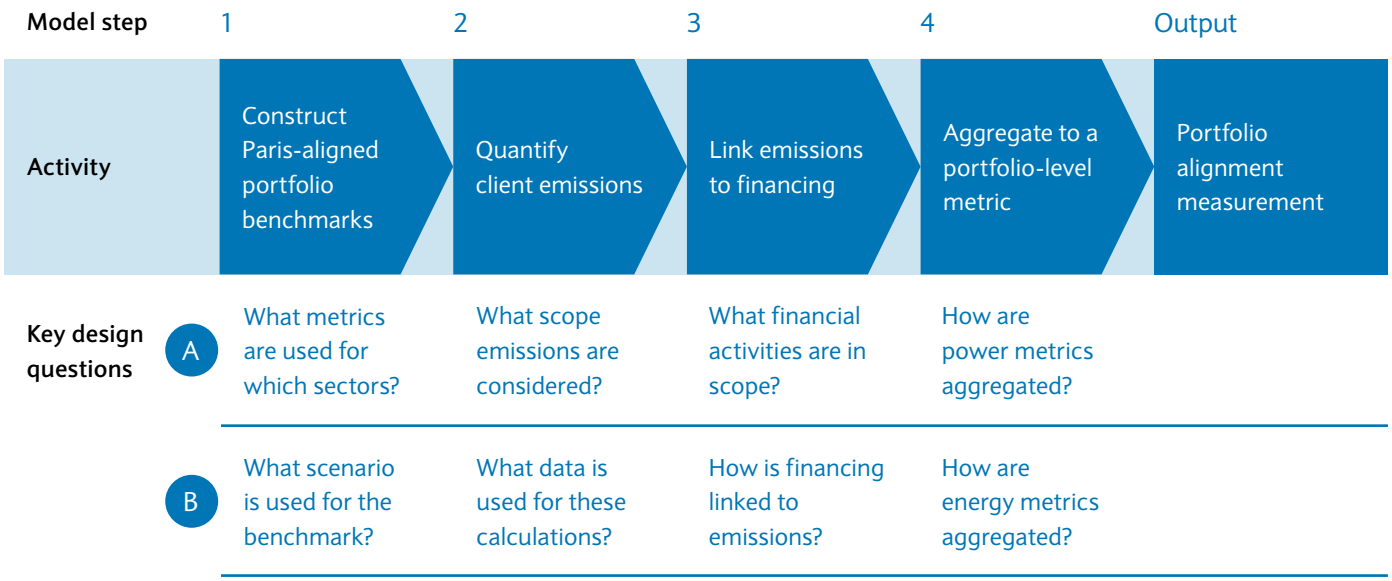
Introducing BlueTrack™

BARCLAYS

We believe that Barclays can make a real contribution to tackling climate change and help accelerate the transition to a low-carbon economy.

It's our ambition to be a net zero bank by 2050. We're already net zero emissions from our own operations, so our focus now is on reducing the client emissions that we finance. That starts with aligning our financing portfolios with the Paris Agreement, across not just lending but our capital markets activity as well.

To help us do that, we've built BlueTrack™. It's how we measure financed emissions, and track them over time against a decreasing 'carbon limit' on the activity we finance. It's also helping us to embed climate impact in our financing decisions. BlueTrack™ builds on and extends existing industry approaches to better reflect the breadth of our support for clients through our investment bank.



Our climate dashboard shows our financed emissions targets over time, and our progress towards them, by comparing the BlueTrack™ metrics for each sector against a benchmark emissions level.

1. Constructing Paris-aligned portfolio benchmarks

The first step of our model is to use an external climate scenario to construct a Paris-aligned portfolio benchmark that defines how a given financing portfolio will need to reduce emissions over time. This involves selecting an appropriate metric to use for measuring sector performance, selecting an appropriate external climate scenario, and then extracting the relevant time series from that scenario to serve as a benchmark.

In the following section we will explain how our model does this, and why we constructed it that way.

1.A. What metrics are used as benchmarks for each sector, and why?

1.A.1 Our model uses an absolute emissions metric to measure the performance of our Energy portfolio, and an emissions intensity metric for our Power portfolio. In order to understand why, we first need to understand how those two metrics are different.

1.A.2 An absolute emissions metric is simply a measurement of the total quantity of greenhouse gasses emitted by an actor over time. For example, if a company emits 10 tons of carbon dioxide this year, its absolute emissions measurement would be 10 tons. An emissions intensity metric is a measurement of the quantity of greenhouse gasses emitted by an actor per unit of output they produce. So, if the same example company produced 10 units of electricity this year, its emissions intensity would be 1 tonne CO2/ unit of electricity.

1.A.3 Emissions intensity metrics provide a view of the decarbonisation progress made by a company or sector over time. When transitioning, companies will need to invest in greener activities (e.g. renewables), which would be captured using an intensity metric but not necessarily an absolute metric. For this reason we have selected an intensity metric to track the performance of our Power portfolio. We will likely use a similar metric in the future as we expand our model to cover further sectors.

1.A.4 We have chosen to use an absolute emissions metric to measure the performance of our Energy portfolio; the Energy sector is different because it cannot reduce its emissions intensity beyond a certain point (for example, burning a barrel of oil will always produce a similar quantity of emissions). Because an emissions intensity metric will not capture the absolute reduction in production necessary for our fossil fuel clients to be aligned with the Paris Agreement, we have selected an absolute emissions metric.

1.A.5 One potential consideration with an emissions intensity metric is that it would in theory allow 'greening' a portfolio by keeping fossil fuel companies financing and adding green company financing in the portfolio, which would keep absolute emissions high. However, this logic would only apply in the short term, as the amount of green financing to be added in order to keep a portfolio in line with a well below 2°C scenario would soon become boundless (as the benchmark intensity gets closer to zero) and outside of what a bank can realistically capture as a fair share.

1.A.6 Also, when accounting for a company's absolute emissions in our portfolio, we actually measure the share of emissions of our financing relative to the company's value (see details in section 3.B). This brings an additional problem, as such an absolute measurement is subject to significant sources of volatility, as there are many real-world events that can change the size of this accountability. For example, any event that changes the company valuation of a client could increase or decrease the absolute emissions they contribute to your portfolio, despite no change in real-world emissions, because the financing increases or decreases relative to their total value.

1.B. What scenario is used for benchmark construction, and why?

1.B.1 Our model uses the International Energy Agency's Sustainable Development Scenario (SDS) to develop Paris-aligned benchmarks for our financing portfolios. This scenario was selected because it was developed by a reputable external provider, is aligned with the Paris Agreement goals, and because relative to many peer scenarios it offers a sufficiently high-resolution dataset to meet our analytical needs.

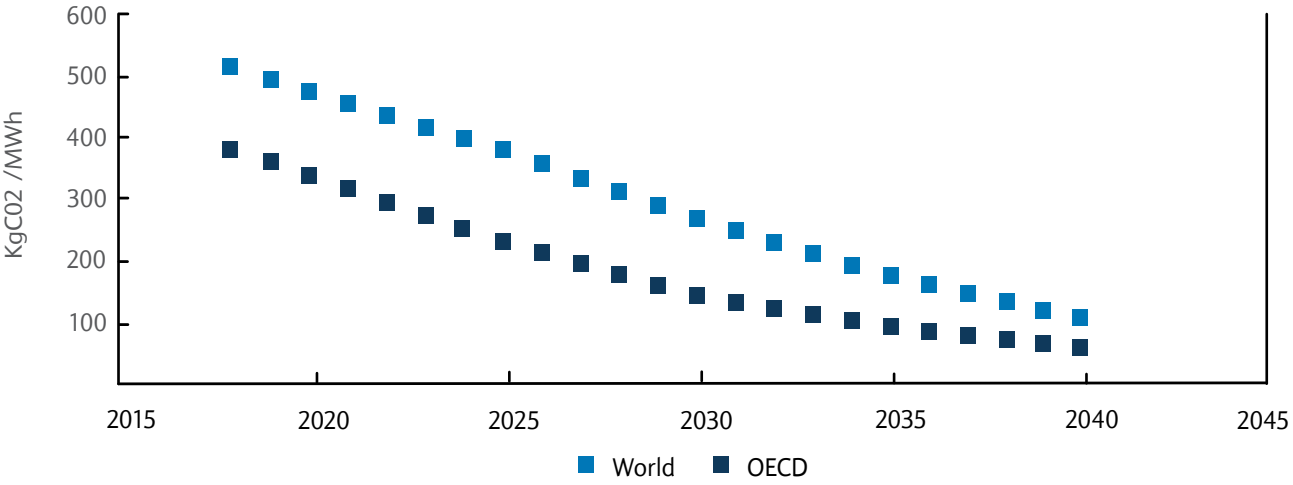
1.B.2 The absolute emissions benchmark for our Energy portfolio is taken from the SDS scenario's OECD fossil fuel production forecasts, which we believe most accurately reflect the geographic range of our client base.

1.B.3 For Power Generation, we believe the SDS electricity production pathway for the OECD is the most appropriate benchmark. The intensity of the SDS pathway is derived by dividing electricity total emissions by the electricity production.

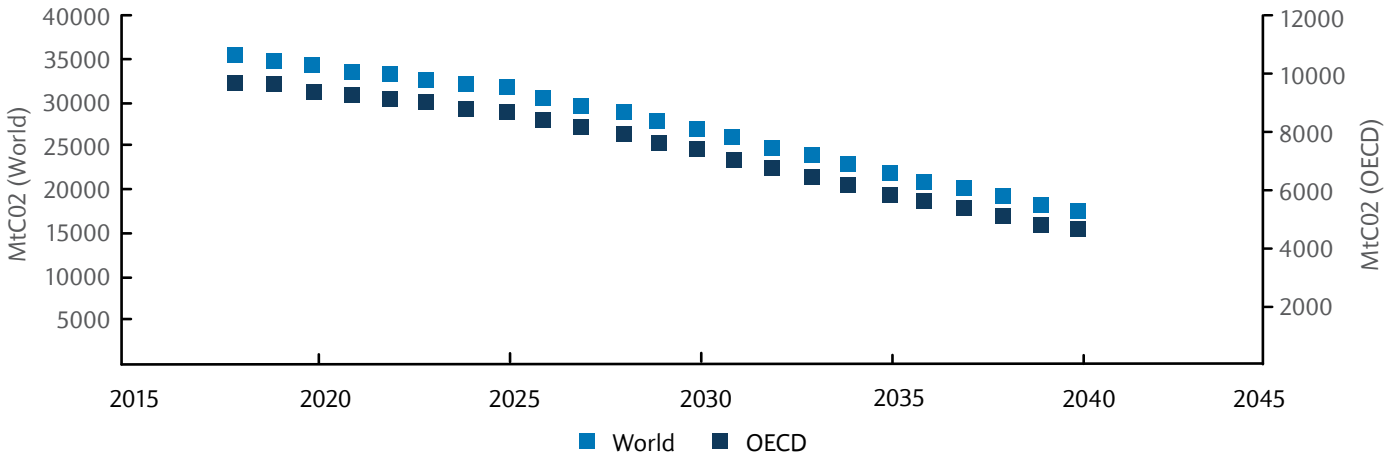
1.B.4 It is important to note that, in order to remain consistent with the IEA SDS benchmarks, all of our metrics will be calculated as CO2 only, disregarding other climate pollutants like methane and nitrous oxide.

IEA SDS Benchmark Examples

Power Generation



Fossil Fuel



2. Quantifying client emissions

The second step of the model is to quantify the emissions produced by the clients to which we provide financing. This involves setting boundaries to define the emissions a given company is responsible for, and then finding a way to accurately source and process data from a variety of internal and external sources to quantify those emissions.

In the following section we will explain how and why this is done.

2.A. What scope of emissions are included, and why?

2.A.1 For the Energy sector, all emissions related to fossil fuel extraction and use (Scope 1, 2, and 3) are attributed to the extracting company. This is a key design choice as in reality most of the emissions related to a given unit of fossil fuels are released into the atmosphere during combustion, i.e. by the end user as part of Scope 3. This decision was made to recognise that both producers and consumers of fossil fuels are responsible for reducing the emissions that result. The direct and indirect emissions of a company's own operations (Scope 1 and Scope 2) are also assessed. In the current iteration of the model, emissions from midstream operations (refining and transport of fossil fuels) are not quantified, in order to focus the metric on reducing extraction volume instead of making the production process more efficient. These activities represent a small portion of the Energy sector's total emissions, typically less than 10%.

2.A.2 For the Power sector, we attribute to each company the emissions that result from combusting fossil fuels to produce electricity (Scope 1). The methodology does not consider the Scope 2 emissions of the sector, as they are quite marginal in the context of electricity production. Scope 3 emissions for the Power and Utilities sector generally comprise the emissions that result from the combustion of natural gas provided to end-users for residential or commercial heating. These emissions have not been included, as they are already accounted for in Scope 3 of the Energy sector that produces the natural gas, and will be accounted for in the Scope 1 emissions of end users as we expand the number of sectors covered by the model.

2.B. What data is used for these calculations?

2.B.1 Company-level disclosure has improved significantly in recent years, particularly driven by the Taskforce on Climate Related Financial Disclosures. Nonetheless, we have found that the data is still not sufficiently robust overall to be used as the primary source for BlueTrack™. Because of this, the methodology estimates company emissions by combining external fossil-fuel asset and production databases with assumptions about emissions factors and asset utilisation rates. This is similar to the approach used by the 2Dii PACTA methodology.

2.B.2 The fossil fuel extraction and electricity production capacity data used for our Energy and Power portfolios is obtained from a specialist data provider: Asset Resolution. For Energy companies, this extraction data is converted into Scope 1-3 emissions using the carbon content of each fuel type published by the IEA. Scope 1 and 2 emissions are estimated using regional intensity factors. For Power companies, electricity production capacity is typically not fully utilised; we estimate the actual production by applying a utilisation factor derived from IEA data for each fuel type and region. This estimated production is converted into Scope 1 emissions using the IEA carbon content of each fuel type.

The overleaf figures show the intensity and capacity factors that are derived from the IEA scenario.

Derived capacity factors from the IEA for power generation
(Capacity factors derived from the IEA World Energy Outlook 2019 at World level)

Technology	Annual Electricity Generation (TWh)	Generation Capacity (GW)	Capacity Factor
Coal	10,123	2,079	56%
Oil	808	450	21%
Natural Gas	6,118	1,745	40%
Nuclear	2,718	419	74%
Hydro	4,203	1,297	37%
Other Renewables	1,960	1,065	21%

Derived emissions factors from the IEA for Power
(Power emissions factors derived from the IEA World Energy Outlook 2019 at OECD level)

Technology	Annual Emissions (Mt CO2)	Annual Electricity Generation (TWh)	Emissions Factor (KgCO2 / MWh)
Coal	2,807	2,894	970
Oil	160	213	751
Natural Gas	1,317	3,143	419

Derived emissions factors from the IEA for fossil fuel
(Fossil Fuel emissions factors derived from the IEA World Energy Outlook 2019 at World level)

Technology	Annual Emissions (Mt CO2)	Annual Production (Mtoe)	Emissions Factor (KgCO2 / MWh)*
Coal	14,352	3,821	323
Oil	10,859	4,501	207
Natural Gas	6,416	3,273	169

* Emission factors for fossil fuels have been converted into MWh for consistency with Power emission factors.

2.B.3. We recognise that this approach makes use of simplifying assumptions, and that both emissions factors and utilisation rates will vary from the IEA averages used on a company-by-company basis. For example, certain countries in which Barclays' clients operate have regulations in place to limit the use of coal fired power plants where lower carbon assets (renewable, gas) are installed, which impacts its capacity utilisation. Renewable power asset utilisation is naturally limited by weather trends i.e. requirements for wind/sun, which will vary by geography. Emissions factors may vary due to asset efficiency – two different coal-fired power plants may generate different amounts of electricity per tonne of fuel combusted – or variance in end use, given, for example, that not all fossil fuels produced are combusted, and instead go to chemical, plastic, or fertiliser production.

2.B.4 For the companies with substantial footprints that do disclose emissions (generally at parent company level, with limited break-down per activity or per subsidiary), available disclosures are used to check and, where appropriate, override the value calculated from production data. This is particularly important for companies that have above or below average intensities, either as a result of the type of their operational process or operational efficiencies.

2.B.5. Data coverage is expected to be adequate at 80-90% of Barclays financing as of December 2020 for both our Energy and Power portfolios. This is driven by better data coverage for the larger borrowers and across clients of the Investment Bank vs. lower coverage in smaller borrowers and in clients of the Corporate Bank. To minimise potential understatement of our emissions, values for companies without data are estimated based on the portfolio average. Over time, we will look to increase data coverage to a target of 90% of financing, driven by improved coverage by third-party providers, improved company disclosures, and client outreach. Any change in the metric due to an expansion in coverage would not be reflective of a change in Barclays' portfolio emission profile.

3. Attributing emissions to our financing

The third step of the model is to attribute client emissions to the financing provided. This involves defining the financing activities considered in-scope, determining how provided financing should be spread across the various business activities of diversified clients, and then appropriately linking each financing portion to the client's respective absolute emissions or emissions intensity metric. In the following section we will walk through how our model approaches this problem, as well as the rationale behind our approach.

3.A. What financing activities are considered in-scope, and why?

3.A.1 All of our corporate lending activities are considered in-scope. The majority of Barclays lending is in the form of Revolving Credit Facilities (RCF) which are typically undrawn, particularly in the Investment Bank. We use the total limit (i.e. maximum amount a company could borrow under the facility) outstanding as of the reporting date.

3.A.2 We also considered using the drawn amount, Exposure at Default (EAD) or Risk Weighted Assets (RWA). There are arguments for using drawn amounts: they better reflect spot exposure and would form part of the company's liabilities. However, drawn amounts are typically much lower than the limit and using them would lead to carbon metrics that are overly dominated by the capital market financing we arrange for our clients. It would also expose carbon metrics to volatility at times of increase in drawn amounts which cannot be controlled, would not be informative for the management of our activity, and may be related to the near-term liquidity needs of a company rather than investment in carbon-generative activities.

3.A.3 In addition to lending, our model considers funding arranged in the capital markets as in-scope. This is a key element of our approach, and ensures that our we are properly accounting for the breadth of support we provide our clients through our capital markets franchise. We use the amount arranged over the past 12 months (pro-rated if there were several banks in the syndicate). Barclays is allocated 33% of these transactions, with the remaining proportion allocated to investors.

3.B. How is provided financing linked to company-level emission metrics?

3.B.1 Once company-level emissions metrics are calculated, those metrics need to be linked to the financing that we provide. If we provide £100 in financing to a Power company, its emissions intensity metric will be assigned £100 scaled based on share of revenue the company derives from electricity generation, which can then be included in the calculation of our overall Power portfolio metric. As previously discussed, if we provide £100 in financing to a fossil fuel company, we need to determine what percent of their total financing £100 represents, so that we can assign our 'fair share' of that company's absolute emissions to our Energy portfolio.

3.B.2 If a company straddles the Energy and Power sectors (e.g. has a subsidiary that extracts fossil fuels, and another subsidiary that generates power), the power generation activity will be counted as part of the Power portfolio, and the fossil fuel extraction activity as part of the Energy portfolio, using the approach detailed next.

3.B.3 If financing is provided to a Power company, our model splits financing across its businesses according to the division of that company's revenue (as per MSCI and S&P Trucost, subject to fall-back provisions). This means that if Barclays has arranged a £100m bond and provided a £50m RCF to a company that derives only 10% of its revenue from power generation, only £15m in financing will be included in the Power portfolio intensity calculations (before applying a 33% weighting). This is particularly important to ensure accurate accounting where we have exposure to large companies with relatively small Power businesses, although it could make it difficult for third parties to reconcile our emission disclosure with our financial disclosure.

3.B.4 Where granular revenue data is not available, a standard matrix based on the sector classification of the producer (Barclays Internal Classification or 'BIC' code) will be used. Material cases are subject to review, and may be overridden by a Subject Matter Expert.

Standard Revenue Adjustment Matrix

Production data	Sector (according to BIC code)	Fossil Fuel	Power Gen	Other sectors
Power	Power	0%	100%	0%
	Upstream	0%	25%	75%
	Midstream	0%	25%	75%
	Downstream	0%	25%	75%
Power and Fossil Fuel	Power	25%	75%	0%
	Upstream	75%	25%	0%
	Midstream	25%	25%	50%
	Downstream	25%	25%	50%

3.B.5 Finally, when calculating our 'fair share' of a company's absolute emissions, we use financing provided as a proportion of book value of debt and equity. We are cautious about using the more traditional measurement of enterprise value, as it relies on market capitalisation, which can create volatility. Everything else being equal, Barclays' absolute emissions would increase if a company's stock price falls (and vice versa). In addition, EV uses debt net of cash. Using this would not be consistent with the definition of 'financing' and would lead to the equity and debt holders owning more than 100% of a company's emissions.

3.B.6 We are aware that an undrawn commitment does not form part of a company's balance sheet value. It is nonetheless included in exposure in our model, as it is a better reflection of the balance sheet commitment we make. This leads to an over-allocation of emissions to Barclays vs. other funders of a company but is relatively immaterial when allocating an ownership share to Barclays given most companies multi-bank and have a large book value of debt and equity.

4. Aggregating company-level measurements to a portfolio-level metric

The fourth and final step of the model is to aggregate company-level emission measurements and financing information into portfolio-level metrics. This is relatively straightforward and involves either performing a simple or weighted sum across all clients in a portfolio, depending on whether the portfolio in question uses an absolute or emissions intensity metric.

As the final section in our methodological overview, the text below will summarise the key design choices discussed throughout this document in table form as they apply to generating portfolio-level metrics, and provide the specific calculations used.

4.A. How are client-level measurements aggregated for the power portfolio?

4.A.1 For the Power portfolio, emission intensity is calculated as a function of each company's emissions and energy produced. The portfolio metric is then tabulated as an average weighted value using proportion of total portfolio financing.

$$\frac{\sum_{\text{Company}} \left[\frac{\text{Company emissions}}{\text{Energy produced}} \times \text{Barclays financing} \right]}{\sum_{\text{Company}} \text{Barclays financing}}$$

Key choices to calculate the intensity metric

Emission Intensity	Power Generation
Intensity type	Physical intensity (CO2 emissions per unit of energy produced), expressed in KgCO2 / MWh
Company emissions	Total CO2 Scope 1 emissions
Scope 1 Emissions	Derived from Asset Level Capacity, Capacity Utilisation per fuel type and Emission Factors Checked against company disclosure, for material cases, if available
Scope 2 Emissions	n.a
Scope 3 Emissions	n.a
Energy Produced	Derived from Asset Level Capacity, Capacity Utilisation per fuel type
Barclays financing	The share of a company's financing that relates to electricity generation is used (the rest is excluded). This is estimated by using the share of revenue that the client derives from those activities.

4.B. How are client-level measurements aggregated for the Energy portfolio?

4.B.1 For the Energy portfolio, total absolute emissions are calculated as a simple sum of Barclays' 'fair share' of each company's absolute emissions.

$$\sum_{\text{Company}} \left[\frac{\text{Barclays financing}}{\text{Company value}} \times \text{Company emissions} \right]$$

Key choices to calculate the absolute metric

Absolute Emission	Fossil Fuel
Company Emissions	Total CO2 Scope 1, 2 and 3 emissions
Scope 1	Derived from Asset Level Fossil Fuel Extraction (tonne of fuel), Energy Content of each fuel type (KWh per tonne) and regional carbon emission factors (CO2 per KWh). Checked against company disclosure, for material cases, if available.
Scope 2	Derived from Asset Level Fossil Fuel Extraction (tonne of fuel), Energy Content of each fuel type (KWh per tonne) and regional carbon emission factors (CO2 per KWh). Checked against company disclosure, for material cases, if available.
Scope 3	Derived from Asset Level Fossil Fuel Extraction (tonne of fuel), Energy Content of each fuel type (KWh per tonne) and regional carbon emission factors (CO2 per KWh). Checked against company disclosure, for material cases, if available.
Barclays Financing	Financing provided or arranged
Company Value	Book Value of Equity plus Book Value of Debt
Treatment of missing production data	For the portion of the portfolio for which the production data is not available, the absolute emissions are estimated based on the portfolio average.

Known areas for future enhancement

Barclays recognises that this is a first-generation methodology and that there are several areas for further enhancement and refinement over time. These include:

1. Calculation granularity

   As company disclosures continue to improve, not least as a result of the TCFD guidelines, we are hopeful that this source of data will become sufficiently robust to play a much greater role in the calculation of BlueTrack™ metrics. Among other things, this could allow us to account more easily for regional capacity factors, global carbon intensity factors by fuel type, and other GHGs. More comprehensive data would also enhance differentiation within the model, enabling us to fully capture the distinction between fossil fuel producers with different levels of efficiency.

   The data we use from external sources is not always as granular as would be ideal. For example, the data only has power capacity data on 'gas' power plants rather than Open-Cycled Gas Turbines / Closed-Cycle Gas Turbines which tend to have different utilisation rates.

2. Data quality, including precision, coverage and matching

   Climate data is an evolving topic and not yet at the same standard as more traditional financial metrics. Most of our data is collected from external sources which require mapping to Barclays' internal data. Whilst we have set a framework that facilitates a robust matching process which is more rigorous than peer approaches, it is likely that some residual issues will remain.

   Asset Resolution is our key data source but does not have 100% coverage. Whilst it has strong coverage across our key markets (US and Europe), it is not complete in more developing parts of the world. Data coverage issues are of primary importance when calculating absolute emissions as it is a simple sum but less important for the other metrics which are weighted averages. This is partially mitigated as larger clients also tend to have better quality data. These issues will need to be clearly addressed as part of the disclosure to aid transparency to the market.

3. Company-level forecasting/commitments

   BlueTrack™ currently calculates a spot, rather than forward-looking, metric. Through our strong client relationships we are often aware of climate-related commitments clients have made, and we would like to reflect these in our approach.

4. Other sectors

   BlueTrack™ will ultimately cover our entire financing portfolio, and we expect to include a couple of additional Industry & Manufacturing sub-sectors over the coming year.

   We will prioritise the extension of our approach to other sectors by considering, among other things, the magnitude of emissions from a sector, the amount of business that Barclays does in it, the feasibility of emissions reduction using existing technology, and the availability of emissions data at an appropriate level of granularity.

5. Other scenarios

   BlueTrack™ will be updated over time to track newer benchmark scenarios as they are developed.

Appendix A – Summary of Key Design Choices

High level choices	Power Generation	Fossil Fuel
Financing scope	Lending from Barclays and Capital Market Financing arranged by Barclays	
Primary metric	Emission Intensity	Absolute Emissions
Secondary metrics	Energy Mix Absolute Emission	Fossil Fuel Mix Emission Intensity
Company scope	All companies that generate electricity subject to production threshold	All companies involved in fossil fuel production subject to production threshold
Benchmark	IEA SDS Electricity Generation for the OECD	IEA SDS Fossil Fuel Production for the OECD
Data sourcing	Asset level data (i.e. power plant production capacity, mine or wells production level) are sourced for companies in Barclays portfolio. The emissions modelled via this asset level data is then checked against company disclosure for companies above a given materiality threshold. Third party data is matched to Barclays portfolio using Legal Entity Identifier, ISIN, direct name match or manual matching (no approximate algorithmic name matching).	
Lending	Total lending limit (drawn and undrawn) outstanding as of the reporting date.	
Capital Market Financing	33% of the debt and equity transaction arranged by Barclays in the past 12 months as well as underwriting outstanding as of the reporting date.	

Appendix B – Full list of Barclays Internal Classification (BIC) codes in-scope

BIC Code	BIC Name
1010	Mining of Coal & Lignite; Manufacture of Solid Fuel
1110	Oil&Gas: Extraction of Crude, Nat Gas, Bituminous Shale & Sand
6030	Oil&Gas: Midstream, Transportation, Gathering and Processing
1120	Oil&Gas: Service Activities incidental to Oil/Gas Extraction
4526	Oil & Gas Contractors
2321	Oil&Gas: Oil & Petroleum Refining & Marketing
2322	Oil&Gas: Other Treatment of Petroleum Products
5156	Wholesale: Fuels, Metals, Paper & Other Intermediate Products
5157	Wholesale Power and Gas
4044	Power Generation - Project Finance
4037	Integrated Utilities - Public
4038	Power Distribution & Transmission - Investor Owned (i.e. Electric Utilities - Regulated)
4039	Power Distribution & Transmission - Publicly Owned (i.e. Electric Utilities - Regulated)
4010	Electricity Production & Distribution
4011	Non-renewable Electricity Production and Distribution - Private
4012	Non-renewable Electricity Production and Distribution - Public
4013	Non-renewable Electricity Production and Distribution - Public (Cooperative)
4020	Gas Manufacture & Distribution
4021	Gas Manufacture and Distribution - Private
4022	Gas Manufacture and Distribution - Public
4034	Gas Supply
4035	Gas Utility - Integrated
4041	Power Generation - Merchant Generators
4043	Power Generation - Other
4046	Power Generation - Retail
4036	Integrated Utilities - Private
4014	Renewable Electricity Production and Distribution - Private
4042	Power Generation - Nuclear Energy
2330	Nuclear Fuel Processing
4015	Renewable Electricity Production and Distribution - Public
4016	Renewable Electricity Production and Distribution - Public (Cooperative)
4040	Power Generation - Alternative Energy
4045	Power Generation - Renewable Energy
1310	Iron Ores Mining
1320	Non Ferrous Ores Mining
1450	Other Mining & Quarrying