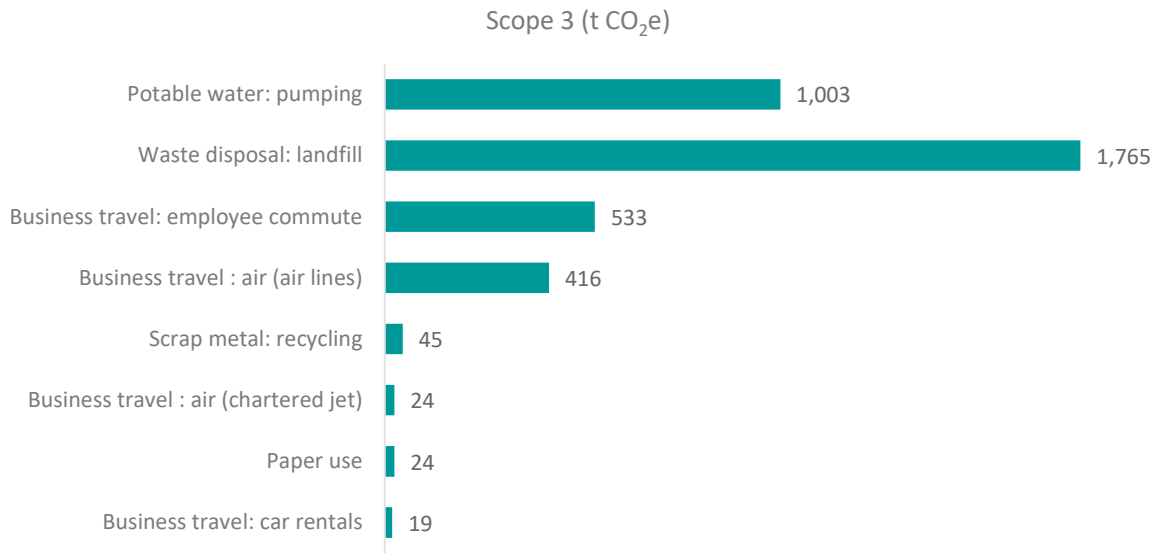
- Business travel: air (air lines) and land (car rentals) for the Williamson Mine
- Business travel: air (chartered jet) was removed from Scope 1 and added to Scope 3

Scope 3 emissions comprise mainly of business travel by air or land. It comprises only 1% of the total GHG emissions of Petra Diamonds Limited.

Table 5: Scope 3 (Other Indirect) Emissions

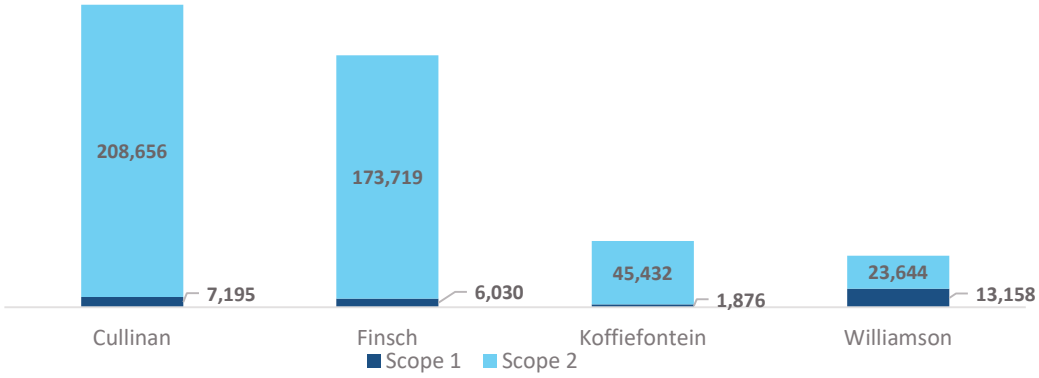
Scope 3 emissions	Cullinan	Finsch	Koffie-fontein	William-son	Group office	PETRA (Group office included)
Paper use	10.98	6.13	4.44	1.44	1.00	23.99
Waste disposal: landfill	192.85	128.70	106.31	1,337.22	Non-material	1,765.08
Scrap metal: recycling	21.23	13.91	7.38	2.42	N/A	44.94
Potable water: pumping	58.20	324.78	4.27	615.46	0.53	1,003.24
Business travel						
Air: Chartered jet	5.92	5.92	5.92	0.00	5.92	23.67
Air: Air lines	15.58	14.79	14.25	122.88	248.49	415.99
Land: car rentals	1.79	2.22	2.53	2.43	9.64	18.61
Land: employee commute	163.63	163.63	102.78	102.78	Non-material	532.83
TOTAL	470.18	660.07	247.88	2,184.62	265.58	3,828.34

Graph 5: Scope 3 Emissions Petra Diamonds Limited



As Scope 1 and Scope 2 emissions comprise approximately 99% of the Petra Diamonds Limited GHG emissions, it is sometimes used as an indication of the GHG emissions of the Company. Should it be used like this, it would clearly be indicated that only Scope 1 and 2 emissions are considered.

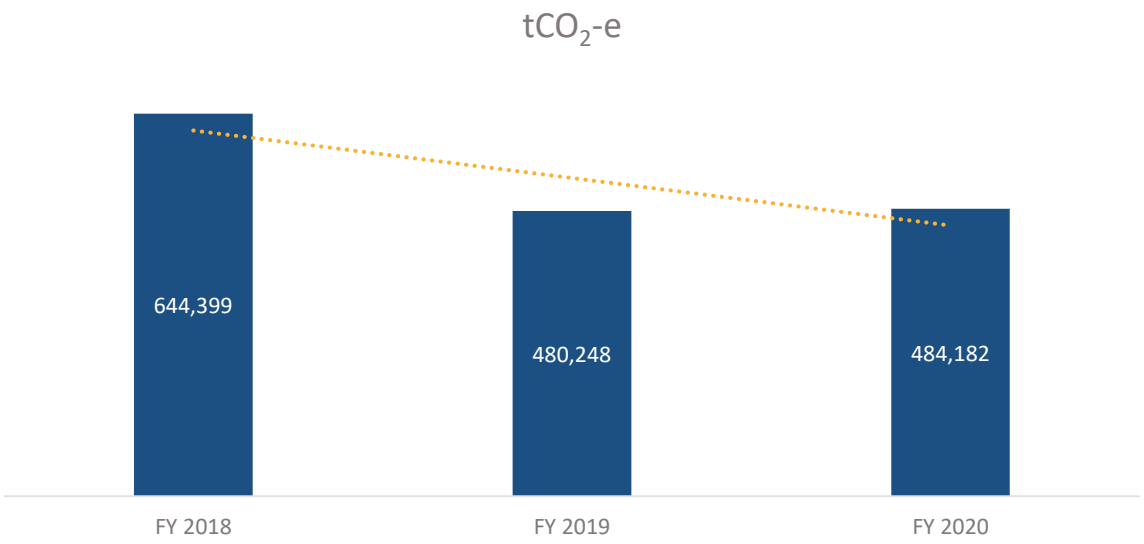
Graph 6: Scope 1 and Scope 2 GHG Emissions by Organisation (tCO_2e)



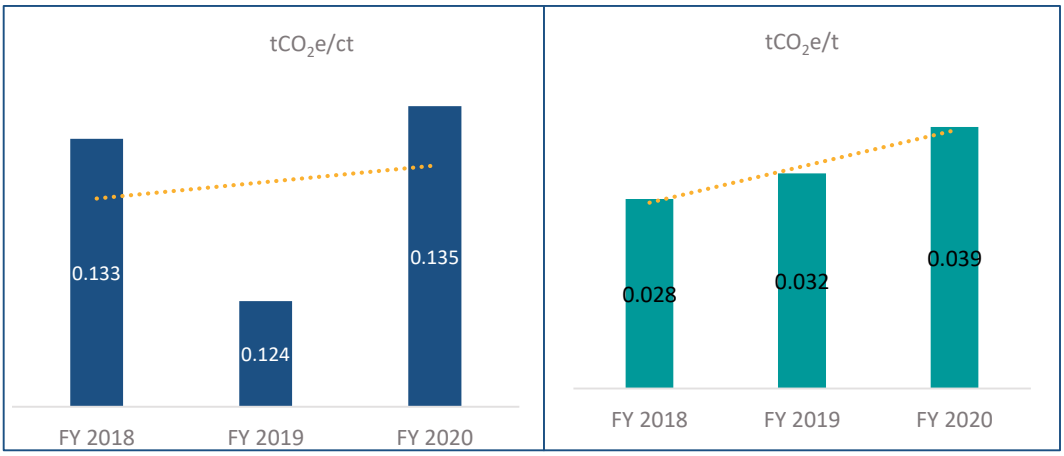
The following graphs indicate the trend for Petra Diamonds Limited's total GHG emissions, as well as for the different intensity measures as tracked from FY 2018 to FY 2020. Except for tCO_2e/tonne treated, total GHG emissions and the other intensity measures decreased from FY 2018 to FY 2019 as a result of the divestment of the Kimberley Ekapa Mining Joint Venture ("KEM JV"). The total GHG emissions in FY 2020 (t CO_2e) increased by 0.82% compared to FY 2019, mainly as a result of a 91% increase in the Scope 2 emissions at the Williamson Mine. This increase, despite a decrease in electricity use, is due to the use of a more accurate and recent grid emission factor for electricity purchased from Tanesco (0.529 kg CO_2e/kWh vs 0.2421504 kg CO_2e/kWh) in FY 2020.

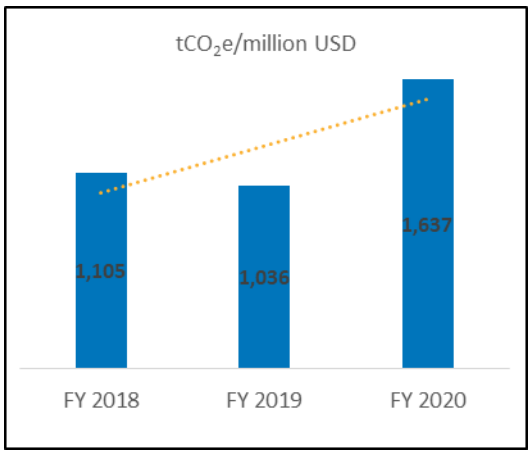
All three intensity measures increased from FY 2019 to FY 2020, as a result of lower production and revenue: tCO_2e/tonne treated increased by 22% as tonnes treated decreased by 17%; tCO_2e/carat increased by 9% as carats produced decreased by 7%; tCO_2e/US$ increased by 58% as revenue decreased by 36%. The COVID -19 pandemic in Q4 FY 2020 resulted in minimal production and revenue, with the Williamson Mine being placed under care and maintenance from April 2020.

Graph 7: GHG Emissions Petra Diamonds Limited FY 2018 - FY 2020



Graph 8: Intensity Ratio GHG emissions Petra Diamonds Limited FY2018 - FY 2020





4. Consolidation Approach and Methodology

All GHG emission calculations and reporting are based on the GHG Protocol principles: relevance, completeness, consistency, transparency and accuracy.

Petra Diamonds follows a centralised approach based on the GHG Protocol principles for the collection of information on its GHG emissions. The Company's mines submit (monthly, quarterly and annually) the relevant data and information required to the Group HSEQ Data Analyst and Reporting Coordinator who is responsible for all the GHG emission calculations (quarterly and annually). The calculations are done by means of a GHG calculating tool in MS Excel format and the mines' GHG emissions are consolidated into the total GHG emissions for Petra Diamonds Limited that is reported quarterly and annually per financial year (July to June).

The organisational GHG emissions are availed to the different mines annually, while the GHG emissions for Petra Diamonds Limited are quarterly and annually reported in the internal quarterly and annual Group Integrated Environmental Reports. Externally, GHG emissions are reported annually in the Company's Sustainability Report and the GHG Emissions Report, as well as voluntarily to various analytics providers, such as CDP.

All GHG emissions are calculated according to the formula: *activity data x emission factor ("EF"),* after conversion of activity data to the correct units as determined by the specific emission factor. All CO_2, CH_4- and N_2O- emissions are converted to CO_2-equivalents (CO_2e) values by multiplication with Global Warming Potential values.

Emission factors, calorific values and global warming potentials used for the determination of the GHG emissions are obtained from the following platforms and are annually checked and updated as required[2]:

- **Scope 1 emission factors:** *2006 Intergovernmental Panel for Climate Change ("IPCC") Guidelines for National Greenhouse Gas Inventory Vol 2: Energy* and Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas in South Africa based on the 2006 IPCC Guidelines.

[2] Annexure 1: Complete list of emissions factors, calorific values and global warming potentials

A UK Department for Environment, Food & Rural Affairs ("DEFRA") emission factor is used for water treatment (domestic effluent)

- **Scope 2 emission factors:** Annual Eskom grid emission factor (factor 2 based on total electricity generated, including coal, nuclear, pumped storage, wind, hydro and gas turbines, but excluding the total consumed by Eskom); Tanesco: The IEA 2010 electricity emission factor for Tanzania was updated in 2020 to The Institute for Global Environmental Strategies' ("IGES") emission factor for registered Clean Development Mechanism ("CDM") projects: combined grid emission factor; London electricity: DEFRA UK electricity emission factor.
- **Scope 3 emission factors:** DEFRA Emission factors and 2006 IPCC Guidelines for National Greenhouse gas inventory EF for chartered flights.
- **Global warming potentials** *(IPCC Direct Global Warming Potentials):* IPCC Fifth Assessment Report 2014 (SAR - 100 year) and DEFRA 2019 (Refrigerants) for Scope 1 Fugitive emissions (HFCs).
- **Calorific values for fuel***:* Net calorific values of fuels provided by the South African petroleum industry association as per the Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas in South Africa.

It is to be noted that Petra Diamonds has decided on a materiality threshold of 5 % for Scope 1 and Scope 2 emissions and 10% for Scope 3 emissions.

5. Assumptions and Sources excluded from GHG Inventory

5.1 Assumptions

Petra Diamonds Limited's GHG emission calculations are based on the following assumptions:

- Company/chartered jet fuel: fuel used for refuelling is obtained from the company responsible for maintaining/ chartering the jet. Total is divided by 4 and allocated to each of the South African mines (CDM, FDM, KDM) and Petra Diamonds South Africa (head office Johannesburg). Company jet use is recorded under Scope 1 and chartered jet use under Scope 3.
- Mobile fuel use for Johannesburg offices: Petrol 93 and diesel (50ppm) costs are converted by the HSEQ Data Analyst and Reporting Coordinator to litres, based on the average monthly Automobile Association rates (https://www.aa.co.za/fuel-pricing).
- Fugitive emissions (HFCs): refilling of air cons, are calculated based on the mass of gas purchased, as it is assumed that it will replace leaked HFCs.
- London offices: Water and electricity use data reported to the Data Analyst are estimates based on the ratio of Petra employees (one) to the total employees in the office building in London (20 employees, 3 companies). Petra use equals 5 % of total use.
- Business travel: business flights (air lines): As DEFRA emission factors are used, all flights within South Africa are considered as domestic flights; flights within Africa are considered as short haul flights; flights between South Africa and any other place outside South Africa are considered as long haul flights; flights between destinations not in South Africa are considered as international flights. For Tanzania the same approach is followed with flights within Tanzania considered as domestic flights; within Africa considered as short haul flights; between Tanzania and any other place outside Tanzania considered as long haul flights; flights between destinations not in

Tanzania are considered as international flights. DEFRA emission factors with radiative forcing is used and distances are obtained/calculated in km or nautical miles that are converted to km (multiplying by 1.852).

- Business travel- employee commute: it is assumed that 30% of privately owned cars ran on diesel and 70% on petrol. DEFRA emission factor for average cars is used. Data is obtained by means of surveys conducted on the mines every two years. To be noted that as a result of the biennial data collection, the 2018 DEFRA emission factors were used in the calculation for employee commute GHG emissions.

5.2 Sources excluded from GHG inventory

- Process emissions: Water treatment (domestic effluent) for KDM as the mine does not operate its own Water Treatment Works, but rather releases all domestic waste water/effluent into the municipal system. No volumes are available and a materiality test in 2019, based on the number of employees, indicated that it is immaterial.
- Johannesburg and London: Business travel- employee commute. No data is available and it is considered immaterial based on the number of employees involved.
- Johannesburg and London: Process emissions: water treatment (domestic effluent) as all domestic waste water is released into municipal systems and no data is available. It is also considered as immaterial due to the small number of employees involved.
- Johannesburg and London: Waste disposed to landfill (general, hazardous and non-biomass fraction). The same reasoning is valid as for domestic effluent treatment above.
- Petra Diamonds does not perform any activities linked to the emission of the following GHGs and thus does not account for or report on it:
  - ✓ Sulphur hexafluoride (SF_6, resulting mainly from leakages from electrical switchgear)
  - ✓ Perfluorocarbons (PFCs, resulting mainly from aluminium production processes)
  - ✓ Nitrogen Trifluoride (NF_3, resulting mainly from the manufacture of LCD screens)

6. Base year and Base year policy

In FY 2013, Petra implemented a structured system of collection, recording and reporting of environmental data and therefore selected FY 2013 (1 July 2012 - 30 June 2013) as its inventory base year for GHG emission calculations and reporting. FY 2013 was also selected as the target base year with a baseline value of 0.23 t CO2-e/ct and the setting of a GHG emissions target of a 1% reduction in t CO2-e/ct per annum.

Petra Diamonds decided that the following cases should trigger recalculation of the base year, if it results in a change of 10% in the total GHG emissions in tCO2-e:

- Structural changes such as mergers, acquisitions and divestments
- Changes in calculation methodology or improvements in the accuracy of emission factors or activity data that result in a significant impact on the base year emissions data
- Discovery of significant errors or a number of cumulative errors, that are collectively significant

In applying the base year policy, Petra Diamonds recalculated its base year in:

- FY 2016: acquisition of KEM-JV (baseline value: 0.20 t CO2-e/ct)
- FY 2018: divestment of KEM-JV (baseline value: 0.192 t CO2/ct)

Based on a finding during the third party audit of the FY 2019 GHG emissions that pointed out that no verifiable documentation was available for FY 2013, the original base year, it was decided to use the FY 2019 verified GHG emissions as the new baseline from FY 2020 onwards. Base year recalculations will still be triggered by the above mentioned cases as the base year policy stays valid with the exception of the new base year.

7. Annexures

Annexure 1: Emission factors, Calorific values, Densities and Global Warming Potentials

Emission factors		
Activity	**Value**	**Reference**
Diesel combustion: stationary and mobile	CO_2: 74 100 kg CO_2/TJ CH_4: 3 kg CH_4/TJ N_2O: 0.6 kg N_2O/TJ	2006 IPCC Guidelines V2-3, Chapter 2, Table 2.2 (p16) and table 2.3 (p18)
Petrol combustion: mobile	CO_2: 69 300 kg CO_2/TJ CH_4: 3.80 kg CH_4/TJ N_2O: 5.70 kg N_2O/TJ	2006 IPCC Guidelines V2-3, Chapter 3, Table 3.2.1 (p16 Road transport default CO_2 EF) and Table 3.2.2 (p21 LDV 1995 or later) EFs for motor gasoline
Jet fuel-A1 combustion: mobile	CO_2: 70 000 kg CO_2/TJ CH_4: 0.5 kg CH_4/TJ N_2O: 2 kg N_2O/TJ	2006 IPCC Guidelines V2-3, Chapter 3, Table 3.6.4 (p64- aviation) and Table 3.6.5 (p64-aviation)
LPG combustion: stationary	CO_2: 63 100 kg CO_2/TJ CH_4: 1 kg CH_4/TJ N_2O: 0.1 kg N_2O/TJ	2006 IPCC Guidelines V2-3, Chapter 2, Table 2.2 (p16) and Table 2.3 (p18)
Electricity purchased: South Africa	1.04 kg CO_2e/kWh	ESKOM 2019 Integrated report: 2019 ESKOM grid emission Factor 2 Factor 2: Figures are calculated based on total electricity generated, which includes coal, nuclear, pumped storage, wind, hydro and gas turbines, but excludes the total consumed by Eskom.
Electricity purchased: Tanzania	0.529 kg CO_2e/kWh	Institute for Global Environmental Strategies (IGES): registered CDM projects: combined grid emission factor
Electricity purchased: UK	0.2556 kg CO_2e/kWh	DEFRA 2019 UK electricity
Business travel: employee commute-bus	0.10097 kg CO_2e /passenger.km	DEFRA 2018 business travel land. Regular taxi Average car (diesel and petrol) Average local bus
Business travel: employee commute-taxi	0.21482 kg CO_2e /km	
Business travel: employee commute-private owned petrol car	0.18368 kg CO_2e /km (0.18084kgco2e/km)	
Business travel: employee commute-private owned diesel car	0.17753 kg CO_2e /km (0.17336kg co2e/km)	
Business travel: car hire	0.18084 kg CO_2e /km	DEFRA 2019 Business travel land (average petrol car)
Business travel: air lines	Domestic: 0.25493 passenger.km Short haul: 0.15832 passenger.km Long haul: 0.19562 passenger.km International: 0.18078 passenger.km	DEFRA 2019 Business travel air (not WTT) (EF with RF for average passenger)

Paper use	0.8701 kg CO_2e /kg	DEFRA 2019 Material use, paper and board mixed (870.1kg CO2-e/tonne)
Waste disposed to landfill (general, hazardous, non-biomass fraction)	586.514 kg CO_2e/t	DEFRA 2019 Waste Disposal (Municipal waste to landfill)
Scrap metal for recycling	21.354 kg CO_2e/t	DEFRA 2019 Waste Disposal (Scrap metal recycled, closed loop)
Potable Water use (pumping of water)	0.344 kg CO_2e/m^3	DEFRA 2019 Potable water use (Pumped)
Water Treatment (effluent)	0.708 kg CO_2e/m^3	DEFRA 2019 Water treatment
Net Calorific values		
Fuel	**Value**	**Reference**
Diesel	38.1 MJ/l	Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas in SA: Annexure D (Calorific values from South African Petroleum Industry Association)
Petrol	34.2 MJ/l	
Jet fuel A1	37.5 MJ/l	
LPG	46.1 MJ/kg	
Densities		
Fuel	**Value**	**Reference**
Diesel	0.845 kg/l	Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse gas in SA: Annexure D (based on 2006 IPCC Guidelines)
Petrol	0.75 kg/l	
Jet fuel A1	0.79 kg/l	
LPG	0.555 kg/l	
Global warming Potentials (100 year)		
Greenhouse gas	**Value**	**Reference**
CO_2	1 kg CO_2e	IPCC 5th AR-2014: Chapter 8, p747, Table 8.A.1
CH_4	28 kg CO_2e	
N_2O	265 kg CO_2e	
R134A	1430 kg CO_2e	DEFRA 2019 Refrigerant & Other
R404A	3922 kg CO_2e	
R410A	2088 kg CO_2e	
R507	3985 kg CO_2e	
R22	1810 kg CO_2e	

Annexure 2: Energy Consumption Reduction Measures implemented FY 2020

- Change in ventilation fan operational model: improve fan efficiency through reducing guide vanes or where possible switch off one or two main fans during off-peak times.
- Implementation of virtual servers to save energy use by actual servers: a total of 219 servers were replaced by 201 virtual servers (19.66kWh saving per virtual device per day).
- Standardisation of printing protocols reduced the electricity used by printers as well as paper use (saving on ink and secondary water savings).
- Replacement of energy efficient motors is an ongoing project.
- Raw water pumping station upgrades: pumping was automated to off-peak hours, old pumps were replaced by more efficient devices and all leaks on the pipeline were repaired.
- Installation of non-return valves to reduce water losses even further.

Annexure 3: Limited Assurance Conclusion by third party auditor FY 2019

All material errors and non-conformances identified during the verification process were duly corrected prior to the issuance of the verification statement.

Based on the process and procedures conducted during the limited assurance verification, it is our conclusion that there is no evidence that the GHG assertion:
1. is not materially correct and is not a fair representation of the GHG data and information for the 2019 financial year; and

2. has not been prepared in accordance with the GHG Protocol's Corporate Accounting and Reporting Standard.

Subject to the qualifications set out in the qualification paragraph above.