



Avoided Emissions: Why it matters to investors to account for what does not exist

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Key points

- So-called avoided emissions are emissions that do not occur thanks to the use of low-carbon solutions rather than a higher-carbon incumbent solution
- While there are no formal standards to measure and report avoided emissions, companies providing relevant solutions should showcase their benefits - applying robust methodologies and disclosing them - as these solutions are instrumental in the energy transition, helping lower society's greenhouse gas footprint
- Companies providing solutions could be attractive to investors but vitally they must set a credible strategy to reduce their own emissions

To stop global warming, society needs to reduce its greenhouse gas (GHG) emissions and reach a state of net zero – the point at which the GHG concentration in the atmosphere stabilises and is no longer increasing¹. Such a goal requires an energy transition.

This means fully transforming the world's energy mix and changing how we produce and consume food, goods and services. As investors, we ask companies to play their part by reducing their own emissions and contribute to emission reduction along their value chain. Companies can also develop products and services which can help users lower their individual emissions.

Corporate GHG accounting is largely governed by guidelines and methodologies produced by the GHG Protocol². There is a widely accepted system used to measure and report on direct/indirect corporate emissions - called scope 1, 2 and 3 emissions.³

Scope 1 refers to direct emissions from a company's activity while scope 2 are emissions related to operational electricity use. A company's scope 3 emissions are those found along its value chain, both upstream (before) and downstream (after) its own operations.

However, there are no formal standards used to measure and report avoided emissions that are due to company-sold solutions.

In this paper, we will examine avoided emissions, look at their place in the energy transition narrative, outline their potential pitfalls and explain why they matter for investors.

What avoided emissions are and what they are not

Avoided emissions are emissions which have not been generated because an individual or company has used a product or service which is less emission-intensive than the product or service it would have used otherwise – for example driving an electric vehicle instead of a petrol or diesel-powered car.

In other words, avoided emissions are the difference between the expected emissions generated by using the low-carbon solution and the emissions that would be generated by a reference or baseline solution. This baseline solution can be the dominant product (the one with the highest market share) or the average product on the market⁴.

Other examples of products helping to generate avoided emissions include solar panels, heat pumps and wind turbines. Avoided emissions can only be found in companies which sell lower-emission solutions – companies that buy such solutions would lower their direct emissions (scope 1).

Avoided emissions are sometimes called scope 4 emissions, directly referencing the GHG Protocol. Although simple and supposedly logical, this term may also be misleading as, while these emissions are related to a company's activity, they do not belong to a GHG accounting perimeter.

It should also be noted that avoided emissions are modelled and not measured, which is also the case for most scope 3 emissions.

While there are no formal standards for avoided emissions, there are several guidelines and methodologies available, notably from the World Business Council for Sustainable Development⁵ (WBCSD), CDP⁶, the Science Based Targets initiative (SBTi), or ADEME, the French agency for ecological transition (ACT methodology)⁷.

Although the GHG Protocol does not have a standard for avoided emissions, the subject is briefly mentioned in its scope 3 standard⁸, where it is written that “accounting for avoided emissions that occur outside of a company's scope 1, scope 2, and scope 3 inventories requires a project accounting methodology. Any estimates of avoided emissions must be reported separately from a company's scope 1, scope 2, and scope 3 emissions, rather than included or deducted from the scope 3 inventory”.

There are many nuances of definitions for avoided emissions in those methodologies. There is nonetheless a broad agreement that those emissions⁹

- Are fictitious emissions (i.e., they did not happen)
- Are linked to a solution (good or service) during its use phase
- Represent the positive impact on emissions thanks to a solution compared to a baseline scenario in which this solution does not exist
- Fall outside of the scope of the company being considered

Modelled, not measured

Like scope 3 emissions, avoided emissions are not physically measured but modelled. With no support from formal measurements, the way these models are built are of paramount importance. Amongst the parameters are:

- The reference scenario or baseline. A meaningful and representative reference scenario is essential to the credibility and materiality of the end figures. For instance, numbers are very different if the reference is the installed base, the product with the highest market share each year or the average of products sold in the same year. The emissions factors selected must be reflective enough of the market. To use an asset management analogy, it is like needing to pick the appropriate benchmark for an investment strategy
- Dynamic reference scenario. This should be dynamic rather than static, making it capable of integrating future changes - for instance, looking at tomorrow's energy mix when assessing the merits of electrification or efficiency gains over time. Hypotheses must be made, adding a layer of variability into the calculations
- The time horizon. Avoided emissions can be measured at a point in time or through the life cycle of a product. If the solution is used once, then a point in time calculation makes sense – for instance contrasting bioenergy to fossil energy at combustion. But when the solution is used multiple times – such as for a car or a heat pump – then a calculation over a lifecycle is appropriate

An implication of those points is the model must be carefully built and regularly updated to remain relevant.

Range

Ideally, a company should calculate the system-wide impact of its solutions on emissions, assessing the direct benefits while also considering indirect impacts elsewhere. This is called the consequential method, and it yields a comprehensive view of the solution's impact.

However, gathering this information is very challenging as data is lacking and many assumptions are required. As a result, the simpler attributional method, based on a usual lifecycle analysis, is used, which gives a partial view of the total impact.

Analytical pitfalls

- **Cannibalisation.** If a low-carbon solution is successful, i.e., successfully penetrates the market and gains market share, then it modifies the reference scenario. Over time this 'new' solution may become incumbent, hence morphing into the reference scenario - the fate of a successful solution is to deliver fewer avoided emissions over time as it displaces lesser solutions and potentially becomes the baseline
- **The human factor.** Avoided emissions depend on the real use of the solution to be close to the expected use. However, real life is not a model and human beings do not always read notices. For instance, it has been shown that plug-in hybrid vehicles do not deliver the promised fuel gains¹⁰ relative to gasoline powered cars, largely because of the way they are driven and used
- **The rebound effect.** Another element is what is commonly called the rebound effect, i.e., consuming more or using a product more because it is green or low emission. A common example may be driving more since you have an electric vehicle or setting the temperature a bit higher because you have a heat pump. This increased use hinders the impact of low-carbon solutions. The rebound effect is well identified and is expressly mentioned by notably the WBCSD, the CDP and the World Resources Institute. This can dent the benefits of the solution

Why do avoided emissions matter in the energy transition?

Transitioning is a long road. We are facing a genuine challenge as the energy transition calls for deep-rooted ecosystemic changes, encouraging strong motivation for many but also receiving pushback from others. An all-hands-on-deck approach

is necessary as everyone everywhere must participate – from governments and corporations, to individual people.

When looking at companies – public, private or state owned - it's important not to penalise those that help the transition by developing low-emission solutions and increase their direct GHG footprint in doing so. The overall reduction in the GHG footprint - in operations, across the value chain and beyond it – is what matters.

Integrating avoided emissions in the transition analysis is hence a necessity. They are a legitimate metric that contribute to clearer picture of the situation.

The methodological challenges we highlighted should not be ignored but should not be a reason to dismiss the notion of avoided emissions.

What should investors make of this?

We believe sustainably-minded investors should absolutely integrate avoided emissions in their analysis when this is relevant. We believe this because:

- It provides a more comprehensive view of a company's role and contribution to the energy transition. It may provide alternative perspectives on a company with rising emissions if it grows thanks to a successful low-carbon solution. Once again, thinking in terms of enlarged value chain and overall society's benefits is the right approach
- Such companies may be potentially attractive investment cases and potential growth stories. This is however far from guaranteed, and investors should carry out the traditional financial and operational analysis

When factoring in avoided emissions, investors should also:

- Analyse and assess the company within its broader transition strategy. For any company, helping to deliver avoided emissions should not be treated as reason to avoid tackling emission reduction, and it should set a credible and robust strategy to do so
- In addition, as already mentioned earlier in this note, avoided emissions should be accounted for in parallel to scope 1, 2 and 3 emissions. There should be no netting
- Ask for transparency and disclosure of the methodology used to calculate avoided emissions. Given the challenges we described, it is important to do so. We can for instance

point at documents published by Saint-Gobain¹¹ or Schneider Electric¹². This methodology should be clear and robust, and audited by an outside party

- Investors should also apply caution about claims and data, because of the methodological challenges, and also because there are companies exaggerating the benefits of what they do
- Be careful when comparing companies, because methodologies will differ and will not yield comparable

results, even for companies in the same industry. Also, a company not selling solutions should not be penalised. Its emission reduction strategy should be assessed on its own merits

- Think in terms of order of magnitude rather than of precise data. The famous quote about being roughly right rather than precisely wrong applies here.

¹ [Climate change: The relationship between net zero and rising global temperatures | AXA IM Corporate](#)

² [Standards & Guidance | GHG Protocol](#)

³ [Understanding scope 3: How responsible investors can wrestle with the unruliest of emissions | AXA IM Core \(axa-im.com\)](#)

⁴ Technically, avoided emissions result from differentiated emission factors, contrasting the default emission factor of the reference solution to the specific and lower emission factor of another solution. An emission factor is a coefficient that quantifies the emissions per unit of activity, for instance grams of carbon dioxide per kilowatt-hour of electricity

⁵ [Guidance on Avoided Emissions – WBCSD](#)

⁶ [CDP Climate Change 2023 Reporting Guidance](#)

⁷ [Assessing low-Carbon Transition: Avoided emissions, ACT, April 2021](#)

⁸ [Corporate Value Chain Accounting and Reporting Standard, Greenhouse Gas Protocol, pages 107 and 109](#)

⁹ We borrowed this list from ACT – [Assessing low-Carbon Transition: Avoided emissions, April 2021](#)

¹⁰ [Real-world usage of plug-in hybrid vehicles in Europe: A 2022 update on fuel consumption, electric driving, and CO2 emissions - International Council on Clean Transportation and First Commission report on real-world CO2 emissions of cars and vans using data from on-board fuel consumption monitoring devices - European Commission](#)

¹¹ [Methodological guide to assess the greenhouse gas emissions avoided thanks to the use of solutions manufactured by Saint-Gobain, 2021](#)

¹² [Saved and avoided emissions by Schneider Electric offers | Schneider Electric](#)

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