

Net Zero Methodological White Paper

The journey continues

Second Edition
2024



standard
chartered

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Foreword

Since the Paris Agreement was reached at COP21 in 2015, its signatories have wrestled with putting the pursuit of net zero into action. In the time since, those committed to achieving this ambition have been tackling such challenges as common standards, data access, measurement, target setting, disclosures and operationalisation in order to help steer a clear and transparent path to this critical goal. Progress toward the goal cannot be accomplished in isolation by any organisation. It will require engagement, participation and collaboration with coalitions of the willing.

At Standard Chartered, our commitment to net zero in our own operations by 2025 and in our financed emissions by 2050, has involved active engagement with our primary stakeholders around the world, including clients, vendors, shareholders, civil society and our employee base. This engagement has required us to carefully balance their various needs and considerations on the path to delivery. As a financial institution we have an important role to play, in supporting our clients, sectors and markets to deliver net zero, but to do so in a manner that supports livelihoods and promotes sustainable economic growth. More recently, this has also included a heightened focus on the security and resilience of our markets as they respond to greater climate change induced uncertainty. Our global footprint consists of both developed and emerging market economies. This blend provides us with a specific responsibility to deliver a just transition to net zero that achieves our climate commitment by driving and encouraging change in the real-world economy, while ensuring the economic and social development of all markets.

This White Paper provides further clarity on our net zero journey. It provides transparency on how, through our commitment to sector-specific science-based methodologies, we plan to measure and manage our progress. Achieving the transition net zero will continue to be challenging and will require a concerted and sustained effort. We have much to do, but we're clear on our roadmap and unwavering in our focus to get there.

Our journey continues and we look forward to continuing to partner with those vested in helping us achieve individually and collectively the ambition enshrined in the Paris Agreement.



Marisa Drew
Chief Sustainability Officer

Introduction

Standard Chartered is proud to publish the second edition of our methodological White Paper on net zero '**The Journey Continues**' (2024 White Paper). It provides an update of our '**Net Zero Approach - Methodological White Paper**' (2021 White Paper) and is an important step in delivering on our net zero commitment and the related transparent disclosure of information.

In this 2024 White Paper, we share our methodology to support the accuracy of our reported financed and facilitated emission calculations and disclosures as we recognise this is critical to raising awareness and building stakeholder trust.

We strive to reach our net zero objective by 2050 through continuing to measure, manage and reduce the emissions associated with our financing and facilitation activities. Our approach relies on science-based and sector-agreed practices regarding our most greenhouse gas (GHG) intensive sectors.

As a lender, we know that we have a unique and key role to play in achieving a just transition to net zero across our 53 markets.

Background

Our net zero commitments have evolved since the 2021 White Paper. We have applied enhanced metrics in the following sectors:

- the oil and gas (**O&G**) baseline and target was enhanced from a revenue-based intensity to an absolute emissions metric, thereby placing an emissions budget on the sector.
- power and steel have strengthened from a revenue-based intensity to a physical intensity whereby emissions will now be measured relative to a production unit.
- shipping, automotive, aluminium, cement, Commercial Real Estate (**CRE**), and residential mortgages are included in our sector deep-dive and reported on a production, or physical intensity basis.

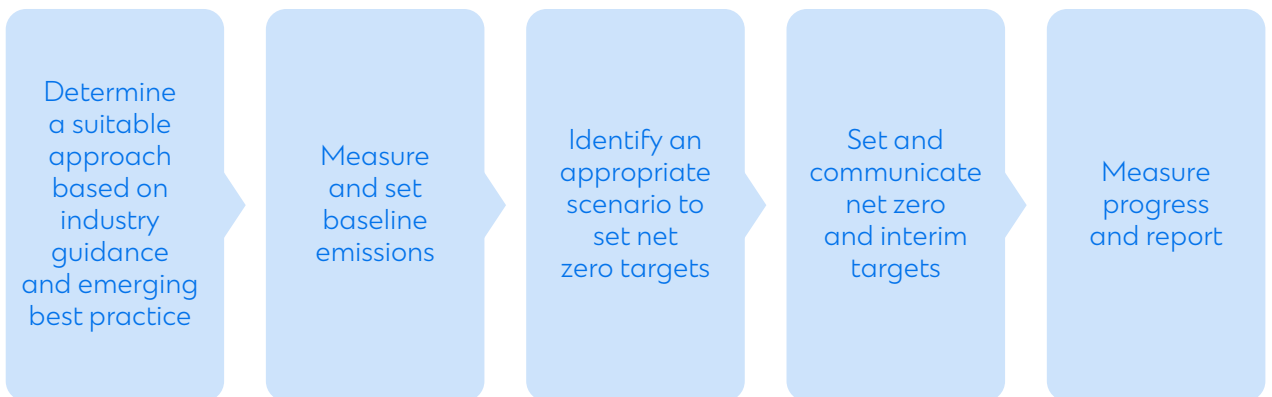
Methodology

We have adopted science-based and sector-agreed methodologies to measure and govern our in-scope loan book to net zero. Our carbon accounting is calculated and reported in-line with the Greenhouse Gas Protocol via the Partnership for Carbon Accounting Financials (PCAF). Additionally, we refer to scientific and industrial climate guidance from the Net Zero Banking Alliance (NZBA), Intergovernmental Panel on Climate Change (IPCC), the International Energy Agency (IEA), the Rocky Mountain Institute (RMI), Poseidon Principles, Global Cement and Concrete Association (GCCA), Transition Pathway Initiative (TPI) and Mission Possible Partnership (MPP).

Approach

We adopt a five-step approach in setting and reporting the Group's net zero targets.

Figure 1: Net zero five-step approach



Information related to the first three steps is included in this paper for each high-emitting sector for which there is a baseline and a target.

Our financed emissions sector-by-sector progress (as against the relevant target) to date is set out in the Sustainability Review section of our 2023 Annual Report.

Financed emissions calculation

There are two components to the financed emissions calculation: (i) the attribution factor; and (ii) the emissions calculation (explored below).

Attribution factor

The share of total annual GHG emissions of a borrower or investee that is allocated to the corresponding loan or investment (PCAF, 2022) is known as the **attribution factor**.

Emissions calculation

We use three types of emission metrics in our financed emissions calculations:

I. Absolute financed emissions

These are calculated based on the total GHG emissions of the client or portfolio. Absolute emissions targets effectively create a GHG budget. This is because the primary route to decarbonising these sectors is to use less of the commodity for generating energy, rather than using the commodity more efficiently.

II. Physical / production emission intensity

This metric measures the emissions efficiency of a portfolio in terms of total GHG emissions per unit of a common output. For example, absolute emissions divided by a value of physical activity or output, expressed as tCO₂e/tonne product produced (PCAF, 2022). This can also include the emissions per distance travelled, or emissions per square metre of an occupied building that we finance. This metric is most appropriate in sectors that not only need to decarbonise their operations but also require a growth in the sector throughout the transition to net zero.

III. Alignment delta (AD)

AD is a variant on the physical emissions intensity approach. It measures the coefficient of alignment against a particular reference scenario i.e., expressed in percentage terms, how much a particular portfolio is above or below the net zero reference scenario. This metric is best for heterogeneous sectors where emission generating assets need to be compared on a like for like basis but have differing production units.

Data inputs

We use three types of data in the financed emissions calculations:

1. financial data
2. emissions data
3. physical activity data or production data

Data sourcing follows the approach outlined below (unless otherwise stated) in the sector specific methodologies, e.g., for CRE, residential mortgages and cement.

Client exposure

This is defined as the drawn amount of the debt that is still outstanding (i.e., disbursed debt minus any repayments) at year-end. The amount is measured in \$USD, and the approach is consistent with PCAF guidance. The client exposure data is homogenous and sourced from internal accounting record systems. The outstanding amount at year-end is the numerator in the attribution calculation.

Client company value

Company value is the sum of a company's (lending counterparty) total debt plus equity. For public companies, this is the sum of the market capitalisation of ordinary shares at fiscal year-end, the market capitalisation of preferred shares at fiscal year-end, and the book values of total debt and minorities' interests, otherwise known as 'EVIC'. For private companies, company value is the sum of total equity plus debt. The client company value is the denominator in the attribution factor calculation.

In general, client company value is sourced from the following:

1. externally via data aggregators (such as S&P)
2. manually from annual reports
3. internally through our risk systems and client credit assessments

If a client's company value is unavailable, we estimate this using an internal proxy. This is only done in certain sectors and where there is sufficient comparable internal data to do so.

Client asset value

For CRE, residential mortgages and shipping the asset value is used as the denominator in the attribution factor calculation. If the asset value is unavailable, then the asset is excluded from the financed emission calculation population.

Client emissions

Client emissions data includes Scope 1, Scope 2 and Scope 3 GHG emissions (where appropriate). In general, client emissions data is sourced from the following:

1. externally via third party data aggregators (such as S&P)
2. manually from annual reports/ sustainability reports
3. calculated using client production data multiplied by an appropriate emissions factor
4. estimated using internal or public datasets

Emission factors

Emission factors are the emissions per unit of production or energy consumption linked to the client's primary business activity. Emission factors are sourced and calculated using reputable industry bodies such as the IEA. For specific emission factors please refer to the sector methodologies.

Client production/ physical factor

Client production data includes quantity of produced product linked to their primary business activity, such as tonnes of cement or steel. This can be the actual production of the client or derived from the capacity their facilities allow them to produce on an annual basis. Physical factors include distance travelled, and square meterage of property financed. In general, client production/ physical data is sourced from the following:

1. third party data aggregators (such as Wood Mackenzie)
2. manually from annual reports
3. internally through our risk systems and client credit assessments
4. estimated using internal or public datasets

Scope of financial products

The following products are included in our financed emissions calculations:

- corporate bonds
- corporate lending
- project finance loans
- commercial real estate investment loans
- residential mortgages

Lending to financial institutions and private banking (except for residential mortgages) is excluded.

Traded products, including derivative balances and unsettled trades, amongst others, are excluded as these products are typically not classified as loans and advances within the Standard Chartered banking book. Product exclusions are consistently applied across each sector prior to the financed emissions calculations, the product filtering relies on product flags held on our internal accounting system.

Sector value chain

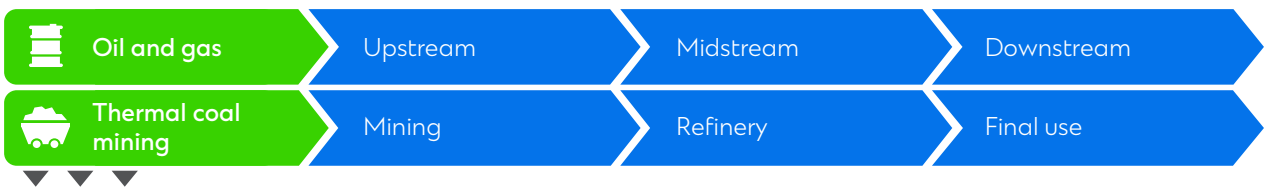
We measure and set targets against the most emission intensive segment of the value chain within each sector. This is determined by several considerations, some of which include:

- the portion of the value chain included in the reference scenario we have selected to set targets
- the materiality of emissions and importance of decarbonising that part of the value chain
- the data availability for that section of the value chain

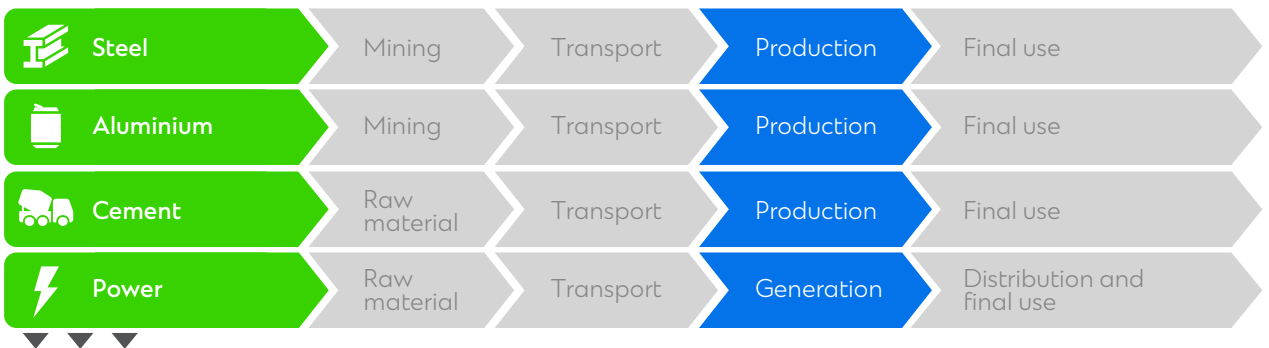
The parts of the value chain covered in our sector targets are outlined below.

Figure 2: Sectoral value-chain scoping overview

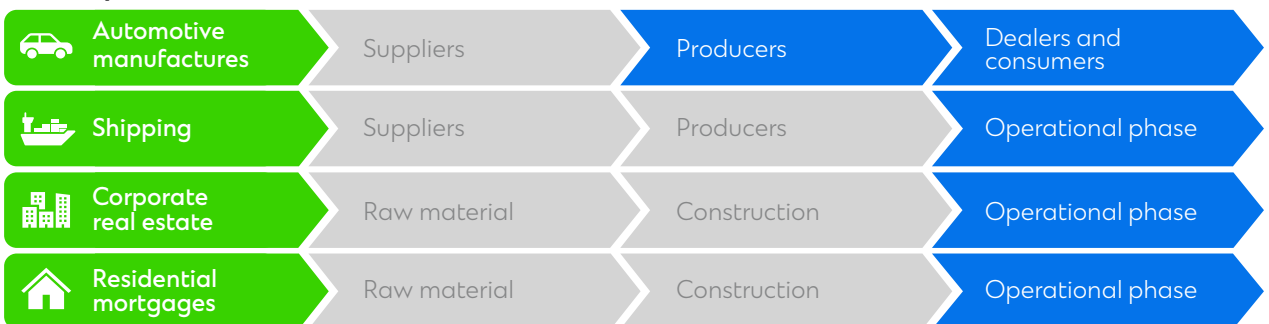
Primary



Secondary



Tertiary



Data quality and limitations and restatements

Data quality

We measure emission data quality by using PCAF scoring on a client or asset basis, and this is aggregated at a portfolio level.

The PCAF Standard for financed emissions recommends applying a data quality scoring methodology to help assess data quality challenges and recognise areas for improvement. PCAF's ratings assign directly collected client emissions data score more favourably while estimated or extrapolated data scores less favourably. A PCAF score of 1 is typically considered to have a low margin of error for estimation of financed emissions, while a PCAF score of 5 is considered to have a larger margin of error. Please refer to PCAF's Global GHG Accounting and Reporting Standard Part A – Financed emissions 2nd edition (2022) for data quality scoring by each asset class.

We recognise that while the market improves its reporting around GHG emissions the data used in estimating GHG emissions can vary in quality. To ensure transparency, we disclose a PCAF score for each sector which sets out the relative accuracy of the data. Our PCAF scores for 2021 and 2022 are disclosed in the Sustainability Review section of our 2023 Annual Report.

Changes in estimates, methodologies, and errors

The events or circumstances where we would consider recalculating or updating base year emissions together are included below. Our approach is aligned with the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standards (2011).







Table 1: Restatement approach

Scenario	Approach	
Errors in data or methodology	Restatement	Comparative years are retrospectively restated to reflect the correct emissions value.
Changes to methodology or data sources used to calculate emissions	Re-baseline	Emissions figures will be updated from the current reporting year. The prior year reported figure will be updated to reflect the new methodology and considered the new baseline year.
Structural changes in reporting entity		Emissions figures will be updated from the current reporting year. The prior year reported figure will be updated to reflect the new reporting boundary and considered the new baseline year.
Updates to client or supplier data from timing lags and improved sources of information	Captured in following year	The impact of the update will be recorded in the current year reported emissions.

Portfolio balance sheet

We focus on the most emissions intensive sectors as defined by the NZBA to calculate the GHG emissions related to our financed emissions. We also measure sectors falling outside of this list and report on these in our 'others' category.

Table 2: Portfolio balance sheet

Sector	Emission metric	Scenario	Value chain	Scope of emissions	Baseline year
Corporate, Commercial and Institutional Banking (CCIB)					
 Automotive manufacturers	Physical intensity	IEA APS and NZE	Automotive manufacturers	1, 2, 3 ¹	2021
 Steel	Production intensity	MPP TM MPP TM Regional	Steel producers	1, 2	2021
 Power	Production intensity	IEA APS and NZE	Electricity generators	1, 2	2021
 Shipping	Alignment delta	IMO existing IMO rev. min IMO striving	Shipping lessors and companies	See shipping section	2021
 Aluminium	Production intensity	MPP STS	Aluminium producers	1, 2	2021
 Commercial Real Estate	Physical intensity	IEA APS and NZE	Real estate lessors	1, 2	2021
 Cement	Production intensity	IEA NZE	Clinker and cement manufactures	1, 2	2021
 Oil and gas	Absolute emissions	IEA NZE	Upstream, midstream and downstream	1, 2, 3	2020
 Thermal coal mining	Absolute emissions	IEA NZE	Thermal coal extraction and combustion	1, 2, 3	2020
 Others	Absolute emissions	IEA NZE	Other sectors	1, 2	2021
Consumer, Private and Business Banking (CPBB)					
 Residential mortgages	Physical intensity	CRREM	Residential households	1, 2	2021
CCIB					
 Facilitated emissions	Absolute emissions	n/a	Full value chain	1, 2, 3	2021

¹ Scope 3 excludes 'well-to-tank' emissions.

Sector specific methodology

Aluminium

The production of aluminium is emissions intensive and is responsible for roughly 2% of global CO₂e emissions per year (IEA, 2023). The aluminium sector relies heavily on electricity from the local grid. Over 60% of the sector's CO₂e emissions are attributable to the electricity consumed during smelting for the electrolytic reduction process. We have identified three overarching technological levers (IAI, 2021) for decarbonising aluminium production as follows:

- **promoting electricity decarbonisation** – transitioning to low-emission power offers the most significant opportunity to reduce emissions. We will engage with clients who have smelting facilities to incentivise the uptake of reliable power purchase agreements (PPA)²
- **reducing direct emissions** – electrification, fuel switching, and use of carbon capture, utilization and storage (CCUS) offer the most credible decarbonisation pathways along with low-emission anode production
- **incentivising recycling and resource efficiency** – recycled aluminium has a significantly lower GHG footprint than primary aluminium production, therefore, increasing scrap collection rates would reduce the use for primary aluminium

Without efforts to curtail production and consumption, annual emissions in the sector could grow by as much as 90% by 2050 (MPP, 2023) because of population growth and economic development.

Sustainable Aluminium Finance Framework ("SAFF")

SAFF is an open-source reporting framework for financial institutions to assess, disclose, and compare their lending portfolios and aluminium makers performance against a 1.5°C pathway (SAFF, 2023). SAFF is a voluntary reporting framework, it was developed by RMI and the working group banks in consultation with industry experts, non-governmental organisations (NGOs), and other stakeholders. Ultimately, SAFF aims to enable standardised comparisons between clients, portfolios, and to catalyse further collaboration between Standard Chartered and our clients on their transition to a low-emission future.

Value chain boundary

The majority of GHG emissions from the aluminium sector relate to the production process, specifically alumina refining, anode/paste production, and smelting. We report our aluminium financed emissions with reference to the 'Fixed System Boundary' set out by the SAFF. As such, all emissions resulting from primary and recycled production of aluminium are within scope³.

² Please refer to power section of the whitepaper for an overview of power generation decarbonisation levers.

³ We have opted to exclude semi-fabrication clients from our portfolio due lack of available data.

Emissions boundary

Scope 1 and Scope 2 emissions are calculated for aluminium producers. We aim to accurately report Scope 3 emissions associated to the sector in the future as data quality and availability improves.

GHG boundary

Standard Chartered reports our financed emissions in CO₂e, the measurement is consistent with the SAFF methodology and our clients.

Data sources

The data sources and hierarchy for aluminium follows the rules laid out in the generic data section above.

Calculation methodology

In setting our emissions baseline and target, we have measured our aluminium portfolio emissions with an intensity metric (tCO₂e/t aluminium). This intensity metric is commonly used by stakeholders in the sector and is a useful comparison against peers. Additionally, the metric incorporates an attribution factor to derive Standard Chartered's share of real-world emissions in the aluminium sector.

$$\text{Financed emissions (tCO}_2\text{e)} = \sum_{\text{All clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client emissions (tCO}_2\text{e)}$$

$$\text{Financed production (t Al)} = \sum_{\text{All clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client production (t Al)}$$

$$\text{Portfolio intensity (tCO}_2\text{e/t Al)} = \frac{\text{Financed emissions (tCO}_2\text{e)}}{\text{Financed production (t Al)}}$$

Example

Inputs:

- \$0.1 billion general lending
- company value of \$20 billion
- total asset production of 2 Mt aluminium
- total asset emissions of 25 MtCO₂e

$$\text{Financed emissions} = \left(\frac{\$0.1 \text{ billion}}{\$20 \text{ billion}} \right) \times 25 \text{ MtCO}_2\text{e} = 0.125 \text{ MtCO}_2\text{e}$$

$$\text{Financed production} = \left(\frac{\$0.1 \text{ billion}}{\$20 \text{ billion}} \right) \times 2 \text{ Mt Al} = 0.01 \text{ Mt Al}$$

$$\text{Production-based intensity} = \frac{0.125 \text{ MtCO}_2\text{e}}{0.01 \text{ Mt Al}} = 12.5 \text{ tCO}_2\text{e/t Al}$$

Reference pathway

We have set our aluminium sector targets with reference to the Mission Possible Partnership aluminium Sector Transition Strategy (**MPP STS**). The MPP STS is a bottom-up model which covers primary aluminium production, we have adapted the scenario to include recycled aluminium.

Automotive manufacturers

The automotive sector continues to be central for global mobility systems, and it is a key sector for international supply chains and the economy. However, it is also a significant contributor to climate change. Annually, the exhaust emissions from passenger vehicles account for 8% of global CO₂ emissions (IEA WEO, 2023).

Transitioning to low and zero emission vehicles is crucial to reach net zero by 2050. Automotive original equipment manufacturers (**OEMs**) have the greatest impact on design choices of vehicles that emit emissions when in use (IEA WEO, 2023) and as such, the decarbonisation levers focus on automotive OEMs. Decarbonising the automotive sector is achieved through the following overarching levers:

- encouraging fuel-switch and improving fuel-efficiency as a first step
- maximising the electrification production rate
- minimising virgin material usage in the manufacturing process

Value chain boundary

When measuring the automotive sector emissions, the boundary covers OEMs of newly manufactured light duty vehicles (**LDV**)⁴.

Emissions boundary

We include Scope 1, Scope 2 and Scope 3 emissions (excluding well-to-tank emissions) in our financed emissions calculation. For Scope 3 we include the lifetime tailpipe emissions of the vehicles sold during the reporting cycle and a factor derived from supply chain emissions of the OEM. Note that our calculation does not currently include emissions from charging EVs.

GHG boundary

For the automotive sector, we measure emissions intensity as a function of emissions, measured as grams of carbon dioxide (CO₂).

Data sources

In addition to the generic data sources outlined in the 'data input' section above, our client emissions data is sourced from the TPI carbon performance assessment of automobile manufacturers. Following the industry's progress in adopting a test procedure that better reflects driving conditions in the real world, TPI uses a Worldwide Harmonised Light Duty Driving Test Procedure (**WLTP**) as the common basis against which all global manufacturers are evaluated.

⁴LDVs are defined as 'passenger cars and light commercial vehicles (gross vehicle weight <3.5 tonnes)' per the IEA 2023 WEO.

Calculation methodology

In setting our emissions baseline and target, we have measured our automotive portfolio emissions in grams of CO₂ per vehicle kilometre travelled (gCO₂/Vkm). The portfolio is aggregated on an exposure-weighted approach, the emission intensity is calculated by multiplying the physical intensity of each OEM with the percentage exposure to OEM in the portfolio.

Where:

- exposure = client's drawn exposure at year-end
- client intensity = inclusive of OEM's Scope 1, Scope 2 and Scope 3 'supply chain' and 'use of sold products' for passenger vehicles sold

Exposure-weighted emission intensity (gCO₂/Vkm)

$$= \sum_{\text{All clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Total portfolio exposure (\$)}} \right) \times \text{Client emission intensity (gCO}_2/\text{Vkm)}$$

Example (portfolio level)

Inputs:

- client_a exposure = \$0.2 billion
- client_b exposure = \$0.3 billion
- total portfolio exposure = \$0.5 billion
- client_a emission intensity = 150 gCO₂/Vkm
- client_b emission intensity = 170 gCO₂/Vkm

$$\text{Emission intensity client } a = \left(\frac{\$0.2 \text{ billion}}{\$0.5 \text{ billion}} \right) \times 150 \text{ gCO}_2/\text{Vkm}$$

$$\text{Emission intensity client } b = \left(\frac{\$0.3 \text{ billion}}{\$0.5 \text{ billion}} \right) \times 170 \text{ gCO}_2/\text{Vkm}$$

Portfolio physical-based intensity = 162 gCO₂/Vkm

Reference pathways

We have set an interim target range using the IEA Net Zero Emissions (**NZE**) scenario as the lower-bound range and the IEA Announced Pledges Scenario (**APS**)⁵ scenario as the upper bound-range. Both scenarios are consistent with the **Paris Agreement** to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

⁵ The APS is an exploratory scenario, the latest scenario modelling predicts the global temperature rise to 1.7°C (50% probability) (IEA, 2023).

Cement

The cement sector contributes approximately 7% towards global GHG emissions (IEA, 2023). The primary source of the emissions occurs during the production process where a chemical reaction takes place between limestone and heat. By incorporating sustainable practices into cement production, such as increasing energy efficiency and utilising alternative fuels, the sector can contribute to a more environmentally friendly future by reducing its emissions footprint.

The main challenge for the cement sector is to reduce CO₂ emissions while meeting global demand. The infrastructure needs of developing economies necessitate the global development and implementation of new emission reduction technologies in the sector.

The following sections briefly describe the key choices in calculating cement sectors' emission intensity baseline and 2030 target.

Value chain boundary

The majority of GHG emissions from the cement sector occur from the:

- heated limestone in clinker and cement manufacturing (~60%); and
- combustion of the fuels used in the cement kiln and other plant processes (~40%)

Therefore, the technical boundary for emissions calculation covers midstream processes where the majority of the sector emissions are concentrated.

Emission boundary

As we are measuring the emissions from the production of cement the emissions boundary considered is the direct emissions (Scope 1) and indirect energy emissions (Scope 2). In some cases where it is not possible to disaggregate direct and indirect emissions, we classify these as Scope 1, and Scope 2.

GHG boundary

Due to data availability and materiality, we have chosen to report only on CO₂. The uplift from CO₂ to CO₂e in cement is less than 1% and, as such, is considered not material to the calculation (UK Department for Energy Security and Net Zero, 2023).

Data sources

The cement sector financed emissions calculation utilises the same data sources as outlined above in the general data input section. However, due to our value-chain scoping we prioritise annual reports and sustainability reports over S&P.

Calculation methodology

In setting our emissions baseline and target, we have measured our cement sector portfolio emissions with a production-based emissions intensity metric of tonnes CO₂ per tonnes of cementitious material⁶ (tCO₂/t cement). This intensity metric is commonly used by stakeholders - such as the GCCA and is a useful comparison against peers. Additionally, the metric incorporates an attribution factor to derive Standard Chartered's share of real-world emissions in the cement sector. Generally, our selection of a production-based emissions intensity metric for the cement sector is motivated by the need to balance the rising demand for cementitious materials in emerging economies with the pressing requirement to decarbonise the cementitious material production process.

$$\text{Financed emissions (tCO}_2\text{)} = \sum_{\text{All parents}} \left(\frac{\text{Parent exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client emissions (tCO}_2\text{)}$$

$$\text{Financed production (t cement)} = \sum_{\text{All parents}} \left(\frac{\text{Parent exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client production (t cement)}$$

$$\text{Production-based intensity (tCO}_2\text{/t cement)} = \frac{\text{Financed emissions (tCO}_2\text{)}}{\text{Financed production (t cement)}}$$

Example

Inputs:

- cementitious material producing company
- \$0.1 billion general lending
- company value of \$10 billion
- total cementitious material production aggregated at parent level of 20 Mt
- total Scope 1 and Scope 2 emissions aggregated at parent level of 12 MtCO₂

$$\text{Financed emissions} = \left(\frac{\$0.1 \text{ billion}}{\$10 \text{ billion}} \right) \times 12 \text{ MtCO}_2 = 0.1 \text{ MtCO}_2$$

$$\text{Financed production} = \left(\frac{\$0.1 \text{ billion}}{\$10 \text{ billion}} \right) \times 20 \text{ Mt cement} = 0.2 \text{ Mt cement}$$

$$\text{Production-based intensity} = \frac{0.1 \text{ MtCO}_2}{0.2 \text{ Mt cement}} = 0.5 \text{ tCO}_2\text{/t cement}$$

Reference pathway

Our cement sector target aligns with the IEA NZE scenario. This science-based scenario is consistent with the Paris Agreement commitment to limit global temperature rise to within 1.5°C.

⁶For completeness, we take the higher of the cement or clinker production number.

Commercial real estate (CRE)

The CRE sector is an important area to decarbonise in order to achieve net zero by 2050. The CRE sector contributed 8% towards global emissions in 2022 (IEA, 2023). Emissions primarily arise from two sources:

- the operation of the building; and
- embodied emissions which are emissions related to the construction, maintenance, and disposal of real estate assets

Key determinants of the GHG emissions of the CRE portfolio include the size and type of the building which impact the buildings energy needs as well as the energy mix of the electricity grid in the region in which the building is located.

Value chain boundary

We only measure emissions on the operation of buildings. We consider the embodied emissions to be largely captured in the steel and cement sectors.

Product scoping

We consider the following financial products in CRE:

- Investment loans (**IL**) where the proceeds are utilised to purchase a building are included
- Property development loans (**PDL**) are excluded as there are no operational emissions
- due to data limitations, General lending (**GL**) is excluded as presently our lending cannot be accurately linked back to a client's property assets

Emissions boundary

As we are measuring the emissions from the operation of buildings the emissions boundary considered is the Scope 1 and Scope 2 emissions of the buildings being financed.

GHG boundary

All GHG emissions are considered with a CO₂e value measured and reported.

Data sources

In addition to the generic data sources outlined in the 'data input' section above, our client emissions and net floor area⁷ data for the CRE sector is sourced from the following sources:

- Morgan Stanley Capital International (**MSCI**) Real Capital data is used where actual floor area is not available
- emissions factors from Carbon Risk Real Estate Monitor (**CRREM**) are also used when building report and MSCI emissions are unavailable

⁷ Net floor area is defined as the actual occupied area of a floor, not including accessory unoccupied areas or the thickness of walls. (International Building Code, 2018).

Calculation Methodology

We use an emissions intensity of kgCO₂e/Sq.m to measure the progress of our portfolio towards net zero by 2050. This is to more accurately reflect the decarbonisation progress made by any company over time as it factors in investment into green buildings which would not be captured through absolute emissions. Additionally, it also allows for better comparisons with peers.

$$\text{Financed emissions (kgCO}_2\text{e)} = \sum_{\text{All clients}} \left(\frac{\text{Building exposure (\$)}}{\text{Building value (\$)}} \right) \times \text{Building emissions (kgCO}_2\text{e)}$$

$$\text{Financed physical area (Sq.m)} = \sum_{\text{All clients}} \left(\frac{\text{Building exposure (\$)}}{\text{Building value (\$)}} \right) \times \text{Building floor area (Sq.m)}$$

$$\text{Physical-based intensity (kgCO}_2\text{e/Sq.m)} = \frac{\text{Financed emissions (kgCO}_2\text{e)}}{\text{Financed physical area (Sq.m)}}$$

Example

Inputs:

- \$8 million investment loan
- building value of \$10 million
- floor area of 300 Sq.m
- emissions of 16,000 kgCO₂e

$$\text{Financed emissions} = \left(\frac{\$8 \text{ million}}{\$10 \text{ million}} \right) \times 16,000 \text{ kgCO}_2\text{e} = 12,800 \text{ kgCO}_2\text{e}$$

$$\text{Financed physical area} = \left(\frac{\$8 \text{ million}}{\$10 \text{ million}} \right) \times 300 = 240 \text{ Sq.m}$$

$$\text{Physical-based intensity} = \frac{12,800 \text{ kgCO}_2\text{e}}{240 \text{ Sq.m}} = 53 \text{ kgCO}_2\text{e/ Sq.m}$$

Reference pathway

We have set a range target using the IEA NZE scenario as the lower-bound range and the IEA APS scenario as the upper bound-range. Both scenarios are consistent with the Paris Agreement to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

Oil and gas

The O&G sector's production emissions (i.e., operations) and consumption emissions (i.e., use of fuel products) account for approximately 15%, and 36% (IEA WEO, 2023) of global energy-related emissions respectively. As such, the decarbonisation of the O&G sector is crucial if we are to reach net zero.

Over half of the O&G sector's emissions originate in Asia, Africa, and the Middle East (IEA, 2023). These regions contain the vast majority of Standard Chartered's market footprint and related financing activity. The O&G sector is the largest contributor to our absolute financed emissions, comprising approximately 10 million tonnes of CO₂e per annum. Given these factors, we have set an absolute emissions target for our exposure to the O&G sector.

Fossil fuel assets are deeply entrenched in the global economy, hence, the transitioning, phasing-down and phasing-out of unabated fossil-fuel production assets in the O&G sector is one of the most substantial challenges towards realising net zero. The transition requires the development and scaling of new technologies and business models to drastically reduce production (supply) and alter consumption (demand) patterns.

To transition to net zero, we need to see a rapid global scale up of clean energy. This should be delivered through a just transition that ensures a secure, equitable and sustainable future (World Energy Council, 2023). The added complexity of embedding 'energy trilemma' considerations into clean energy investment decisions is ongoing, and our frameworks are reviewed and updated regularly to reflect the latest industry knowledge from reputable institutions, including the IEA.

Beyond the net zero baseline and target, we have also published our O&G position statement. Our position statement reflects the criteria we assess our clients against when considering the provision of financial services to extractives activities in the O&G sector. For further information please refer to our extractive industries position statements.

We have identified the following overarching strategies to decarbonise the O&G sector in the table below.

Table 3: O&G strategic levers and options

Strategic levers	Strategic options
Reduce O&G production emissions (Scope 1, and Scope 2)	<ul style="list-style-type: none"> improve the operational efficiency of O&G production; reduce methane leakages, venting, and flaring integrate renewables and low-emission electricity into upstream and liquefied natural gas (LNG) developments abate emissions at source⁸ through deployment of carbon capture and storage technologies (CCS, CCUS)
Develop non-oil and gas businesses	<ul style="list-style-type: none"> transition to non-fossil fuel energy businesses: low-emission electricity generation, synthetic fuels, advanced biofuel, power-to-x, etc. transition to non-energy businesses: electricity distribution, electric vehicle (EV) battery charging, energy efficiency, distributed battery/energy storage

⁸ By implementing CCUS, emissions can be reduced directly at source by preventing CO₂ from entering the atmosphere; however, the overall effectiveness depends on factors such as the efficiency of capture technologies, the extent of utilisation and the long-term storage of captured CO₂.

Reducing production emissions is an important aspect for all O&G companies, this strategic lever is considered most achievable in the short-term on a global basis as the technology and knowledge to reduce production-related emissions are generally proven and cost-effective.

However, the reduction of consumption emissions and the development of non-O&G businesses will vary across companies due to:

- geographical considerations
- value-chain operations
- degree of vertical integration
- rate of new technology adoption
- local legislation
- government mandates

Therefore, the implementation and timing of the second lever is more variable and assessed on a regional and asset basis.

Value chain boundary

Our value chain boundary is set out in the table below and adapted from the IEA's The O&G sector in Net Zero Transitions report (2023b).

Table 4: Oil and gas activities and companies

		Companies	
	Activities	Pure players	Integrated O&G and NOCs
Upstream ⁹	Exploration & production	E&P pure players	
		Services companies	Integrated oil companies
Midstream ¹⁰	Pipeline and land transportation		Integrated LNG companies
	Maritime transport (crude or product tanker, LNG)	Natural gas transporters Oil products transporters	National oil companies (NOC)
	Midstream services	Service companies	
Downstream ¹¹	Refineries and LNG facilities	Refining pure players	
	Petrochemicals	Petrochemical pure players	

⁹ Defined as entities that explore for, extract, or produce energy products such as crude oil and natural gas. Companies in the sector that develop conventional and unconventional O&G reserves; these include, but are not limited to, shale oil and/or gas reserves, oil sands, and gas hydrates (IEA, 2023b).

¹⁰ This consists of companies that are involved in the transportation, storage, and processing of natural gas, crude oil, and refined petroleum products (IEA, 2023b).

¹¹ Entities that refine petroleum products, and/or operate petrochemical production facilities (IEA, 2023b)

Emissions boundary

- The Scope 1 and Scope 2 emissions across upstream, midstream and downstream counterparties
- Scope 3 emissions are solely the end use of product (i.e., combustion). This is attributed to counterparties with **production activities**

GHG boundary

We report our O&G sector financed emissions in CO₂e covering Scope 1, Scope 2 and Scope 3 use of sold products.

Data sources

In addition to the generic data sources outlined in the ‘data input’ section above, our clients’ production data is downloaded from the Wood Mackenzie data analytics ‘Lens’ platform. The production figure is multiplied by a barrel of oil and gas equivalent emission factor to calculate the Scope 3 ‘use of sold product’ emissions.

Calculation methodology

In setting our emissions baseline and target, we have measured our O&G sector portfolio emissions on an absolute emissions basis.

$$\text{Financed emissions (tCO}_2\text{e)} = \sum_{\text{All clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client emissions (tCO}_2\text{e)}$$

Example

Inputs:

- \$0.5 billion in-scope lending
- company value of \$150 billion
- total Scope 1 and Scope 2 emissions: 30 MtCO₂e
- total Scope 3 emissions: 300 MtCO₂e

$$\text{Financed emissions}_{\text{Scope 1 and 2}} = \left(\frac{\$0.5 \text{ billion}}{\$150 \text{ billion}} \right) \times 30 \text{ MtCO}_2\text{e} = 0.10 \text{ MtCO}_2\text{e}$$

$$\text{Financed emissions}_{\text{Scope 3}} = \left(\frac{\$0.5 \text{ billion}}{\$150 \text{ billion}} \right) \times 300 \text{ MtCO}_2\text{e} = 1.00 \text{ MtCO}_2\text{e}$$

$$\text{Financed emissions}_{\text{Total}} = 0.10 \text{ MtCO}_2\text{e} + 1.00 \text{ MtCO}_2\text{e} = 1.10 \text{ MtCO}_2\text{e}$$

Reference pathway

Our O&G sector target aligns with the IEA NZE scenario. This science-based scenario is consistent with the Paris Agreement commitment to limit global temperature rise to within 1.5°C.

Power

The electricity and heat sector contributed 40% towards global GHG emissions in 2022 (IEA, 2023). It is projected that global electricity demand will continue to rise especially in emerging markets and developing economies. This is because as population growth continues, urbanisation accelerates, and socio-economic development drives an increase in consumption. As such, fossil fuel electricity generation makes up a disproportionately larger share in many of the markets in which Standard Chartered operates. We aim to direct capital to promote the uptake of renewable energy technologies in tandem with providing transition finance to our clients in emerging markets in support of their journey to net zero.

Value chain boundary

The majority of GHG emissions from the power sector are emitted at the point of combustion where fossil fuels or biomass are used to generate electricity and heat. We only consider power generation for electricity as in-scope within the value chain and we exclude steam, heating, cooling producers and transmission & distribution (T&D) entities from our financed emissions calculation. We consider the following power generation types (non-exhaustive) to be in-scope: gas turbines, steam turbines, diesel engines, supercritical pulverised coal, hydro, geothermal, wind, solar, nuclear, tidal, concentrated solar, and waste-to-energy.

Emissions boundary

We primarily consider the Scope 1 emissions associated with power generation and the combustion of fossil fuels. In some cases, we use our clients' Scope 1 and Scope 2 emissions when the emissions data is not disaggregated.

GHG Boundary

We have chosen to report on CO₂ emissions due to data availability and materiality. The CO₂ to CO_{2e} uplift is less than 1% for fuels used in power generation and not considered to be material to the calculation (UK Department for Energy Security and Net Zero, 2023).

Calculation methodology

In setting our emissions baseline and target, we have measured our power portfolio emissions with an intensity metric (tCO₂/MWh). Financed emissions calculated in the power sector can be generalised based on generation type, but the emissions factors utilised to calculate the clients' emissions will vary based on the type of lending and nature of the project.

Client production

Power sector client production data in order of preference:

- reported generation from:
 - annual reports/ sustainability reports
 - internally through our risk systems and client credit assessments

- estimated production from reported or estimated capacity leveraging:
 - Enerdata¹² average utilisation factors by region and technology

Client emissions

- power sector client emissions data in order of preference:
 - reported emissions from
 - externally via third party data aggregators (e.g., S&P)
 - annual reports/ sustainability reports
 - estimated emissions derived from reported production or capacity leveraging:
 - IEA average intensity factors by region and technology

$$\text{Financed emissions (tCO}_2\text{)} = \sum_{\text{All clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client emissions (tCO}_2\text{)}$$

$$\text{Financed production (MWh)} = \sum_{\text{All clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Generation (MWh)}$$

$$\text{Emission intensity (tCO}_2\text{/MWh)} = \frac{\text{Financed emissions (tCO}_2\text{)}}{\text{Financed production (MWh)}}$$

Example (project finance)

Inputs:

- project finance (or specified general lending) for combined cycle gas turbine (CCGT) plant
- \$0.1 billion lending with project value of \$3 billion
- total asset generation of 30,000,000 MWh (100% CCGT)
- total asset emissions of 10.5 MtCO₂

$$\text{Financed emissions} = \left(\frac{\$0.1 \text{ billion}}{\$3 \text{ billion}} \right) \times 10,500,000 \text{ tCO}_2 = 350,000 \text{ tCO}_2$$

$$\text{Financed generation} = \left(\frac{\$0.1 \text{ billion}}{\$3 \text{ billion}} \right) \times 30,000,000 \text{ MWh} = 1,000,000 \text{ MWh}$$

$$\text{Production-based intensity} = \frac{350,000 \text{ tCO}_2}{100,000,000 \text{ MWh}} = 0.35 \text{ tCO}_2\text{/MWh}$$

¹² Enerdata is an independent research company that specialises in the analysis and forecasting of energy and climate issues

Reference pathway

We have set a range target using the IEA NZE scenario as the lower-bound range and the IEA APS scenario as the upper bound-range. Both scenarios are consistent with the Paris Agreement to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

Residential mortgages

Residential housing contributed 5% towards global emissions in 2022 (IEA, 2023). The residential housing sector emissions are primarily from two sources:

- the operation of the building
- embodied emissions which are emissions related to the construction, maintenance, and disposal of real estate assets

We omit embodied emissions in our financed emissions calculation (refer to value chain boundary below for the rationale). As such, the key determinants of operational emissions are the energy efficiency of the residence being funded (demand) as well as the cleanliness of the grid that is providing the house with electricity (supply).

The levers available to decarbonise the portfolio are:

- increase lending to clients to improve unit or building energy efficiency through retrofitting and improvement of insulation, ventilation, and energy management
- through collecting specific unit or building emissions data within the portfolio which reduces the need to proxy data and increases emission accuracy
- through engaging with clients to decarbonise their electricity supply, for instance, through the direct purchase of green electricity, or green certificates

Standard Chartered issues residential mortgages in Asia, Africa, the Middle East, and Europe, however 89% of the residential mortgage book is concentrated in South Korea, Hong Kong, Taiwan, and Singapore. These markets constitute our residential mortgages net zero target, the remaining 11% has been de-scoped.

Value chain boundary

For residential mortgages, the value chain only includes financing towards residential use of housing. Emissions calculated are based on residential activities occurred in the occupying space. This means that the loans are only in scope when:

- it is for new purchase or re-financing of the property
- when the property is completed, and
- the property is used only for residential purpose

As such, buildings under construction, equity loans, and properties with full or partial commercial usage are excluded from the calculation. Additionally, embodied emissions through the construction of buildings are not included as these emissions are considered to be accounted for in steel and cement manufacturing.

Emissions boundary

As we are measuring the emissions from the operation of residential buildings, the emissions boundary considered are the Scope 1 and Scope 2 emissions of the building area being financed.

GHG boundary

All GHG emissions are considered with a CO₂e value measured.

Calculation methodology

We have used national energy consumption data for each in scope market to estimate our financed emissions and emission intensity. We use an emissions intensity of kgCO₂e/Sq.m to measure the progress of our residential mortgage portfolio towards net zero in 2050.

$$\text{Financed emissions (kgCO}_2\text{e)} = \sum_{\text{All clients}} \left(\frac{\text{Building exposure (\$)}}{\text{Building value (\$)}} \right) \times \text{Building emissions (kgCO}_2\text{e)}$$

$$\text{Financed physical area (Sq.m)} = \sum_{\text{All clients}} \left(\frac{\text{Building exposure (\$)}}{\text{Building value (\$)}} \right) \times \text{Building floor area (Sq.m)}$$

$$\text{Physical-based intensity (kgCO}_2\text{e/Sq.m)} = \frac{\text{Financed emissions (kgCO}_2\text{e)}}{\text{Financed physical area (Sq.m)}}$$

Example

Inputs:

- \$100,000 residential mortgage loan
- \$121,000 building value
- floor area 28 Sq.m
- emissions 1500 kgCO₂e

$$\text{Financed emissions} = \left(\frac{\$100,000}{\$121,000} \right) \times 1,500 \text{ kgCO}_2\text{e} = 1,240 \text{ kgCO}_2\text{e}$$

$$\text{Financed physical area} = \left(\frac{\$100,000}{\$121,000} \right) \times 28 \text{ Sq.m} = 23 \text{ Sq.m}$$

$$\text{Physical-based intensity (kgCO}_2\text{e/Sq.m)} = \frac{1,240 \text{ kgCO}_2\text{e}}{23 \text{ Sq.m}} = 54 \text{ kgCO}_2\text{e/Sq.m}$$

Reference pathway

Standard Chartered, as a UK headquartered Group with our residential mortgage portfolios predominantly in Asia, is one of the first banks to set a target on our residential mortgage portfolio across multiple countries. As such, we have used multiple country-specific CRREM scenarios to benchmark our portfolios in each market. While we have set a single group-level target, the nature of the residential real estate market means all decarbonisation actions will take place at the local level.

We have set our target range at the ambitious end of the public commitments made by governments and power companies in the countries where we operate. This currently sits above the global CRREM pathway to 2030. We will continue to review our reduction pathway in line with increases in the level of ambition of those external commitments.

Shipping

Shipping is key to facilitating global trade, the sector is estimated to contribute 2% of total global CO₂ (IEA, 2023). The sectoral emissions predominantly arise from the combustion of fuel in ships' engines. The primary lever for decarbonising the shipping sector is through accelerating the uptake and technological development of low and zero-emission alternative fuels.

Poseidon Principles

Standard Chartered is a signatory of the Poseidon Principles (PP), a global framework for financial institutions to assess and report the climate-related alignment of their financed shipping portfolio. Committing to the PP means that Standard Chartered intends to reduce our shipping financed emissions according to a PP trajectory by 2050. The PP determine the decarbonisation pathways to follow, including forward looking trajectory scenarios, as developed by the International Maritime Organization (IMO).

In 2022 Standard Chartered aligned to the IMO 2050 trajectory outlined below. However, in 2023 PP replaced the IMO 2050 with a 'minimum' and 'striving' trajectory, the bounds of the new pathways are set out below under 'IMO Revised Strategy'. The new scenarios adopted by the PP are more stringent than the previous trajectory and signify the ambitions to decarbonise the sector. As such, we are now aligned to the IMO Revised Strategy trajectories, for further details please refer to [PP Resolution MEPC.377\(80\)](#).

Table 5: IMO trajectories

PP trajectory	Emission boundary	Reduction ambition compared to base year 2008			Net zero by 2050
		2030	2040	2050	
IMO 2050	TTW CO ₂	28%	39%	50%	No
IMO Revised Strategy (minimum)	WTW CO ₂ e	20%	70%	100%	Yes
IMO Revised Strategy (striving)	WTW CO ₂ e	30%	80%	100%	Yes

Value chain boundary

Standard Chartered applies PP methodology for the shipping sector. The scope for measuring financed emissions includes ship operators and ship owners with vessels that fall under the purview of the IMO (i.e., vessels >5,000 gross tonnage and a ship type classification that has been submitted to the IMO's Data Collection System for Fuel Consumption (DCS) (Poseidon Principles, 2023). For clarification of classification on ship types or individual ships, please refer to:

- StatCode Ship Type Coding System document, and
- IMO Global Integrated Shipping Information System

Emissions boundary

In line with the latest draft technical guidance from PP (2024) our shipping emissions were updated from operational emissions (“tank-to-wake”) to full lifecycle emissions (“well-to-wake”). As such, Scope 1 and Scope 3 emissions are calculated.

GHG boundary

We previously reported our financed emissions from the shipping sector in CO₂, now in line with the latest draft technical update from the PP (2024) we report our emissions in CO₂e.

Calculation methodology

Standard Chartered measures the climate alignment of our shipping portfolios with reference to the PP technical guidance.

Annual efficiency ratio (AER)

AER is a physical intensity measure for every ship financed by Standard Chartered that meets the IMO criteria based on distance travelled, fuel consumed and its deadweight tonnage (Poseidon Principles, 2023).

$$AER_{\text{Vessel}} = \frac{\sum_i C_i}{\sum_i \text{dwt} D_i}$$

Where:

- AER is reported in unit gram of CO₂e per tonne-mile (gCO₂e/dwt-nm) for all voyages performed over a calendar year
- C_i is the GHG emissions for voyage = fuel consumption x emission factor of each fuel type
- dwt = deadweight at maximum summer draught of the vessel
- D_i = the distance travelled in voyage i

Alignment delta (AD)

AD is a variant on the physical emissions intensity approach, it was developed by PP for measuring heterogenous shipping portfolios. The AD per ship is calculated by comparing the difference between a ship’s measured AER and the AER prescribed by the relevant PP decarbonisation trajectory by ship type and weight. If a ship’s AD is zero or negative that means it contributes to meeting PP and IMO decarbonisation goal, and vice versa if the AD is positive. The portfolio AD is the average sum of the individual comparisons across the portfolio, weighting by exposure to each client.

$$AD_{\text{Vessel}} = \left(\frac{AER_{\text{Vessel}} - \text{Required } AER_{\text{Vessel}}}{\text{Required } AER_{\text{Vessel}}} \right)$$

$$AD_{\text{Portfolio}} = \sum \left(AD_{\text{Vessel}} \times \frac{\text{Exposure to vessel}}{\text{Total portfolio exposure}} \right)$$

Where:

- required AER of vessel is based on type and size to determine the relevant reference pathway
- exposure in this sector is asset-backed and specifically only the amount lent against the vessel and not the client as a whole

Please refer to the Poseidon Principles Technical Guidance Version 4.2 (2023) for a worked example.

Reference pathway

Refer to Table 5 above for details of the reference pathway.

Steel

Steel is a critical material. It is essential to the functioning of the global economy from the production of the world's vehicles and household appliances to buildings and infrastructure. As such, the steel sector is the largest source of industrial CO₂ emissions and accounts for roughly 7% of global CO₂ emissions (IEA, 2023). This is largely due to the sector's reliance on metallurgical coal as the primary fuel source for ironmaking via blast furnaces. We have identified four technological levers for decarbonising steel production:

- scrap-based Electric Arc Furnace (EAF)
- Natural Gas-based Direct Reduction Plant and EAF (NG-DRI EAF)
- Hydrogen Direct Reduction Plant and EAF (H-DRI EAF)
- Blast Furnaces for reducing iron ore / Basic Oxygen Furnaces for smelting with post-combustion Carbon Capture and Storage (BF-BOF-CCS)

The implementation and timing of the levers varies on an asset-by-asset basis. Assessing local conditions is a crucial starting point towards understanding the most likely decarbonisation pathway. With global demand projected to grow 30% by 2050, decarbonising the steel sector is simultaneously one of the greatest challenges and opportunities between now and 2050.

Sustainable STEEL Principles (SSP)

This framework was developed by a group of five international banks and facilitated by the Centre for Climate-Aligned Finance at RMI, in consultation with over 80 representatives from industry, NGOs and other institutions. It represents a crucial step towards standardised reporting in CO₂ for the steel sector, enabling financial institutions to objectively compare steelmakers performance. Committing to the five SSPs (2022) means that Standard Chartered intends to:

1. annually measure and report the climate-related alignment of our steel lending portfolio according to the SSP guidance and methodology
2. annually publish portfolio climate alignment scores, a brief narrative, and the percent of our portfolio represented by emissions reduction targets
3. source data from clients, or from an approved third-party data provider
4. engage with our clients to maximise real economy impact by advancing emissions reductions in line with 1.5°C
5. be a leader by setting steel portfolio targets informed by the SSP, updating the SSP as data evolves

Value chain boundary

The majority of GHG emissions from the steel sector are related to the steel production process. Standard Chartered reports our steel financed emissions with reference to the 'Fixed System Boundary' set out by the SSP. As such, all emissions resulting from ironmaking, steelmaking are within scope and collected on a best-efforts basis.

Emissions boundary

Scope 1 and Scope 2 emissions are calculated for steel producers. We aim to accurately report Scope 3 emissions associated to the sector in the future as data quality and availability improves.

GHG boundary

Standard Chartered reports our financed emissions in CO₂ as this the most material GHG produced in the production of steel. The measurement is consistent with the SSP methodology.

Data sources

In addition to the generic data sources outlined in the 'data input' section above, our client emissions and production data for the steel sector is sourced from CRU's Emissions Analysis database.

Calculation methodology

In setting our emissions baseline and target, we have measured our steel portfolio emissions with an intensity metric (tCO₂/t steel). This intensity metric is commonly used by stakeholders in the steel sector and is a useful comparison against peers. Additionally, the metric incorporates an attribution factor to derive our share of real-world emissions in the steel sector. Overall, our choice of an intensity metric for the steel sector is to recognise the urgent need to decarbonise the steel production process, whilst balancing the growing demand of steel in emerging economies.

$$\text{Financed emissions (tCO}_2\text{)} = \sum_{\text{All Clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client emissions (tCO}_2\text{)}$$

$$\text{Financed production (t steel)} = \sum_{\text{All Clients}} \left(\frac{\text{Client exposure (\$)}}{\text{Company value (\$)}} \right) \times \text{Client production (t steel)}$$

$$\text{Emission intensity (tCO}_2\text{/t steel)} = \frac{\text{Financed emissions (tCO}_2\text{)}}{\text{Financed production (t steel)}}$$

Example

Inputs:

- \$0.15 billion general lending
- company value of \$20 billion
- total asset production of 20 Mt steel
- total asset emissions of 40 MtCO₂

$$\text{Financed emissions} = \left(\frac{\$0.15 \text{ billion}}{\$20 \text{ billion}} \right) \times 40 \text{ MtCO}_2 = 0.30 \text{ MtCO}_2$$

$$\text{Financed production} = \left(\frac{\$0.15 \text{ billion}}{\$20 \text{ billion}} \right) \times 20 \text{ Mt Steel} = 0.15 \text{ Mt steel}$$

$$\text{Production-based intensity} = \frac{0.30 \text{ MtCO}_2}{0.15 \text{ Mt steel}} = 2.00 \text{ tCO}_2/\text{t steel}$$

Reference pathways

We have set our steel sector target range with reference to the Mission Possible Partnership's Technology Moratorium (MPP TM), which is a 1.5°C low overshoot scenario prepared by a body of experts drawn from climate science, finance, policy, and industry (MPP, 2022). The upper bounds of our reference pathway is an regional MPP TM scenario that reflects the geographical mix of our steel portfolio.

Thermal coal mining

We have adopted an absolute financed emissions reductions for thermal coal mining. Our thermal coal mining portfolio continues to decrease in line with contractual commitments and our coal revenue thresholds as detailed in our position statements. No new thermal coal use of proceeds loans have been provided.

Per our [position statements](#) we will not provide financial services (effective from March 2022 onwards) directly towards:

- new thermal coal mining projects
- thermal coal mine expansions
- infrastructure dedicated to thermal coal mining projects
- acquisitions of standalone thermal coal mines

Additionally, we will only provide financial services to clients who:

- by 2024, are less than 80% dependent on thermal coal (based on % revenue)
- by 2025, are less than 60% dependent on thermal coal (based on % revenue)
- by 2027, are less than 40% dependent on thermal coal (based on % revenue)
- by 2030, are less than 5% dependent on thermal coal (based on % revenue)

Just Energy Transition Partnerships (JETP)

Standard Chartered is participating in the JETP programmes as a mobiliser and provider of capital in alignment with our commitments as a member of the Glasgow Financial Alliance for Net Zero (GFANZ). Transitioning away from coal-fired power is a crucial requirement to net zero and is a key target for the JETPs. Where Standard Chartered has provided financing under a JETP or coal decommission structure, we will ringfence this funding and financed emissions from other high carbon sectors as 'coal decommissioning'.

Value chain boundary

Entities engaged with the upstream extraction of thermal coal.

Emission boundary

Scope 1 and 2 emissions are calculated for thermal coal producers

Scope 3 emissions are solely the end use of product (i.e., combustion). This is attributed to counterparties with production activities

GHG boundary

All GHG emissions are considered with a CO₂e value measured.

Data sources

In addition to the generic data sources outlined in the 'data input' section above, our clients' production data is downloaded from the Wood Mackenzie data analytics 'Lens' platform. The production figure is multiplied by a coal combustion emission factor to calculate the Scope 3 'use of sold product' emissions.

Calculation methodology

In setting our emissions baseline and target, we have measured our thermal coal portfolio emissions on an absolute emissions basis.

$$\text{Financed emissions} = \sum_{\text{All clients}} \left(\frac{\text{Client Exposure (\$)}}{\text{Company Value (\$)}} \right) \times \text{Client emissions (tCO}_2\text{e)}$$

Example

Inputs:

- \$0.015 billion general lending
- Company value of \$2 billion
- total Scope 1 and Scope 2 emissions: 10 MtCO₂e
- total Scope 3 emissions: 80 MtCO₂e

$$\text{Financed emissions}_{\text{Scope 3}} = \left(\frac{\$0.015 \text{ billion}}{\$2 \text{ billion}} \right) \times 80 \text{ MtCO}_2\text{e} = 0.6 \text{ MtCO}_2\text{e}$$

$$\text{Financed emissions}_{\text{Scope 1 and 2}} = \left(\frac{\$0.015 \text{ billion}}{\$2 \text{ billion}} \right) \times 10 \text{ MtCO}_2\text{e} = 0.08 \text{ MtCO}_2\text{e}$$

$$\text{Financed emissions}_{\text{Total}} = 0.6 \text{ MtCO}_2\text{e} + 0.08 \text{ MtCO}_2\text{e} = 0.68 \text{ MtCO}_2\text{e}$$

Reference pathway

The thermal coal mining portfolio is a run-down book, we have a target to reduce absolute emission by 85% by 2030. In addition to the emissions target we have financial restrictions per our position statements as outlined above in the background section.

Facilitated emissions

During 2022, Standard Chartered joined PCAF to support the development of a methodology to measure facilitated emissions associated with the arranging of capital markets issuances. In line with PCAF recommendation, we report our facilitated emissions separate from financed emissions due to the difference in nature of these activities across two key dimensions:

1. financed emissions account for on-balance sheet exposure from direct lending and investments while facilitated emissions represent emissions from off-balance sheet activities where financial institutions support the issuance of capital markets instruments
2. capital market facilitation leads to a temporary association with a transaction, which takes the form of a flow activity. By contrast, direct financing usually leads to a financial institution holding the transaction for years on its balance sheet, which classifies as a stock activity

Issuance boundary

Our calculation covers the issuance of corporate bonds and excludes:

- asset-backed securities
- short-term bonds (less than 1.5 years to maturity)¹³
- bonds issued by government or financial institutions
- green, Social and Sustainability tagged bonds

Additionally, due to the timing of PCAF's finalised guidance our 2021 facilitated emissions baseline excludes all syndicated loans¹⁴.

Value chain boundary

The sector definition for facilitated emissions calculation covers a wider range of companies compared to financed emissions because we have not performed any value chain exclusions.

Emission boundary

The analysis aggregates facilitated emissions across all sectors, accounting for client's Scope 1 Scope 2 emissions. In addition, we have included upstream and downstream Scope 3 emissions for O&G, thermal coal mining and automotive manufacturing, in line with current PCAF guidance. We will continue to expand our Scope 3 coverage against PCAF's required phase-in period as market data and our internal data improves.

GHG boundary

All GHG emissions are considered with a CO₂e value measured.

¹³ PCAF's Facilitated Standard did not explicitly provide guidance on short duration, the exclusion of short maturities was applied due to the potential fluctuation it would introduce to the portfolio.

¹⁴ In 2024 we will perform an analysis of the syndication book to understand the population that is not also underwritten by us. This will become the starting point for considering the inclusion of syndicated loans.

Calculation methodology

Our calculations reflect the latest guidance document described in PCAF's 'The Global GHG Accounting and Reporting Standard Part B: Facilitated Emissions' published in December 2023.

We computed our facilitated emissions using the formula below and applying a weighting factor of both 33% and 100%.

Facilitated emissions (tCO₂e)

$$= \sum_{\text{All clients}} \left(\frac{\text{Facilitated amount (\$)}}{\text{Company value (\$)}} \right) \times \text{Weighting factor (\%)} \times \text{Client emissions (tCO}_2\text{e)}$$

Where:

- facilitated Amount (\$) = total amount raised (\$) × volume attributable to us (%)
- company value = for listed companies this is the EVIC of the respective client. For private companies this is the sum of the total company equity and debt when no market value for equity is available
- weighting factor = 33%
- annual emissions = the total in-scope emissions of the issuer
- c = the issuing company

Example

Inputs:

- sector = O&G
- total amount raised = \$0.15 billion
- league table credit volume attributable to Standard Chartered = 50%
- company value = \$10 billion
- weighting factor = 33%
- Scope 1 and Scope 2 emissions = 15 MtCO₂e
- Scope 3 = 1 MtCO₂e

$$\text{Facilitated emissions} = \left(\frac{\$0.15 \text{ billion} \times 50\%}{\$10 \text{ billion}} \right) \times 33\% \times 16 \text{ MtCO}_2\text{e}$$

$$\text{Facilitated emissions} = 0.04 \text{ MtCO}_2\text{e}$$

Conclusion

We remain committed to the transparent disclosure of our methodology to facilitate comparison, engagement and discussion amongst stakeholders on meaningful pathways to achieve net zero. We will monitor our approach and publish amendments to our White Paper as necessary in accordance with scientific guidance and sector-agreed methodologies as updated from time to time. We will continue to operate in a manner that seeks to promote sustainable economic growth in our markets, recognising that this ambition will be subject to the specific market risks and challenges presented by climate change.

Acronyms

AD	Alignment delta
AER	Annual efficiency ratio
BF-BOF-CCS	Blast furnaces for reducing iron ore / basic oxygen furnaces for smelting with post-combustion carbon capture and storage
CCGT	Combined Cycle Gas Turbine
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Utilisation and Storage
CO ₂ e	Carbon Dioxide Equivalent
CRE	Commercial Real Estate
CRREM	Carbon Risk Real Estate Monitor
E&P	Exploration & production
EAF	Electric Arc Furnace
EV	Electric Vehicle
EVIC	Enterprise Value Including Cash
GCCA	Global Cement and Concrete Association
GFANZ	Glasgow Financial Alliance for Net Zero
GHG	Greenhouse Gas
GL	General Lending
H-DRI EAF	Hydrogen Direct Reduction Plant and EAF
IEA	International Energy Agency
IEA APS	International Energy Agency Announced Pledges Scenario
IEA NZE	International Energy Agency Net Zero Emissions by 2050 Scenario
IL	Investment loans
IMO	International Maritime Organization
IMO Existing	International Maritime Organization Existing Scenario
IMO rev. min.	International Maritime Organization Revised Minimum Scenario
IMO Striving	International Maritime Organization Striving Scenario
IPCC	Intergovernmental Panel on Climate Change

JETP	Just Energy Transition Partnerships
LDV	Light-duty Vehicle
LNG	Liquefied Natural Gas
MPP	Making Possible Partnership
MPP	Mission Possible Partnership
MPP STS	Making Possible Partnership Steel Transition Strategy
MPP TM	Making Possible Partnership Steel Technology Moratorium Scenario
MSCI	Morgan Stanley Capital International
MWh	Megawatt Hour
NG-DRI EAF	Natural Gas-based Direct Reduction Plant and EAF
NGO	Nongovernmental Organization
NZBA	Net Zero Banking Alliance
O&G	Oil and Gas
OEM	Original Equipment Manufacturer
Paris Agreement	As defined by the United Nations and adopted at the UN Climate Conference on 12 December 2015
PCAF	Partnership for Carbon Accounting Financials
PDL	Product Development Loan
PP	Poseidon Principles
PPA	Power Purchase Agreement
RMI	Rocky Mountain Institute
S&P	Standard & Poors
SAFF	Sustainable Aluminium Finance Framework
SBTi	Science-based Targets Initiative
T&D	Transmission & Distribution
TPI	Transition Pathway Initiative
TTW	Tank-to-Wake
WLTP	Worldwide Harmonised Light Duty Driving Test Procedure
WTW	Well-to-Wake

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