



ArcelorMittal

29 March 2019

TO: The Minister of Environmental Affairs
Department of Environmental Affairs
Environment House
473 Steve Biko Street
Arcadia
Pretoria
0083
South Africa

BY E-MAIL: GHGPPP@environment.gov.za
DRamalope@environment.gov.za

AND BY HAND Environment House, Pretoria (Ms C. Seepane)

FOR ATTENTION: Honourable Minister N.P. Mokonyane
Ms D. Ramalope

Dear Madam

**POLLUTION PREVENTION PLAN PROGRESS REPORT FOR
ARCELORMITTAL SOUTH AFRICA LIMITED ("AMSA") (AS PER
POLLUTION PREVENTION PLAN REGULATIONS PROMULGATED ON
THE 21ST OF JULY 2017)**

AMSA is pleased to herewith submit its Pollution Prevention Plan Progress Report as per the Regulations promulgated on the 21st of July 2017.

Your attention is drawn to paragraph 7 of the Regulations mentioned above that deals with confidentiality as some information in this report is highly confidential at this stage and that it will be dealt with accordingly.

Should you have any further questions, please do not hesitate to contact [REDACTED] at [REDACTED] : [\[REDACTED\]@arcelormittal.com](mailto:[REDACTED]@arcelormittal.com)

Yours sincerely

[REDACTED]

[REDACTED]

**POLLUTION PREVENTION PLAN PROGRESS REPORT (IN TERMS OF
REGULATION 712 PROMULGATED ON THE 21ST OF JULY 2017)
("Regulations")**

Period covered: 1 January 2017 to 31 December 2018

ArcelorMittal South Africa Limited

**Registration number: 1989/002164/06, a limited liability company duly
incorporated in the Republic of South Africa.**

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Introduction

ArcelorMittal South Africa Limited, hereinafter referred to as "AMSA" is a significant emitter of Greenhouse Gases ("GHGs") of which the bulk falls within the "direct" or "scope 1" category covered by these regulations.

As has come to light on numerous occasions during the climate change and mitigation potential debate, the iron and steel industry is severely limited in reducing its direct emissions due to the fact that carbon is relied on as a reductant to convert iron ore into the final product namely steel. This however does not mean that no emission reduction is possible and AMSA is pleased to disclose to the Department significant progress made in terms of its Pollution Prevention Plan (PPP).

To obtain some perspective it is important to note the following events in chronological order:

- 21 December 2017 – Submission of PPP
- 27 March 2018 – Letter from AMSA to DEA explaining that a Progress Report is not feasible due to various reasons
- 25 June 2018 – Approval of AMSA's PPP by the DEA

The approval letter dated the 25th of June 2018 by the Department mentions that the first Progress Report is due by 31 March 2019.

AMSA specified anticipated emission reductions covering the period 2017 to 2021 in its PPP.

As required by the regulations, the National Greenhouse Gas Emission Reporting Regulations form the basis for the reporting of AMSA's emissions. The Technical Guideline document, that accompanies the GHG Reporting

Regulations, was however not finalized to accommodate all the process configurations, boundaries and practices as found within AMSA. This issue was raised with the Department via BUSA and AMSA will pursue this matter further with the relevant officials. This does not imply that AMSA cannot report its GHG emissions, but its rights need to be reserved as final changes to the Technical Guideline Document could result in changes to the final GHG emission outcome.

AMSA's operations as per this plan are spread throughout South Africa and cover those activities over which the company has management control. Such operations and activities as covered in this plan are the same as those covered in AMSA's registration in terms of the National Greenhouse Gas Reporting Regulations promulgated on the 3rd of April 2017. AMSA's registration was submitted to the DEA on the 3rd of May 2017. These registered facilities/operations comprise of:

- ArcelorMittal South Africa Limited: Vanderbijlpark Works
- ArcelorMittal South Africa Limited: Newcastle Works
- ArcelorMittal South Africa Limited: Vereeniging Works
- ArcelorMittal South Africa Limited: Pretoria Works
- Saldanha Steel (Pty) Ltd, a fully owned subsidiary of ArcelorMittal South Africa Limited

Evaluation of performance in terms of the PPP

This report evaluates the actual emission reductions against the mitigation measures specified in table 2 of the PPP for the years 2017 and 2018. For ease of reference AMSA's approved PPP is attached to this report as Annexure III.

During the compilation of the PPP, the 2017 PPP Guidelines issued by the Department were used and it was decided to again rely on the tables supplied in this version to inform progress made. It was found that especially table 3 of the 2017 PPP Guidelines is far better equipped to illustrate progress compared to the table 3 found in the 2018 PPP Guidelines.

Tables 1.1 and 1.2 were completed to illustrate AMSA's total GHG emissions for the preceding years 2017 and 2018 respectively.

Table 3 illustrates the actual emission reductions achieved against the mitigation measures specified in table 2 of the PPP. All reductions are quantified in metric tons and in accordance with the IPCC Guidelines (2006) read together with the April 2017 Technical Guidelines for the Reporting of GHG Emissions.

The completed tables can be found at the end of this report attached as Annexure II.

From table 3, the following can be highlighted:

- When combining 2017 and 2018, the actual emission reduction achieved is 280 103 tons CO₂e versus the anticipated 278 430 tons CO₂e (Scope 1&2) – a very pleasing result.
- The “Natural Gas Consumption Reduction” was not achieved in 2018 as planned, mainly due to the fact that Liquid Steel production increased as a result of higher capacity utilisation.
- “VSD installations” slightly underperformed and part of this is due to a lower ESKOM emission factor being utilised (0.9491 vs 1.01 tCO₂/MWh)
- “Utilisation of process gas for power generation” was highly successful and made up for some of the underperforming projects
- Although no emission reduction was specified for 2017 and 2018 regarding “CO₂ Recovery from Waste Gas Streams” it should be noted in advance already that this project is behind schedule and that the projected emission reductions for this mitigation measure will not be achieved for 2019 and 2020.

AMSA remains fully committed to achieve the anticipated emission reductions as per its specified mitigation measures, albeit with a measure of delay in the case of the “CO₂ recovery from waste gas streams”.

Conclusion

Careful consideration was given to the fact that this report should comply with the requirements as stipulated in Chapter 3 of the regulations. The above information combined with information in tables 1.1, 1.2 & 3 more than adequately addresses such requirements.

As the reader of this report may appreciate, the successful implementation of mitigation measures did pose challenges, but to date the overall mitigation effect is positive.

AMSA is more than willing to share further information in the event of more clarity being required.


Apart from tables 1.1, 1.2 & 3, a declaration is also attached as Annexure I to this plan to confirm the accuracy of information within the realms of specific concerns raised and review(s) of the Technical Guidelines being made.

ANNEXURE I

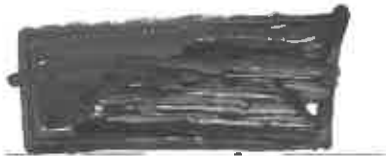
Declaration

Name of Company: ArcelorMittal South Africa Limited.

Declaration of accuracy of information provided:

I,  declare that the information provided in this report is in all respects factually true and correct to the best of my knowledge and conditions specified and as at the date of signature.

Signed at Vanderbijlpark on the 29th of March of 2019.



Signature



Capacity of Signatory

ANNEXURE II

Table 1.1: 2017 Template for total annual emissions from each activity measured as CO₂-eq for the preceding calendar year

Activity (IPCC Source Category)[1]	Year: 2017 [2]	GHG1: CO ₂ (t CO ₂) [3]	GHG2: CH ₄ (t CH ₄) [3]	GHG3: N ₂ O (t N ₂ O) [3]	GHG4 (t) [4]	GHG5 (t) [4]	GHG6 (t) [4]	Methodology and GHG emission factors used to estimate baseline emissions[4]	Total GHG emissions in CO ₂ equivalents (tCO ₂ -eq)
1.A1c (Manufacture of Solid Fuels) Coke Making	2017	1088723	N/A	N/A	N/A	N/A	N/A	Tier 1, IPCC factor: 0.56 tCO ₂ /tonne produced Tier 1, Annexure A & Annexure H (Technical Guidelines).	1088723
1.A2a (Iron & Steel) Downstream Natural Gas/Sasol/LPG Combustion	2017	317504	5.64	0.56	N/A	N/A	N/A	Natural Gas: 56100 kgCO ₂ /TJ (IPCC); LPG: 63100 kgCO ₂ /TJ LPG (IPCC); Global Warming Potential: CH ₄ : 23 tCO ₂ eq (100 years); Global Warming Potential: N ₂ O: 296 tCO ₂ eq	317799
1.B1c (Solid Fuel Transformation (CH ₄ from Coke Making)	2017	N/A	0.19	N/A	N/A	N/A	N/A	Tier 1, Annexure C & Annexure H (Technical Guidelines). CH ₄ : 0.1 gCH ₄ /t Coke produced (IPCC). Global Warming Potential: CH ₄ : 23 (100 years)	4
2.C1 (Iron & Steel Production) Process Emissions	2017	8562286	301.97	N/A	N/A	N/A	N/A	Tier 1, IPCC Factors: BOF crude steel Produced: 1.46 tCO ₂ /tCS produced Sinter Production: 0.2 tCO ₂ /tSinter produced Direct Reduced Iron production: 0.7 tCO ₂ /tDRI produced	8569232
Total by gas	2017	9966513	307.80	0.56	N/A	N/A	N/A		9975758

[1] Activities for which GHG data will be required for PPP reporting (activities are presented in the National GHG Reporting Regulations, 2017)

[2] Total greenhouse gas emissions from the production process for the calendar year preceding the submission of the first PPP progress report

[3] All GHGs emitted by the company and for which the company has registered in terms of the GHG reporting regulations

[4] As per the Technical Guidelines for Monitoring, Reporting and Verification of Greenhouse Gas Emissions by Industry

[5] CO₂ emissions due to Diesel, Petrol and Heavy Fuel Oil combustion (mainly transport) are not included in the above figures. Uncertainty prevails in terms of the GHG reporting regulations on whether such emission figures should be included or not. Further, the IPCC reporting regulations are also not clear on whether such emissions are included in the Tier 1 factors provided. When converting Diesel, petrol and heavy fuel oil into an emission figure it amounts to: 13553 tCO₂, 16130 tCO₂ and 15928 tCO₂ for 2016, 2017 and 2018 respectively (including CH₄ and N₂O emissions expressed as CO₂).

[6] The IPCC guidelines do not make adequate provision for the unique COMEX/MIDREX/COMARC process configuration utilised at AM Saldanha Works. As there are many similarities with an integrated plant, the BOF emission factor was applied for crude steel production. In addition, the DRI emission factor was applied to Midrex DRI production.

[7] HFCs, PFCs, SF6 are not applicable to the Iron & Steel industry reporting emissions (in accordance with IPCC & Technical Guidelines).

[8] CH₄ emissions for Sinter were included from 2017 onwards.

Table 2.2: 2018 Template for total annual emissions from each activity measured as CO₂-eq for the preceding calendar year

Table 1.2: Template for production processes, GHG emissions and methodology to estimate the emissions

Activity (IPCC Source Category)[1]	Year: 2018 [2]	GHG1: CO ₂ (t CO ₂) [3]	GHG2: CH ₄ (t CH ₄) [3]	GHG3: N ₂ O (t N ₂ O) [3]	GHG4 (t)	GHG5 (t)	GHG6 (t)	Methodology and GHG emission factors used to estimate baseline emissions[4]	Total GHG emissions in CO ₂ equivalents (tCO ₂ e)
1.A1.c (Manufacture of Solid Fuels) Coke Making	2018				N/A	N/A	N/A	Tier 1, IPCC factor: 0.56 tCO ₂ /tonne produced	
1A2a (Iron & Steel) Downstream Natural Gas/Saso/LPG Combustion	2018				N/A	N/A	N/A	Tier 1, Annexure A & Annexure H (Technical Guidelines).	
								Natural Gas: 56100 kgCO ₂ /TJ (IPCC);	
								LPG: 63100 kgCO ₂ /TJ LPG (IPCC);	
1B1.c (Solid Fuel Transformation (CH ₄ from Coke Making)	2018				N/A	N/A	N/A	Global Warming Potential: CH ₄ : 23 tCO ₂ eq (100 years);	
								Global Warming Potential: N ₂ O: 296 tCO ₂ eq	
								Tier 1, Annexure C & Annexure H (Technical Guidelines). CH ₄ : 0.1 gCH ₄ /t Coke produced (IPCC).	
2C1 (Iron & Steel Production) Process Emissions	2018				N/A	N/A	N/A	Global Warming Potential: CH ₄ : 23 (100 years)	
								Tier 1, IPCC Factors:	
								BOF crude steel Produced: 1.46 tCO ₂ /tCS produced Sinter Production: 0.2 tCO ₂ /tsinter produced Direct Reduced Iron production: 0.7 tCO ₂ /tDRI produced	
Total by gas	2018				N/A	N/A	N/A		10104647

[1] Activities for which GHG data will be required for PPP reporting (activities are presented in the National GHG Reporting Regulations, 2017)

[2] Total greenhouse gas emissions from the production process for the calendar year preceding the submission of the first PPP progress report

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[6] The IPCC guidelines do not make adequate provision for the unique COREX/MIDREX/CONARC process configuration utilised at ASM Saldanha Works. As there are many similarities with an integrated plant, the BOF emission factor was applied for crude steel production. In addition, the DRI emission factor was applied to Midrex DRI production.

[7] HFCs, PFCs, SF6 are not applicable to the Iron & Steel industry reporting emissions (in accordance with IPCC & Technical Guidelines).

[8] CH₄ emissions for Sinter were included from 2017 onwards.

Table 3: Template for annual reporting on mitigation interventions for years 1 to 5 (showing examples of mitigation interventions and emission reduction achievements)

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Mitigation Measures	Affected GHG	Anticipated emission reduction (tonnes CO ₂ e)					Actual emission reduction achieved (tonnes CO ₂ e)					Total actual reductions (2015-2021)	Description of deviations from the approved pollution prevention plan and remedial actions to put into place.	
		2017	2018	2019	2020	2021	2017	2018	2019	2020	2021			
Natural Gas Consumption Reduction	CO ₂	22000									25872			The main reason for the target not being achieved in 2018 was a higher production capacity utilisation resulting in increased Liquid Steel production.
CO ₂ recovery from waste gas streams	CO ₂	0									0			The project will now only be implemented by end 2021. The main reason for the delay was that investors were not prepared to invest in iron and steel making facility that was on the brink of bankruptcy.
	CH ₄	0									0			
VSD to reduce electricity consumption	CO ₂	58085									42028			AMSISA is optimistic to achieve the target for 2019. It should be noted that a reduced ESKOM CO ₂ factor (1.01 tCO ₂ /MWh to 0.9491 tCO ₂ /MWh) also played a significant role in the target not being achieved.
Utilizing Process gases for power generation	CO ₂	0									31670			The actual emission reduction achieved was above the anticipated reduction. AMSISA plans to sustain this performance going forward.
Total Scope 1 per year (tCO ₂ e)	CO ₂	22000									25872			When assessing the combined actual performance for 2017 and 2018, AMSISA is slightly ahead of schedule in terms of anticipated emission reductions. This scenario may however change due to the CO ₂ recovery from waste gas streams being behind schedule.
Total Scope 2 per year (tCO ₂ e)	CO ₂	58085									73698			
Total Scope 1 + 2 per year (tCO ₂ e)	CO ₂	78225									98570			