Decarbonising the platinum group metals value chain to lower the carbon footprint of energy transition technologies

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Background

To reach net zero emissions by 2050, **rapid decarbonisation is required** and with this goal in mind, companies are tasked with decarbonising their operations to remain compliant with **carbon legislation**, as well as the **public perception** regarding companies being sustainable.

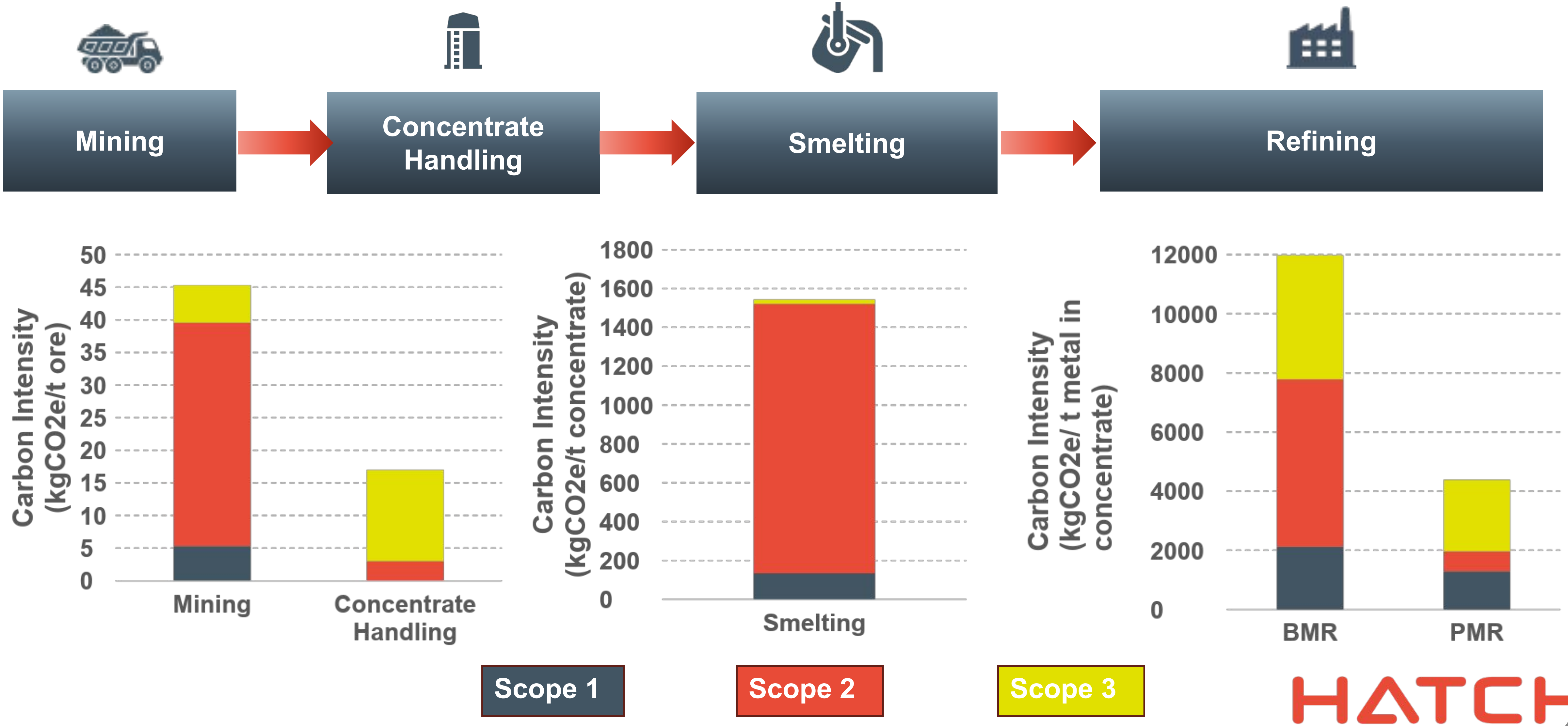
Various low carbon products are being positioned to attract a "green premium" price.

The PGM industry risks being excluded by benefitting from the green transition

Policy in the South African context includes the Carbon Tax Act and the Climate Change Bill.

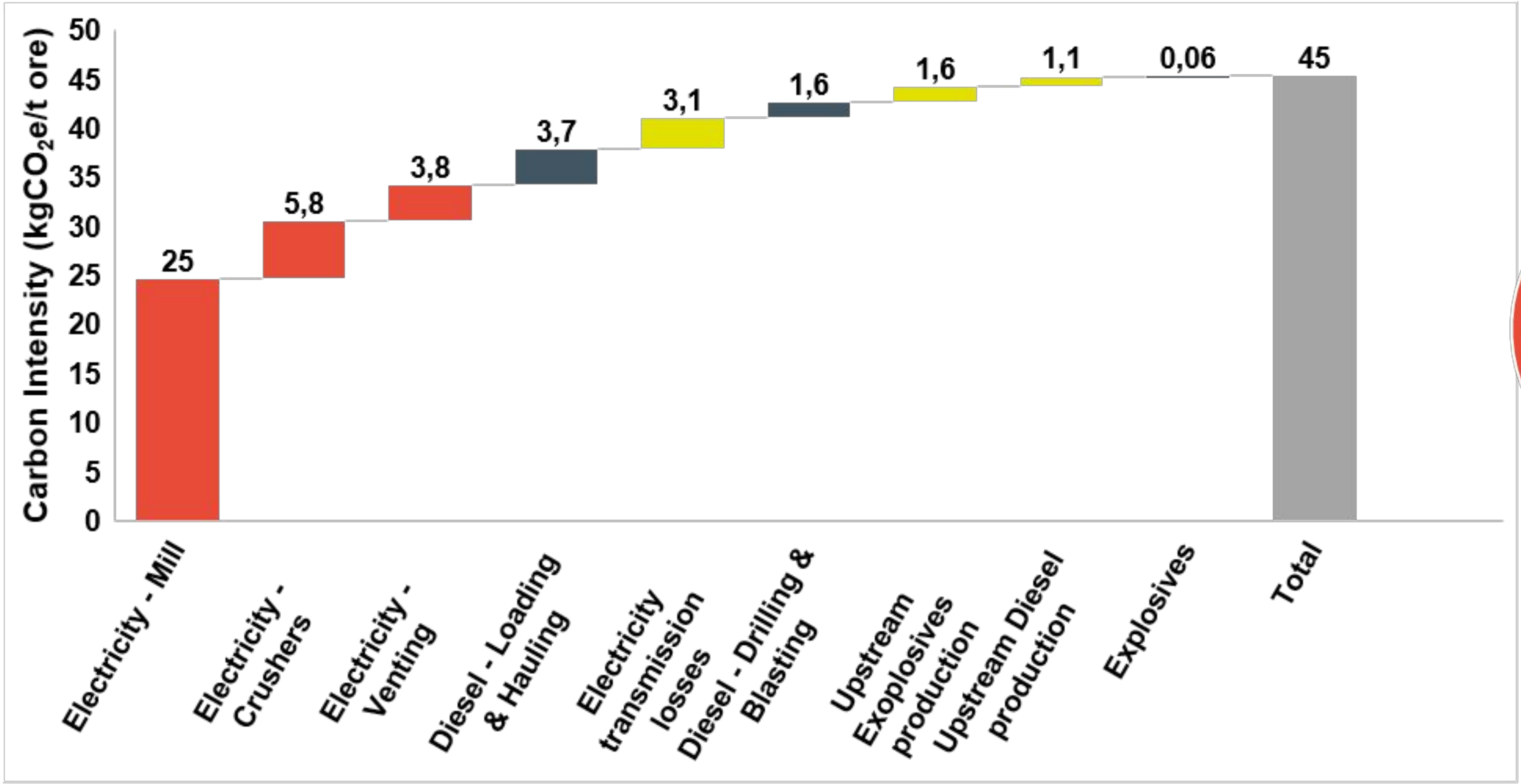
Flowsheet

Flowsheet

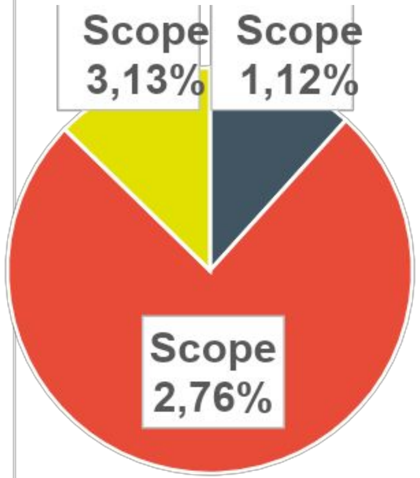


Mining
Concentrate Handling
Smelting
Refining
Carbon Intensity (kgCO2e/t ore)
50
45
40
35
30
25
20
15
10
5
0
Mining
Concentrate Handling
Carbon Intensity (kgCO2e/t concentrate)
1800
1600
1400
1200
1000
800
600
400
200
0
Smelting
Carbon Intensity (kgCO2e/ t metal in concentrate)
12000
10000
8000
6000
4000
2000
0
BMR
PMR
Scope 1
Scope 2
Scope 3

Mining

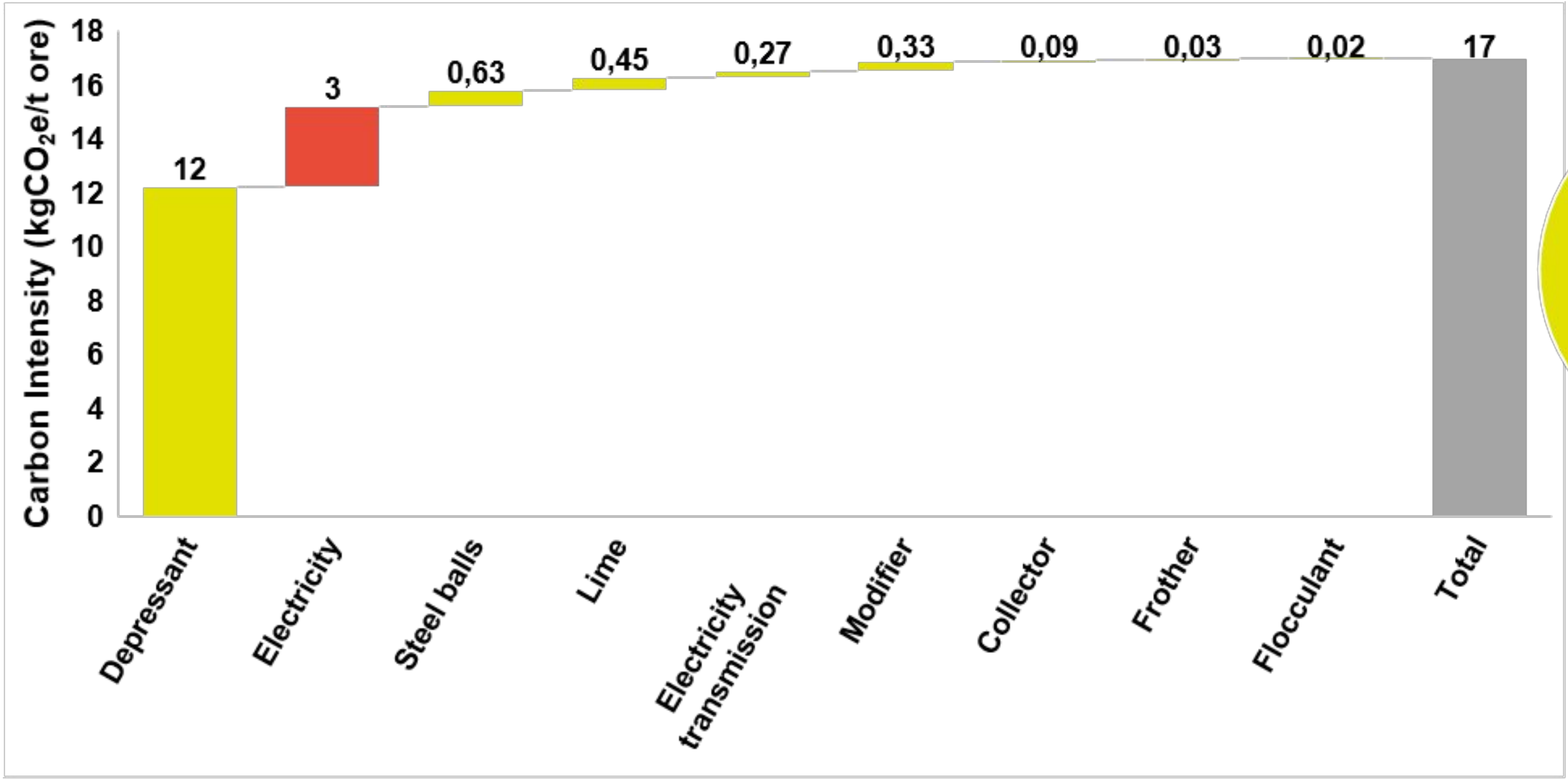


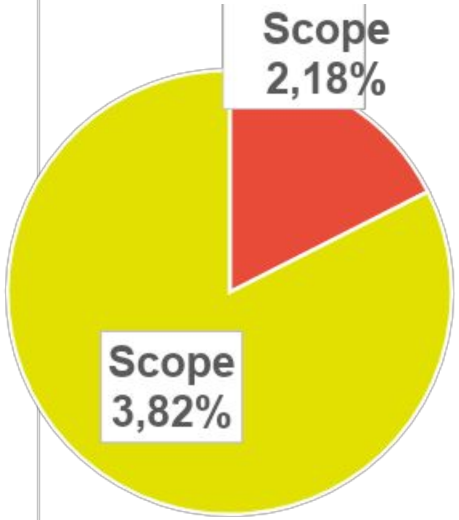
Carbon Intensity (kgCO$_2$e/t ore)
50
45
40
35
30
25
20
15
10
5
0
25
5,8
3,8
3,7
3,1
1,6
1,6
1,1
0,06
45
Electricity - Mill
Electricity - Crushers
Electricity - Venting
Diesel - Loading & Hauling
Electricity transmission losses
Diesel - Drilling & Blasting
Upstream Exoplosives production
Upstream Diesel production
Explosives
Total



Scope 3,13%
Scope 1,12%
Scope 2,76%

Concentrate Handling





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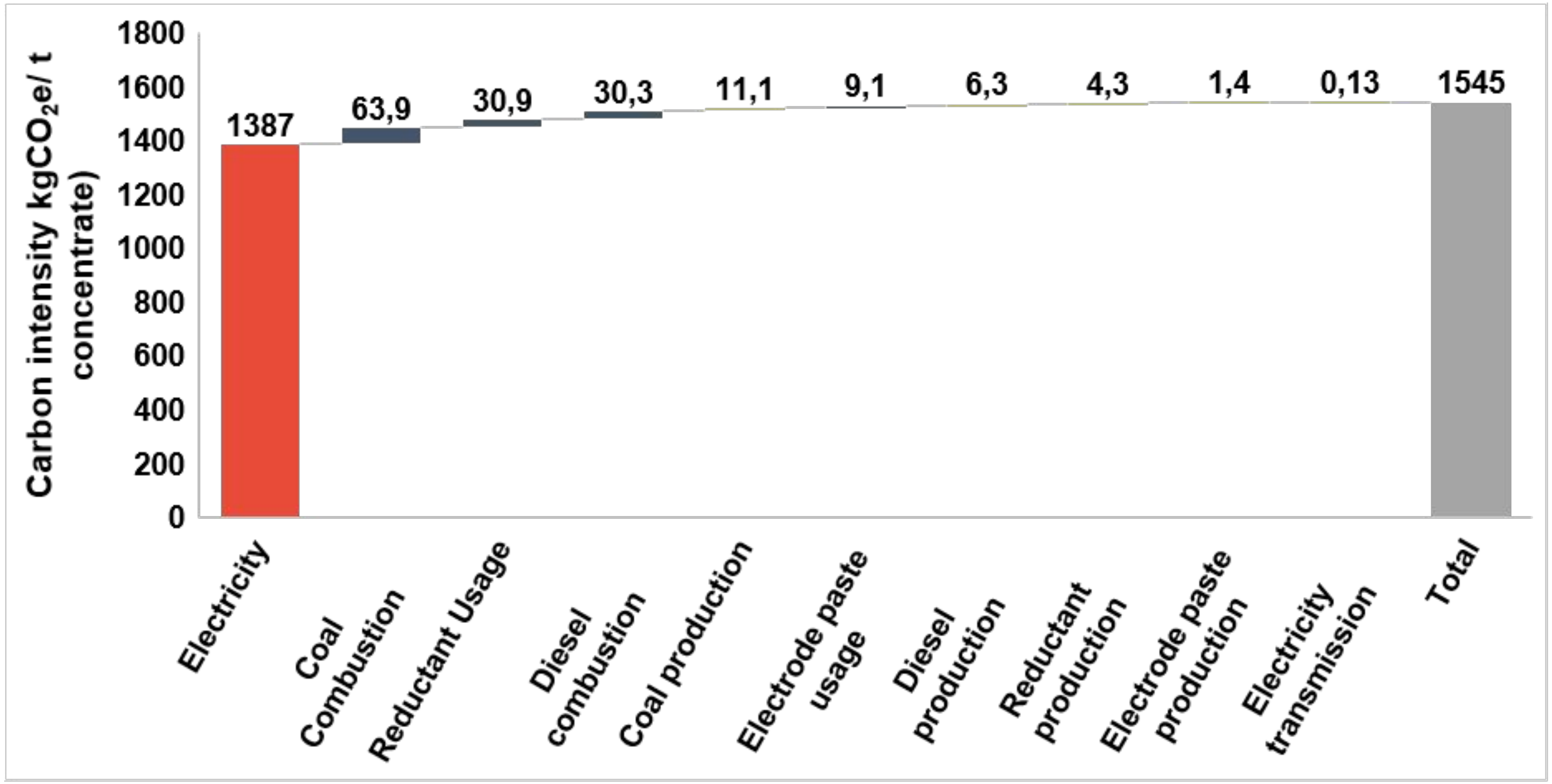
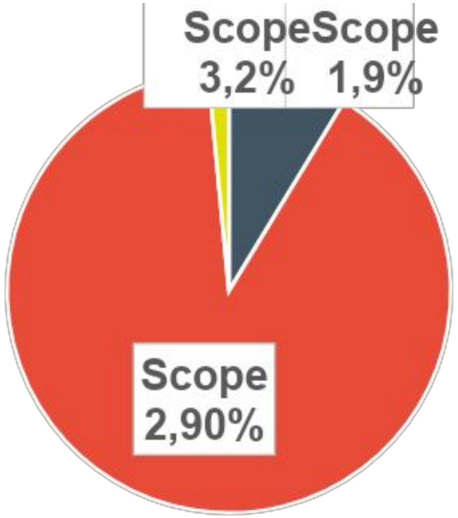
Smelting

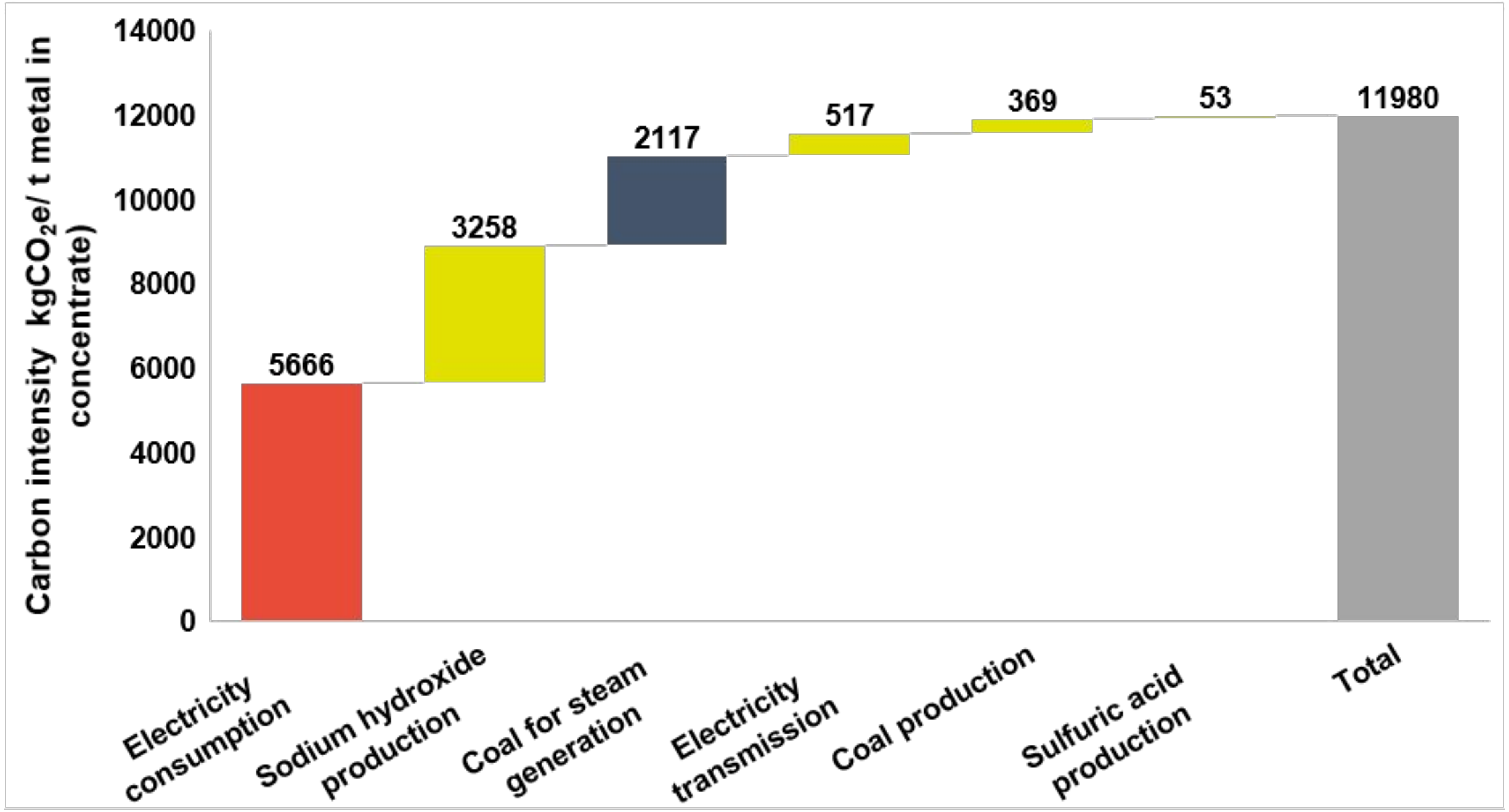


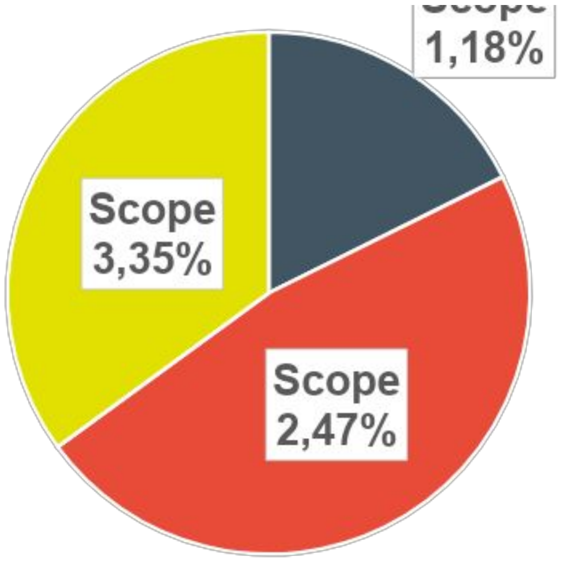
Carbon intensity kgCO$_2$e/ t concentrate)
1800
1600
1400
1200
1000
800
600
400
200
0
1387
63,9
30,9
30,3
11,1
9,1
6,3
4,3
1,4
0,13
1545
Electricity
Coal Combustion
Reductant Usage
Diesel combustion
Coal production
Electrode paste usage
Diesel production
Reductant production
Electrode paste production
Electricity transmission
Total



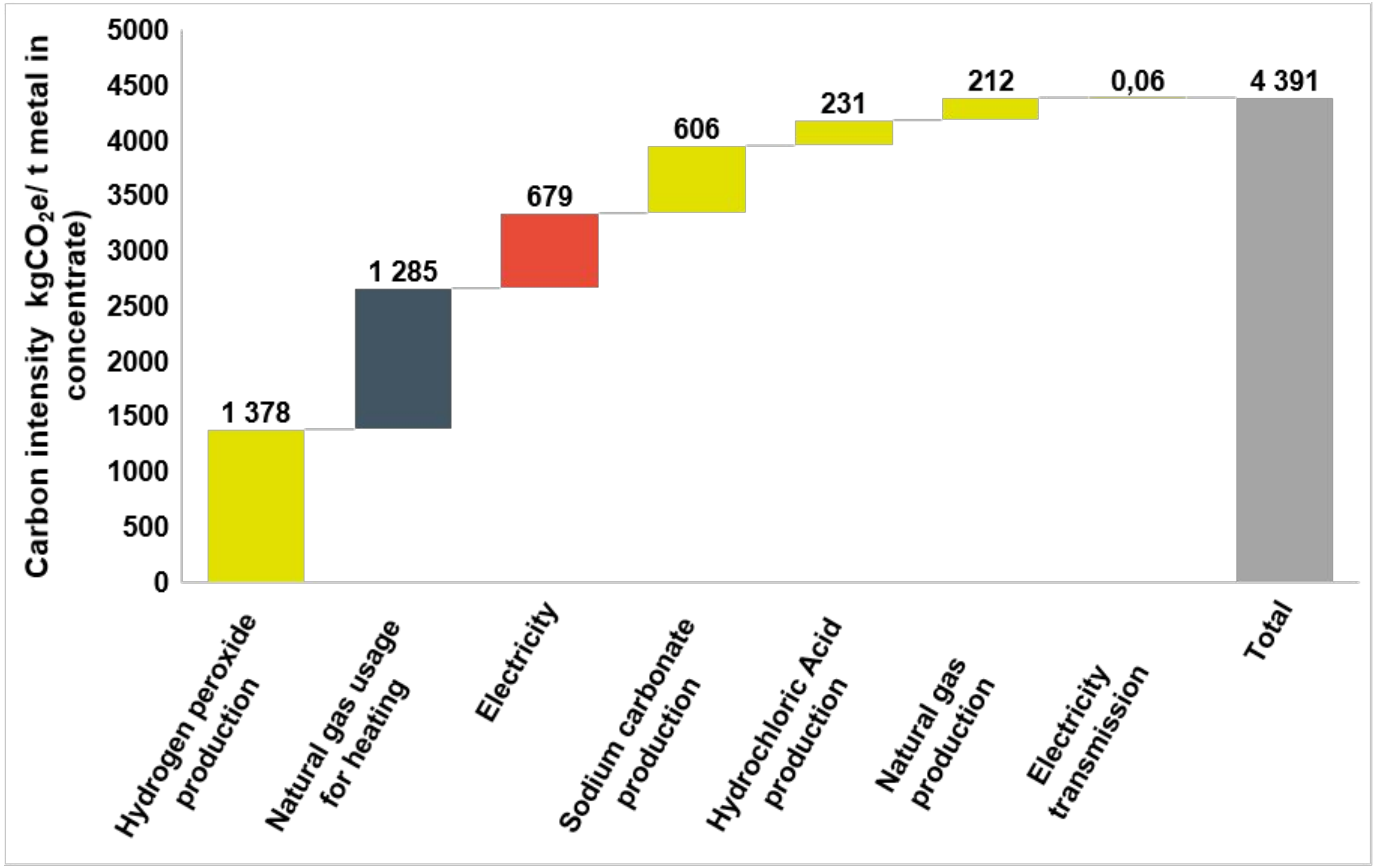
Scope 3,2%
Scope 1,9%
Scope 2,90%

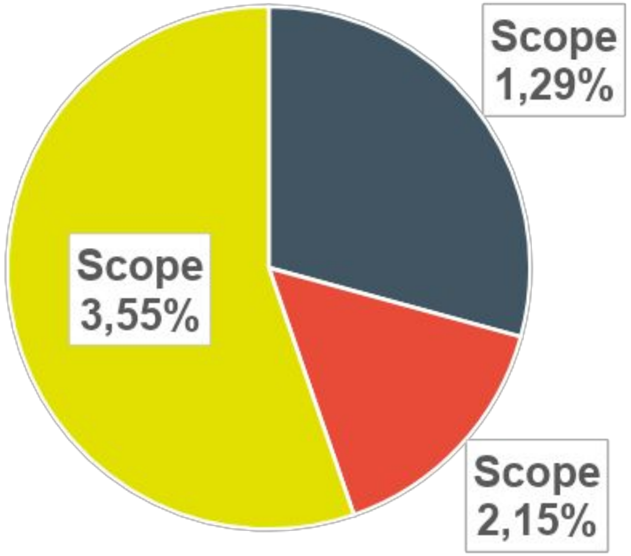
Refining – Base Metals





Refining – Precious Metals





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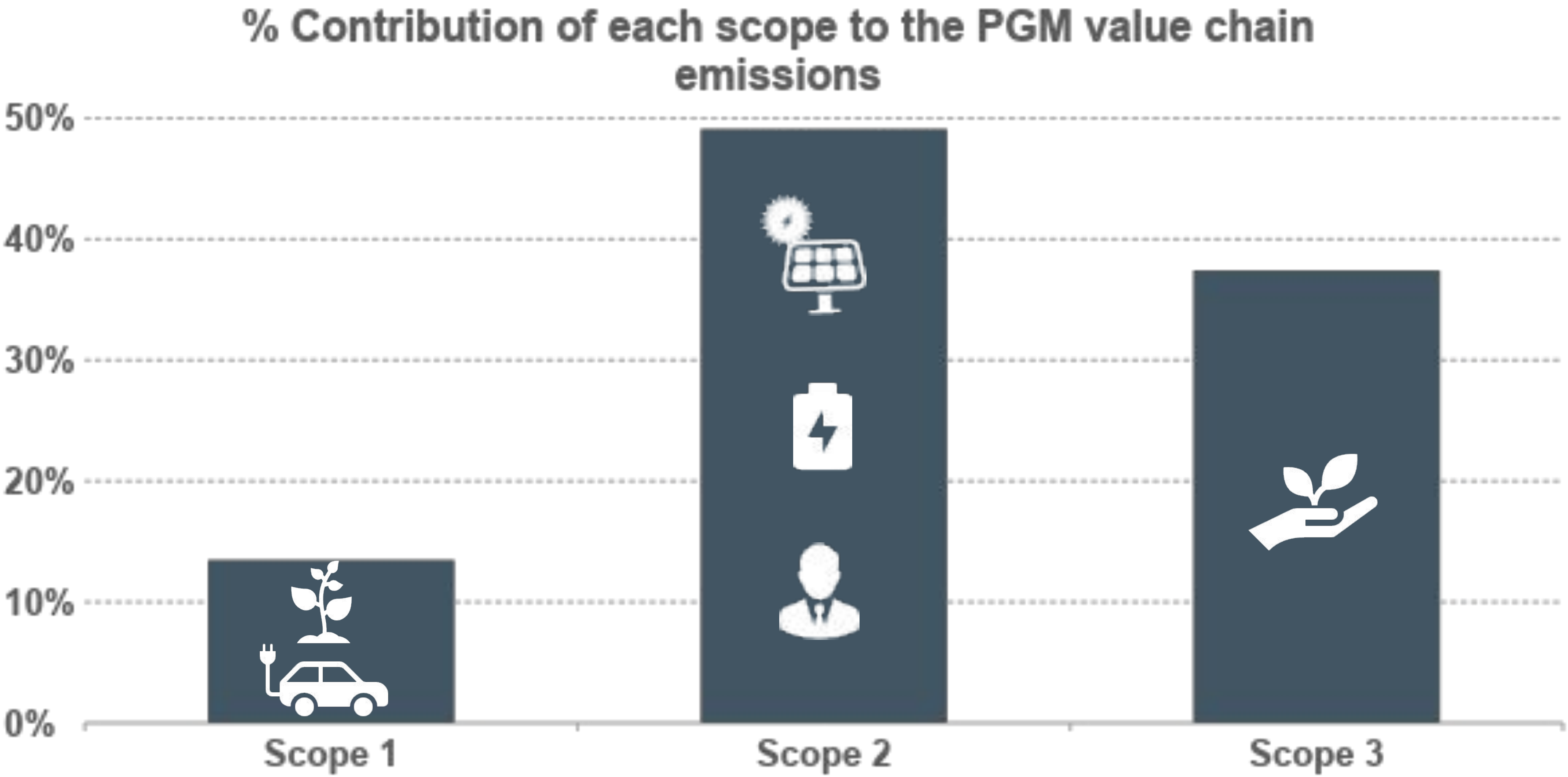
PGM Value Chain Emissions



Market Drivers

Customers

- After customers have decarbonized own operations, will have to **look at decarbonizing their supply chains**.
- **Consumers** are starting to **prioritize sustainability** of their **purchases**
- **Crackdown in greenwashing** claims

Policy

- Emissions **cap and trade programs**
- Carbon border mechanisms **(CBAM)**
- Carbon **taxes**

Carbon Credits

- Becoming **more constrained due to tightening of** carbon credit generation **regulations**.
- **Article 6** Impact

Conclusion

RISKS	NEXT STEPS	LONG TERM
Market Share Green Premium Carbon Policies	Aggregators Storage Solutions Electrification	Decarb Pathways Monitor Conditions

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Thank you

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