Achieving real net-zero requires a lot more efforts from laggards

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Abstract:

Designing climate policies (for both companies and investors) that leverage market mechanisms is certainly efficient and can have a substantial impact on the common goal of keeping global warming within the boundaries set in the Paris Agreement on climate change. But for such policies and initiatives to work, we all need to understand their limitations and potentially their drawbacks.

When investors implement low-carbon strategies, they modify the composition of their portfolios compared to cap-weighted benchmarks. For any deviation from the market portfolio there must be an investor willing to take the opposite position. Therefore, from an aggregated point of view, only the ownership of the company changes: carbon emissions remain in the market. Proponents of these type of approaches point to the fact that when capital flows from high-carbon to low-carbon emissions companies, it should have an impact on the cost of capital and funding conditions for companies that are divested by investors, pushing them to improve their climate credentials to attract climate-conscious investors. While we broadly agree with the logic behind this thesis, we also acknowledge that for activities that have no direct low-carbon substitutes (for example full-scale reliable renewable energies, steel, concrete, airlines, food production, etc.), the market logic may not work as expected. Consumers cannot easily switch from high- to low-carbon products and services as easily as needed. Hence, higher cost of capital and funding conditions may translate into higher prices for consumers. Therefore, to reduce environmental impacts at the aggregate level, all companies, and especially laggards, should reduce their environmental impact. But how much will the stock market reduce its carbon intensity if laggards were able to reduce theirs, for example, at the median level in their peer group or sector ?

We look at companies in the MSCI ACWI Index and measure the total carbon intensity of several regional portfolios under the hypothetical scenario that the worst performers, from a carbon intensity point of view, where able to match the performance of the best 25th, 50th or 75th percentile in their sector. It is important to stress that in this scenario, we aim at reducing the total carbon intensity without removing companies (typically high polluters) from the portfolio.

For most of the regions, if all companies manage to reduce their footprint at the level of the top quartile in their peer group, we will only get a 30% reduction compared to the business-as-usual scenario. If instead all companies were to cut their carbon intensities at the median level of their sector, we would only get a modest 15% reduction. Both are extremely challenging goals to achieve.

At the same time, we have around 70%-75% of companies in regional portfolios are already aligned to the 2 °C scenario or have set a SBTi target. The biggest effort, as some investors start to acknowledge it, must come from companies without which our economies cannot run and yet they need to reduce dramatically their environmental impact. Delivering massive reductions in global equity market indices is extremely challenging if we do not allow for exclusions and under/over-weighting. Unfortunately, this is the only way to make sure that our economies become aligned with the Paris Agreement. Exclusion is a powerful tool for investors to foster change. But they should not forget the toughest quartile.

Over the last few years, investors have started to integrate climate risks in their portfolios, mainly through measurable climate objectives. Among several approaches that have been deployed, mostly through newly created investment funds, the most popular being the carbon (footprint) reduction. In its general form, the objective is to reduce the portfolio carbon footprint (or other climate related metrics), typically by a predefined threshold and relative to a benchmark. The objective is achieved through a combination of exclusions and changes in the weighting of the securities in the investment universe: securities whose carbon footprint is particularly high are removed or have their weights significantly reduced with respect to the benchmark; securities with low carbon footprint are instead overweighted. More sophisticated approaches combine the carbon reduction mechanism with other features (such as constraints or minimal thresholds) or set the portfolio temperature alignment to ambitious climate scenarios (<2° or 1.5°), but they all share the same basic idea: If the economy is represented by such portfolio, then it would be aligned to those climate scenarios. This logic is now widely accepted among investors and, in the form of Paris Aligned Benchmarks (PAB Indices), is now enshrined in the regulation. With capital flowing into funds that implement all sorts of carbon reduction, the hope is that the market signals to companies investors' preferences, by making funding and investments more difficult for those that have not yet started their transition toward low-carbon and net-zero. Designing climate policies (for both companies and investors) that leverage market mechanisms is certainly efficient and can have a substantial impact on the common goal of keeping global warming within the boundaries set in the Paris Agreement on climate change. But for such policies and initiatives to work, we all need to understand their limitations and potentially their drawbacks.

Shareholders and the equity market.

The first challenge is the assumption that economies are well represented by market portfolios. This is particularly true for equity investments. When investors implement low-carbon strategies in equity markets, they modify the composition of their portfolios compared to cap-weighted benchmarks. For any deviation from the cap-weighted benchmark, because of climate considerations, there must be an investor willing to take the opposite position. Therefore, from an aggregated point of view, only the ownership of the company changes: carbon emissions remain in the market. Proponents of these type of approaches point to the fact that when capital flows from high-carbon to low-carbon emissions companies, it should have an impact on the cost of capital and funding conditions for companies that are divested by investors, pushing them to improve their climate credentials to attract climate-conscious investors[1]. While we broadly agree with the logic behind this thesis, we also acknowledge that for activities that have no direct low-carbon substitutes[2] (for example full-scale reliable renewable energies, steel, concrete, airlines, food production, etc.), the market logic may not work as expected. Consumers cannot easily

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[1] ESG Investing and Climate Transition: Market Practices, Issues and Policy. Considerations, OECD Paris, https://www.oecd.org/finance/ESG-investing-and-climatetransition-Market-practices-issues-and-policy-considerations.pdf

[2] It is unfair to say that there are no alternatives to such products and services because recent developments are starting to emerge and, for some of them, reaching commercially available status. Solar and wind power are already part of the energy mix in many countries; we are already seeing interesting developments in green steel and low carbon concrete; and the food industry is slowly but surely experimenting with new products that are technologically advanced and climate conscious. But we are only at the beginning of this transformation, and for now we must acknowledge that our economies can simply not work without these high-climate impact activities.

switch from high- to low-carbon products and services as easily as needed. Hence, higher cost of capital and funding conditions may translate into higher prices for consumers. A similar behaviour is visible at the macro-economic level: while European and North American GDP have become less carbon intense, the decoupling between GDP and CO_2 is not visible at the global level[3]. Clearly, part of the decarbonization of developed economies has been achieved by the outsourcing of certain high-carbon activities in emerging countries, while the weight of the service industry, which is much less carbon intensive, has grown. Developed economies (in the same way as low-carbon investors' portfolios) are set on a path to become carbon efficient, but at the planet level (or at the cap-weighted benchmark level for equity markets), such decarbonization is not yet visible. Ours is not a criticism against general low-carbon approaches[4]: After all, tilting investors' portfolios toward low-carbon companies is a way to select more efficient companies that are likely to be better positioned for a world that must reach such ambitious climate objectives. We try instead to understand and measure the extent to which companies, in their aggregate, should pursue ambitious climate goals for the planet to have a chance to remain within the boundaries set in the Paris Agreement.

Targets

For companies that are to set climate objectives, an easy benchmark is given by their direct peers and competitors. Companies that lag their peer group on climate metrics (for example carbon intensity) could in theory try to improve their performance by looking, for example, at the median level in their peer group. Although this is not always feasible[5], especially when we consider international benchmarks, it is fair to say that the average climate performance of a peer group reflects the current state of technology and know-how, which should be replicable by these companies. Because companies set targets also by looking at what their peers are doing, it is important to understand the link between the targets each company sets and the impact, at the market level, of their efforts. The objective of our analysis is to measure to which extent stock markets can improve their environmental impact if the worst performers could manage to improve their environmental performance. For this, we design a hypothetical scenario of the form:

> *By how much does the stock market environmental impact reduce if companies whose footprint is higher than a certain threshold were able to reduce it?*

[3] Artus, P. (2022). Are there signs of a decoupling between GDP and CO2 emissions? Natixis Research, https://www.research.natixis.com/Site/fr/publication/3UfDTndzcb1a8Zxsgnh_Cg%3D%3D

[4] As a matter of fact, as an asset manager, we currently manage several investment strategies that focus on the reduction of carbon footprint.

[5] A company whose activities are highly energy-intensive may not easily shrink its carbon footprint if its country's energy system is itself high-carbon intensive. For example, two companies in the same peer group whose main electricity source is nuclear vs. thermal coal will have substantially different carbon footprints and there is very little that the latter could do to match the carbon footprint of the former in the short term.

The framework

We consider the investment universe defined by the MSCI ACWI Index, a global index made of the largest companies listed in both developed and emerging stock markets. Within this large set of companies[6], we build several regional groups and, for each of them, we collect granular sector data (GICS-4 level) as well as carbon emissions and intensities[7] (both direct – Scope 1+2 - and full-scope – Scope 1+2+3). These regional portfolios are standard cap-weighted benchmarks that investors use, among other things, to benchmark their strategies, from the financial as well as environmental and carbon footprint points of view.

Let us assume that within each peer group, companies whose environmental impact ranks above a certain threshold, say the *Xth*-percentile, manage to reduce their impact to the level of the one ranked as *Xth.* For example, if we look at direct carbon emissions and X = 50, then we would consider the hypothetical case where all companies in the highest half manage to reduce those direct emissions down to the level corresponding to the median. Table 1 provides a simplified example of our hypothesis:

Sector	Environmental Metric			Hypothetical Sector
Company A	10			10
Company B	20			20
Company C	30	Median = 35		30
Company D	**40**			**35**
Company E	**50**			**35**
Company F	**60**			**35**

Table 1 : Example of transformation for a sector where companies whose environmental metric is below the median (X = 50) reduce their impact exactly at the level of the median (X = 50).

If companies are equally weighted in the sector, then the current (weighted average) environmental metric would be 35 against 27.5 for the hypothetical sector. This corresponds to an approximately ~21% relative reduction.

We perform this analysis on several regional portfolios, by assuming that the worst performing companies manage to reach the 75th, 50th and 25th percentile in their peer group. For each region and each target, we then compute the hypothetical carbon reduction compared to the cap-weighted regional benchmark. For most of the regions, a 50% reduction in the carbon footprint is achieved only if all companies manage to reduce their footprint at the level of the top quartile in their peer group. This is an extremely challenging goal for many companies to achieve. It is important to remark that most low-carbon approaches manage a reduction near 50% versus their benchmark mostly by removing high-emission companies from the portfolio. In our framework

[6] 2,362 at the end of January 2022.
[7] Carbon emissions and intensity data is sourced from Trucost, a leading environmental data provider, based on the last available information.

instead we do not remove companies, but we assume they can dramatically reduce their carbon emissions and intensities. Unless some (high carbon intensity) companies are to disappear because their products and services can be replaced with low-carbon alternatives, our hypothetical framework is the only way to reduce, at the aggregated level, the climate impact of our economies[8].

Figure 1 shows the potential reduction in the direct carbon footprint (Scope 1+2) for several regional indices and global benchmarks.

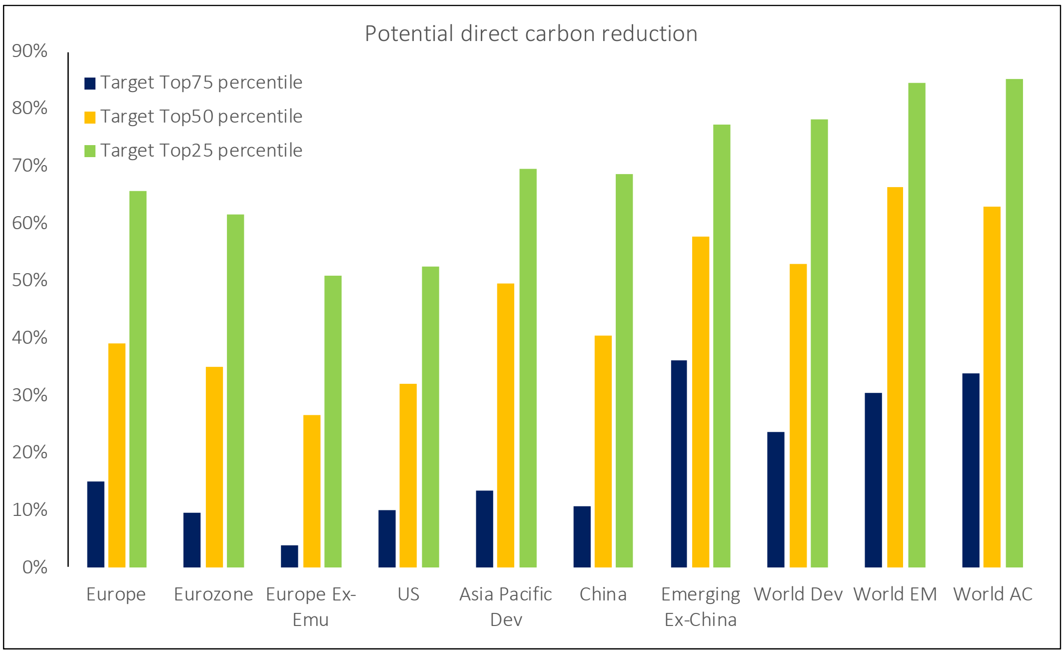

Figure 1 : Potential direct (Scope 1+2) carbon reduction, relative to cap-weighted benchmarks.

We see that to achieve a 50% reduction in the direct carbon footprint, we would need all companies whose emissions are above the lowest quartile in their peer group, to reduce them to that level. Less ambitious targets, such as reducing the direct carbon footprint at the median level (50th percentile) are not particular appealing in developed regions: For example, in Europe and in the US, this would only result in an approximately ~30% reduction. Not surprisingly, the targets can be lowered for large and geographically diversified benchmarks: for the global MSCI ACWI Index, if all companies in the highest carbon emission quartile could reduce their footprint at their peer group median, we could achieve an approximately ~60% reduction.

Figure 2 shows the results when we consider the full scope of companies' carbon footprints (Scope 1+2+3). The global picture does not change much: a 50% reduction in the aggregate footprint would require companies to achieve substantial reduction in the full supply chain of production footprint of their products and services.

[8] The attentive reader would point out that we are confusing economies and cap-weighted equity benchmarks. He is right.

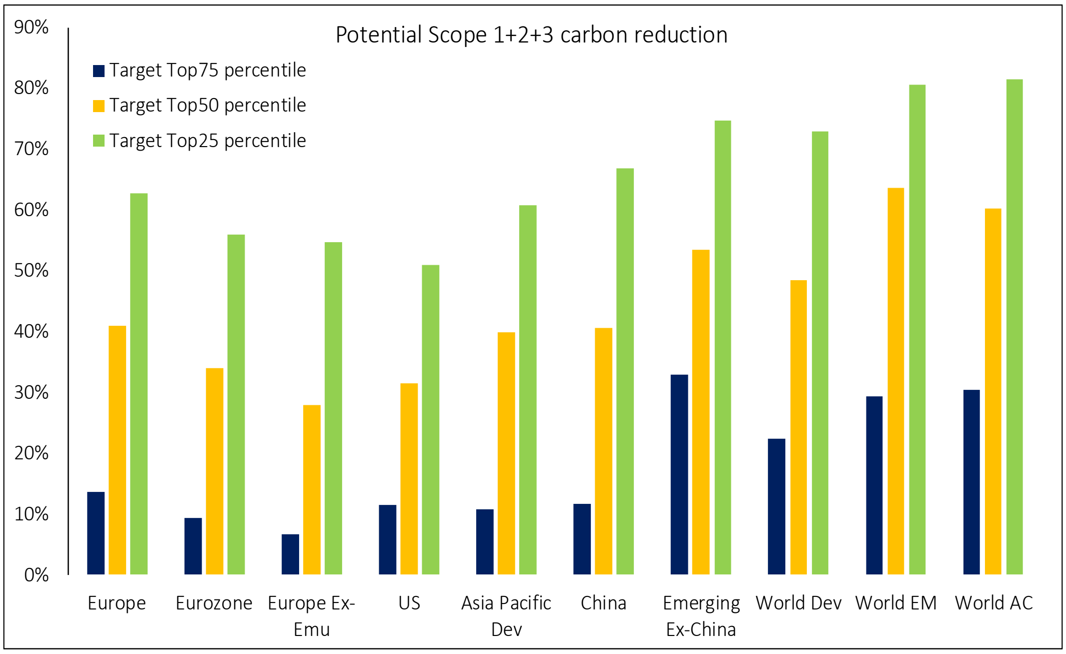

Figure 2 : Potential direct and indirect (Scope 1+2+3) carbon reduction, relative to cap-weighted benchmarks.

When we look at carbon intensities (emissions/revenues), we see that ambitious targets set by companies in Europe (at the 25th percentile) are not enough to reach a 50% reduction compared to the market. In the Eurozone, such effort would only provide a reduction in the carbon intensity of the market of approximately ~40%, and it would be around ~35% for the rest of the continent. In the US instead we could reach the 50% reduction target if only companies could lower their carbon intensities at the level of the best performing companies, in the 25th percentile (Figure 3).

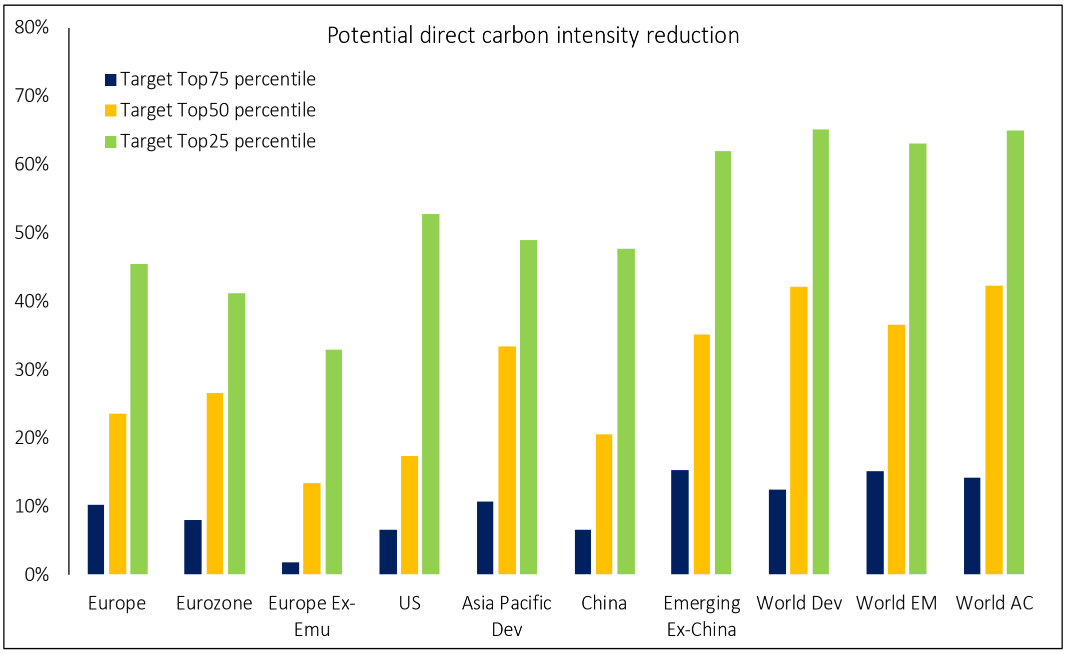

Figure 3: Potential direct (Scope 1+2) carbon intensity reduction, relative to cap-weighted benchmarks.

The reduction is much higher in global benchmarks (Emerging ex-China, World and World All Countries), which is not surprising as there is a lot of dispersion in carbon intensities among companies from different geographies. Matching the best performing ones therefore would yield great results in terms of carbon intensity reduction.

The main findings are overall robust to the inclusion of scope 3 in the carbon intensity perimeter (Figure 4). We notice however a degradation of the potential reduction that can be achieved in Europe: this time, if all companies manage to reduce their carbon intensity (operations and products) to the level of the best performing companies in the 25th percentile, we will obtain an approximately ~30% reduction only. The reduction would be only slightly above 30% for the US. Limiting the target at the median level (50th percentile) withing each peer group would deliver a modest around ~15% reduction in both Europe, US and China.

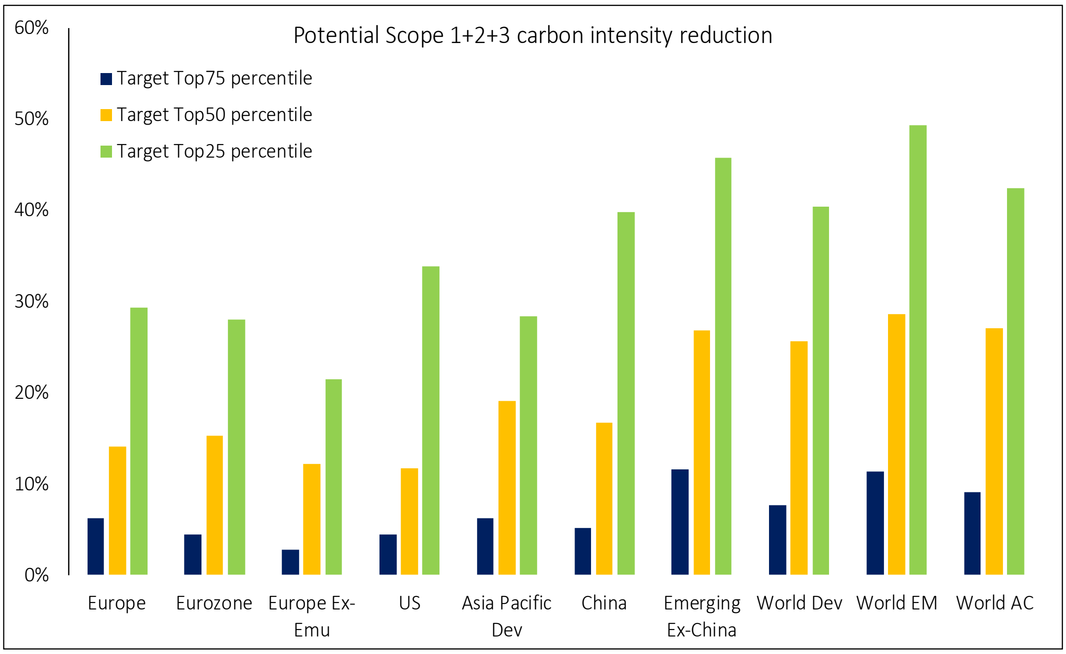

Figure 4 : Potential direct and indirect (Scope 1+2+3) carbon intensity reduction, relative to cap-weighted benchmarks.

The right threshold

The current PAB Indices regulation[9] stipulates that to be aligned with the Paris Agreement, indices must show a reduction of at least 50% of the carbon intensity compared to the market benchmark[10]. This is usually achieved by removing a relatively limited number of companies from cap-weighted benchmarks and small weight adjustments on both companies and sectors. The rationale of the 50% reduction, together with the self-decarbonization[11] of 7% is well clear: capital flows toward companies in PAB indices should nudge companies into their journey toward net-

[9] EU Paris-aligned Benchmark (PAB) Regulation. Article 3(1) - (23b) of Regulation (EU) 2016/1011. https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX%3A32020R1816&qid=1610752735162

[10] Other provisions require a given level of self-decarbonation as well as certain exclusions and exposure to high-climate impact sectors.

[11] Self-decarbonization, or the reduction of the carbon intensity year on year, of 7% should guarantee, in theory, that the portfolio will meet the criteria for alignment with the Paris Agreement in 2050.

zero by 2050. But as our analysis shows, if this is done by removing companies whose products and services are still needed and hardly replaceable, it may fail to bring the overall climate impact down to the extent required by the Paris Agreement. Furthermore, it appears that the level of carbon reduction could be adapted to the specificities of the investment universe: for relatively small and homogeneous geographical benchmarks, reaching 50% could prove very hard, under the assumption that companies undertake the required efforts to reduce their carbon intensity, unless of course one can remove such companies from the investment strategy.

The most challenging quartile

In our hypothetical framework, we've shown how much environmental impact reduction we can achieve if companies with high carbon footprint were able to match the median (50th percentile) or the top quartile (25th percentile) carbon performances. Actually, in most sectors there is very little dispersion in carbon footprint (when adjusted by size or revenues for instance). These are typically low-impact sectors, where selecting companies with a low carbon footprint has little marginal impact on the overall carbon footprint. As shown in Figure 5 (using cumulative market capitalization) and Figure 6 (using total number of companies) a significant number of companies (around ~70% in developed markets and ~50% circa in emerging markets) are already aligned with the Paris Agreement. By looking at their current and past emissions and their carbon budget, they are in line to be sustainable in a world that aims at limiting global warming below 2 °C.

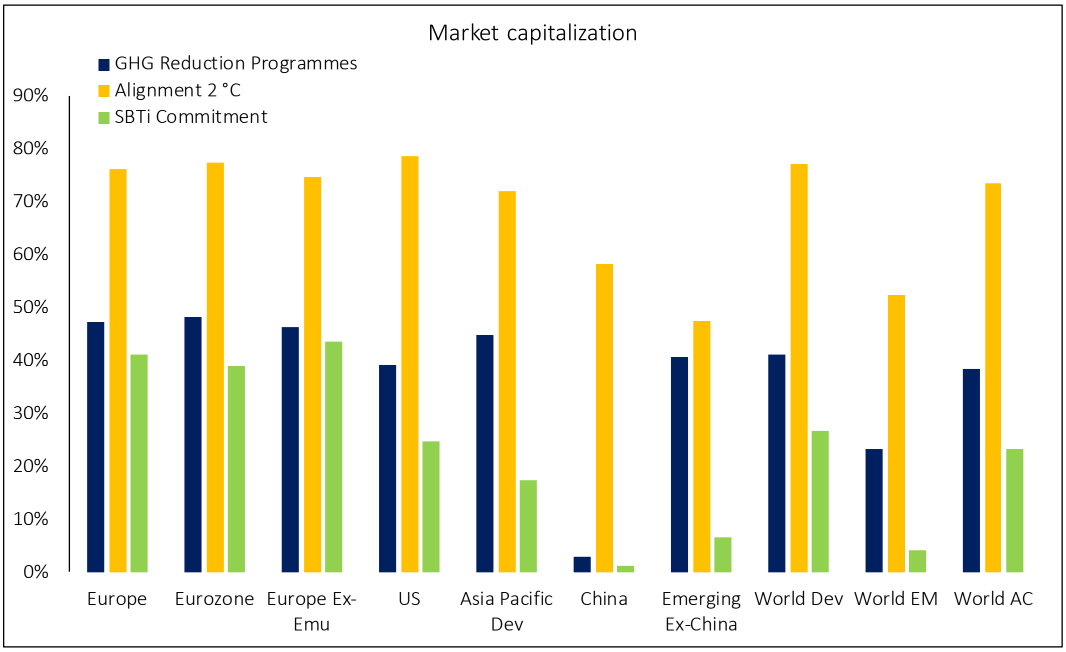

Figure 5 : Cumulative market capitalization of stocks with GHG reduction programmes (source Sustainalitycs), aligned to the 2 °C scenario (source ISS) and with a SBTi target (source The Science Based Target initiative - SBTi)

On the face of it, a still substantial number of companies, across different regions, have no or weak GHG reduction programmes clearly defined and implemented. For example, in Europe, only around ~45% of companies have such programmes. Even worse, fewer of them have explicitly set a SBTi[12] target, which defines and promotes the best practices to achieve robust, measurable and science-based targets to reach net-zero. In some other regions, especially emerging markets, this proportion is even lower.

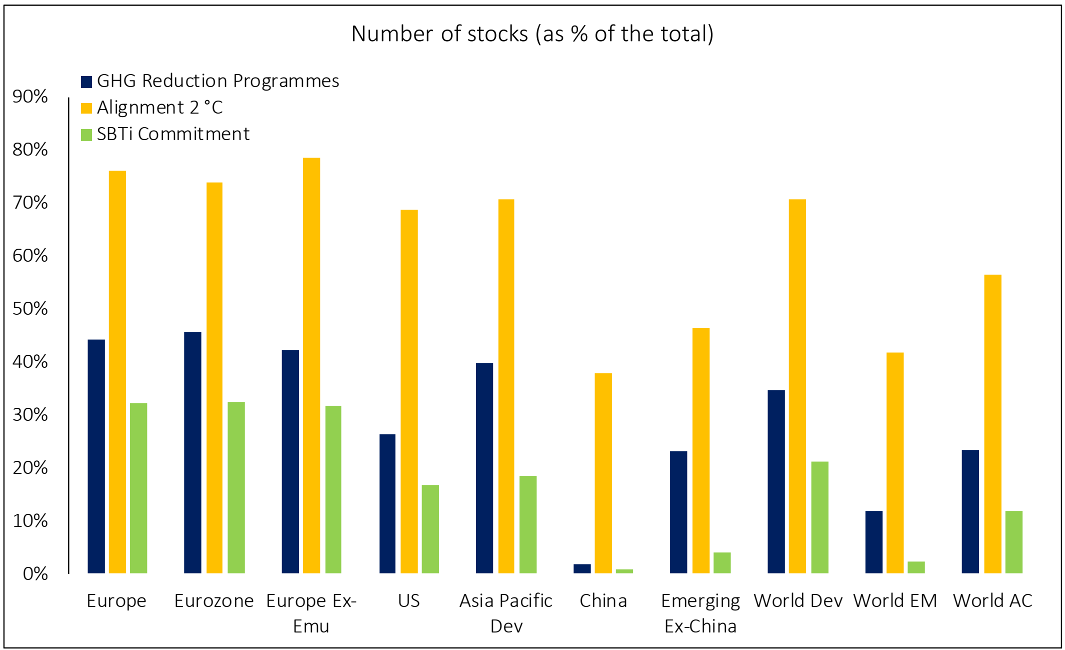

Figure 6 : Total number of companies, expressed as percentage of the total number of companies, with GHG reduction programmes (source Sustainalitycs), aligned to the 2° scenario (source ISS) and with a SBTi target (source SBTi)

In summary, while most companies in global benchmarks are already positioned to be aligned with a 2 °C scenario, this is not necessarily the result of clearly stated GHG reduction programmes nor commitments to the SBTi, but only the consequences of their role in the economy. Stated differently, as global benchmarks have become more exposed toward certain sectors that are naturally low carbon (Information technology, communication services, financial institutions, healthcare, media, etc.) while high carbon impact companies have shrunk or become private, it is possible that leveraging public markets to reduce carbon footprint through low-carbon investments turns less effective than expected.

12 https://sciencebasedtargets.org/

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