

Research methodology: Carbon footprint French bank fossil fuel portfolio

Introduction

This research methodology accompanies the French bank carbon footprint datasets prepared for Oxfam France and Les Amis de la Terre.

The objective of the research was to compare the carbon footprints of different French banks through the financing of fossil fuels at year-end 2018. In order to calculate the carbon footprints the Partnership Carbon Accounting Financials (PCAF) methodology was used. PCAF is an initiative of Dutch financial institutions to measure the carbon footprints of their investments. The members initially included 14 Dutch banks, asset managers, insurance companies, and pensions funds. Recently it was announced that more than 50 financial institutions worldwide, representing US\$ 2.9 trillion in assets, have committed themselves to assess and disclose the GHG emissions of their loans and investments. The financial institutions have committed to utilizing the carbon accounting standard developed by PCAF.¹ In France, only Crédit Coopératif has committed to the partnership.

As the PCAF methodology was developed and is promoted by financial institutions, and the fact that the methodology is publicly accessible makes it a useful methodology to calculate carbon footprints of financial institutions.

The remainder of this methodology note is structured as follows: section 1 outlines the financial research methodology, while section 2 describes the carbon footprint methodology.

1 Financing data

This section is organized as follows: section 1.1 describes the types of financing included within the scope of this research; section 1.2 presents the sectors that are considered in this research; section 1.3 details the methodology used to calculate financial contributions of financial institutions where these are not listed in the financial databases; section 1.4 sets out the timeframe of this research; and; section 1.5 lists the data sources used.

1.1 Types of financing

The banks financing companies engaged can be involved through two types of financing: credit and investment. When financial institutions provide credit, it can be through loans or the underwriting of share and/or bond issuances. Investment, on the other hand, is when financial institutions invest in the equity and debt of a company by holding shares and/or bonds. This section outlines the different types of financing, how they were researched and the implications for the study.

1.1.1 Loans

The easiest way to obtain debt is to borrow money. In most cases, money is borrowed from commercial banks. Loans can be either short-term or long-term in nature. Short-term loans (e.g. trade credits, current accounts, leasing agreements) have a maturity of less than a year. They are mostly used as working capital for day-to-day operations. Short-term debts are often provided by a single commercial bank, which does not ask for substantial guarantees from the company.

A long-term loan has a maturity of at least one year, but more often of three to ten years. Long-term corporate loans are particularly useful to finance expansion plans, which only generate rewards after a certain period of time. The proceeds of corporate loans can be used for all activities of the company. Long-term loans are frequently extended by a loan syndicate, which is a group of banks brought together by one or more arranging banks. The loan syndicate will only undersign the loan agreement if the company can provide certain guarantees that interest and repayments on the loan will be fulfilled. Corporate loans are often used as project finance (a loan that is earmarked for a specific project) or as general corporate purposes or working capital. Sometimes, a loan's use of proceeds is reported as general corporate purposes when it will be used for a certain project. This is difficult to ascertain.

Moreover, another type of loan is a revolving credit facility. A revolving credit facility provides a company with an option to take up a loan from a bank (or more often: a banking syndicate) when it has an urgent financing need. It is similar to a credit card. Companies can use the revolving facility up to a certain limit, but they don't have to. Revolving credits are often concluded for a five-year period and then renewed, but many companies renegotiate their revolving credit facility every year with the same banking syndicate. Amounts, interest rates, fees and participating banks can change slightly every year. As the financial press often reports these renegotiations for larger companies, this might raise the impression that banks are lending huge sums of money to the same company every year. But: this concerns renegotiations of basically the same facility and a revolving credit facility is hardly ever actually called upon for a loan. Within the scope of this research revolving credit facilities are counted for every time that they are renewed.

Although revolving credit facilities are not always fully called upon, the syndicate of banks providing the facility do have the obligation to provide the entire amount of money when the company asks for it. Therefore, even if the company ends up never using the facility, the banks were still involved with the company during the period of the revolving credit facility and would have provided the company with the money when they asked for it.

1.1.2 Share issuances

Issuing shares on the stock exchange gives a company the opportunity to increase its equity by attracting a large number of new shareholders or to increase the equity from its existing shareholders.

When a company offers its shares on the stock exchange for first time, this is called an Initial Public Offering (IPO). When a company's shares are already traded on the stock exchange, this is called a secondary offering of additional shares. To arrange an IPO or a secondary offering, a company needs the assistance of one or more (investment) banks, which will promote the shares and find shareholders. The role of investment banks in this process is therefore very important.

The role of the investment bank is temporary. The investment bank purchases the shares initially and then promotes the shares and finds shareholders. When all issued shares that the financial institution has underwritten are sold, they are no longer included in the balance sheet or the portfolio of the financial institution. Nevertheless, the assistance provided by financial institutions to companies in share issuances is crucial. They provide the company with access to capital markets and provide a guarantee that shares will be bought at a pre-determined minimum price.

1.1.3 Bond issuances

Issuing bonds can best be described as cutting a large loan into small pieces and selling each piece separately. Bonds are issued on a large scale by governments, but also by corporations. Like shares, bonds are traded on the stock exchange. To issue bonds, a company needs the assistance of one or more (investment) banks which underwrite a certain amount of the bonds. Underwriting is in effect buying with the intention of selling to investors. Still, in case the investment bank fails to sell all bonds it has underwritten, it will end up owning the bonds.

1.1.4 (Managing) shareholdings

Institutional investors, such as banks, insurance companies, pension funds and asset managers, can, through the funds they are managing, buy shares of a certain company making them part-owners of the company. This gives the bank a direct influence on the company's strategy. The magnitude of this influence depends on the size of the shareholding.

As financial institutions actively decide in which sectors and companies to invest, and are able to influence the company's business strategy, this research will investigate the shareholdings of financial institutions of the selected companies. Shareholdings are only relevant for stock listed companies. Not all companies in the study are listed on a stock exchange.

Shareholdings have a number of peculiarities that have implications for the research strategy. Firstly, shares can be bought and sold on the stock exchange from one moment to the next. Financial databases keep track of shareholdings through snapshots, or filings. This means that when a particular shareholding is recorded in the financial database, the actual holding, or a portion of it, might have been sold, or more shares purchased. Secondly, share prices vary from one moment to the next.

1.1.5 (Managing) investments in bonds

Institutional investors can also buy bonds of a certain company. The main difference between owning shares and bonds is that owner of a bond is not a co-owner of the issuing company; the owner is a creditor of the company. The buyer of each bond is entitled to repayment after a certain number of years, and to a certain interest during each of these years.

Similarly, to shares, bonds can be bought and sold from one moment to the next. Bondholdings are also reported by the holding investor through regular filings. However, historical filings are not kept within the financial databases; only the most recent bondholding information is available. Bondholdings were not included in as there is no historical filings needed to look at the year 2018.

1.2 Sectors in scope

This research screened the syndicated financing to, and shareholdings of, the French banks in the following sectors as defined by the Thomson Reuters Business Classification industry groups:

- Coal
- Electric Utilities (excluding pure renewable energy and hydro power companies)
- Metals & Mining (only companies also on the Global Coal Exit List)
- Multiline Utilities
- Natural Gas Utilities
- Oil & Gas
- Oil & Gas Related Equipment and Services

1.3 Financial institution financing contributions

The financial databases do not always include details on the levels of individual financial institutions' contribution to a deal. Individual bank's contributions to syndicated loans and underwriting were recorded to the largest extent possible where these details were included in the financial databases. In many cases, the total value of a loan or issuance is known, as well as the number of banks that participate in this loan or issuance. However, the amount that each individual bank commits to the loan or issuance has to be estimated. This research uses a two-step method to calculate this amount. The first uses the ratio of an individual institution's management fee to the management fees received by all institutions. This is calculated as follows:

$$\text{Participant's contribution: } \left(\frac{\text{individual participant attributed fee}}{\text{sum of all participants attributed fees}} * \text{principal amount} \right)$$

When the fee is unknown for one or more participants in a deal, the second method is used, called the 'bookratio'. The bookratio (see formula below) is used to determine the commitment distribution of bookrunners and other managers.

$$\text{Bookratio: } \frac{\text{number of participants} - \text{number of bookrunners}}{\text{number of bookrunners}}$$

Table 1 shows the commitment assigned to book runner groups with this estimation method. When the number of total participants in relation to the number of bookrunners increases, the share that is attributed to bookrunners decreases. This prevents very large differences in amounts attributed to book runners and other participants.

Table 1 Commitment assigned to book runner groups

Bookratio	Loans	Issuances
> 1/3	75%	75%
> 2/3	60%	75%
> 1.5	40%	75%

> 3.0	< 40%*	< 75%*
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* In case of deals with a bookratio of more than 3.0, we use a formula which gradually lowers the commitment assigned to the bookrunners as the bookratio increases. The formula used for this:

$$\frac{1}{\frac{\sqrt{\text{bookratio}}}{1.443375673}}$$

The number in the denominator is used to let the formula start at 40% in case of a bookratio of 3.0. As the bookratio increases the formula will go down from 40%. In case of issuances the number in the denominator is 0.769800358.

1.4 Timeframe

For shareholdings the last filing date –31 December 2018 – was retrieved. For bond and share issuances all deals to the relevant sectors by the French banks in the year 2018 were included. For loans provided in the period 1 January 2011 to 31 December 2018 were included. This is based on an average loan maturity of 7 years, allowing the research to capture loans that have not matured at the moments where financed emissions are evaluated. It is acknowledged that some loans may have a longer maturity, however, in order to make the scope of the research manageable, limiting it to loans with a 5 year maturity rate is defensible. The outstanding values in 2018 were calculated.

1.5 Data sources

The financial research was based exclusively on Thomson Reuters EIKON. This implies that deals from other data sources – such as project finance from IJGlobal, or corporate loans from company publications – could not be captured by this research.

2 Carbon footprint methodology

This section outlines the research methodology used to calculate the carbon footprint of the four French banks. Additionally, it provides a discussion of challenges arising from the applied methodology.

As mentioned above, the objective of the research was to compare the carbon footprints of different French banks through the financing of fossil fuels at year-end 2018. In order to calculate the carbon footprints this researched applied the Partnership Carbon Accounting Financials (PCAF) methodology.

The asset classes addressed by PCAF in its methodology document are:

1. Sovereign bonds
2. Listed equity
3. Project finance
4. Mortgages
5. Commercial real estate
6. Corporate debt
7. Corporate/SME loans
8. Indirect investments²

It should be noted that the PCAF methodology does not cover bond or share issuances as issuances are not on the books of financial institutions in the form of exposure. However, this research argues that issuance underwriting is a major source of financing, particularly of capital intensive industries such as fossil fuels, and therewith a major contributor to emissions, and should therefore not be ignored. The following section will describe how the PCAF methodology was applied to the different financing types included in the scope of this research.

2.1 Methodology per financing type

This research used the PCAF methodology to calculate the CO₂ emissions of the French banks financing of the fossil fuels sector. The sections below provide a brief description of the methodology per financing type, as well as specific considerations for this research.

2.1.1 Listed equities (shareholdings)

As described above, this research used Thomson Reuters EIKON to identify the shareholdings of the French banks in the Thomson Reuters Business Classification industry groups related to fossil fuels at reporting date 31 December 2018 (see sections 1.2 and 1.4 for details). This provided the first required input to calculate the carbon footprint, namely the invested value.

In order to calculate the attributable emissions of a shareholding position, three data points are needed: invested value; company emissions; and; enterprise value. The invested value was identified through Thomson Reuters EIKON. The company emissions data is derived from the sources described in section 2.2. The enterprise value can generally be obtained from financial data service providers such as Thomson Reuters EIKON and Bloomberg (see section 2.3.1 for a discussion on enterprise value). According to the PCAF methodology attributable emissions for shareholding positions are calculated as follows: ³

$$\sum \left(\frac{\text{Invested value}}{\text{Enterprise value}} \right) \times \text{Emissions}$$

First, the *attribution factor* is calculated. This is the invested value divided by the enterprise value. This attribution factor is then multiplied by company emissions to derive the attributable emissions. This process is followed for each equity position.

2.1.2 Loans

As described above, this research used Thomson Reuters EIKON to identify the syndicated loans provided by the French banks to fossil fuel related companies according to the Thomson Reuters Business Classification industry groups classification for the period 1 January 2011 to 31 December 2018 (see sections 1.2 and 1.4 for details). The outstanding amounts at 31 December 2018 were then calculated based on the maturities of the identified loans. This provided the first required input to calculate the carbon footprint, namely the invested value.

In order to calculate the attributable emissions of an outstanding loan, three data points are needed: value outstanding; company emissions; and; enterprise value. The outstanding value was identified through Thomson Reuters EIKON and further calculated based on maturity dates. The company emissions data is derived from the sources described in section 2.2. The enterprise value can generally be obtained from financial data service providers such as Thomson Reuters EIKON and Bloomberg (see section 2.3.1 for a discussion on enterprise value). According to the PCAF methodology attributable emissions for outstanding loans are calculated as follows: ⁴

$$\sum \left(\frac{\text{Outstanding value}}{\text{Enterprise value}} \right) \times \text{Emissions}$$

First, the *attribution factor* is calculated. This is the outstanding value divided by the enterprise value. This attribution factor is then multiplied by company emissions to derive the attributable emissions. This process is followed for each outstanding loan.

2.1.3 Bond and share issuances

As mentioned above, the PCAF methodology does not cover bond or share issuances as issuances are not on the books of financial institutions in the form of exposure (see section 1.1 for details). However, issuance underwriting is a major source of financing, particularly of industries such as fossil fuel. Thereby, issuances are a major contributor to emissions, and should therefore not be ignored.

As both bond issuances and shares issuances contribute to constituent elements of *Enterprise value* namely *Borrowings* and *Market Capitalization*, they can be treated in a similar way to both loans and shareholdings as described above. A share issuance is essentially a shareholding until the shares are sold. And a bond issuance is a bondholding until the bond is sold, and bondholdings are also covered by the PCAF methodology. However, this research recognizes that even though bonds have long maturities, the issuance underwriter sells the bonds as quickly as they can. Similarly, even though a shareholder may hold onto a share position for a long time, the share issuance underwriter tries to sell the shares as quickly as they can.

Therefore, within context of the nature of this financial service, but also in recognition of the contribution emissions this form of financing has, this research has determined to apply a one-year-contribution factor. That is to say that issuances in 2018 contributed to emissions in 2018. Bonds issued before this year, even though they may not have matured, are not considered.

This research used Thomson Reuters EIKON to identify the syndicated bond and share issuance provided by the French banks to fossil fuel related companies according to the Thomson Reuters Business Classification industry groups classification for the year 2018 (see sections 1.2 and 1.4 for details). The attributable emissions for bond and share issuances are calculated as follows:

$$\sum \left(\frac{\text{Issuance contribution value}}{\text{Enterprise value}} \right) \times \text{Emissions}$$

First, the *attribution factor* is calculated. This is the issuance contribution value divided by the enterprise value. This attribution factor is then multiplied by company emissions.

2.2 Emissions data

2.2.1 Emissions scope categorization

GHG emissions are divided into the direct and indirect emissions of companies or institutions as follows:

- **Scope 1 – Direct emissions**

These are the GHG emissions that are generated directly by sources owned or controlled by the company or institution.⁵

- **Scope 2 – Indirect emissions from electricity**

These are the GHG emissions generated from the electricity, steam, heating and cooling purchased and consumed by the company or institution.⁶

- **Scope 3 – Other indirect emissions**

These are all indirect emissions that are not included in Scope 2 which occur in the value chain of the company or institution, including both upstream and downstream emissions. Scope 3 emissions include the following 15 categories:

1. Purchased goods and services
2. Capital goods
3. Fuel- and energy-related activities (not included in scope 1 or scope 2)
4. Upstream transportation and distribution
5. Waste generated in operations
6. Business travel
7. Employee commuting
8. Upstream leased assets
9. Downstream transportation and distribution
10. Processing of sold products
11. Use of sold products
12. End-of-life treatment of sold products
13. Downstream leased assets
14. Franchises
15. Investments⁷

Companies determine themselves which scope 3 emissions to include in their inventory, i.e. how they define their operational boundaries. Once companies have defined their operational boundaries, accounting standards such as the Greenhouse Gas Protocol have defined accounting practices for companies to follow to create completeness and consistency in reporting (see section 1.3.6 for a brief discussion on scope 3 accounting and reporting).

2.2.2 Company level data

The PCAF methodology allows many data sources to be used, including Carbon Disclosure Project (CDP), Trucost and Bloomberg, among others. This research used company level data from three sources: CDP, Thomson Reuters EIKON and Bloomberg (please see section 2.3.3 for a discussion on the limitations of company level emissions data).

Companies provide data to CDP voluntarily through the use of CDP's reporting template. CDP then hosts this data on its website. This data can then be purchased. CDP also has data partnerships with Bloomberg and MSCI among others.

Both Bloomberg and Thomson Reuters EIKON gather emissions data from company publications. Additionally, each vendor uses its own methodology to estimate emissions per company (Scope 1-3) when reported values are not available.

Thomson Reuters EIKON states that it uses three models in order of preference to estimate emissions values where these are not reported: CO2 model; Energy model, and; Median model.⁸

- The CO2 model uses emissions data for the company for the previous year(s), adjusting for changes in revenue and number of employees, to estimate the emissions for the current year.
- When it is not possible to apply the CO2 model, the Energy model is used. The Energy model uses energy consumed (or energy produced for electric utility companies), adjusted for number of employees and revenue, compared with sector peers on the basis of 8, 6, 4 or 2 digit Thomson Reuters Business Classification (TRBC) codes. Selection of TRBC level depends on number of available energy consumption ratios per relevant level.
- When it is not possible to apply the Energy model, the Median model is used. The Median model is similar to the Energy model as its basis its estimations on sector peers. Firstly, the CO2 emissions per employee are calculated for all industry peers on the basis of 8, 6, 4 or 2 digit TRBC codes. Selection of TRBC level depends on number of available energy consumption ratios per relevant level. The median of all these companies is then applied to the company for which CO2 emissions are missing. The same process is then carried out for CO2 emissions per revenue, i.e. CO2 emissions per dollar revenue are calculated for all industry peers on the basis of 8, 6, 4 or 2 digit TRBC codes. The median of all these companies is then applied to the company for which CO2 emissions are missing. The average of these two figures – estimated CO2 emissions for total employees and estimated CO2 emissions for total revenues – is then taken as the estimated CO2 emissions for the company in question.⁹

Bloomberg uses its own proprietary approach to estimate emissions per company where reported CO2 emissions are not available.

This research used – in order of preference – CDP data, Thomson Reuters EIKON data, and Bloomberg data. Where data was missing for the current year (2018), emissions data from the previous year or two years depending on availability was used. These figures were then adjusted for changes in the number of employees and total revenues. The CO2 per employee and CO2 per dollar revenue were calculated for the year for which data was available. These ratios were then applied to the figures for the number of employees and total revenues for the current year, and the average of these figures was taken as the estimated CO2 emissions for the current year.

Where there was no emissions data available from CDP, Thomson Reuters EIKON, or Bloomberg, a median model approach was used on the basis of the available data from CDP, Thomson Reuters EIKON and Bloomberg. CO2 emissions per employee and per dollar revenue ratios were calculated for all companies for which there was data available in the dataset built using CDP, Thomson Reuters EIKON and Bloomberg data. These ratios were then applied to companies for which emissions data was missing the TRBC 8 or 6 levels – industry or industry group – depending on the number of available ratios – if there were 10 or more ratios then TRBC 8 digit level was used, otherwise the 6 digit level was used. The 4 and 2 levels – business sector and economic sector – were not used as these are considered far too broad to make reasonably accurate estimations of CO2 emissions at the company level. In cases where there were insufficient ratios within the compiled dataset, further emissions data for other companies was gathered from Thomson Reuters EIKON.

2.3 Discussion on methodological challenges

In applying the PCAF methodology to the French banks' fossil fuel financing relationships, a number of challenges became apparent, relating to the availability of data needed to apply the methodology and the methodologies through which these data are determined. The challenges encountered are discussed in the following sub-sections.

2.3.1 Determination of enterprise value

In the PCAF methodology for corporate bonds and listed equities the enterprise value is the key denominator in calculating the attribution factor for the relevant financial institution. However, when conducting the analysis for this current research, a number of challenges relating to the enterprise value arose:

- Negative enterprise value: For a number of companies the financial data providers listed a negative enterprise value. This would create a negative attribution factor, which is of course not possible. In the PCAF methodology report negative enterprise value is noted as an issue, however, it is not adequately described how the issue is resolved, "EV was negative in the case of several financial institutions, which needed further tweaking in a handful cases to prevent undesired tilts in the results".
- As enterprise value is composed of Market capitalization + Total borrowings + Minority interest – Cash and Cash equivalents, this research opted to exclude Cash and Cash Equivalents from the calculation of enterprise value as it was creating the negative value.
- In other cases, the financial data service providers did not have enterprise values, however did have data on the component elements. In such cases, the enterprise value was calculated (Market capitalization + Total borrowings + Minority interest – Cash and Cash equivalents). There were also instances where either the Market capitalization was missing (e.g. in the case of bonds), or the Total borrowings was missing. In such instances, the enterprise value was approximated by doubling the value that was present, e.g. Total borrowings if Market capitalization was missing. This was done with logic of applying equal ownership to equity investors and debt financiers as a fair approximation with the understanding that the actual composition varies significantly per company.

2.3.2 Emissions estimation methodology

There are a number of challenges related to emissions estimations methodologies. The first challenge relates to self-reporting of emissions by companies either in their own company publications or to initiatives such as CDP. How each company calculates its emissions may differ significantly, particularly scope 2 and scope 3 emissions. There is not one standardized approach. This implies that companies cannot be compared with each other, because it is like comparing apples (calculation model A) with pears (calculation model B). Moreover, in many cases, these emissions disclosures and emissions calculations methodologies of companies are not independently audited or verified similar to how their financial statements and processes are audited. This means that the quality and veracity of the outcomes of the different calculation models cannot be assured. These potential issues with company self-reporting of emissions also has consequences for estimation models used by data service providers as self-reported figures are data inputs for these models.

Another challenge related to emissions estimations methodologies is that different data service providers use a variety of different models estimate company emissions where these company have not reported figures. A brief analysis of the dataset prepared for the analysis shows significant differences between data providers. In some cases the differences are about 5-25%, however, when the emissions figures are double digit millions, then a 5% difference still implies a difference of a million or so tCO₂e. However, there were also cases where the differences were more than 100% or more. Furthermore, there were also significant differences between a self-reported values (from CDP) and a data service provider estimated values of similar proportions. Outcomes of attributable CO₂ emissions analysis will therefore differ significantly depending on which data service providers are used.

Some data service providers may estimate the company emissions at a too distant level. For example, Thomson states that it uses sector averages at 8, 6, 4 or 2 digit code levels depending on the number of ratios available. However, the 4 and 2 digit codes are for business sector and economic sector. At the 2 digit code, for example, companies active in sectors as divergent as steel manufacturing, packaging, gold and chemicals are included. The average emissions from these sectors differ significantly and cannot be applied across the board.

Finally, the use of industry classifications and sector averages does not take into consideration the differences between companies with regard to the emissions reduction technologies they use either voluntarily or because they are subject different regulations in different jurisdictions.

Nevertheless, until there is a standardized approach that is independently verified and audited, investors and researchers will have to rely on the plethora of data sources that are available to them, bearing in mind that the outcomes of carbon foot printing analyses may differ significantly depending on which data sources are used.

2.3.3 GHG emissions per economic industry

GHG emissions data per industry are also not standardized globally. Eurostat provides data based on the NACE sector break-down, which makes it well possible to combine with the Input-Output tables. Data are available up to 2017, so for the 2018 estimates in this study we used 2017 data. For other countries, sources with data on GHG emissions per sector use other sector break-downs which makes comparison between countries difficult. Often, the GHG emission sector break-downs are also not aligned with the sector break-downs of the Input-Output tables for the same country, which makes it difficult to combine them.

2.3.4 Scope 3 emissions

As mentioned above, companies themselves determine which scope 3 emissions to include in their inventory, i.e. how they define their operational boundaries. This has a number of implications. Firstly, there are differences between companies active the same sector in terms of what they consider their operational boundaries. This makes accurate comparison between companies impossible. For example, some financial service actor may not include their financed emissions through their investments (category 15 Investments, see 1.2.1), even though the Task Force on Climate-related Financial Disclosures encourages. Or they may not report on all categories of their financial relations – e.g. issuance underwriting may not be included, while investments in equities are. The PCAF methodology is intended to assist financial institutions to fulfil their reporting of scope 3 emissions.

Secondly, there may be a degree of double counting of scope 3 emissions among actors. For example, in the category 11 Use of sold products, oil & gas companies, steel manufacturers, and auto manufacturers may all be reporting scope 3 emissions attributable to this category. This is inherent in the methodology and cannot be corrected.

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