

# Gold Mining and Scope 3 GHG Emissions Accounting and Reporting Guidance notes





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# 1. Introduction

The global shift towards a decarbonised economy is vital if we are to make progress in stabilising the climate and protect our socio-economic and environmental prospects for a safe and prosperous future. To ensure we have a clearer shared understanding of how companies and business sectors are contributing to that progress, we need agreed measures of progress and, over the last two decades or so, the *Greenhouse Gas (GHG) Protocol Corporate Accounting and Reporting Standard*<sup>1</sup> has become the main accounting framework for corporate GHG reporting. It is now referenced or embedded in corporate climate and sustainability reporting requirements and regulations across the world.<sup>2</sup> However, regardless of its near universality, some substantial challenges and ambiguities remain in how to interpret and act on particular sources and categories of GHG Protocol emissions.

This guidance note intends to support the World Gold Council's Members and other gold mining companies in their climate-related accounting and reporting commitments. More specifically, it seeks to identify possible enhancements in how those companies measure and manage the GHG emissions associated with their value chains (known as *Scope 3 emissions*). These are the emissions beyond their immediate responsibility or direct control. Recognising the great differences in the location, scale and type of the mines these companies operate, this document does not attempt to define a single standardised approach

or methodology for estimating and disclosing Scope 3 emissions. Rather, it aims to contribute to greater sectoral convergence and clarity by reducing inconsistencies on specific issues of relevance and impact to gold mining companies and industry stakeholders. Furthermore, it offers additional general guidance on how particular GHG emissions definitions and data points might be communicated to encourage greater understanding of the *purpose* of climate-related disclosures, and the facts and intentions they strive to capture.

1. GHG Protocol, an initiative of the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) was launched in 1998 and the first edition of its 'Corporate Accounting and Reporting Standard' was published in 2004; its initial Scope 3 guidance was published in 2011.

2. For a discussion of how the GHG Protocol is utilised in different ESG disclosure frameworks, see *Navigating the ESG landscape: Comparison of the 'Big Three' Disclosure Proposals (2022)*, PwC/Harvard Law School Forum on Corporate Governance.



# 2. What are Scope 3 emissions?

Scope 3 is a term defined by the Greenhouse Gas (GHG) Protocol, the provider of the world’s most widely used GHG accounting standards, which allows governments and organisations to identify, quantify and manage their GHG emissions. The GHG Protocol categorises these emissions into three *Scopes*:

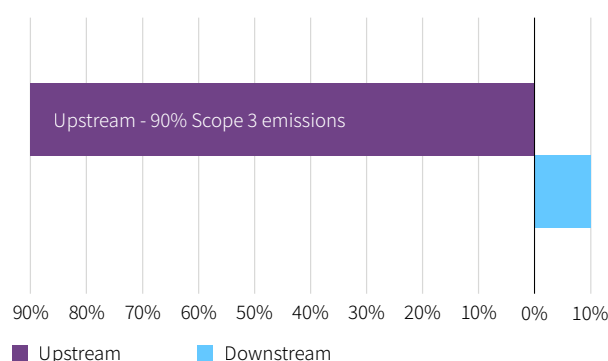
- **Scope 1:** Direct emissions from activities **within your organisation’s control**. This includes onsite fuel combustion from buildings and company vehicles as well as direct manufacturing and process emissions.
- **Scope 2:** Indirect emissions from purchased electricity (or externally generated heat or steam); you are **indirectly responsible** for the release of GHG emissions from the use of this energy.
- **Scope 3:** Any other indirect emissions from **sources outside your direct control**. These emissions – also known as value chain emissions – are a consequence of the company’s business activities but are generated by sources the company does not own or control.

Although the GHG Protocol divides Scope 3 emissions into *upstream* and *downstream* sources, 15 categories in total (see *Figure 2* and *Table 1*, page 4), it is still questionable as to whether this distinction fully captures the implications of the very significant difference between the emissions associated with upstream inputs and the emissions generated from the downstream use of sold products and services.

This becomes doubly significant when we note that, for most businesses, Scope 3 emissions account for approximately 90% of their total emissions.<sup>3</sup> Decarbonisation of the global economy is therefore, for most sectors, primarily a question of how to reduce Scope 3 emissions, even if those emissions may be relatively remote from – and beyond the direct control of – most corporate entities. The **very significant difference in the levels of impact or influence** a company can exert in addressing specific upstream and downstream factors is therefore masked by all these emissions collectively falling under the category of Scope 3.

The relative ‘distance’ and levels of indirection (from core company operations) of some of the 15 categories of Scope 3 emissions can also hinder accurate and consistent identification and measurement of these emissions. This is a key challenge facing the gold mining sector’s accounting and reporting of Scope 3 emissions. However, the relatively high concentration of gold mining’s emissions in upstream sources (as illustrated in *Figure 1*) suggests that significant improvements in Scope 3 emissions accounting and reporting might be made by companies focusing on their estimation and disclosures of **three or four categories of emissions**. This is therefore where this paper directs much of its focus.

**Figure 1: World Gold Council Members\* upstream and downstream Scope 3 emissions**

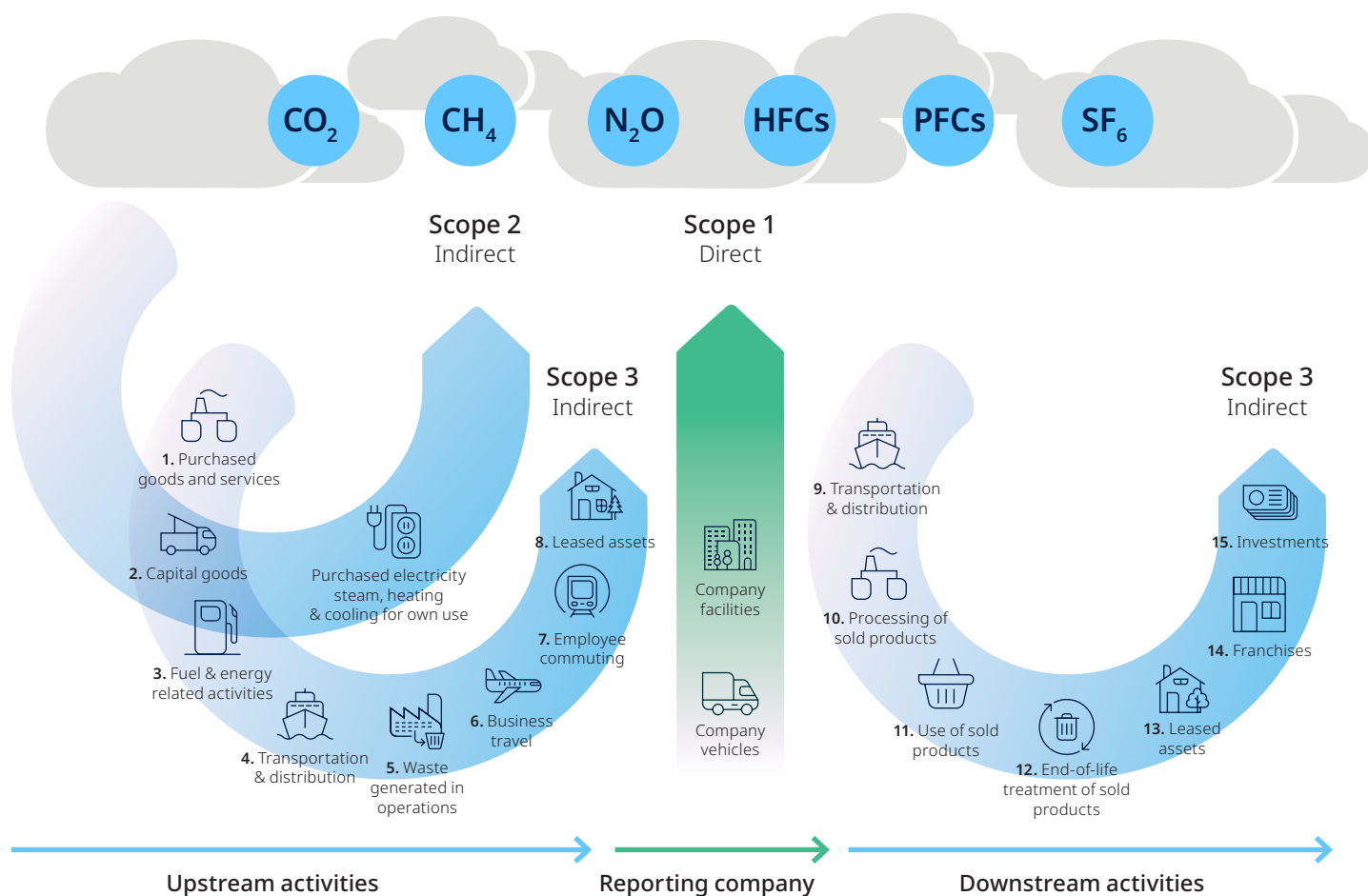


\*Includes 14 World Gold Council Members which calculate and publicly disclose all S3 category emissions identified as material.

3. The median 2021 Scope 3 emissions of 16 sectors categorised by CDP as ‘high-impact’ was 88% of their total GHG emissions. See *CDP Technical Note: Relevance of Scope 3 Categories by Sector* (2023), CDP.



Figure 2: 15 GHG Protocol Scope 1, 2 and 3 emissions



Source: GHG Protocol/Carbon Trust

Table 1: 15 GHG Protocol Scope 3 categories

Upstream Scope 3 category emissions	Downstream Scope 3 category emissions
1. Purchased goods and services	9. Downstream transport and distribution
2. Capital goods	10. Processing of sold products
3. Fuel and energy use	11. End-use of sold goods and services
4. Upstream transport and distribution	12. Waste disposal and treatment of products
5. Waste generated in company operations <sup>4</sup>	13. Downstream leased assets
6. Business travel	14. Operation of franchises
7. Employee commuting	15. Operation of investment
8. Upstream leased assets	

## A note on gold mining's Scope 3 category emissions

We note above – see Figure 1 – that the majority of gold mining's Scope 3 emissions are related to upstream sources, rather than from the use of gold and the life cycle of gold products. This is discussed in more detail below (in section 5, *What are gold mining's*

*Scope 3 emissions?*). However, it is perhaps worth emphasising here that this emissions profile is quite unusual and distinguishes gold from nearly all other mined products and, as stated above, from the pattern of emissions associated with the wider global economy.

4. That is, if you don't own or control the waste management facilities.



# 3. Challenges

The following summary of corporate challenges in Scope 3 emissions accounting represent some of the commonly raised issues that companies (across different sectors) have requested assistance in addressing:

- **Collecting and reporting data** can be time-consuming and resource-intensive. If reliant on third-party sources for Scope 3 data and calculations, companies may struggle to understand – and thus act upon – those emissions. Different data types and sources will be associated with different levels of certainty and confidence, but data selection should be guided by the overarching need for increased specificity and accuracy. (See also the comment below on **Estimation methods and data sources**.)
- **Scope 3 modelling** approaches, such as one based on product spend with a given supplier, may be insufficient to allow companies to identify distinct GHG emissions reduction opportunities and to inform the necessary management decisions. An over-reliance on modelling can result in too close and rigid a focus on the model and its assumptions, potentially distracting from meaningful real improvements to Scope 3 emissions. (For example, **spend-based modelling**, typically relies on industry-average emissions factors that may not accurately reflect the actual emissions profile of a given company.)
- **Extrapolating from a small sample** (e.g. of supplier data) may be a fairly common approach to estimating Scope 3 emissions, but may require careful handling and considerable statistical expertise given the inherent uncertainties in such data.

Even when companies have capacity and expertise, organisational structures and processes in different parts of the business may result in partial or fragmented Scope 3 data. There is a risk that the emissions included in initial Scope 3 reporting are those that can be most easily measured, rather than the most *material* items.

“Reporting of Scope 3 emissions, however, may be challenging for many companies, given their reliance on upstream and downstream entities for the underlying data. Further, the disparate sources of information, as well as level of estimation required, may create challenges in developing the Scope 3 amounts in a reliable and timely manner.”

*Navigating the ESG landscape: Comparison of the ‘Big Three’ Disclosure Proposals (2022)*, PwC/Harvard Law School Forum on Corporate Governance

## 3.1 Target-setting challenges

Finally, we need to acknowledge the challenges of setting credible targets for the reduction of indirect emissions that, by definition, a company is identified as *causing* but not *owning* or *controlling*. There are very significant differences between quantifying the likely impacts of specific company actions and estimating the outcomes from a company's *influence* on its supply chain partners or clients. A question therefore remains as to **how to best quantify and communicate what level of reduction may emerge from engaging with upstream and downstream industry partners** and stakeholders to act on the emissions they control. That is, we need to **better capture and explain the possible limitations and dependencies which might constrain those reduction targets**. This paper offers some general guidance on the communication aspects of these issues (see the Communications section below).



## 3.2 The importance of improved Scope 3 emissions reporting

Whilst there are many challenges to arriving at clear and consistent accounting and reporting of a company's Scope 3 emissions, there are also some **substantial potential benefits** in addressing those challenges:

- **Stakeholder expectations:** Consumers, investors, and industry stakeholders increasingly expect companies to demonstrate an awareness of their environmental impacts and to disclose information about them, with GHG (including Scope 3) emissions, emissions now given a high priority. These expectations are increasingly become formal corporate obligations embedded in regulation.
- **Collaboration:** The engagement with suppliers and customers to improve the clarity and consistence of emissions data along the value chain, thus supporting more collaborative emissions reduction actions, can also lead to more sustainable sourcing practices, cost savings, and efficiency improvements.<sup>5</sup>
- **Enhanced brand capital and increased investor confidence:** Transparent reporting on emissions can enhance brand reputation and attract a wider set of investors, particularly those that prioritise companies and products they trust as able to demonstrate their responsibility and sustainability credentials.

“Reporting of Scope 3 emissions increases transparency as it reveals the emissions in production processes, i.e., it allows firms to identify emissions as well as the most promising intervention points... For the individual firms, emission reporting helps in identifying potential cost savings, potential and future climate change-related risk factors, and in seeking new business opportunities.”

Supply-chain data sharing for Scope 3 emissions (2023), A. Stenzel & I. Waichman, *npj Climate Action* 2:7

5. Supply-chain data sharing for Scope 3 emissions (2023), A. Stenzel & I. Waichman, *npj Climate Action* 2:7.



# 4. Estimating Scope 3 emissions – foundational concepts, terms and references

## 4.1 Reporting principles

We do not intend to reproduce substantial excerpts from the *Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard* and therefore recommend it be consulted prior to any consideration of sectoral (gold mining) guidance. However, the Protocol's overarching set of five principles, to guide judgemental decisions and facilitate greater objectivity and transparency on all GHG accounting and reporting, are of relevance to a wide range of industry stakeholders and emissions data end-users and are therefore restated here.

It is highly likely that there will be some degree of trade-off between these principles when a company seeks to prioritise and implement them, depending on its capacity and the maturity of its emissions reporting procedures. The International Council on Mining & Metals (ICMM) have suggested that, initially, mining companies should focus on relevance, completeness, and transparency, with enhanced accuracy and consistency likely to follow as reporting evolves.<sup>6</sup>

### The basic process

The GHG Protocol provides guidance on the core issues and steps of GHG accounting and reporting, including:

- Principles of accounting and reporting (summarised above)
- Setting organisational boundaries
- Setting reporting boundaries
- Establishing a baseline year
- Managing/improving the quality of GHG inventory data
- GHG emissions reporting

As comprehensive material is already available on these steps, we have not duplicated the corresponding guidance in any detail here, except where it may be of particular relevance or assistance to gold mining companies.

## GHG accounting and reporting shall be based on the following five principles:

- 1. Relevance** - Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users – both internal and external to the company.
- 2. Completeness** - Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions.
- 3. Consistency** - Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
- 4. Transparency** - Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
- 5. Accuracy** - Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

Source: *GHG Protocol Corporate Standard*

6. *Scope 3 Emissions Accounting and Reporting Guidance* (2023), ICMM.





## 4.2 Boundary definitions

To accurately report on GHG emissions a company must first define its organisational and operational boundaries, which will define or demarcate its responsibility for particular types or sources of emissions.

**Organisational boundaries** are typically defined using two distinct methodologies, focused on either *equity share* or *control*.

*Equity share:* A company will account for its GHG emissions from operations according to its share of equity (% ownership) in the operation. That said, while the ownership proportion and the equity share are normally the same, this isn't always the case. If there is some ambiguity or complexity in shared ownership, it is recommended (in compliance with international financial reporting standards) that the 'economic substance' of a company's interest in the shared business takes precedence over its formal ownership structure.

*Control:* The control approach suggests 'ownership' of GHG emissions from operations over which a company has control. It does not account for Scope 1 and 2 emissions from operations over which it has a financial stake but no control; however, it could still account for the latter as Scope 3 emissions. In practice, control can be classified on either a *financial* or *operational* basis, and businesses will select between operational or financial control criteria.

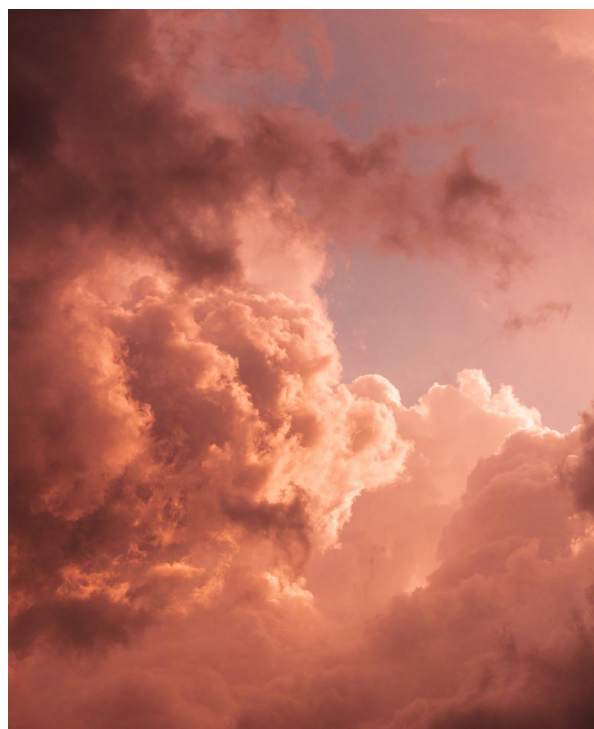
*Financial control:* Companies accept responsibility for emissions from assets or activities for which they bear the majority of risk and benefit from the resulting financial performance. This extends beyond owning half (or more) of a business;<sup>7</sup> financial control reflects the capacity to direct the operation's financial and operating policies and profit from those operations.

*Operational control:* Companies accept responsibility for emissions from assets or activities over which they have complete/decisive authority to create and apply operating policies. This is frequently the most typical method for establishing boundaries.

However, having operational control may not mean a company has the authority to make all decisions concerning an operation, particularly if other partners have joint financial control. Which suggests, of course, that companies can have joint financial control over an operation but not exercise operational control.

This operational control approach is frequently the preferred method for establishing boundaries. It has the advantage of being focused on a company's ability to take decisive action. You may own something, but if you don't have operational control over it, you may not be able to change or minimize the carbon emissions it produces.

Boundary definitions can also be applied at different levels of the reporting process, but at the highest level should be applied consistently. Any change in boundary definitions (e.g. from year to year) should be clearly flagged and explained, not least as it may have a substantial impact on the corresponding scale and materiality of particular category emissions.



7. A company can have *financial control* over an operation/asset even if it owns less than 50% of it; the influence of potential voting rights, for example, should also be considered.



## 4.3 Baselines

To allow reported emissions and the impact of emissions reduction actions to be understood over time, a *baseline* or reference point is needed against which progress can be measured. This is typically the chosen year that a company began reporting their emissions or a point in time at which reliable emissions data became available. (Hence, creating a baseline can be done retroactively.) However, in selecting a reference year for baseline scenarios, a company should seek to identify a time that is fairly representative of its operational and emissions profile – striving for a generally fair and accurate representation – rather than a period of activity that might later be identified as unusual or exceptional.

Given the different levels of ownership and control of a company in relation to its Scope 3 emissions, compared to its Scope 1 and 2 emissions, it may choose to set different baselines across Scope 3 categories, instead of just one. Establishing a representative baseline can be challenging, especially for the Scope 3 emissions beyond direct company control, but pragmatism is probably more useful in this context than analytical rigour. Setting a baseline may be used to signal a company's intention to act and its willingness for its progress to be measured.

### Revising baselines and 'significance thresholds'

Alongside their baseline, a company should also consider disclosing their "significance threshold" for recalculating their baseline emissions. These thresholds represent the quantitative and/or qualitative criteria defining changes that will trigger a potential recalculation of their baseline.<sup>8</sup> Common events that may cause thresholds to be exceeded include M&A activity, in-/out-sourcing of business activities, and the employment of a new carbon accounting methodology. 'Organic' change, even if very substantial, is generally not sufficient to trigger a re-examination of company baselines.<sup>9</sup>

Rebaselining will often result in the selection of a new (more recent) baseline year. In all instances, companies rebaselining their Scope 3 emissions should clearly explain the basis and context – triggering event - for any recalculations, and their rationale for selecting a new baseline year. Companies are also encouraged to communicate the implications emerging from the triggering event(s) for their overall emissions profile and on their total Scope 3 emissions or on specific Scope 3 categories.

8. SBTi recommend quantitative significance threshold for science-based targets of +/- 5% (or less).

9. The GHG Protocol excludes 'organic changes' from significance thresholds. These are shifts in emission levels resulting from fluctuations in production outputs, changes in product mix, and closures and the opening or closing of company-owned/-controlled operations. These changes need to be accounted for as an increase or decrease in the company's emissions profile over time. (Corporate Value Chain (Scope 3) Accounting and Reporting Standard, GHG Protocol).

## 4.4 The Scope 3 double-counting dilemma

We should acknowledge that, particularly at the start of a carbon inventory or footprint mapping process, many businesses are confused by the risk of 'double counting', fearing that their carbon profile or footprint is unfairly increased if emissions from other organisations are included within their estimates.

However, when considering the GHG emissions of the value chain of any organisation, we should accept that **double counting between companies is an inherent characteristic of Scope 3 emissions**. Simply put (and oft-quoted), this is essentially because one organisation's Scope 1 and 2 emissions are another organisation's Scope 3 emissions – that is, the same emissions are referenced in the estimates of both organisations. This may seem illogical but, when we consider the ultimate purpose of GHG accounting and transparency – to facilitate collaborative emissions reduction and climate mitigation actions – there is an argument to be made that this double counting is likely supportive of progress. The consequence of potentially two or more organisations taking responsibility for the same or overlapping emissions, and therefore both striving to reduce them, is a far less negative risk than the possibility of an organisation ignoring emissions it has at least some responsibility for.

There is the potential for confusion if double-counting is also reflective of two or more companies holding mutual interests but using different approaches to GHG accounting and boundary definitions. Ideally, **companies engaged in shared ownership or joint ventures (JVs)<sup>10</sup> will agree a mutually compatible approach** and be clear in publicly communicating this, and their different spheres of impact or influence (on potential emissions reduction actions).

If reporting companies are sufficiently honest and clear in **demonstrating their awareness and acceptance of the unavoidable double counting in value chain emissions**, this may assist in building stakeholder and investor acceptance of (and trust in) reported emissions.<sup>11</sup>

10. A joint venture (JV) is defined by Investopedia as "a business arrangement in which two or more parties agree to pool their resources for the purpose of accomplishing a specific task. This task can be a new project or any other business activity." (<https://www.investopedia.com/terms/j/jointventure.asp>).

11. It should be noted, however, that the double counting of emissions by companies with shared interest in a joint venture needs to be avoided in carbon trading schemes and many government regulatory programmes.



## 4.5 Materiality

An early step when considering the different categories of Scope 3 emissions is how to understand the scale, relevance, and risks associated with each – that is, how to determine their relative levels of *materiality*. While materiality is a fundamental concept used in both accounting and legal decisions, and now in ESG and GHG emissions disclosures, the criteria by which it is assessed and measured are not clear-cut and may require consideration of a combination of quantitative and qualitative factors.<sup>12</sup> The ICMM Guidance proposes that Scope 3 materiality assessments should initially assume that all 15 Scope 3 categories are potentially significant, and then offers a structured decision pathway to ‘diagnose’ the relative materiality of each category.<sup>13</sup> But the different elements that feed into such decisions can also be viewed in the context of the key factors identified by GHG Protocol’s *Criteria for identifying relevant Scope 3 activities*,<sup>14</sup> with those below perhaps being most relevant:

- **Size** (category emissions as a % of Scope 3 and overall emissions)
- **Influence** (the potential ability to reduce category emissions, or to obtain data on those emissions to measure progress)
- **Risk** (how category emissions relate to the potential associated exposure to financial, regulatory, supply chain, product and customer, legal or reputational risks)
- **Stakeholders** (how category emissions are reflected in consumer, supplier, investor, societal expectations and priorities)
- **Sectoral guidance** (alignment with the objectives and priorities identified in existing sector-specific guidance)

With regards the first and most obvious of these factors – the relative scale of category emissions in relation to total Scope 3 emissions – the ICMM identify **5% (of total Scope 3 emissions) as a basis for the initial determination of materiality**. This is broadly in line with guidance from the SBTi regarding the materiality threshold for Scope 1 and 2 emissions: ‘Where a company’s Scope 1 or 2 emissions are deemed immaterial... under 5% of total combined Scope 1 and 2 emissions.’<sup>15</sup>

That said, estimations of materiality will also likely be reflective of the other factors listed above which may be more *qualitative* in nature.

As a basic principle, companies should **disclose and justify any exclusions**.

Companies should also periodically undertake materiality *reassessments*<sup>16</sup> of excluded Scope 3 categories to ensure company accounting and reporting reflects the organisation’s evolving emissions profile.

Regarding the basis on which decisions are made, the recent considerations of the SEC regarding the issue of materiality in climate-related accounting and disclosures reassert the significance of its view on materiality based on the ‘reasonable person’ standard from tort law. This interprets material information as that which a reasonable investor would consider important in making an investment decision.

Borrowing from guidance to the financial auditors on materiality issues,<sup>17</sup> and reflecting the general spirit and intention of emissions disclosures (to help drive meaningful GHG emissions reduction), a materiality threshold might also need to be reduced if the volume of emissions (tonnes of CO<sub>2</sub>e) is identified as substantial. Variations or deviations in threshold levels may also be explained with reference to the criteria listed above.

Regarding total Scope 3 emissions, however, if the sum of all category emissions is a smaller portion (less than 40%) of total company emissions, as is the case for at least some gold miners, then the weight and priority given to Scope 3 emissions reduction targets, at least in the near term, is diminished.<sup>18</sup>



12. See, for example, *Expanding the Concept of Materiality to Environmental, Social, and Governance: Audit Issues and Implications* (2023), in *Current Issues in Auditing* vol. 17.

13. *Scope 3 Emissions Accounting and Reporting Guidance* (2023), ICMM.

14. *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* (2011), GHG Protocol (WRI & WBCSD).

15. *SBTi Criteria and Recommendations* (2020), sciencebasedtargets.org

16. Timelines for materiality reassessments will undoubtedly vary, and there is little firm guidance on this from the GHG Protocol or SBTi, but the ICMM suggest excluded categories should undergo a periodical review of no longer than 2-3 years to reaffirm the category as non-material or change its status to become material.

17. See, for example, *Current Materiality Guidance for Auditors* (2000), T. E. Mackee & A. Eilifsen, Foundation for Research in Economic and Business Administration.

18. That is, the SBTi *Net Zero Standard* criteria for near-term targets (*Criteria 4*) states that ‘if a company’s Scope 3 emissions are 40% or more of total Scope 1, 2, and 3 emissions (i.e. the vast majority of companies), a Scope 3 target is required.’ That said, the setting of an emissions reduction target is generally taken as flagging the targeted category emissions as material even if they fall below the quantitative threshold.



## 4.6 Estimation methods and data sources

The basic equation for the calculation of Scope 3 emissions is (as it is with Scope 1 and 2) as follows:

**GHG Emission = Activity Data x Emission Factor**

**Activity Data:** data indicating the level or quantity of an activity that generates (or impacts) GHG emissions.

**E.g:** Volume of a purchased material/fuel, energy consumption metric, volume of material moved across a particular distance.



**Emission Factor (EF):** a metric or coefficient that specifies the quantity of GHG that is emitted per unit of (GHG-producing) activity.

**E.g:** the amount of CO<sub>2</sub>e emitted by using (combusting) a litre of a specific fuel.

Thus, an activity metric is multiplied by an emissions factor to derive the GHG emissions associated with a Scope 3 upstream or downstream category process or operation.

The inputs to these calculations will utilise data that is either **primary** (from a company’s own measurements or collected directly from its suppliers) or **secondary** (third-party reference metrics, conversion factors, benchmarks, and generalised estimates) in form.

**Four methods** are outlined by the GHG Protocol to calculate Scope 3 emissions which are also of specific relevance to gold mining companies in calculating their most material emissions – particularly Category 1 (Purchased Goods and Services) and Category 2 (Capital Goods):

- **Spend-based method:** A combination of primary activity data on the amount spent on purchased products and secondary emission factors for purchased products per monetary value.
- **Average data (physical unit) method:** A combination of primary activity data on the mass or quantity of purchased products and secondary emission factors for purchased products per unit.
- **Hybrid method:** A combination of supplier-specific activity and emissions data and secondary data to fill any gaps.
- **Supplier-specific method:** A combination of primary activity data on the volume or quantity of purchased products from specific suppliers and primary product and supplier-specific emission factors per unit.

Implied level of data accuracy



Reporting companies should strive for a **method and data sources that offer the greatest specificity and accuracy** – to assist, respectively, in identifying and prioritising meaningful reduction actions in their supply chain, and in measuring and monitoring progress with greater certainty and confidence.<sup>19</sup> Primary data sources are typically preferred as likely offering greater accuracy and consistency, but this is very variable, and in many instances and locations, where suppliers and customers may be less advanced in their ability to measure and report emissions, secondary reference sources – industry averages and/or emissions factor databases – may represent the best available data.

Please refer to *Appendix 2: Key Documents & Data Sources* for a list of established and frequently used Emission Factor (EF) data sources.

When evaluating **the quality and applicability of EF data sources**,<sup>20</sup> the following considerations will likely be of significance, with the aim that the data is as specific as possible with regard to the following:

- A particular **activity**
- The **time** at which an activity was conducted<sup>21</sup>
- The distinct characteristics of the **geographical location** of an activity
- The use of specific **technology** (even potentially being supplier/product-specific).

19. For those companies in the early stages of the process of collecting and analysing emissions data, particularly with a focus on Scope 3, the GHG Protocol produce a *Sample Scope 3 GHG Inventory Reporting Template*, which can be used (at a minimum) as an illustration of the nature and specificity of the reporting requirements of the *GHG Protocol Corporate Standard* and the *Scope 3 Standard*.

20. As with materiality assessments, periodic reviews of emission factor databases are recommended. Companies should be aware that updates to reference data inputs to calculations can produce significant changes in the company’s current and historical Scope 3 emissions, thus potentially triggering rebaselining process.

21. That is, unless the emissions associated with an activity are expected/understood to be constant or relatively stable.



# 5. What are gold mining's Scope 3 emissions?

## 5.1 Mining sector Scope 3 emissions

The challenges and opportunities referred to above are, of course, relevant to nearly all sectors. Certainly, the wider mining industry has been giving this subject – the carbon profile of its value chains – substantial attention, including recently publishing guidance to improve the industry's disclosure of Scope 3 emissions. That said, there are significant differences in the Scope 3 emissions profiles of most mining companies (that mine bulk / industrial metals) and those associated with gold mining. These are discussed further below.

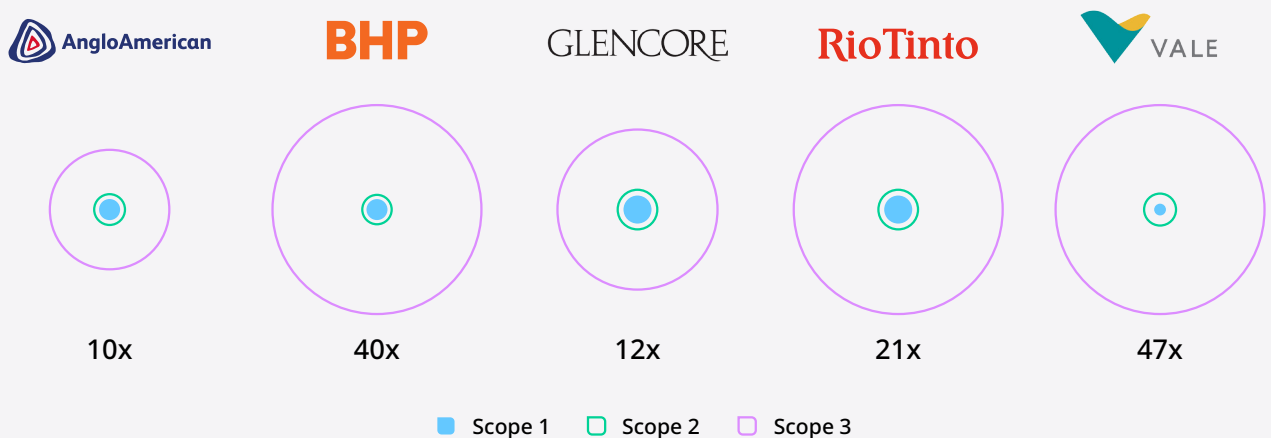
A **key point of differentiation between gold mining and most other mining companies** focused on the extraction and processing of base and industrial metals relates to how mined products are used. Gold is notably different because its **Scope 3 emissions largely reside upstream** and not in the use of the metal once it leaves the mine and enters the market. Whereas, for the wider mining sector, Scope 3 emissions are not only by far the largest contributor

to overall company emissions, as indicated in *Figure 3*, but for many major mining companies those emissions are specifically related to the way metals are used (downstream) – in subsequent product life-cycle which will likely generate substantial further emissions.

The scale of this challenge for the broader mining industry, and the implications it will have on the industry's decarbonisation commitments and plans, has led the ICMM, for example, to recently publish *Scope 3 Emissions Accounting and Reporting Guidance*. This aims to offer mining companies a more standardised framework with firmer guidance on how to calculate and disclose their value chain emissions.

The guidance offered to gold mining companies herein draws heavily from the ICMM's recommendations and deliberately strives for alignment and compatibility. However, given the distinct nature of the gold value chain, there is also a case for an additional, more streamlined approach tailored to gold specifics and focused on those issues gold mining companies have recently found most significant/challenging.

Figure 3: Diversified miners Scope 3 emissions relative to Scope 1 and Scope 2 emissions



Source: Wood Mackenzie

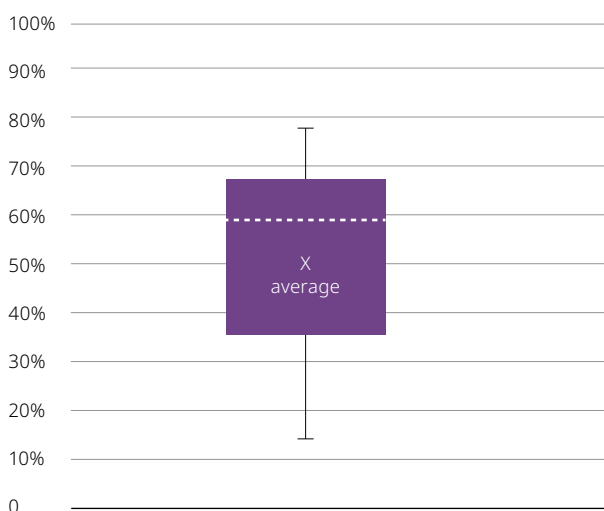


## 5.2 Gold mining Scope 3 emissions

Focusing on the 14 World Gold Council Member companies that publicly disclosed on all Scope 3 categories (identified as material),<sup>23</sup> we note **a very wide range in the relative scale of these emissions – from 15% to 77% – as a percentage of total company emissions** (as illustrated in *Figure 4*). This range becomes even larger when we consider the additional companies that report Scope 3 emissions in a partial fashion (that is, with acknowledgements regarding category omissions due to data and capacity constraints).

This variance might be expected to some degree given the very significant differences in the location, scale and type of mines these companies operate, including those producing metals other than gold. That said, the range in the relative scale of Scope 3 emissions also suggests substantial distinctions and variation in how those emissions are interpreted (i.e. identified and calculated) by different companies.

**Figure 4: Variation in the scale of World Gold Council Members' reported Scope 3 emissions\***



Source: World Gold Council Member Data (2022)

\* Includes 14 World Gold Council Members which calculate and publicly disclose all S3 category emissions identified as material (by their company-specific materiality assessments).

Without clarifying the nature and possible causes of this range, it is questionable as to whether current Scope 3 emissions estimates across the World Gold Council membership – and, by implication, across the gold mining sector – offer investors and stakeholders a useful indication of the reality of the industry's Scope 3 emissions and the credibility of any associated reduction plans.

Even in aggregate summary form, we noted that recent reporting of Scope 3 emissions data suggested a significant shift from the World Gold Council's findings in its previous research.<sup>24</sup> That earlier research strived to identify and quantify the sources of emissions from across the whole gold supply chain and estimated that gold mining's Scope 3 GHG emissions constituted, on average, around 22% of its total emissions. Recent data suggest that figure may have been an underestimate, although the marked differences in companies' Scope 3 emissions levels, and the lack of clarity in what is specifically driving those differences, mean any conclusions should be approached with some caution.

Specifically, while the earlier research may have struggled to locate sufficient granular data to bolster confidence in its Scope 3 emissions estimates, an examination of recent data and disclosures suggests that the consequent moves to more detailed reporting may still not be sufficient to result in greater certainty in a sectoral overview. The divergence in company interpretations and estimation methodologies suggests we are still not able to offer a firm summary of gold mining's profile on Scope 3 emissions.

### Commonalities and shared priorities

While the scale and significance of different Scope 3 emissions categories vary widely across the World Gold Council membership, commonalities have been identified (among the gold mining companies we examined), as outlined below (**and in Figure 5**). These are used to focus the guidance offered here to support greater clarity and convergence in the emissions reporting practices of our Members.

22. <https://www.gold.org/about-us/our-members>. From 32 Member companies, we excluded 4 Chinese members, given their limited public disclosures, and we have examined the Royalty/Streaming companies separately – see *Appendix 1: Additional Guidance for Gold Mining Royalty and Streaming Companies*; of the remaining 22 companies, 17 reported Scope 3 data (14 disclosing a full inventory - i.e. all material Category Emissions),

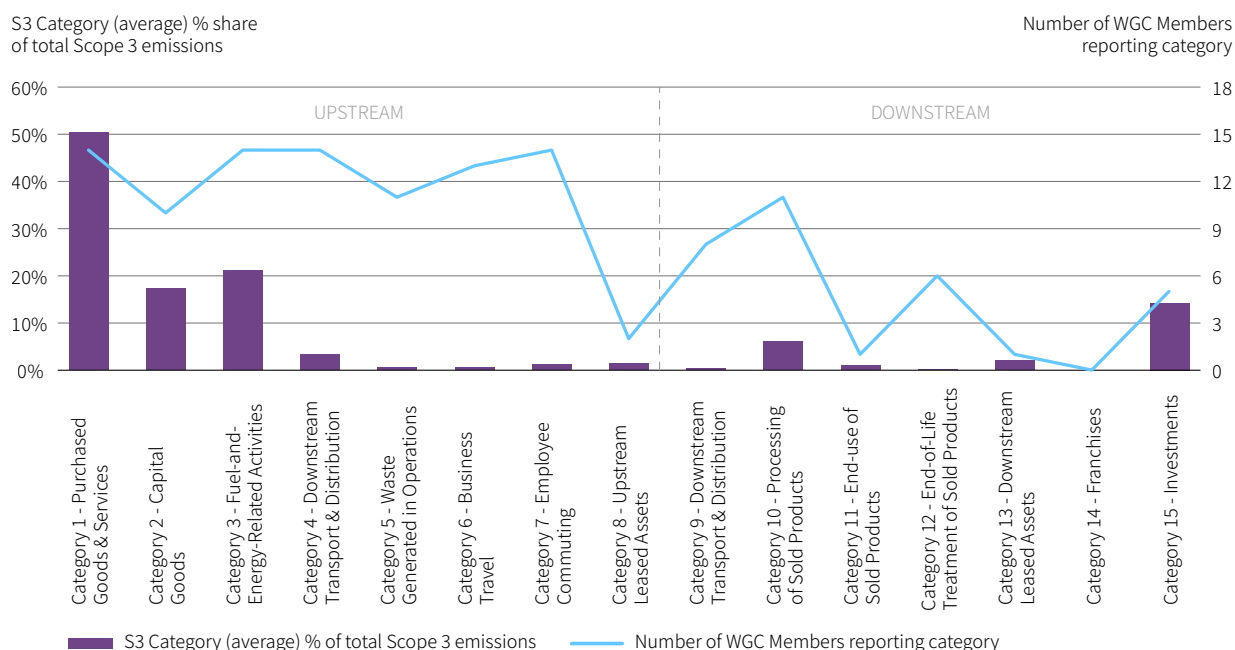
with 3 further companies having signalled their intent to disclose in the near future.

23. Based on reported emissions data for 2022. Unless otherwise stated, all Member company data will relate the emissions reported for that year.

24. *Gold and Climate Change: Current and Future Impacts* (2019), World Gold Council.



Figure 5: World Gold Council Members\* and reporting of Scope 3 categories (2022)



Source: World Gold Council Member Data

\*Includes 14 World Gold Council Members which calculate and publicly disclose all S3 category emissions identified as material (by their company-specific materiality assessments).

These key categories (of greatest relevance to the World Gold Council membership) indicate how we might refine our focus in seeking to clarify the industry's Scope 3 emissions:

- Scope 3 emissions are, given current indications, likely material to all gold mining companies. The extreme variance in the existing data makes it difficult to approach these estimates (of relative scale) with confidence, but **the current average sits at 40%**.
- **Upstream category emissions are far more substantial** – around 90% of all gold mining Scope 3 emissions:
  - **Category 1 – Purchased Goods and Services** – is the most significant single category, averaging 50% of total Scope 3 emissions.
  - **Category 2 – Capital Goods** – and **Category 3 – Fuel and Energy-Related Activities** – are also material to most Members.
- Of **downstream category emissions**, the following two categories are clearly of most relevance, albeit those that may require further examination/clarification:
  - **Category 10 – Processing of Sold Products** – is of some material relevance to Member companies producing other metals in addition to gold, and those companies that refine their gold in carbon-intensive locations.
  - **Category 15 – Investments** – is material to a far smaller number of Members, but nonetheless is significant in those particular instances, with higher emissions being reflective of the treatment of Joint Ventures (JVs), and the interpretation of 'organisational/operational boundaries' (as described above).



For guidance on potential improvement to the reporting of these gold mining category – emissions (specifically, Categories 1, 2, 3 and 10 and 15), see *Table 2: Guidance on gold mining Scope 3 category emissions*, pages 17-18.

### Opportunities for progress

Whilst the current extreme divergence in Scope 3 estimates signals the need for substantial enhancements and convergence on estimation methodologies and reporting, we should also be clear that the **opportunity for gold mining to address these challenges is clear and concentrated**. Compared to other sectors of the global economy, including the wider extractives sector, gold mining may be far better positioned to rapidly improve its approach to Scope 3 accounting. Those improvements should, in turn, make the industry's articulation of its emissions reduction plans more credible.

“Granted, companies that are just starting their Scope 3 projects may not yet have a great story to tell. But the market expectation is for progress not perfection, and reporting on how you are measuring and managing emissions is how you prove your company's commitment to mitigating the risks of climate change.”

*How companies can effectively measure and manage Scope 3 emissions* (2023), PwC.com







# 6. Clarifying gold mining's Scope 3 emissions accounting and reporting

The following notes seek to focus attention on the emissions that our survey of Member companies has indicated are the most substantial and material to their operations, attempting to summarise in a fairly concise way what good practice looks like for each category of emissions.<sup>25</sup>

## 6.1 Total Scope 3 GHG emissions

The following high-level guidance for the estimation and disclosure of total company Scope 3 emissions are also applicable to the process of measuring specific 'category' emissions (in addition to the guidance offered in *Table 2: Guidance on gold mining's material Scope 3 category emissions*).

- Disclose each category's percentage share of total Scope 3 emissions, thus allowing a **transparent understanding of the contributions and exclusions to overall reported Scope 3 emissions**.
  - **Exclusions** – category emissions that are not included when totalling Scope 3 emissions – should be clearly identified and explained.
- **Materiality:** explain the criteria behind the initial (referential) quantitative threshold (e.g. if the 5% level is used, as aligned with the ICMM recommendations<sup>26</sup>) and document the factors that may make categories *qualitatively* material (see also the above comments with regards to variants in materiality thresholds).
- **Communication:** offer context beyond and behind emissions volume (e.g. tCO<sub>2</sub>e) figures and describe the factors impacting indirect value chain emissions at a company or asset level beyond the volume of emissions.

- Acknowledge that total Scope 3 emissions figures include high levels of uncertainty and quality constraints in the data; this might be enhanced with a stated commitment or defined plans to **reduce future uncertainty and improve data and disclosure quality over time**.
- Clearly **explain any change in methodological considerations**, data sources and estimation calculations. This is likely of particular significance when it results in a shift in baseline figures.

Note also the points made above regarding the **significant difference between upstream and downstream emissions**, which might also be referenced by summarising these distinct sets of category emissions and their proportional contribution to total reported emissions.

## 6.2 Scope 3 GHG category emissions

There are a substantial number of guidance documents detailing general approaches to each of the 15 categories of GHG emissions, but there are still some areas of ambiguity in how companies interpret that guidance. More specifically, the comments below, in *Table 2*, focus on those issues we have noted as most material in current gold mining accounting and reporting on different categories of emissions – **Upstream Categories 1, 2 and 3**, and **Downstream Categories 10 and 15**.

<sup>25</sup> For more comprehensive and detailed guidance, companies are directed to *Appendix 2: Key Reference Documents*.

<sup>26</sup> *Scope 3 Emissions Accounting and Reporting Guidance* (2023), ICMM.



Table 2: Guidance on gold mining's material Scope 3 category emissions

Scope 3 emissions categories:				
Category	Description <sup>27</sup>	Recommended minimum boundaries	Accounting guidance	Reporting guidance
1. Purchased Goods and Services	Extraction, production, and transportation of goods and services purchased or acquired by the reporting company in the reporting year (and not otherwise included in Categories 2 – 8).	<p>Cradle-to-gate<sup>28</sup> emissions of the volumes of goods (products), services and capital goods purchased during the reporting period. An indicative list of material goods and services includes:<sup>29</sup></p> <ul style="list-style-type: none"> <li>• Sodium cyanide, lime, hydrochloric acid, and other chemicals for mineral processing</li> <li>• Explosives (ANFO, emulsion etc.)</li> <li>• Steel parts</li> <li>• Mills</li> <li>• Purchased feedstock (e.g. ore, concentrate)</li> <li>• Truck tires</li> <li>• Rubber and plastics</li> <li>• Heavy Machinery</li> <li>• Mining and Building services (including cement and wood)</li> <li>• Lubricants</li> <li>• Glass</li> <li>• Water</li> <li>• Paper</li> </ul> <p><b>Exclusions:</b> all goods and services falling under the other upstream categories, as well as spend not associated with the purchasing of goods and services, such as internal payroll, intra-company payments, compliance and expenses and donations. Whilst consultants providing supplementary/advisory functions may be perceived as a 'purchased service' (and therefore included within Scope 3 Category 1 emissions), we interpret the GHG Protocol recommending that all staff, including temporary, casual and contracted personnel (i.e. contractors and 'external payroll'), be included as 'employees' and accounted for in a uniform manner.</p> <p>Companies should also exclude purchases from any 'circular by-products', where the reporting company purchases back by-products originating from their operations but then purchased – and subsequently returned – by customers. The emissions from 'returned' goods should already have been accounted for in Category 10 (see below).</p> <p><b>Note:</b> Both Categories 1 and 2 items can be accounted under a single category if companies do not recognise or capture any such distinction in their own operational and accounting systems.</p> <p>There is a challenge with <b>goods and services that are specific to a particular stage of the mine life-cycle</b> (e.g. during construction) and may, therefore, in other years be far less relevant. This is discussed further in section 6.4, <i>Annual reporting and mine life-cycle emissions</i>.</p>	<p><b>Category 1 will likely be the largest source Scope 3 emissions for gold mining companies</b>, therefore, special attention should be directed towards obtaining the highest quality activity data, particularly for priority<sup>30</sup> items.</p> <p>Goods and services can be divided into <i>key emission sources</i> and <i>non-key emission sources</i><sup>31</sup>.</p> <p>Suppliers can also be divided into priority and non-priority to direct focus and action towards improving data quality and material emissions reduction.</p> <p>Capital goods can be distinguished as follows (in order of priority):</p> <ol style="list-style-type: none"> <li>1. key suppliers for key CAPEX projects</li> <li>2. non-key suppliers, non-key CAPEX projects,</li> <li>3. tail of capital goods expenses</li> </ol> <p><b>Exclusions:</b> product or supplier <i>tail spend</i>,<sup>32</sup> i.e. high-volume but low-value transactions to which emissions factors (EFs) cannot be meaningfully applied.</p>	<p>Category 1 and 2 emissions should, if possible, be reported on separately for clarity and transparency. Wherever possible, disclose which key goods or services had the highest emissions and what their emissions totalled.</p> <p>Disclose how <b>significant changes in company operations and site-level activity have impacted year-on-year emissions</b> (e.g. a spike in Category 1 and 2 emissions may reflect the emissions associated with the purchasing of building materials for construction purposes). In these instances, we <b>recommend that explicit reference is made to project/mine life-cycle development</b>.</p> <p>Disclose the percentage share or relative weight of different data types used to communicate calculation methodologies.</p> <p>That is, companies should indicate the level or % of data that is:</p> <ul style="list-style-type: none"> <li>– supplier-specific</li> <li>– average-data (volume-based)</li> <li>– spend-based.</li> </ul> <p>Companies should also disclose the rationale for using average-data and spend-based data (for example, due to the good/service being of low materiality or because supplier-specific data wasn't available).</p> <p>Disclose the EF databases used for purchased goods and services and capital goods.</p>
2. Capital Goods	Extraction, production, and transportation of capital goods purchased or acquired by the reporting company in the reporting year.			

27. Category descriptions are adapted from *Technical Guidance for Calculating Scope 3 Emissions* (2013), GHG Protocol.

28. *Cradle-to-gate* is defined by the GHG Protocol as 'all emissions that occur in the life-cycle of purchased products, up to the point of receipt by the reporting companies (excluding emissions from sources that are owned or controlled by the reporting company)' *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*, p. 57, GHG Protocol.

29. This list is indicative (rather than definitive) and draws from both ICMM guidance and data publicly disclosed by World Gold Council Member companies. In practice, this list will vary per company based on the outcomes of materiality assessments.

30. Prioritisation might be given to products or suppliers representing 80% of total spend, which are typically associated with the most significant set of 20% of sellers and suppliers.

31. Where 'key emissions sources' constitute activities that are the most emissions-intensive and 'non-key emissions sources' of lower materiality.

32. The ICMM define *tail spend* as 'procurement spend making up 80% of transactions while covering only 20% or less of total spend' and recommend, for exclusion limiting the tail to below 5% of spend. See *Scope 3 Emissions Accounting and Reporting Guidance* (2023), p. 40, ICMM.



Scope 3 emissions categories:

Category	Description <sup>33</sup>	Recommended minimum boundaries	Accounting guidance	Reporting guidance
3. Fuel- and Energy-Related Activities	Upstream emissions of purchased fuels and electricity, transmission and distribution (T&D) losses, and generation of purchased electricity that is sold to end users.	Cradle-to-gate emissions of: <ul style="list-style-type: none"> <li>• Purchased fuels and electricity (raw material extraction up to the point of transportation, excluding combustion)</li> <li>• Energy consumed/lost in a T&amp;D system<sup>34</sup></li> <li>• From the generation of purchased energy, such as steam or other sources.</li> </ul>	Companies are recommended, if possible, to include all fuel and energy consumed by facilities falling under the pre-selected organisational and operational boundaries. Companies should consider the implied hierarchy in data quality – see <b>Estimation methods and data sources</b> , above – when selecting activity data. <p><b>Exclusions:</b> Tail energy and fuel spend if fragmented and summed to less than 5% of total energy and fuel spend for any site.</p>	Disclose which fuels constitute this category and for which activities they are used.
10. Processing of Sold Products	Processing of intermediate products sold in the reporting year by downstream companies (e.g., manufacturers).	These emissions are likely to refer to data covering the Scope 1 and Scope 2 emissions of refineries that process the company's sold gold (dore). <p><b>Note:</b> While the value and physical durability of gold means future downstream re-refining/recycling of gold is inevitable, capturing and calculating the scale of future emissions from this circularity is difficult and this should be explicitly acknowledged. While the final estimates may be of relatively little material consequence to gold mining companies with regards their overall emissions profile, some accommodation should be made for this issue in reporting.</p> <p>It may also be worth noting that the relatively 'indestructible' nature and <i>circularity</i> of gold as a material renders typical life-cycle assessment (LCA) models less applicable, and attention might be better directed to <b>refinery-specific data</b>, if available.</p>	Companies should in the first instance try to engage with their refineries to obtain an appropriate emissions factor. Given the significance of (Scope 2) energy emissions to the overall emissions intensity of refining activity, the location of the refinery is likely to be highly significant. <p>If a specific emissions-intensity metric is not provided by the refiner, but it reports a total emissions figure for the volume of its annual gold output, some rough estimation might be calculable if the mining gold mining company has recorded the volume of material it has sent to that refiner over the same period.</p> <p>Alternatively, if refinery-specific data is not available then a more general refining industry average EF might be used – for which we offer a figure below (see A note on downstream Category 10 emissions).</p>	Mining companies that produce multiple metals (metals other than gold) should strive to separate the emissions from different processing (sheltering/refining) methods. <p>Explain reasons for gold refining emissions that are substantially above the industry average (typically, this will reflect a refinery that is heavily dependent on local fossil fuel-based power).</p> <p>Although there is no public benchmark for average gold refining emissions, we have estimated a figure based on public disclosures and other industry estimates.</p>
15. Investments	Emissions from investments in the reporting year, not included in Scope 1 or Scope 2: <ul style="list-style-type: none"> <li>• Equity investments</li> <li>• Debt investments</li> <li>• Project finance</li> <li>• Managed investments and client services.</li> </ul>	The relevant emissions will represent the Scope 1 and 2 emissions of the investee entity – e.g. joint venture (JV) – on a <b>proportional</b> investment/equity share basis. This has been an area of some confusion with some companies choosing operational control boundaries over an equity and revenue share approach, but GHG Protocol guidance <sup>35</sup> suggests the latter is preferred even if it may imply a level of double counting. (See also the comments above on <i>The Scope 3 double-counting dilemma</i> .) That said, if JV 'partners' agree an operational control model, then clear explanations of these boundary choices should be prioritised in their disclosures.	Companies should account for <i>proportional</i> Scope 1 and Scope 2 emissions of relevant investments (i.e. <i>investees</i> ), including joint ventures or equity investments in other companies (capturing associated emissions that are not included within the reporting company's Scope 1 and Scope 2 emissions). <sup>36</sup>	Disclose the JVs included within this category and your company's share of ownership. <p>Disclose your investment/JV partner(s), their ownership share, and which company operates the JV.</p> <p>If an operational control approach has been agreed by JV 'partners', disclose the associated emissions attributions (and which company is responsible for any associated emissions reduction actions).</p>

33. Category descriptions are adapted from *Technical Guidance for Calculating Scope 3 Emissions* (2013), GHG Protocol.

34. T&D losses are summarised in the GHG Protocol as "generation (upstream activities and combustion) of electricity, steam, heating, and cooling that is consumed (i.e. lost) in a T&D system – reported by end user" (Technical Guidance for Calculating Scope 3 Emissions, GHG Protocol).

35. *If emissions from equity investments are not included in Scope 1 or Scope 2 (because the reporting company uses either the operational control or financial control consolidation approach and does not have control over the investee),*

*account for proportional Scope 1 and Scope 2 emissions of equity investments that occur in the reporting year in Scope 3, category 15'. From Technical Guidance for Calculating Scope 3 Emissions* (2013), GHG Protocol.

36. The ICM guidance suggests the reporting company should also disclose the Scope 3 emissions of its investments, if some level of *significance* is noted in the scale of these emissions (in relation to the investments total emissions), but at this stage (i.e. until Scope 3 reporting/data reaches a more mature state), it might be more advisable to adhere to the GHG Protocol Guidance as described here. However, we acknowledge that if JV partners agree and disclose clear operational control boundaries, with corresponding emissions attribution, this may simplify how the emissions of such investee entities are evaluated.



## 6.3 A note on downstream Category 10 emissions

Gold is relatively unusual as a mined product in that, once refined, it becomes both a *product* (bullion) and a potential *material* or input to other products – specifically, electronics and jewellery. But the volumes of physical material that flow downstream (from mine to market) are very small compared to other industrial materials and product lines and therefore, once refined/fabricated, those gold products are rarely associated with further emissions of any scale. **Refining is therefore the key step in the supply chain that impacts the downstream emissions profile of all gold products**, and the emissions factor associated with the refining process (and, preferably, specific refineries) is the **key data input in calculating Category 10 emissions**.

That said, there is still relatively little reference data on gold refining emissions to draw upon, and an analysis of recent refining company emissions disclosures suggests a variance in the data that might challenge any extrapolation from emissions from a single source.

Our analysis suggests that the **location of the refinery** (potentially a key factor in shaping its Scope 2 emissions) is a significant driver of emissions that should be explained in company reporting documents.

Clearly, for accurate Category 10 emissions calculations, an emissions intensity figure (i.e. a refining company emissions factor) for gold would be **best obtained directly from the refiner responsible for processing** particular mined material (dore).

However, where this is not accessible, we have calculated an **average gold refining carbon emissions intensity**, drawn from the disclosures of several leading gold refiners combined with industry-wide estimates from a leading supplier of gold supply chain carbon profile data.<sup>37</sup>

**Gold refining global average emissions factor** (the emissions intensity of refined gold – tonnes of CO<sub>2</sub>e per tonne of refined gold) = **7.02 tCO<sub>2</sub>e/tAu**<sup>38</sup>

37.Data, of varying specificity, was drawn from 6 refineries and industry summary data from Skarn Associates.

38.This figure is higher than that previously calculated by the World Gold

## 6.4 Annual reporting and mine life-cycle emissions

The wide variance in the scale of gold mining company Scope 3 emissions (as a percentage of a company's total emissions) can, in some instances at least, reflect the inclusion (typically, in Category 1 and 2 emission) of emissions that reflect a particular stage in the development of a mine. The challenge in annual reporting is to identify and explain those emissions which might therefore be deemed as untypical of normal operational conditions. For example, the relatively high emissions associated with the purchase of building materials used in the construction of a mine (such as concrete, steel, etc.) may well result in a 'spike' in annual Category 1 and 2 emissions. But these purchases are unlikely to be repeated year after year – they relate to a very specific point in the life-cycle of a mine.

This becomes quite significant, and potentially misleading, when analysts present company-level 'carbon curves' (which rank the carbon intensity of different mining companies' gold production) that do not adequately signal to the consumers of their data that the underlying emissions may not be directly associated with productive mines. While the emissions associated with, for example, mine construction – or other stages in the life-cycle of a mine – cannot be ignored, they should be clearly identified as related to a specific aspect of a mine's development. That is, if a company considers emissions relatively exceptional/atypical and likely associated with a particular year/period, rather than an enduring factor in the mining process, it is advised to highlight this fact in its public disclosures.

## 6.5 Communications

Our analysis of the Scope 3 emissions reporting of a range of gold mining companies strongly suggests that disclosures might be improved if companies seek to acknowledge areas of uncertainty and explain the rational reasons behind any potential ambiguities. That is, there is a role for clearer and more expansive communication of the challenges of Scope 3 emissions accounting, and **companies should prioritise honesty and integrity in describing those aspects of the estimation process that they find most challenging**. Rather than striving for spurious accuracy, or simply omitting reference to emissions that they struggle to measure or control, companies should explicitly flag those indirect emissions which are beyond their ability to monitor or manage.

Council (in 2019) – 3.62 tCO<sub>2</sub>e / tAu – but this is probably due to the inclusion of refinery data which likely reflects Scope 2 emissions from high carbon electricity supply.



This is likely doubly important when it comes to target setting and the need to communicate rational expectations, given the lack of 'ownership' and limited influence of companies on most categories of Scope 3 emissions.

True company transparency on Scope 3 emissions should be expressed via reference to the best available data and accompanying explanations, which strive to communicate to stakeholders how companies are acting to influence upstream and downstream emissions reduction, whilst acknowledging the limits of that influence. The majority of guidance on corporate approaches to Scope 3 emissions generally stresses the need for engagement and collaboration with suppliers and partners, but there is still a lack of clear and honest communications to investors, consumers, and industry stakeholders on how that might translate to real emissions reduction actions. For gold mining companies, this engagement and any associated actions will likely be relatively **concentrated on (upstream) supplier engagement and, in a few cases, closer co-ordination and reporting consistency with partner companies**. This leads us to conclude that enhanced communications and greater transparency on some of the category emissions items highlighted above might enhance sectoral consistency, resulting in significant improvements in how the industry's emissions profile and reduction opportunities are understood.

As previously suggested, where different companies are reporting on Scope 3 Category 15 emissions (typically, from joint ventures – mines in which they have a shared interest or ownership), there are potential benefits in more open **communication of a shared (mutually compatible) approach to boundary definitions and estimation methodologies**.

### Communicating Scope 3 emissions reduction targets<sup>39</sup>

Even if gold mining companies move to greater levels of consistency in how they approach the measurement and monitoring of indirect emissions, hopefully resulting in greater accuracy, there remains the challenge of how to build confidence in the possible future consequences of engagement and influence on their wider supply chain. In other words, the definition of **Scope 3 emissions reduction targets inevitably includes elements of uncertainty**, and the level of uncertainty will differ across the 15 categories of emissions, reflective of the degree of influence a company can potentially exert on the different aspects and parties of its value chain. It is therefore important that targets strive for credibility and are communicated in ways which allow investors, consumers and stakeholders to understand the conditions, dependencies and limitations of those targets. We therefore suggest Scope 3 targets are defined and expressed with the following considerations:

- They reference and explain key supply chain characteristics and idiosyncracies.<sup>40</sup>
- They reference and explain overall corporate (or site-level) strategic plans.
- They explain methodological issues and/or data constraints, underlying assumptions, and any external reference points such as established climate scenarios.
- They offer an explanation of the planned actions the company will take to potentially achieve its targets but describe in some detail the constraints and dependencies which may inhibit (or accelerate) progress on those plans.

If targets are revised, the nature of the revisions and why changes have been implemented (with possible reference to the above points) should also be fully explained.

39.The ICMM, in its consideration of target-setting terminology, has noted there may be some variance in the precise interpretations (perhaps with legal implications) of company descriptions of their future emissions reduction intentions and planned actions as 'targets, ambitions, objectives, priorities and/or goals'. Perhaps the key issue for consideration is the issue of how specific or definitive is any such 'target' when compared with more

general ambitions and goals. If there are questions around how such terms might be received, it is expected companies may choose to consult counsel.

40.For downstream and gold market factors and considerations, please consult the World Gold Council, [www.gold.org](http://www.gold.org).



# 7. Conclusion

To conclude, it is perhaps worth noting that although current climate-related reporting standards allow voluntary disclosure of Scope 3 emissions, this could change in the future as governments, regulators and consumer groups are increasingly pressing for mandatory disclosures to underpin more comprehensive climate plans and actions. This will undoubtedly pose significant challenges, particularly when disclosures are expected to inform reduction targets and consequent actions, even though there are limits to the level of control or influence companies can exert on indirect emissions. However, the relative concentration of gold mining's Scope 3 emissions, associated with a relatively small number of categorised (upstream) sources, might be interpreted as an opportunity for the industry to accelerate progress and demonstrate leadership. There might also be additional benefits from the closer, more collaborative arrangements that will likely need to emerge between companies and suppliers if there is to be a meaningful reduction in the key categories of emissions (that is, Scope 3 Categories 1 and 2). The World Economic Forum recently outlined key steps (*action levels*) it suggested are broadly applicable for most sectors to drive progress on Scope 3 emissions.<sup>41</sup> These are summarised as follows (moving from company actions, to wider engagement with value chain players, and then on to wider societal expectations and responses):

- i. Start from within
- ii. Empower your supply chain
- iii. Leverage industrial ecosystems
- iv. Drive the cultural shift towards a sustainable society

Considering the nature of wider engagement across the value chain, we have repeatedly highlighted above that climate-related disclosures can also be used to better communicate a company's recognition of the challenges and constraints it faces on its decarbonisation journey. This can help set rational

“These opportunities provide a path for companies to take responsibility, foster collaboration across value chains, redesign operating and business models, and adopt emerging technologies for rapid decarbonisation.”

The 'No-Excuse' Opportunities to Tackle Scope 3 Emissions in Manufacturing and Value Chains (2023), WEF White Paper, World Economic Forum

expectations and build trust. That is, there are additional benefits to being clear, honest and transparent when approaching a challenging task with known data constraints and knowledge gaps. More specifically, the readers of company Scope 3 emissions disclosures, and the consumers of the associated data, are more likely to accept and trust the reported information if it is accompanied by an open and frank explanation of the known limitations, particularly if such communications include a commitment to strive for additional improvements and greater accuracy in future. And, as data improves and 'good practice' methodologies become more widely accepted and disseminated, there is reason for confidence that gold mining can make substantial progress in contributing to the decarbonisation of those emissions over which it has little direct control or 'ownership'.

41. The 'No-Excuse' Opportunities to Tackle Scope 3 Emissions in Manufacturing and Value Chains (2023), WEF White Paper, World Economic Forum.



# Appendix 1: Additional guidance for gold mining royalty and streaming companies

While closely associated with mining projects, royalty and streaming companies are very different operations based on very different business models. They are essentially funding vehicles, offering mining companies an alternative form of finance. Their revenues derive from their provision of funds – up-front payments – to mining companies, for which they subsequently receive a share of future production (a ‘stream’) at a pre-agreed discounted price metal (gold) or an income (‘royalty’) associated with the revenues generated from that production.

This means royalty and streaming companies are only indirectly linked to mine production, and are typically very small-scale enterprises with minimal operational or administrative overheads. These factors clearly have very significant implications for their GHG emissions profiles.

## Gold and precious metals royalty and streaming sector Scope 3 emissions

Of the six (Member) royalty and streaming companies examined, all disclosed their Scope 1, 2, and 3 emissions. With the exception of one key Scope 3 category (*Category 15 – Investments*), these emissions are largely immaterial.

Given these companies represent well over half of this market,<sup>42</sup> we can have a strong degree of confidence that the patterns described below are fairly representative of the overall royalty and streaming sector.

Specifically, we noted **all companies shared the following characteristics:**

- They don’t have any material Scope 1 emissions and Scope 2 emissions are very small
- Emissions from **Scope 3 Category 15 – Investments represent 99.96% of total emissions**
- Excluding investments, their reported emissions are negligible.
  - While 1 company disclosed emissions associated with *Purchased Goods and Services* (Scope 3 Category 1) and all companies reported emissions associated with *Business Travel* (Scope 3 Category 6), these figures were extremely small. (Summing all such emissions from all six companies, we calculated their total annual emissions as less than 1.5 kt CO<sub>2</sub>e.)
- After some previous variance in accounting approaches, **all six now adopt a broadly similar methodology** and include the emissions of their investments within their Scope 3 estimates.

But there is **some variance in the level of detail and metrics in disclosures:**

- Four companies disclose both the total emissions and emissions intensity of their investments
- Two companies only disclose their investment’s total emissions

When investments are included, the **combined total emissions of the companies = 1,239 kt CO<sub>2</sub>e**

42. In terms of the volume of annual GEOs – gold equivalent ounces; GEO is a measurement useful as a quick comparison tool when referring to different mineral/income streams but wishing to translate them into an equivalent

figure for gold production; it is often simply calculated by taking a revenue sum and dividing it by the average gold price for the same period.



## Scope 3 GHG Category 15 emissions

Emissions intensity figures (of the four Members reporting) per GEO (gold equivalent ounce) vary from 0.18 tCO<sub>2</sub>e to 0.74 tCO<sub>2</sub>e.

While much of the range in emissions intensity estimates is very likely driven by differences in the asset composition of royalty and streaming portfolios, **potential methodological inconsistencies have been identified** that may have had an impact on the disclosed estimates. Whilst there is little evidence that current disclosures are skewed or unrepresentative of the emissions associated with royalty and streaming activities, consumers of the disclosed data might be given further confidence in its accuracy if any opaque and ambiguous elements in estimation methodologies are addressed and explained.

## Recommendations for increased consistency and reduced ambiguity

Perhaps the most obvious difference in company approaches is reflected in the choice of **attribution factor** used – i.e., whether emissions are scaled according to a measure of **volume or value**.

Of the companies examined...

- Half of them solely used production-based (that is, volume-based) methodologies.
- The other half used *both* production – and revenue-based methodologies.
  - Only one company **disclosed the circumstances under which the different attribution approaches are used**. It is likely that such an explanation would be welcomed by those planning to use the data.

While it may not be immediately clear what level of significance or impact the attribution model has on the accuracy of emissions estimations, it is generally recommended that the thinking behind such a methodological choice – the selection of a set of criteria or a particular factor – is disclosed in full.

In a similar spirit – aiming for fuller transparency – companies might also consider the benefits of **explaining the rationale behind any differences in their approach** to the following:

- Royalty vs streaming agreements
- Primary product vs by-product metals

It is to be hoped that, for the future benefit of the royalty and streaming sector, companies might converge around an agreed understanding of which approach to these different aspects of the business might **best approximate good practice**.

## Gold equivalent ounces (GEOs)

As **GEOs** are a key unit of measurement in this context, it is recommended that companies fully explain the calculation method and, specifically, key data points – most obviously, the reference data used to identify the market **price of gold** (for example, the periodic average price or the spot price at a reference point in time).

## Communications

From our examination of current royalty and streaming company disclosures, the following additional communications might contribute to clearer interpretations of their reported data:

- Explicit acknowledgement of **data constraints, gaps and quality** issues
- Explanation of known challenges and **compromises in estimation methodologies**
- Significant **shifts over time in company levels of knowledge, expertise and methodological sophistication** that may be reflected in the reported data and metrics (see also below)

## Periodic or annual changes

It is important to understand that specific data points on company emissions are often used – for example, by analysts and investors – in comparison to previous historical data to quantify progress over time. Therefore, any shifts in approach or methodological changes (resulting in significant emissions level changes) need to be flagged and tied to a specific point in time.





## Appendix 2: Key documents & data sources

### Key reference documents

#### The GHG Protocol

- *Corporate Accounting and Reporting Standard (2004)*
- *Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011)*
- *Scope 3 Calculation Guidance (2013)*
- *Sample Scope 3 GHG Inventory Reporting Template (2019)*

#### CDP

- *Technical Note: Relevance of Scope 3 Categories by Sector (2023)*

#### Science Based Targets initiative (SBTi – sciencebasedtargets.org)

- *SBTi Corporate Net Zero Standard v1.1 (2023)*
- *SBTi Criteria and Recommendations (2020) ICMM*
- *Scope 3 Emissions Accounting and Reporting Guidance (2023)*

#### World Gold Council

- *Gold and climate change: Current and future impacts (2019)*

Table 3: Key emission factor (EF) data sources

Industry-average emission factors			
EF Name	Updates to database	Applicability – main categories	Additional information
EcoInvent	Annual updates <sup>43</sup>	C1	Life-cycle inventory
IPCC Guidelines for National Greenhouse Gas Inventories and Emission Factor Database (EFDB)	Periodical updates	C1	N/A
Inventory of Carbon and Energy (University of Bath)	Periodical updates (last updated in 2019)	C1	Includes EFs for aggregate sand, aluminium, asphalt, bitumen, cement, clay, concrete, glass, steel, and timber
IHS Markit	Regular (market) updates	C3	Fuel supply
Skarn Associates – Gold GHG and Energy Tool	Periodical updates	C10 and C15	N/A
World Gold Council – Current and Future Impacts	Single reference point (2018 data)	C10	A referential estimate of gold refining emissions intensity – since updated [see above comments on 19]
GHGenius	Periodical updates	C3	Life-cycle inventory
International Energy Agency (IEA)	Annual updates	C3	N/A
Ecometrica	Periodical updates	C3	Provides emissions factors for electricity, homeworking, and hotels

43. EcoInvent – the ICMM guidance states ‘Provider to inform users’ in reference to ‘updates to database’. Ecoinvent state they update their database annually, although specific sector factors may be updated less frequently.



Nationally focused industry-average emission factors			
EF Name	Updates to database	Applicability – main categories	Additional information
National Greenhouse Accounts (NGA) Factors	Annual updates	C3	Australia-focused data created for companies operating within Australia
Department for Environment, Food, and Rural Affairs (DEFRA) / Department for Energy Security and Net Zero (DESNZ) – U.K. Government	Annual updates	C1, C3	U.K.-focused data created for companies operating within the U.K.
US Environmental Protection Agency (EPA) Emission Factors Hub	Periodical updates	C3	U.S.-focused data created for companies operating within the U.S.
U.S. Energy Information Administration	Periodical updates	C3	U.S.-focused data providing energy-related emissions factors

The tables above synthesise those Emission Factor data sources used by World Gold Council Members and those recommended by the ICMM.<sup>44</sup> It is not comprehensive, and we acknowledge there are a range of Emission Factor sources that we have not included due to the data being overly specific, unverifiable, or inaccessible, or the source has been discontinued (as in the case of the *Quantis Scope 3 Evaluator* tool).

44.A survey of World Gold Council Members indicates they used 15 distinct (non-supplier-specific) emission factor (EF) sources to calculate their 2022 Scope 3 GHG emissions. These varied from spend-based tools applied to all

Scope 3 categories to activity-specific EFs. The ICMM, via their *Scope 3 Emissions Accounting and Reporting Guidance*, recommended 9 different EF databases.

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