CARBON TRUST | KIGALI COOLING EFFICIENCY PROGRAM

Supported by: RACE TO ZERO | Cool Coalition

Cooling suppliers: Who's winning the Race to Zero?

An assessment of cooling suppliers' climate action

The Carbon Trust's mission is to accelerate the move to a sustainable, low carbon economy. It is a world leading expert on carbon reduction and clean technology. As a not-for-dividend group, it advises governments and leading companies around the world, reinvesting profits into its low carbon mission.

The Kigali Cooling Efficiency Program (K-CEP), a program of the ClimateWorks Foundation, is a philanthropic collaborative that works in tandem with the Kigali Amendment of the Montreal Protocol by helping developing countries transition to energy-efficient, climate-friendly, and affordable cooling solutions. K-CEP focuses on improving the energy efficiency of cooling in order to double the climate benefits and significantly increase the development benefits of the Kigali Amendment's efforts to phase down the production and use of hydrofluorocarbons (HFCs).

Supported by:

Race To Zero is a global campaign to rally leadership and support from businesses, cities, regions, investors that join 120 countries in the largest ever alliance committed to achieving net zero carbon emissions by 2050 at the latest. The objective is to build momentum around the shift to a decarbonized economy ahead of COP26, where governments must strengthen their contributions to the Paris Agreement.

Cool Coalition is a global multi-stakeholder network that connects a wide range of key actors from government, cities, international organisations, businesses, finance, academia and civil society groups to facilitate knowledge exchange, advocacy and joint action towards a rapid global transition to efficient and climate-friendly cooling. The Cool Coalition promotes an avoid-shift-improve-protect holistic and cross-sectoral approach to meet cooling needs through urban form, better building design, energy efficiency, renewables and thermal storage as well as phasing down HFCs.

Publication date: 29 March 2021

Cover image: Cold store of an italian pasta production.
Credit: Dario Egidi

Acknowledgments

The Carbon Trust wrote this report based on an impartial analysis of secondary sources, by reviewing the cooling industry's annual sustainability reports and other external communication.

The Carbon Trust would like to thank everyone that has contributed their time and expertise during the preparation and completion of this report. Special thanks goes to all those who contributed their time through reviewing our analysis and providing comments, to Dan Hamza-Goodcare from the Kigali Cooling Efficiency Program and COP26 High Level Champions team for commissioning, guidance and edits; to Children's Investment Fund Foundation for supporting and funding this work and to the Race to Zero Campaign and Cool Coalition for their support.

Authors

Sophie Bordat
Senior Analyst
sophie.bordat@carbontrust.com

Manu Ravishankar
Associate Director
manu.ravishankar@carbontrust.com

Paul Huggins
Associate Director
paul.huggins@carbontrust.com

David Aitken
Director
david.aitken@carbontrust.com

List of acronyms

BAT	**Best Available Technology (BAT)**
GHG	**Greenhouse Gas**
GWP	**Global Warming Potential**
HFC	**Hydrofluorocarbons**
R&D	**Research & Development**
SBT	**Science Based Target**
SBTi	**Science Based Targets initiative**

Contents

Executive summary

This document aims to provide a snapshot of the cooling industry's climate commitments.

This covers both the readiness to join the Race to Zero campaign and alignment with the recently published Cooling Climate Action Pathway to Net Zero. 54 companies were assessed after reviewing their sustainability reports. The majority of companies are cooling product manufacturers serving markets around the world.

Five companies in the cooling sector have joined the Race to Zero so far.

Most of these companies are product manufacturers and only one company supplies refrigerants. The majority are still in the process of setting a Science Based Target (SBT) and validating their commitment with the development of a plan. The fact that companies have three years to develop their commitment once they've pledged a net zero target should encourage cooling suppliers to join the race, even if their plans on how to achieve this ambition aren't clear from the start.

90% of the cooling suppliers assessed are still early in their journey to join the Race to Zero.

Most of these companies are characterised by having started their climate journey focusing on reducing Scope 1 and 2 emissions but have shown limited commitment to more ambitious targets. There is also a disconnect between companies that are actively enabling the decarbonisation of the sector through the development of natural refrigerants[1] and their climate commitments.

Most of these manufacturers haven't made any commitment nor communicated their ambition to join the race despite their climate-friendly activity. This is a potential easy win on natural refrigerants which looks like low hanging fruit - these suppliers need to raise their climate ambitions.

Generally, cooling suppliers located in countries with legally binding net zero commitments are more likely to have strong climate commitments. However, there are still many outliers.

In our assessment, Chinese manufacturers, among others, are at the bottom of the race despite being in a country with a commitment to carbon neutrality by 2060.

Cooling specific ambition and action is lacking.

We recognise that there is no standardised approach in reporting against cooling impact areas. This makes it harder to assess the strength of different suppliers' commitments. However, net zero requires ultra-low Global Warming Potential (GWP) refrigerants and super-efficiency and yet these solutions are rarely included explicitly. Regardless of a supplier's position in terms of the Race to Zero, public commitments are lacking even for those who have joined the race already.

[1]Ultra-low GWP refrigerants include synthetic refrigerants in addition to natural ones but the lack of natural refrigerant suppliers commitments appears out of step with the net zero compatibility of their products.

1 Introduction

1.1 Context and overview

A vision for net zero cooling has now been published which for the first time provides an answer to the question: how do we get to net zero emissions in the cooling sector.

The Cooling Climate Action Pathway to net zero highlights three key impact areas[2] in which cooling stakeholders across public and private sectors, financiers and civil society need to act to reach net zero by 2050 at the latest. Alongside this vision, there is an action table highlighting key steps for different stakeholders by this year and by 2025, 2030 and 2040, as well as a Cool Calculator which enables cooling industry stakeholders to explore how to get to zero on cooling.

This document aims to understand the compatibility of current commitments pledged by cooling suppliers with the recently defined net zero vision for cooling.

The purpose is to provide insights on where cooling suppliers are relative to each other in terms of joining the Race to Zero campaign and the strength of their cooling specific ambition. We also identify what climate leadership in the sector looks like and summarise recommendations that can help the sector increase its ambition and translate this into cooling specific action before 2050.

Our analysis broadly focusses on the following questions:

- Are cooling suppliers focused on the most impactful solutions for net zero cooling namely super-efficient equipment and appliances, and ultra-low GWP refrigerants[3]?
- Have cooling suppliers taken action to pledge (net zero), plan, proceed and publish[4]?
- What needs to be done in order to accelerate the race to net zero cooling within the industry?

*[2]The three key impact areas are (1) **passive cooling** – widespread adoption of measures that avoid or reduce the need for mechanical cooling including through smart and human centric design and urban planning (2) **Super-efficient equipment and appliances** – a 'race to the top' S-curve transformation where the norm is super-efficient cooling equipment and appliances powered by zero carbon energy; (3) **Ultra-low global warming potential (GWP) refrigerants** – Market domination of ultra-low (< 5GWP) refrigerants across all cooling sectors and applications.*

[3]Given the product development focus of cooling suppliers we did not assess suppliers' level of ambition or action on passive cooling measures but only evaluated their performance against the other two key impact areas.

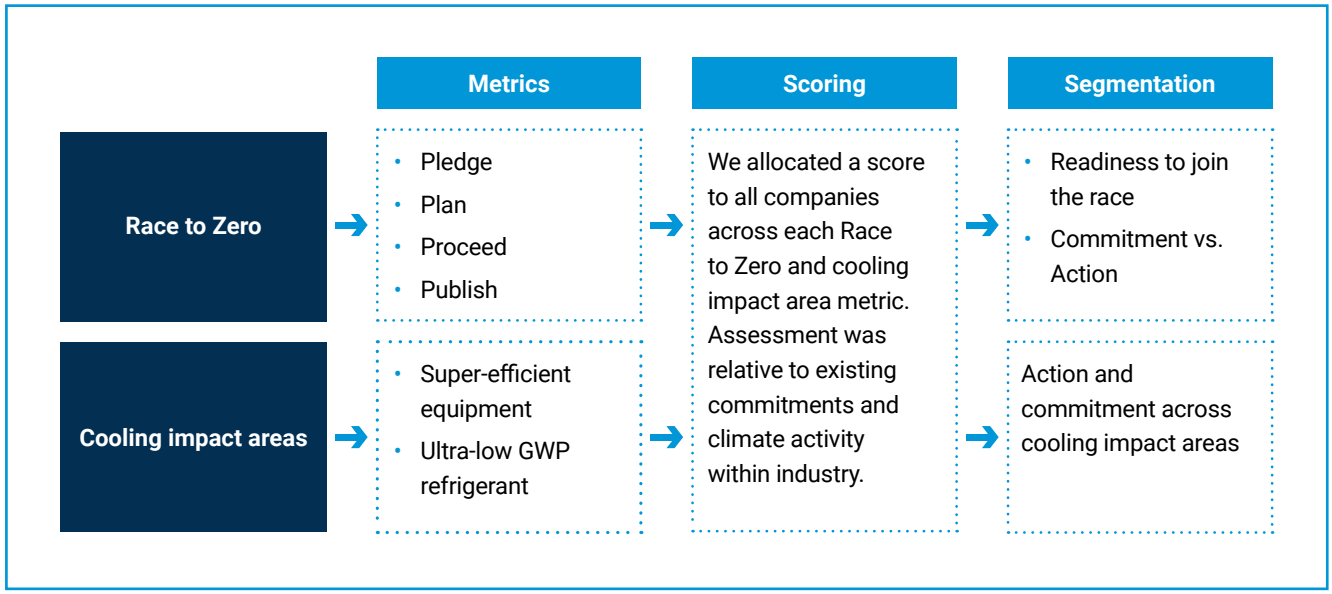
*[4]To join the Race to Zero companies need to make a net zero commitment by 2050 and join a partner network of the race. The Race to Zero defined the 'Starting Line' minimum criteria required for participation to the Race to Zero campaign as follows: (1) **Pledge** to reach net zero in the 2040s or sooner in line with global efforts to limit warming to 1.5°C (2) **Plan** steps to achieve net zero and set interim target in the next decade, which reflects a fair share of 50% global reduction in CO2 by 2030 (3) **Proceed** – take immediate action toward achieving net zero consistent with interim targets and (4) **Publish** – commit to report progress at least annually.*

1.2 Methodology

We analysed publicly available sustainability reports of 54 cooling suppliers covering both cooling equipment manufacturers and refrigerant producers[5].

The majority of suppliers analysed were cooling equipment suppliers (44). We examined their sustainability reports and other press releases to assess their climate commitments and cooling specific ambitions[6]. Appendix 1 provides a table with more detail on the suppliers analysed.

Figure 1: Assessment framework



We used Race to Zero minimum criteria to assess suppliers' readiness to join the race.

To join the race, suppliers have to pledge their net zero commitment and sign up to one of the partner networks of the Race to Zero. The minimum criteria Race to Zero has set includes that the **Pledge** must be aligned with net zero by 2050; a **Plan** has to include interim targets in line with the net zero pledge; organisations must **Proceed** to act in line with their plan and net zero ambition; and finally they must commit to annually **Publish** reports on their progress made to target disclosing their emissions. We scored suppliers against each of these metrics depending on the strength of their pledge, plan, actions (proceed), and publications (disclosures).

Two of the three Cooling Climate Action Pathway's impact areas are the metrics used to assess suppliers' cooling ambition.

We scored all suppliers against super-efficient equipment and appliances and ultra-low GWP refrigerants to determine any trends in terms of commitments or action in this space. Given the product development focus of cooling suppliers, we did not assess suppliers' level of ambition or action on passive cooling measures. However, we recommend an assessment of passive cooling action, particularly in relation to the built environment, as these measures play a key role in reducing the need for, and use of, mechanical cooling and further act as a pillar to reach a net zero target for cooling by 2050.

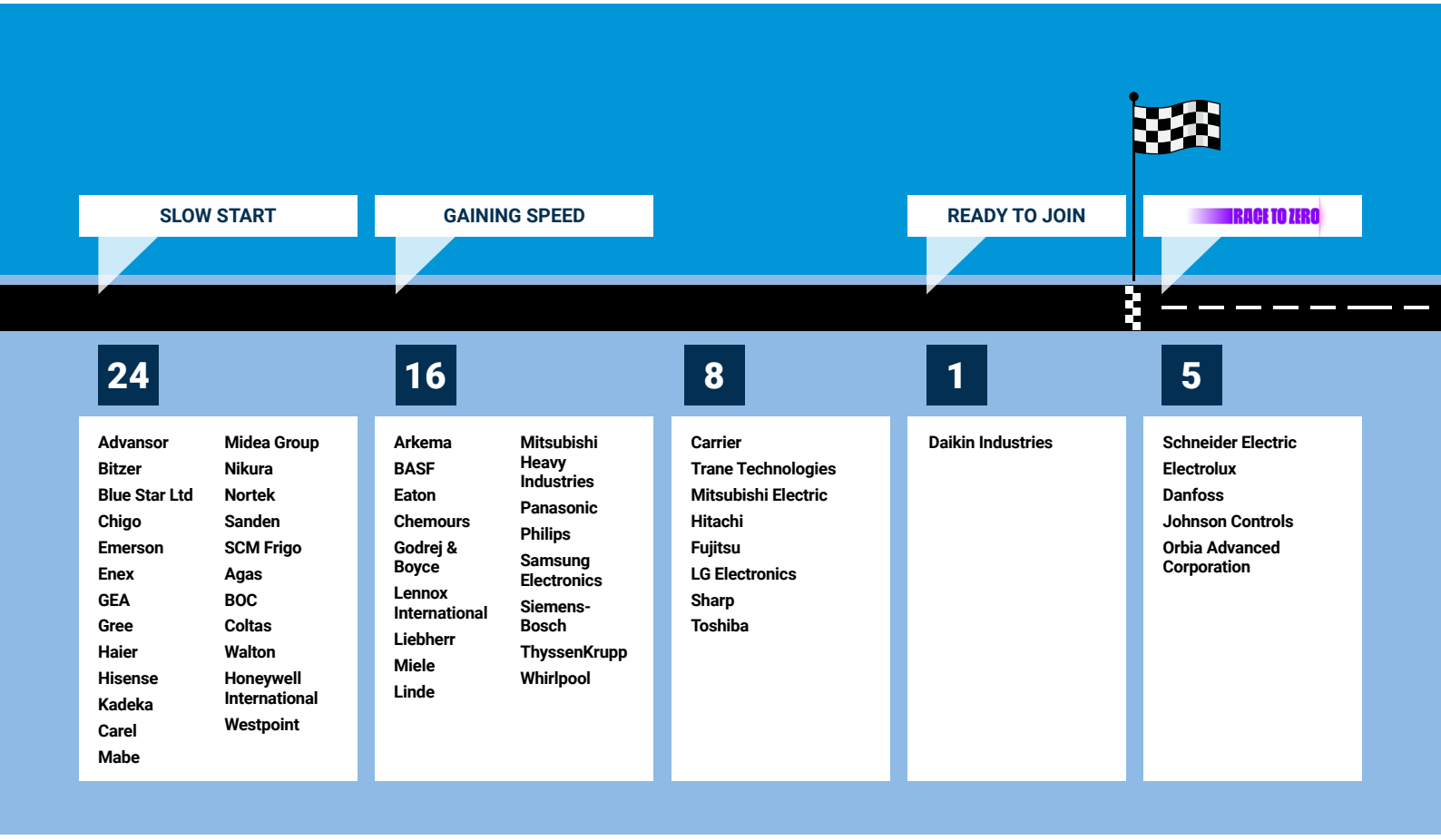
[5]Analysis of the 54 suppliers was conducted between January and February 2021.
[6]We have not engaged 1-1 with every company and welcome feedback on the findings of this report so that future assessments can provide more detail about the race. In particular, we encourage suppliers to publicly elaborate on their action particularly on key impact areas and how they feed into their net zero commitments. Without clear publications it is difficult to uncover the strength of commitments.

[7] Passive cooling is an important impact area for the sector as a whole but action from cooling suppliers in this area might be limited to roles such as advising customers about passive cooling or integrating evaporative cooling technologies among other activities.

2 Insights from the cooling industry's climate action

2.1 Five suppliers have already joined the Race to Zero but 90% of suppliers analysed are still early in the journey to join the race

Figure 2: Segmentation of suppliers based on proximity to join Race to Zero



The numbers in each box represents the number of suppliers in the relevant segments.

This report focuses on the Race to Zero and overall cooling suppliers' efforts to align targets and reporting to Race to Zero. We recognise that action is also being taken that might not align with the Race to Zero criteria and welcome this. However, part of the challenge is to standardise the approach (see recommendations section), which is why our assessment is based firstly on the Race To Zero's methodology.

Out of the 54 cooling suppliers analysed only five have joined the Race to Zero and the majority are far from having climate targets, actions or plans strong enough to join the race.

Daikin Industries is the only company identified as being Ready to Join the race, ranking high across Pledge, Plan, Proceed and Publish. Eight suppliers are getting closer to being ready for joining the race as they've made significant steps either through formulating targets or have demonstrated strong actions and plans. Further momentum across these efforts could turn them into strong candidates for joining the race. The 24 slow starters are characterised by the absence of a target and demonstrating slow action in addition to a lack of Scope 1, 2 or 3 disclosure.

Suppliers can join the race without elaborated strategies or plans: our analysis shows that across the five suppliers that are members of the Race to Zero there are significant differences in their approach to Pledge, Plan, Proceed and Publish. Companies can join the race with a pledge and further elaborate their plans and strategies at a later stage - for instance, if they join the Science Based Targets Initiative (SBTi). Joining Business Ambition for 1.5°C[8] means that organisations have three years to set their net zero target and plan in line with a 1.5°C future. Or if they join the Climate Pledge then they commit to achieve net zero by 2040 through the stimulation and investment of low carbon products and services. The focus of this initiative is on measuring regular emissions reduction impacts, implementing decarbonisation strategies in line with the Paris Agreement and taking action to neutralise remaining emissions. We note that at this point cooling suppliers that have joined the race have done it through the SBTi and their publications are not clear about their carbon removals and offsetting strategies.

Box 1: Examples of net zero commitments from cooling suppliers in the race

- **Electrolux is the only company with an elaborate commitment consistent across Pledge, Plan, Proceed and Publish. The interim targets are aligned with their net zero ambition by 2050 and the company has already demonstrated actions to reduce the footprint of their 'use of products sold' as the main area of action to reduce their GHG emissions.**
- **Danfoss Group's commitment is to have net zero operations by 2030 but the company is still due to clarify what this means and if it includes its entire value chain. They are in the process of setting an SBT and further elaborate their plan as well as elaborating their first Scope 1, 2 and 3 carbon footprint analysis.**
- **Orbia Advance Corporation (previously Mexichem) announced its net zero by 2050 target and will commit to the Business Ambition for 1.5°C. However, their commitment and plan to proceed is still due to be developed, the company has no Scope 3 emissions disclosure, and does not have clear communication of past climate action particularly on reducing operational emissions of products.**

[8]*SBTi and The Climate Pledge are network partners of the Race to Zero through which large businesses can make net zero commitments and are automatically added to the race.*

Suppliers close to a Ready to Join the race position are characterised by ambitious commitments and published Scope 3 emissions disclosures whilst their plans and actions aren't yet aligned to net zero.

Among the eight suppliers, three have pledged to reach net zero throughout their value chain by 2050, three have committed to achieving carbon neutral operations by 2030 and two suppliers have committed to achieving an 80% emissions reduction target by 2050. Those committing to a net zero target by 2050 do not necessarily have an interim target in line with a 1.5°C future, as they have not yet set an SBT. While those committing to a less ambitious target have set a plan, this does not consider alignment with a net zero future. In terms of action, this group of suppliers have already started their climate journey with a majority focusing on reducing Scope 2 emissions and a few leading internal initiatives to increase energy efficiency of products sold across different business lines to limit global warming.[9]

16 suppliers are Gaining Speed mainly by taking significant action and targeting their products' operational emissions despite their commitments being far away from net zero.

Most suppliers are committing to reducing carbon intensity or having carbon neutral operations by 2030-2050 to align with a well-below 2°C future. These suppliers are also characterised by weaker plans that do not state their interim targets, how they will proceed or any specific ambition to align with a net zero future. As part of this group of suppliers, Godrej & Boyce is the only outlier in that it announced its commitment to SBTi Business Ambition for 1.5°C and is due to set its target. In terms of actions, most suppliers have committed research and development (R&D) investment into product innovation or to increasing their portfolio of low carbon technologies.

24 suppliers have a Slow Start marked by having no publicly stated emissions reduction target or communication of an intent to set one.

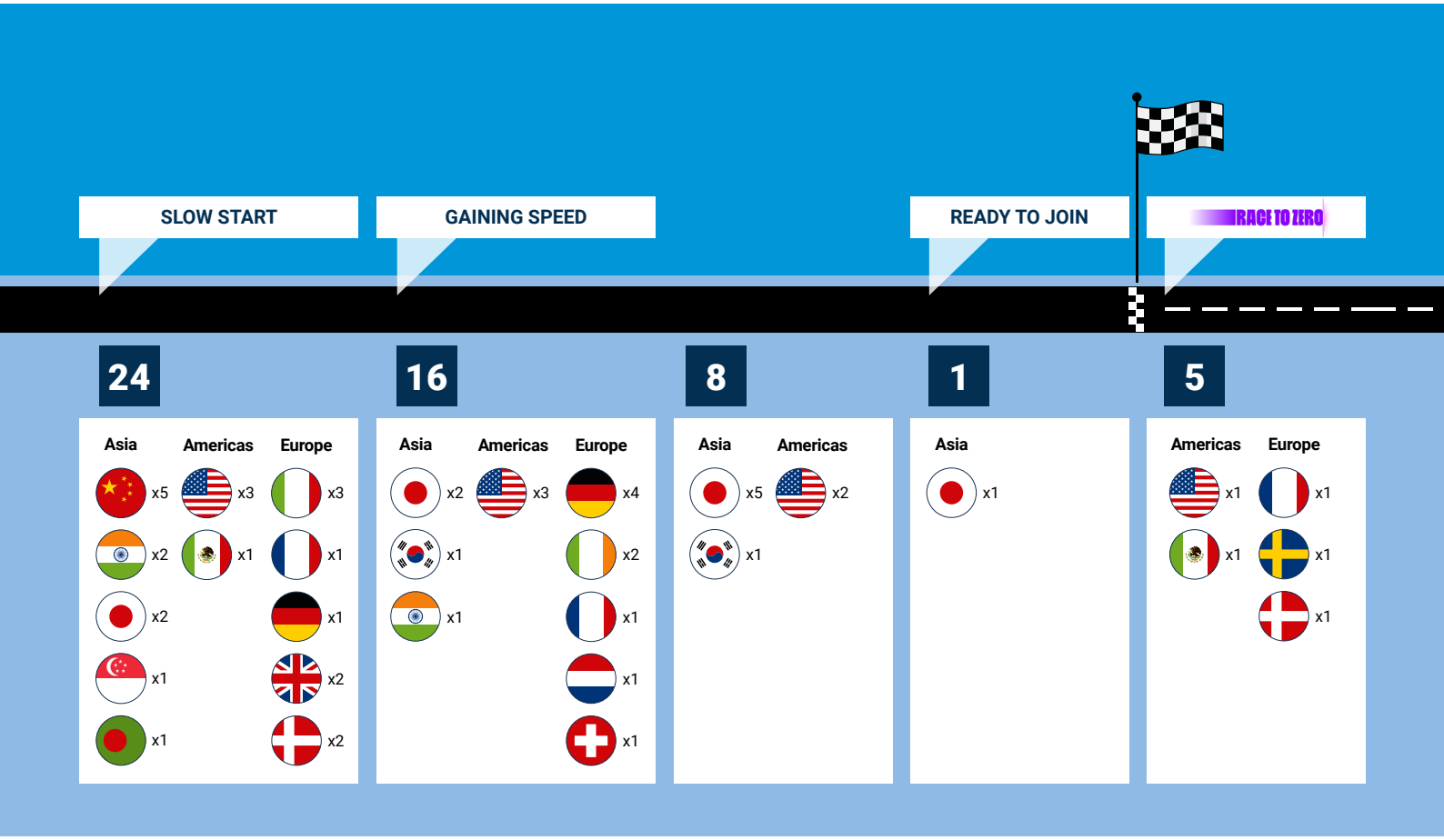
The majority have not publicly demonstrated any action at all. The few that have initiated their climate journey and shared their activities are focused on Scope 1 and 2. However, eight suppliers are refrigerant manufacturers or cooling equipment manufacturers that sell ultra-low GWP refrigerants or equipment suitable for using CO2 as the refrigerant. Despite not having any target, their manufactured products enable a net zero ecosystem allowing manufacturers to access refrigerants with a GWP of <5 or commercial and industrial sectors to purchase cooling equipment suitable to using those refrigerants. Similarly, suppliers like Mabe, Honeywell International and Gree, who are still far from joining the race as they rank low across Pledge, Plan, Proceed and Publish.[10] However, they have made commitments or actions that if met or scaled can result in significant impacts on their markets. For example, in 2020 Mabe announced a complete phase out of all HFCs (Hydrofluorocarbons) from its refrigerator production plants by the end of the year and to improve the efficiency of its refrigerators.

[9]Most of the companies getting close to Ready to Join the race are suppliers that sell a portfolio of products of which cooling equipment is only one business line.

[10]Pledge, Plan, Proceed and Publish are Race to Zero's minimum requirements. More detail on these metrics is described in section 1.2. Methodology.

2.2 Suppliers located in regions with strong climate commitments are more likely to have stronger targets

Figure 3: Geographical spread of cooling suppliers headquarters per Race to Zero readiness groupings



10 out of 14 of the suppliers that are already part of or close to the Race to Zero have their headquarters based in countries with legally binding net zero commitments.[11]

This includes suppliers getting close to a 'Ready to Join' position, those at a 'Ready to Join' position, and the ones already in the race. A couple of outliers exist such as Johnson Controls and Orbia Advanced Corporation that are both based in countries without any legally binding commitment (respectively in the United States and Mexico).

Asian suppliers leading the race are mainly based in Japan and South Korea while those based in China, India and other Asian countries are slowly starting and gaining speed in developing decarbonisation strategies.

Despite China's legally binding commitment to carbon neutrality by 2060, it seems that cooling suppliers have not yet reacted to this national requirement nor been influenced to join the race. As shown in Figure 3, Chinese suppliers are lagging behind in terms of developing targets even though the manufacturing equipment in China respond to local and international demand.

[11] *In March 2021 countries with legally binding net zero commitments are Sweden, France, United Kingdom, Denmark, New Zealand, Hungary, China, Japan.*

Despite the European Union's ambition to work towards a bloc-wide 2050 net zero emission target, many suppliers located in the region are still early in the journey to joining the race.

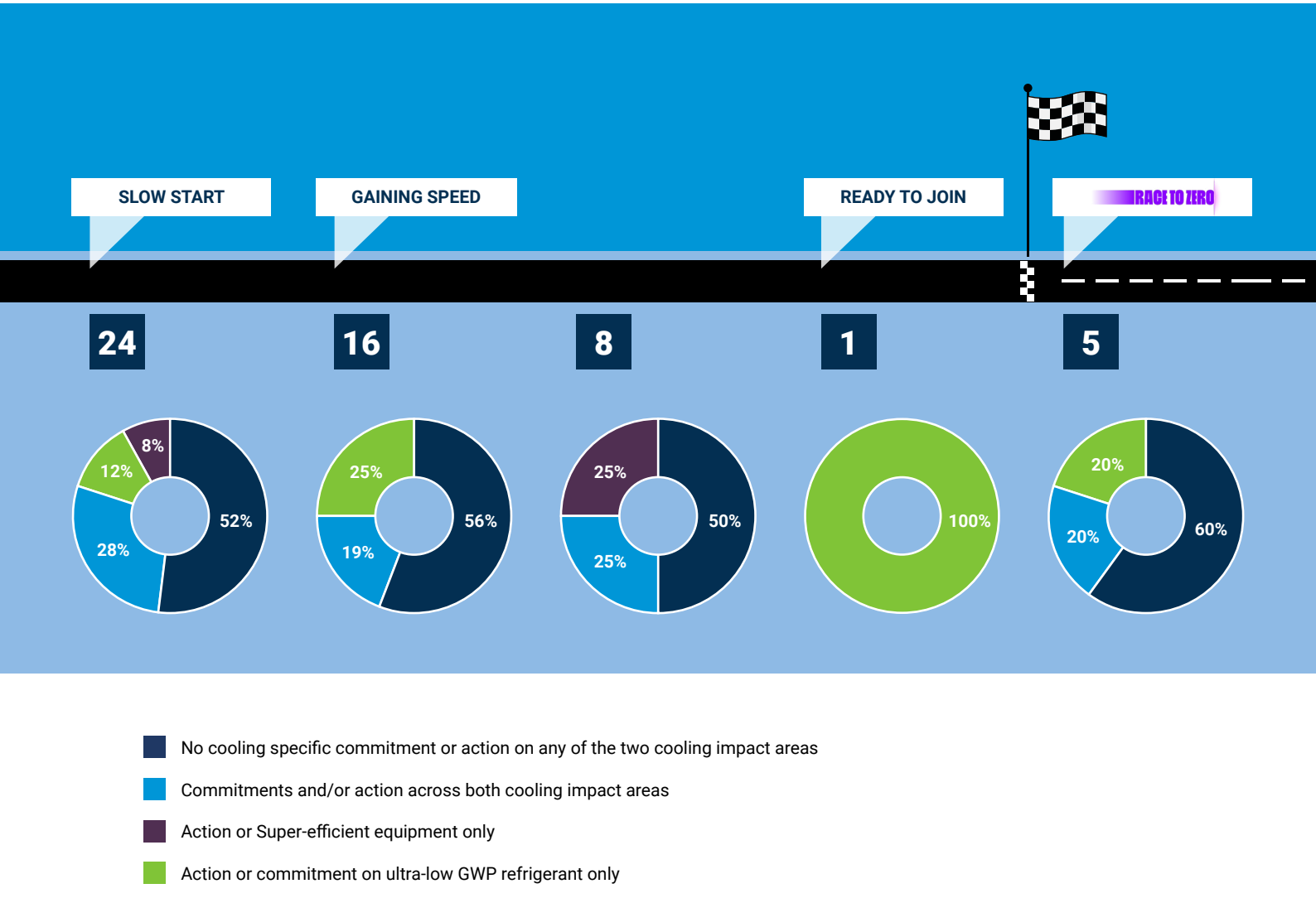
This also includes suppliers located in France, the United Kingdom and Denmark where net zero commitments are legally binding at a country level. Net zero commitments by cooling suppliers in these countries are critical as government net zero targets will need action from these suppliers to be successful.

Currently there are no major cooling equipment or refrigerants manufacturers located in Africa, the Middle East or Oceania.

This analysis reviewed major cooling-related suppliers that supply larger cooling markets which includes those with a subsidiary or local presence in Africa, Middle East or Australia and New Zealand.

2.3 Cooling specific commitments are lacking across the board

Figure 4: Suppliers' contribution to cooling specific impact areas



- No cooling specific commitment or action on any of the two cooling impact areas
- Commitments and/or action across both cooling impact areas
- Action or Super-efficient equipment only
- Action or commitment on ultra-low GWP refrigerant only

We assessed cooling specific actions and commitments of each company against two of the three impact areas defined in the Cooling Climate Action Pathway to Net Zero.

Given the main focus of suppliers is on manufacturing cooling equipment and/or refrigerants, our assessment focused on analysing their actions towards developing super-efficient equipment and appliances and rolling out ultra-low GWP refrigerants (<5 GWP) or switching towards appliances suitable to these next generation refrigerants. Both of these cooling impact areas offer the biggest Greenhouse Gas (GHG) emissions reduction potential according to our Cool Calculator which provides an open, transparent way for cooling sector stakeholders to explore how to get to net zero cooling emissions. The adoption of passive cooling measures to reduce the need for mechanical cooling is not an area that cooling equipment and refrigerant manufacturers focus on investing in, researching, or are explicit about in their publications.[12]

Cooling commitments across suppliers are sparse regardless of their proximity to joining the Race to Zero.

Although there was no net zero cooling vision defining expectations for commitments on cooling ambition prior to the publication of the Cooling Climate Action Pathway to Net Zero, these impact areas should be a climate priority for industry. Suppliers' climate action publications are not explicit about cooling specific activities and ambition. Similarly, suppliers have their own approach in defining what makes their equipment efficient. The majority aim to increase product efficiency to meet local standards and, depending on the region, this might not yet be aligned with a net zero vision. We've acknowledged statements that show that suppliers want to increase the efficiency of cooling products, that have participated in cooling awards (e.g. the Global Cooling Prize), or have defined R&D and investment in increasing equipment efficiencies. However, it is unclear if these actions are aligned with Best Available Technology (BAT) or net zero emissions. In terms of ultra-low GWP refrigerants, actions and commitments consistent with net zero include those that have HFC phase-out commitments, that are already developing ultra-low GWP refrigerants or are planning to increase their portfolio of next generation refrigerants.

Only four suppliers[13] have made clear commitments to phase out refrigerants with high GWP and have a plan of replacing them with low to ultra-low GWP refrigerants.

Most commitments plan to phase-out high GWP refrigerants for some but not all of their product portfolios. These suppliers state that they plan to use natural refrigerants or ultra-low GWP 'as much as possible' but are unclear about the share of products this will represent as their plan allows the substitution of refrigerants with others that can have a GWP as high as 750. The fact that these four suppliers are all cooling product manufacturers with a well-established coverage in their respective markets signals a growing demand for ultra-low GWP refrigerants.

18 suppliers have demonstrated steps towards ultra-low GWP refrigerants despite not making any cooling commitment.

Actions include: already selling natural refrigerants as part of their wide portfolio of refrigerants; demonstrated interest or participation in activities to develop products using alternative refrigerants including natural refrigerants; or having started to phase down high-GWP refrigerants in their products but replaced them with others that are not ultra-low.

[12]We acknowledge that there might be passive cooling measures that operating equipment manufacturers cover that our analysis has not been able to pick up.

[13]Carrier, Electrolux, Mabe and Trane Technologies.

Suppliers have their own definition of efficient (or super-efficient) equipment and appliances that are difficult to compare.

Industry leaders are putting efforts into increasing product efficiencies and leading organisations are part of key initiatives such as United for Efficiency (U4E) and the Super-efficient Equipment and Appliance Deployment initiative among others. However, more needs to be done and with greater consistency. For most suppliers, their statements and actions towards increasing product efficiency are unclear about the level of efficiencies their products will reach, the timeline for their roll-out, and the percentage of these products as part of their overall cooling portfolio or sales.

Most suppliers have defined their own Green Products line that are defined by a combination of factors including their environmental footprint or energy and water consumption but are difficult to compare as they are either developed against different national standards (e.g. Minimum Energy Performance Standards (MEPS), Energy Star) or internal metrics.

Box 2: Examples of companies' commitments and action regarding ultra-low GWP refrigerants

- **Mabe announced a complete phase out of all HFCs from their refrigerator production plants for all products in Latin America.**
- **Honeywell International is a member of the CCAC Phasing Down Climate Potent HFCs/HFCs Initiative which aims to reduce the use and emissions of high-GWP HFCs and enhance energy efficiency in the food cold chain, as well as achieve a 30-50% reduction in HFC emissions from refrigerant servicing within 10 years.**
- **Gree was a co-finalist (with Tsinghua University) at the Global Cooling Prize 2020 for developing a super-efficient and climate-smart Residential Air Conditioner - a technology that operates three modes: Vapour Compression, Direct Evaporative Cooling and Ventilation to optimise indoor cooling by using a temperature-humidity-independent-control cycle. The technology also uses low GWP refrigerant and dehumidifies the air thus using less energy. The system has a small solar photovoltaic (PV) panel integrated into the outdoor unit to reduce overall grid electricity consumption.**

2.4 Data quality to assess cooling specific ambitions and actions is poor

The lack of standardisation in terms of reporting makes it difficult to assess the strength of suppliers' climate commitments or actions.

There is a misalignment between what suppliers commit to and what they actually do. Some publish commitments and announcements but do not track or report against these in a consistent reporting format. Conversely, they might publish separate communications with case studies that showcase technologies the company has invested in with high efficiency characteristics but would not systematically include this in their climate reporting.

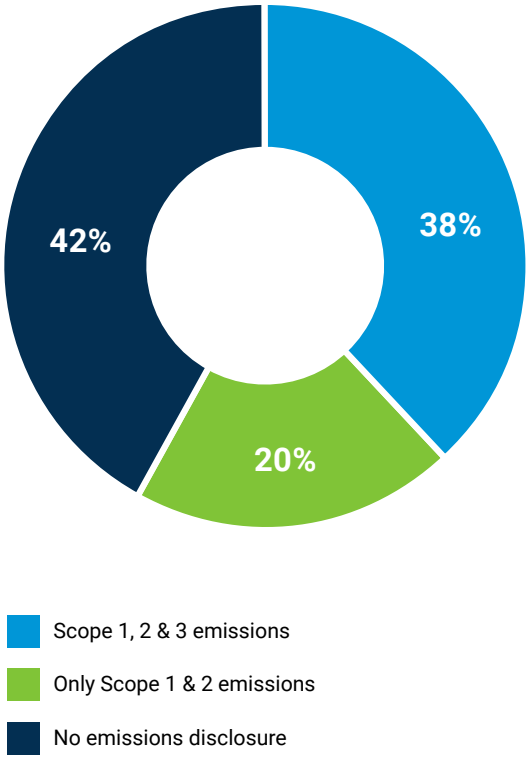
Most suppliers consolidate climate-related reporting with other environmental and social disclosures in their Corporate Social Responsibility or Environmental Social and Governance reports.

As a result, these extensive reports only provide an overview of their emissions reduction strategies, where they exist, but do not dive into specific details particularly for Scope 3 emissions or detail cooling specific metrics.

Only 38% of suppliers assessed are disclosing their Scope 3 emissions.[14]

Among these Scope 3 disclosures, there is a lack of consistency in terms of disclosure quality and granularity. Some suppliers are not explicit about what is included in their Scope 3 (in terms of upstream and downstream reporting as listed in the GHG Protocol) and others explicitly exclude several categories including 'use of sold products' which should represent the highest share of emissions. In addition to this, many suppliers sell cooling related products among other appliances and do not provide a breakdown of their Scope 3 emissions in terms of the share of emissions per product category (i.e. cooling appliances or others). As a result, it is difficult to understand the share of cooling specific Scope 3 emissions and assess if their level of climate ambition is aligned with where most of their emissions are.

Figure 5: Companies' emissions disclosure



[14]*These are GHG emissions inventory that includes indirect emissions resulting from value chain activities.*

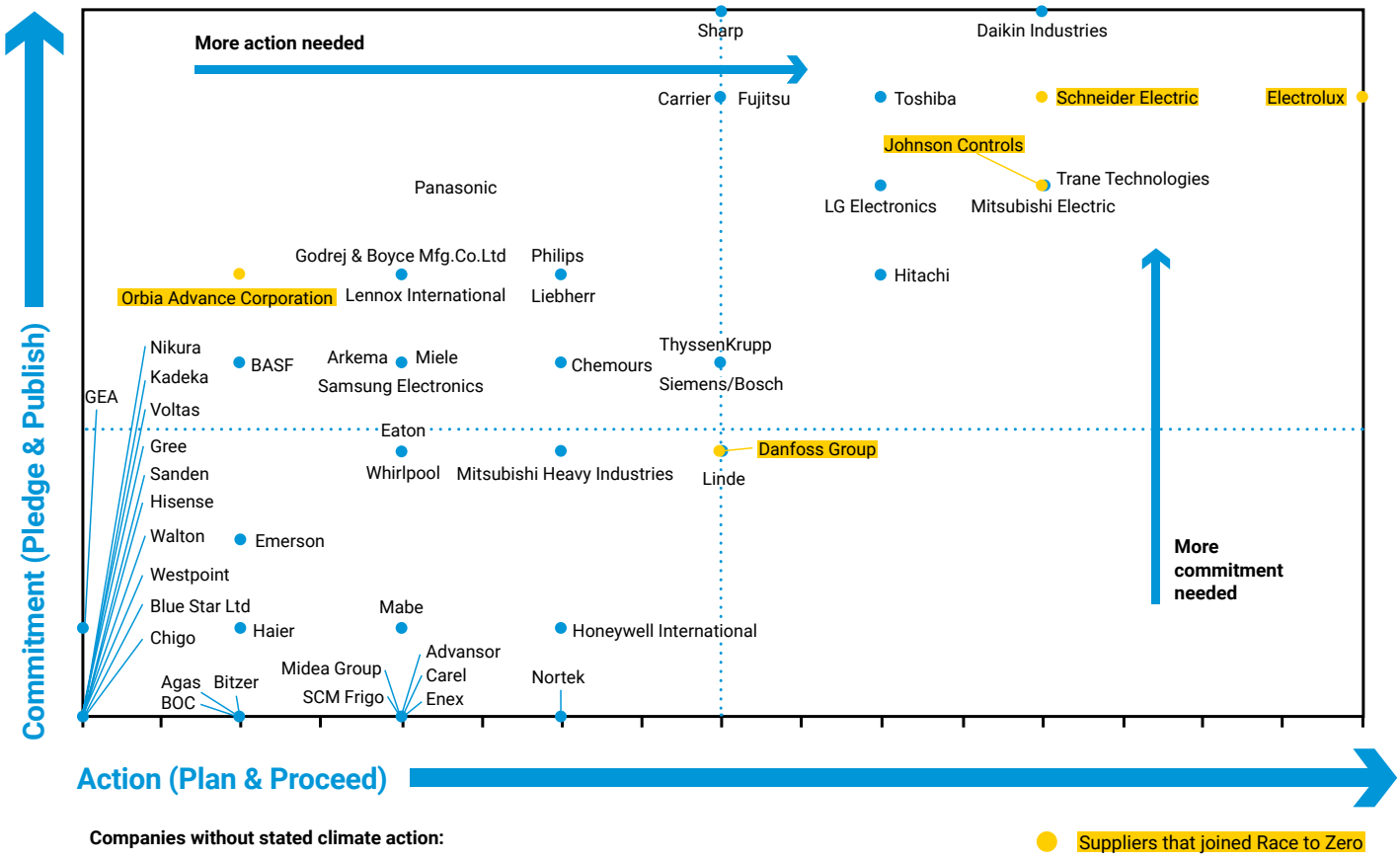
3 Recommendations

We make 10 key recommendations in this section. These are introduced here and detailed further below:

1	Suppliers with strong actions should reflect these actions with net zero commitments.
2	All commitments from members in the race and those about to join the race must be net zero emissions across the value chain.
3	In line with a net zero target throughout the value chain, suppliers' commitments must cover the key net zero cooling impact areas (passive cooling, super-efficient equipment and appliances, and ultra-low GWP refrigerants).
4	Governments in countries that have already made net zero commitments should engage with cooling suppliers to join the race.
5	Although natural refrigerants are typically much more climate friendly than HFCs, only one natural refrigerants supplier is in the race. This seems like a missed opportunity.
6	Pledges, reporting and data collection need to be standardised.
7	Cooling suppliers should increase their consideration of passive cooling's role in getting the cooling sector to net zero by 2050.
8	Having an agreed timeline for rolling out cooling technologies to meet a net-pathway zero would help track progress and could incentivise suppliers to report against their ambition.
9	Scope 3 emissions need to be reported with more granularity.
10	An annual assessment of cooling suppliers' position in the race should be published.

3.1 Strategic actions to get people on the Race to Zero with strong actions and ambitious commitments

Figure 6: Suppliers' climate level of commitment vs action



Companies without stated climate action:

Chigo	Hisense
Blue Star Ltd	Sanden
Gree	Voltas
Kadeka	Walton
Nikura	Westpoint

Suppliers that joined Race to Zero

Segmentation approach:

To identify levers that can help suppliers to join the race we have analysed their level of commitment versus the level of action undertaken. This helps to identify which suppliers are making commitments but not acting and vice versa; we have done this by segmenting scores into commitment and action.

We assessed the strength of commitments based on suppliers' communication on: (1) their target and level of ambition, and (2) existing climate disclosures – respectively taken from suppliers' scores against Pledge and Publish. Regarding the level of action, we looked at scores against Plan and Proceed to determine: (1) if they have clear plans or are in the process of developing these to meet their target, and (2) what actions they are already undertaking that demonstrate strong climate initiative.

1 Suppliers with strong actions should reflect these actions with commitments.

The top half of Figure 6 shows all suppliers with strong commitments but varied level of action. We count 10 suppliers on the top right corner with strong commitments that only need a modest increase in ambition or pledge to get them ready for the race. Ambitions vary between net zero commitments (value chain or operations) but these have not joined the race yet. Others are committed to less ambitious targets such as carbon neutral operations by 2030.

2 All commitments from members in the race and those about to join the race must be net zero emissions across the value chain.

For all cooling suppliers, products' operational emissions represent the biggest share of emissions. Therefore, it is impossible to achieve net zero as a sector without reducing emissions throughout suppliers' value chains.

3 In line with a net zero target throughout the value chain, suppliers' commitments must cover the key net zero cooling impact areas.

To tackle Scope 3 emissions, suppliers need to roll out super-efficient equipment and appliances, and use ultra-low GWP refrigerant products.

Suppliers in the top left quadrant communicate emissions reduction targets on the back of publishing their emissions disclosure but need to be more ambitious and plan concrete action to move into the top right quadrant.

Only Godrej & Boyce has committed to setting an SBT 1.5 net zero target but, at the time this analysis was conducted, did not confirm its target or expand on its plan to develop this ambition. The remaining suppliers have only made Scope 1 and 2 emission reduction targets. Suppliers in this quadrant have not demonstrated clear action on how they are implementing their targets on the ground and have not communicated their immediate next steps.

Most suppliers in the bottom left quadrant are far from joining the race. Some might need a regulatory push to initiate their climate journey while others who are already active could benefit from greater awareness of the Race to Zero.

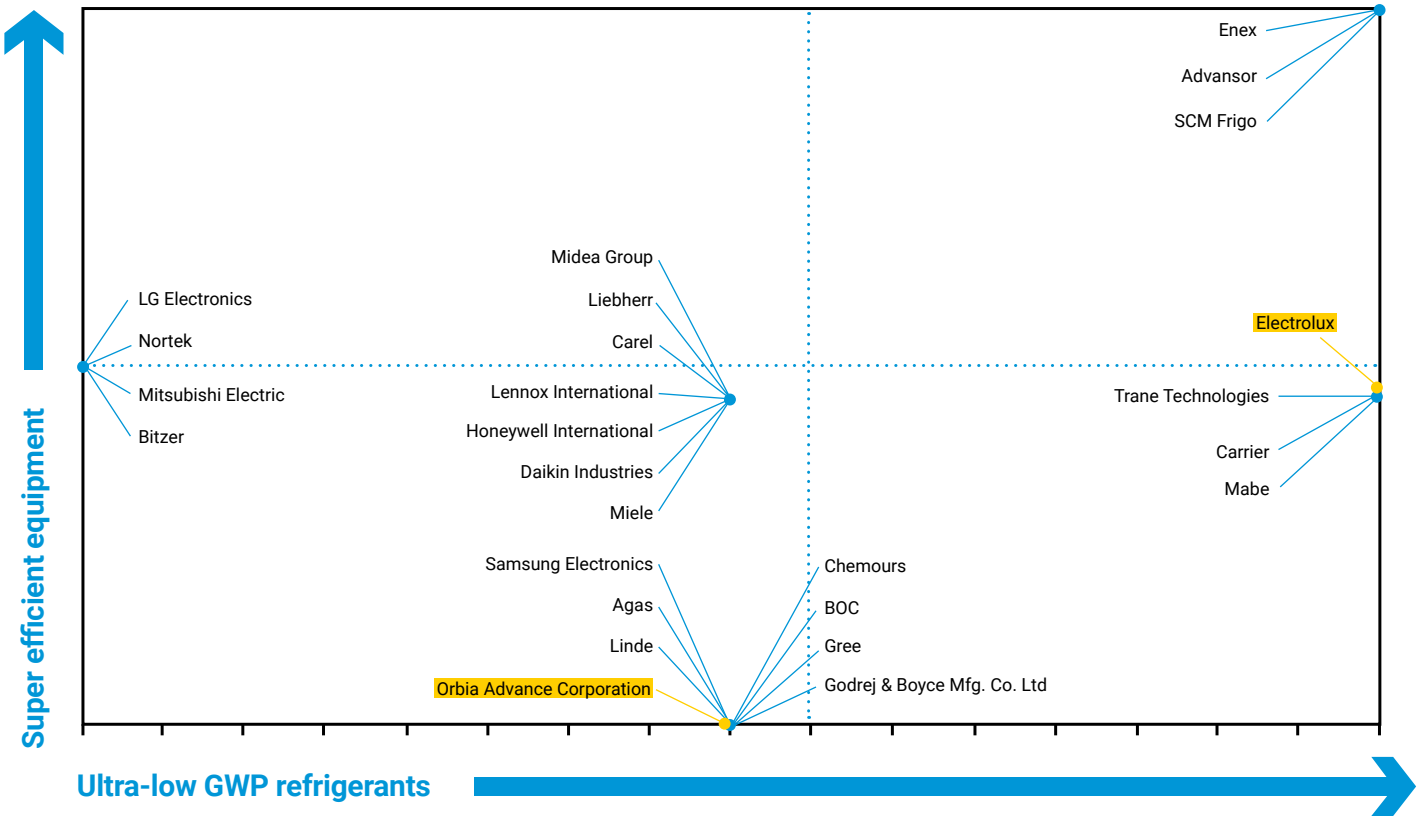
Suppliers in this quadrant are either operating in regions with less strict climate regulations or are smaller operators. Some might already be taking climate action, but where this occurs they are not communicating their climate actions and initiatives effectively, so are positioned at the bottom of the race. In this quadrant, many suppliers are gaining speed, with a focus on reducing operational emissions, but have not yet made clear statements or actions on reducing emissions from the use of products sold.

4 Governments in countries that have already made net zero commitments should engage with cooling suppliers to join the race.

Given the cooling industry is responsible for 7% of global emissions, it is hard to see how Governments will achieve their national net zero targets if they do not get support from cooling suppliers to decarbonise the cooling sector.

3.2 Specific action types to get more cooling specific commitments

Figure 7: Suppliers' cooling specific ambition (Ultra-Low GWP vs Super-efficient equipment and appliances)



Companies without cooling specific commitments:

BASF	Eaton	Hitachi	Panasonic	ThyssenKrupp
Blue Star Ltd	Emerson	Johnson Controls	Sanden	Toshiba
Chigo	Fujitsu	Kadeka	Schneider Electric	Voltas
Gree	GEA	Midea Group	Sharp	Walton
Danfoss Group	Hisense	Nikura	Siemens-Bosch	Whirlpool

Suppliers that joined Race to Zero

Unpacking suppliers' cooling specific commitments:

All suppliers received a score against the two cooling impact areas – ultra-low GWP and super-efficient equipment and appliances - based on commitments announced specifically in relation to each of these impact areas. To visualise supplier action we plotted the score in Figure 7.

Suppliers that joined the race should make their cooling specific ambition more explicit. As described in Section 2 of this report, clear cooling specific ambitions and communication is missing. Even amongst the Race to Zero community, only two suppliers have ultra-low GWP commitments (see Figure 7). The remaining suppliers that join the race can be encouraged to do the same.

5 Although natural refrigerants are typically much more climate friendly than HFCs, only one natural refrigerants supplier is in the race.

Our assessment included refrigerant manufacturers that also sell natural refrigerants as well as suppliers of equipment suitable for natural refrigerants. None of these companies have joined the race. This seems like a missed opportunity.

6 Pledges, reporting and data collection need to be standardised.

Suppliers use different reporting documents to cover environmental, social and governance issues which gives little space for granular information on cooling-related activity. For instance, suppliers might not necessarily communicate their commitment to the Kigali Amendment and their HFC phase down strategy in these reports but may do as a separate press release. Furthermore, indicators for super-efficient equipment and appliances are not standardised making it difficult to assess supplier action and level of ambition. Having a succinct standard against which suppliers can report their actions would provide greater visibility on the change the sector is making, as well as provide clarity on the rate of progress across all actors. A recent paper in Nature highlighted three ways to fix vague net zero emissions targets by focusing on scope, fairness and the roadmap for achieving the target.[15]

7 Cooling suppliers should increase their consideration of passive cooling's role in getting the cooling sector to net zero by 2050.

Although passive cooling is a less obvious opportunity for the cooling suppliers that have been assessed, passive cooling can help accelerate progress in the race and can be integrated into innovation on equipment and appliances.

[15] *Net zero emissions targets are vague: three ways to fix (nature.com). Dated 16 March 2021 and accessed on 20 March 2021.*

3.3 Standardised definitions and timelines regarding cooling specific actions are needed

8 **Having an agreed timeline for rolling out cooling technologies to meet a net pathway zero would help track progress and could incentivise suppliers to report against their ambition.**

Currently there is no commonly agreed timeline regarding when super-efficient and ultra-low GWP refrigerant products will be widely available on the market to hit the net zero by 2050 target. Suppliers typically showcase efficient or environmentally-friendly products that they plan to roll out, but it is not clear if the climate impacts and rate at which these products could be rolled out would meet a net zero target.

9 **Scope 3 emissions need to be reported with more granularity.**

This exercise has shown the difficulty in assessing the sector due to the data gaps in suppliers' reports. We've seen a lack of consistency in terms of Scope 3 disclosure. To join the Race to Zero, suppliers need to disclose the emissions category for the use of sold products which likely represents the highest share of emissions for cooling manufacturers. However, suppliers that sell cooling equipment among other products do not communicate category composition, i.e. the share of cooling equipment among other products. More visibility is needed to ensure that decarbonisation strategies are prioritising and targeting product lines with the highest emissions.

10 **An annual assessment of cooling suppliers' position in the race should be published.**

An annual assessment of cooling suppliers' position in the race should be published to allow progress to be tracked and to recognise progress being made by cooling suppliers on the pathway to net zero cooling emissions.

4 Appendix

4.1 Companies analysed[16]

Company	Sector	HQ
Advansor	Refrigeration	Denmark
Bitzer	Refrigeration	Denmark
Arkema	Refrigerants	France
Blue Star Ltd	AC & Refrigeration	India
BASF	Refrigerants	Germany
Carrier	AC & Refrigeration	USA
Chigo	AC	China
Daikin Industries	AC & Refrigeration	Japan
Danfoss Group	Refrigeration	Denmark
Eaton	AC & Refrigeration	Ireland
Chemours	Refrigerants	USA
Electrolux	AC & Refrigeration	Sweden
Emerson	AC & Refrigeration	USA
Enex	Refrigeration	Italy
Fujitsu	AC	Japan
GEA	Refrigeration	Germany
Godrej & Boyce	AC	India
Gree	AC	China
Haier	AC & Refrigeration	China
Hisense	AC & Refrigeration	China
Hitachi	AC & Refrigeration	Japan
Johnson Controls	AC & Refrigeration	USA
Kadeka	Refrigeration	Singapore
Lennox International	AC & Refrigeration	USA
LG Electronics	AC & Refrigeration	South Korea

[16]*Data collection was conducted between January and February 2021.*

Company	Sector	HQ
Liebherr	Refrigeration	Switzerland
Carel	Refrigerants	Italy
Mabe	AC	Mexico
Midea Group	AC & Refrigeration	China
Miele	Refrigeration	Germany
Linde	Refrigerants	Ireland
Mitsubishi Electric	AC & Refrigeration	Japan
Mitsubishi Heavy Industries	AC & Refrigeration	Japan
Nikura	AC & Refrigeration	Japan
Nortek	AC	USA
Panasonic	AC & Refrigeration	Japan
Philips	AC & Refrigeration	Netherlands
Samsung Electronics	AC & Refrigeration	South Korea
Orbia Advance Corporation	Refrigerants	Mexico
Sanden	AC	Japan
Schneider Electric	AC	France
SCM Frigo	Refrigeration	Italy
Agas	Refrigerants	UK
Sharp	AC	Japan
BOC	Refrigerants	UK
Siemens/Bosch	Refrigeration	Germany
Toshiba	AC	Japan
ThyssenKrupp	Refrigerants	Germany
Trane Technologies	AC	USA
Voltas	AC & Refrigeration	India
Walton	AC & Refrigeration	Bangladesh
Westpoint	AC & Refrigeration	France
Whirlpool	Refrigeration	USA

Carbon Trust Advisory Limited is a company registered in England and Wales under company number 06274284 with its registered office at 4th Floor Dorset House, Stamford Street, London SE1 9NT.

Published in the UK: 2021