MARSHALL GROUP SUSTAINABILITY REPORT 2024

Marshall

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FOR LASTING PRODUCTS, PEOPLE, AND PLANET

In 2024, Marshall Group introduced Make It Last, a holistic sustainability strategy. Our ambition with the strategy is to lead the industry toward circular, emission-free, and responsible practices. We aim to create products that are built to last, easy to repair and recycle, and made from responsible materials, while putting people first in everything we do. The strategy builds on three main pillars: built-to-last products, lasting planet, and lasting people. Below is a summary of the three pillars, followed by a deep dive later in the report.

Built to last products
We lean on a strong heritage of longevity in our amplification business with products produced in the 60s still in use today. Our repair network is spread around the globe, with spare parts readily available for almost every model produced decades ago.

For several years, we have actively worked to design our headphones and speakers for a longer lifespan. In addition to making exposed parts easy to replace, we have focused on battery life through features such as smarter charging and replaceable batteries.

We continuously expand our repair services for headphones and speakers. While we have refurbished and sold thousands of speakers in the past, we launched the first sales for refurbished products through our own e-commerce channel in 2023.

We design our products smarter to eliminate the need for harmful chemicals like PFAS. At the same time, we advocate for stronger chemical regulations to drive meaningful change, including our work with the non-profit organization ChemSec.

With a focus on product longevity - durability, repairability, re-use and circular business models to support it - we want to deliver products made from responsible materials that can be used for generations. Making our products just as long-lived as the icons that use them.

Lasting planet
We are committed to aligning our climate actions with the Paris Climate Agreement's 1.5°C pathway. Our ambition is to bring emissions to zero, eliminate waste, create circular products, and reduce reliance on virgin non-renewable materials and fuels.

Supplier engagement is key to decarbonizing our value chain, accelerating the transition to renewable energy, and improving energy efficiency. We also prioritize waste management and resource recovery to work toward zero waste across our operations.

With the formation of the Marshall Group, 2023 became our base year for greenhouse gas (GHG) data collection, using a third-party platform to support integration and digitalization. In 2024, we reaffirmed our commitment to Science Based Targets by reviewing our 2023 GHG emissions, with plans to complete the application in 2025. We focus on the areas where we have the greatest impact—our products. Through life cycle assessments (LCAs) of five key product types, we apply insights to guide more sustainable design decisions.

Today, 100% of the electricity used at our Stockholm and Milton Keynes sites is renewable, covering 55% of our total electricity consumption. We are also working with key suppliers to accelerate the adoption of renewable energy.

Lasting people
Our ambition is to protect human rights, promote well-being, diversity, and inclusion, and create decent work conditions across our value chain. By uplifting marginalized voices, we aim to be a force for good in the music community.

We are committed to ensuring decent work conditions for all, reducing inequalities and building resilient supply chains.

We prioritize employee wellbeing, safety, work-life balance, and diversity, fostering a sustainable workplace that drives innovation and high engagement. We believe our differences lead to new opportunities and greater effectiveness.

Our Employee Code of Conduct sets clear expectations for ethical behaviours, fair treatment, and integrity within our workplace. It reinforces our commitment to human rights, equal opportunities, and a respectful, inclusive company culture. By upholding these principles, we create an environment where every employee can thrive.

Since 2019, our Supplier Code of Conduct has ensured human and labour rights in our supply chain. We assess and train top-tier suppliers annually, collaborating on capacity building and improvements. Recently, we joined the Responsible Business Alliance (RBA), adapting our supply chain processes to its responsible business conduct standards.

Together, we are shaping a future where sustainability and innovation go hand in hand. ■

KEY PROGRESS 2024

Established a new sustainability strategy:
Make it Last.

Responsible Business Alliance
Marshall Group became a member of the world's largest industry coalition, the Responsible Business Alliance, dedicated to responsible business conduct in global supply chains.

Recycled plastics
Ensured 67% of plastics used in Marshall headphones and speakers". are post-consumer recycled, representing an important increase compared with 2023 (39%), supporting our efforts to reduce virgin plastic use and minimize environmental impact.

Recycled aluminium
Introduced certified recycled aluminium (70% post-industrial and 30% post-consumer) in our over-ear headphones, Monitor III, marking a significant step toward more sustainable material sourcing.

Recycled packaging materials
Increased the share of post-consumer recycled cardboard and paper pulp used for headphones and speakers in packaging, user documentation and logistics, going from 40% in 2023 to 51% in 2024, reducing our reliance on virgin paper and improving the overall sustainability of our packaging solutions.

Recycled neodymium
Introduced recycled neodymium in our in-ear headphones, Motif II A.N.C., contributing to a more circular approach to rare earth materials with 100% post-industrial recycled neodymium content in our product.

Responsible materials
Now 9% of the cardboard and pulp used in headphones and speakers packaging, user documentation and logistics are certified by the Forest Stewardship Council (FSC). This certification ensures that products come from responsibly managed forests that provide environmental, social, and economic benefits.

Science Based Targets initiative
To reaffirm our commitment to the Science Based Targets Initiative (SBTi), we reviewed our 2023 GHG emissions in alignment with SBTi requirements and are in the process of completing the application during 2025.

ROAD TO ZERO

To avoid a global climate catastrophe and sustain life on our planet, it is necessary to limit the increase in global temperature to 1.5°C above pre-industrial levels, as called for in the Paris Agreement. For this, emissions need to be reduced by 43% by 2030 and reach net zero by 2050. Achieving this global goal requires a radical change in how we produce, consume, and move about. Transitioning to a net-zero world is one of the greatest challenges humankind has faced.

At Marshall Group we are aware of the climate crisis and are in the process of revalidating our climate goals in alignment with the Science Based Targets Initiative (SBTi), joining the global effort to limit global warming to below 1.5°C.

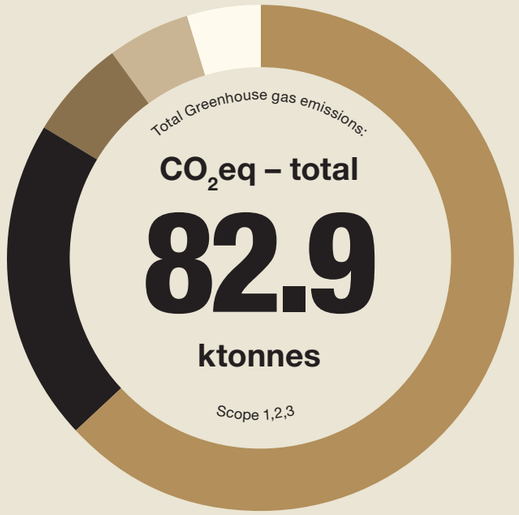
Being in the consumer electronics industry means we have a responsibility to our consumers, stakeholders, and communities to act and drive change. We want to be a frontrunner, using innovation to create the long-needed changes.

Our carbon footprint
Our carbon emissions are calculated on an annual basis, following the Greenhouse Gas (GHG) Protocol, and with a combination of primary and secondary data. By adopting a comprehensive approach, we report both our direct emissions (Scope 1) and indirect emissions (Scope 2 and 3) following a financial approach.

We work to continuously improve the quality of our sustainability data, with the aim to make better choices in product design, production and across our operations. We also want to be able to share more precise and comparable data with our stakeholders.

Our GHG calculations are complemented by ongoing Life Cycle Assessments (LCA) of our products. This type of analysis enables us to reduce our impacts by making more informed internal decisions. LCA is also a tool to increase transparency and improve communication with our consumers.

The total emissions associated with our operations in 2024 were 82,895 tCO2eq. Four categories represent more than 95% of the total emissions: Purchased Goods and Services, 63.1%; Use of Sold Products, 20.5%; Transport and Distribution, 6.2%; and End-of-Life treatment of products, 5.2 %.



2024	Unit: tCO2eq
Purchased goods and services	63.1%
Use of sold products	20.5%
Transport and distribution	6.2%
End-of-Life Treatment	5.2%
Others	4.9%

SCOPE 1

Scope 1 are direct emissions from operations. Our Scope 1 emissions include our production sites in the United Kingdom and Vietnam and include emissions from mobile combustion from our leased or owned vehicles; fuel consumed by on-site heaters; and fugitive emissions (refrigerants). We emit 655 tCO2eq in Scope 1 which represents 0.79% of our total emissions.

SCOPE 2

Scope 2 are indirect emissions from purchased electricity, heating and cooling associated with the operations of Marshall Group's production sites in the United Kingdom and Vietnam, as well as the offices located in Stockholm (HQ), Shenzhen, New York, London, Paris, and Hong Kong. We emit 827 tCO2eq in Scope 2 representing 1% of our total emissions.

SCOPE 3

Purchased goods and services
Materials used in manufacturing of headphones, speakers and amplifiers constitute 51.5% of Marshall Group's CO2eq emissions. To lower the impact associated with the manufacturing of these products, our product sustainability team introduced recycled material alternatives in parts of the products already in 2019.
This Scope 3 category also includes samples, spare parts, service parts, licensing (fridge), accessories, any additional user documentation, packaging or other materials required as well as the energy used during assembly and indirect purchasing. The subcategory indirect purchasing includes a variety of services such as, marketing support, software, equipment, and product repair. These additional materials and services represent 11.6% of total emissions and include all our offices and production sites.

Use of sold products
The second largest source of our Scope 3 emissions – 20.5% of our total emissions – is associated with the energy needed to use our products. As much as 89% of these emissions relates to the use of speakers, with our Homeline speakers representing 69% of the emissions.

Transport and distribution
Our third largest source of Scope 3 emissions are the transport of our products. It represents 6.2% of the Group's total emissions. Marshall Group controls 77% of the transports. In 2024, our fully controlled transports were divided between four transport modes based on weight: road 55.1%; sea 37.7%; rail 6%; and air 1.1%. Air transport carrying the lowest weight accounted for 31.2% of the emissions, and road and sea accounting for 28.2% and 39.4% respectively.

End of life
Scope 3 emissions from waste treatment of materials used in sold headphones and speakers, as well as in samples, spare parts, service parts, licensed products (e.g., fridges), and accessories, represent 5.2% of total emissions, making this category our fourth-largest source of emissions.

Data accuracy and improved methodology
In 2024, we recalculated our 2023 emissions to use it as base year for the SBTi revalidation, following all established requirements and detailing as much as possible in the GHG inventory to increase accuracy. The same methodology was then used for the 2024 GHG inventory. We use a third-party platform for our GHG inventories and the underlying documentation to the calculations are stored to ensure traceability. All emission factors and calculation methods are reviewed and updated annually.

Our GHG inventory includes emissions from materials and end-of-life treatment of used samples, spare parts, service parts, accessories, licensing (fridges), additional packaging, and user documentation. Emissions associated with the use of licensing products (fridges) are also included.

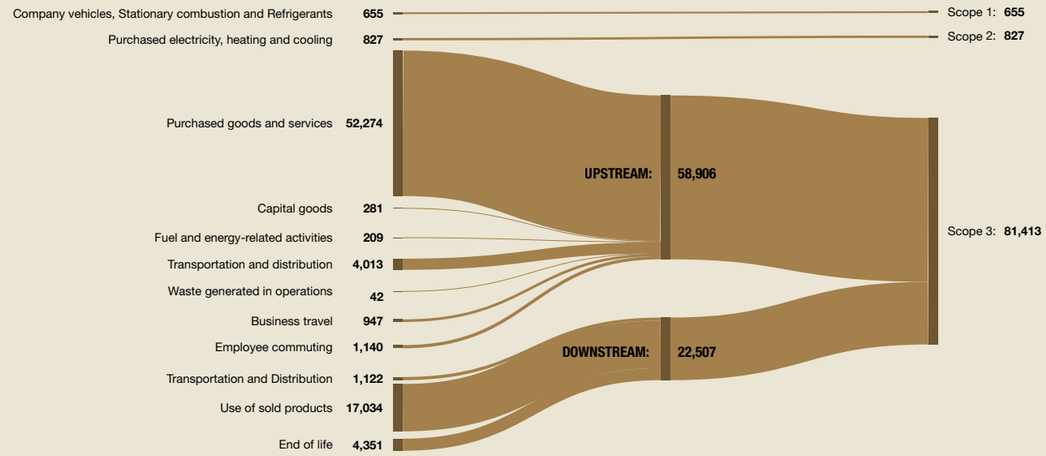
At Marshall Group, we are aiming for continuous improvements in data quality and have identified several ways to improve it in the categories with the highest impact:

- Data quality for GHG emissions associated with purchased goods and services is improved by ensuring that the materials GHG emission factors library, including new materials is updated annually using the latest available version of Ecoinvent and the results from our LCAs.
- Although during the LCAs data collection, the information is received directly from the suppliers, we strive to improve that data quality, especially for electric and electronic components, material group with the largest emissions.
- To reduce uncertainties in calculations, we are working to either transition from the spend-based to a mass-based methodology or improve the spend-based emission factor used in subcategories with large emissions, such as the materials used in the production of amplifiers or for point of sales.
- The main variables used for calculation of emissions from the use of sold products are linked to power consumption; electricity emission factors; usage and lifespan. For the first two variables, there is an established and reliable standard. For the latter variables, we are working to improve the data quality and reduce the uncertainty.
- Emission calculations for end-of-life depend on the type of waste treatment for the material content of each product. It is therefore crucial to know more about the final disposal of our products to calculate the emissions correctly. Emissions associated with waste management in relation to our amplifiers are not currently calculated, and we are striving to include them.

MARSHALL GROUP CONTROLLED TRANSPORTS

Transport mode	Weight (tons)	Emissions (tCO_2e)	% of weight	% of emissions
Air	166	1,182	1.1%	31.2%
Road	8,295	1,70	55.1%	28.2%
Sea	5,675	1,494	37.7%	39.4%
Rail	910	45	6%	1.2%
Total	**15,046**	**3,791**		

TOTAL GHG EMISSIONS



	2020	2021	2022	2023	2024
Scope 1 GHG emissions					
Gross Scope 1 GHG emissions (tCO_2eq)	13	16	9	333	655
Scope 2 GHG emissions					
Gross location-based Scope 2 GHG emissions (tCO_2eq)	77	78	72	791	827
Gross market-based Scope 2 GHG emissions (tCO_2eq)				666	653
Significant Scope 3 GHG emissions					
Total gross indirect (Scope 3) GHG emissions (tCO_2eq)	22,114	18,714	32,418	96,440	81,413
1 Purchased goods and services	21	38	59	57,008	52,274
2 Capital goods	-	-	-	277	281
3 Fuel and energy-related activities (not Scope 1 or 2)	8	8	16	217	209
4 Upstream (transportation and distribution)	2,602	2,326	3,170	2,411	4,013
5 Waste generated in operations	-	-	-	38	42
6 Business travels	125	91	142	551	947
7 Employee commuting	55	57	35	986	1,140
9 Downstream (transportation and distribution)	397	185	252	815	1,122
11 Use of sold products	18,907	16,010	24,582	30,173	17,034
12 End of life	-	-	4,162	3,964	4,351

*Updated with the recalcualtion done for the SBTi revalidation process.

CHEMICALS

Leading the consumer electronics industry away from PFAS
In 2024, Marshall Group launched a public initiative to eliminate PFAS (per- and polyfluorinated alkyl substances) from electronics. Environmental studies reveal PFAS levels continue rising, with remediation costs 15,000 times higher than production costs. While we have successfully removed PFAS from our primary use applications in new models through alternatives and redesign, industry-wide collaboration is essential to address remaining challenges, such as those related to batteries, semiconductors, and flame retardants.

We are prioritising stakeholder awareness and action on PFAS. To enable further improvements, common awareness on the widespread use of PFAS in electronics is needed. This proactive stance addresses growing litigation risks, regulatory compliance, product circularity, and upcoming reporting requirements.

Other chemical compliance work
Our ambition to minimize the negative impacts of chemicals does not only apply to PFAS, but to other chemicals used in our products as well. In 2024 we introduced chemical testing on finished products to our amplifier business. This started with a sample selection of both UK and Vietnamese built amplifiers and will continue to expand over the product range. We manage lead content in recycled aluminium, supporting the use of recycled materials by accepting only minimal residues. We also continue training and communicating with original design manufacturers (ODMs), with a specific focus on PFAS.

All our Tier 1 ODMs are contractually bound to follow our restricted substances list. To ensure compliance and safety, we conduct chemical testing of all headphones and speakers in third-party laboratories. We share information about products containing chemicals of concern with our customers through the European Chemicals Agency (ECHA) database on substances of concern in articles or products (SCIP).

So far, we have eliminated harmful substances such as mercury, brominated flame retardants and phthalates from all our products and banned two of the most well-known perfluorinated substances – perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) – in headphones and speakers. Since 2022, halogen-free PCBAs (the multiple electronic components assembled on the circuit board) has become standard in new design. Faux leather is used in many of our products, and some chemicals in these soft materials may be of concern. We have over the last years explored and investigated several options. PVC (polyvinyl chloride) is now being phased out in favour of water-based PU (polyurethane) leather in headphones and speakers. Water-based PU does not use DMFa (dimethylformamide), which is of health concern in production, and has shown to have similar good product properties. The knowledge gained on this journey is now being shared and explored in our amplifier business, including exploring options for PVC-free coverings.

Improved extended producer responsibility reporting
As an electronics manufacturer in the EU and UK, Marshall Group manages compliance across electrical and electronic equipment, battery, and packaging waste streams. This requires registration with waste collection schemes, sales reporting, and fee payments in each member state.

The Product Compliance team manages compliance with extended producer responsibility (EPR), leveraging both European and local support to stay up to date with evolving requirements and facilitate reporting. They work closely with Sales and IT. Compliance can be verified in various ways: requesting the registration number an organisation receives upon registration; checking listings with environmental authorities in each member state; reviewing the registration number communicated in online sales channels; identifying visible fees on customer invoices in certain markets; or through audits conducted by authorities or customers. The information requirements are integrated into Marshall's sales processes. Audits occur at least annually, either directly or indirectly, and have been passed without major remarks.

In 2024 we improved contracts with producer responsibility organisations and improved data for reporting. We also prepared the reporting structure for new requirements in the French Eco-design law, which implements additional reporting obligations and penalty fees depending on product repairability, as well as discounts if recycled materials are used in products. ■

OUR KEY ACHIEVEMENTS IN 2024:

- Eliminated PFAS from major uses as plastic housings, wires, lubricants, coatings, microphones, and cables in new models of headphones and speakers.
- PFAS review is underway in the amplifier part of the business, and we will be expanding the initiative's work to cover amplifiers over the coming 12 months.
- Led industry discussions on PFAS alternatives at major conferences.
- Advocated for embracing regulation and innovation over derogation requests.
- Engaged in revising flammability standards to align with new regulations.
- Partnered with industry groups and NGOs to develop alternative technologies.

ENERGY USE

Product
Emissions associated with the energy used to charge and play Marshall Group's products are the second-largest contributor to our carbon footprint and therefore key to reducing emissions to achieve our decarbonisation targets. One of our biggest challenges is how to bring quality sound to our customers while simultaneously increasing overall energy efficiency. To do this, we adopt a systematic approach where we work simultaneously on increasing the energy efficiency of our products while understanding and analysing consumer behaviour.

Our ambition is to minimise power consumption in our speakers in all modes by making the software more energy efficient and choosing hardware components with power-saving features. We also want to innovate how to encourage consumers to charge their devices with renewable energy. In 2024, we continued to collaborate with our suppliers to identify more energy efficient solutions and build common knowledge. We have also gained wider insights into our customers' use of the products and have updated our calculation methodologies accordingly.

Facilities
At both of Marshall Group's production sites, we are working to improve operational efficiency. Our focus is on optimizing resource utilization through efficient processes and reducing landfill waste. We prioritize recycling programs and use incineration only as a last resort. Our goal is to achieve Zero Waste to Landfill certification for both of our manufacturing sites by 2030.

We aim to source 100% renewable energy at our facilities and are working to achieve that in several ways. The Stockholm office already uses 100% renewable electricity, and its heating and cooling is powered by waste incineration. The Milton Keynes production site in the United Kingdom pays an extra fee to receive renewable electricity. Together the consumption at these two locations represented 51% of the total energy consumption in 2024 from our seven offices and two production sites.

Life Cycle Assessments
Life Cycle Assessments (LCAs) are essential for understanding the environmental footprint of our products across their entire lifecycle. They provide reliable and relevant emission factors and serve as a tool to strengthen collaboration with our suppliers. By conducting LCAs together with a third-party, we gain deeper insights into our products' environmental impact and identify ways to reduce it. This knowledge enables us to take meaningful action toward our net-zero targets.

We have conducted LCAs on several products since 2015, allowing us to track changes over time and refine our approach. In 2024, we finalized LCAs for three of our five reference products. We selected some of our most popular products across five key categories: amplifiers, headband headphones, true wireless headphones, portable speakers, and Homeline speakers. The last three were assessed in 2024. These LCAs also help evaluate the potential impact of alternative materials and product usage, providing valuable insights for our decarbonisation roadmap. ■

TOTAL ENERGY CONSUMPTION

KPI	2020	2021	2022	2023	2024
Consumption of puchased or acquired electricity (kWh)	242,632	235,896	268,148	1,832,736	1,894,589
Consumption of purchased heating (kWh)	509,604	501,424	509,604	1,228,904	1,228,703
Consumption of purchased cooling (kWh)	196,002	192,856	212,556	195,550	196,000
Energy used from renewable sources (kWh)	-	-	483,502	1,025,878	1,025,878
Energy used from renewable sources (%)	-	-	49%	33%	35%
Total energy consumption (kWh)	**948,238**	**930,176**	**990,308**	**3,081,190**	**3,319,292**

DESIGN FOR REPAIR

MONITOR III – SMARTNESS IN AN UNBREAKABLE CASE

Smartness. If only one word was to describe Monitor III, it would be smartness. Smartness in every detail, in the technology, in the materials and in the design. Nothing was left to chance and the ambitions, sky high from the beginning, were even exceeded in the final result.

Kenny Wong is an industrial engineer who started eight years ago at, what was then, Zound Industries. Headphones have long been his area of responsibility and three years ago him, and his team did the concept presentation for Monitor III. Kenny recalls: “The aim was to make headphones which don’t break or scratch and which can be repaired. Designing for longevity. It’s well-known which parts of the headphones usually break first: Buttons, batteries and soldering points are among them and when they do break there is usually no way to repair them. We wanted to change that.”

He fiddles with Monitor III as he speaks and it’s easy to see the pride in his eyes. The result came out even better than he had hoped for.

At first glance, the headphones may look like pretty much like the previous version. And that was also the plan: the look should stay the same or be improved. But as soon as you take a closer look you will start noticing the differences. The headband in soft plastic – and thus unbreakable – holds a silicon inlay where the cord is placed, allowing for the cord to be easily disassembled and changed if needed. With a simple hand move you unscrew the soft earpads. The battery, which used to be much larger and only placed in one headphone, is now split in two and placed evenly in both ears: smaller, lighter and much stronger. The battery time has gone from 30 to 70 hours! Even more than was first anticipated. Kenny explains another major improvement: “What used to be 93 soldering points was replaced with connectors. 93 soldering points mean 93 potential human errors and weak solderings and when one doesn’t work, there is a whole mess of troubleshooting. With connectors, we can ensure production quality as well as easy exchange and repair!”

The electrical components which are used in Monitor III are a little more expensive than they would usually be, but since they are smaller in size and since manufacturing is made easier, the system is optimized and there is no real difference other than the fact that Monitor III makes use of less material and rare minerals.

“It’s pretty straight forward in that sense”, says Kenny. “It surprises me that the high-end brands’ flag ship models haven’t been upgraded on the inside and still have loads of solderings and no ambition what so ever on repairability and robustness. It’s a bit bold to claim a quality product if you haven’t even considered repairability. It’s not ok. I really hope that Monitor III inspires others to follow suit.”

Even better than repairing, is of course that the products don’t break in the first place. This is why Kenny and team designed a case which is small enough to actually be used. It fits the Marshall-patented fold where the ear pads are screwed in to place so that the soft pads are protected by the tougher, scratch proof ear caps of the headphones. Kenny takes a small knife and shows how the ear cap, when being cut by the knife, shows no scratch sign. Magical!

“One thing which makes me really proud”, says Kenny, “is that the vision and sense of common purpose which we created in the concept stage set a tone for the project which lasted all the way through. There were bumps on the road of course but we had our eyes set on what we wanted to achieve, and we had the company’s support in doing so. That’s what it’s like, working in a design driven, quality-oriented and music-loving company like Marshall.” ■

Marshall Group Sustainability Report 2024

DESIGNING FOR LONGEVITY

Our passion lies in design and quality. We believe that designing timeless, built-to-last products is the most important way to contribute to a more sustainable consumer electronics industry.

Taking inspiration from our own heritage in guitar amplification, we design for durability. Whether we are developing a headphone, a portable speaker, or an amplifier, we always adopt a human centred approach to design.

In 2024, we have continued to strengthen our approach to designing for durability by refining our testing methodologies to better assess the lifespan of our headphones and speakers. This commitment is central to everything we do.

We aim to create products that retain value for as long as possible, designing with longevity and adaptability in mind. One of the challenges – and opportunities – we face is the wide variety of products we offer. On one side, we have amplifiers that musicians use for decades, where technology rarely becomes outdated. On the other, we have advanced wireless products where small size and cutting-edge features are key.

At Marshall Group, we are committed to deepening our understanding of longevity. We have started our transition into a circular business by extending the lifespan of our products and materials, improving resource efficiency, and supporting consumers through new circular business models.

We are also committed to extending product longevity through integrating high-capacity batteries and optimizing battery preservation. We have introduced smart battery features in our products which can be combined with setting the charge levels lower through the Marshall app, allowing users to make conscious choices based on their preferences.

We have increased our focus on design for repair, with key initiatives in 2024 such as hosting in-house 'design for repair' events, organizing forums with repair café representatives, and facilitating a cross-functional team visit to our main European service center. This visit provided valuable insights into the returns-repair-refurbish process, helping us identify opportunities to improve repairability and extend product lifespan.

One of the major advancements in our latest headphones and speakers is the inclusion of easily replaceable spare parts, making repairs simpler, reducing waste, extending products lifespan and preserving their value. By prioritizing design for repair, we empower users, improve serviceability, and strengthen our commitment to sustainability.

Our aim is to ensure that products are not only built to last but also designed for easy maintenance. When they eventually reach the end of their life, components should be simple to disassemble and recycle, supporting a more circular approach to product development.

The Monitor III headphone and the Emberton III portable speaker, released in 2024, exemplify these efforts with enhanced repairability and improved access to spare parts.

Circular actions
We are continuously learning more about circularity and circular design, finding new ways to make our products last longer and use resources more efficiently. To do this, we are rethinking how we design and build our products from the ground up.

For all new headphone and speaker products, we integrate circularity principles throughout the entire product journey – from concept to final product. Guided by our circular design guidelines, we ensure each product meets key criteria such as durability, reusability, upgradeability, repairability, and recyclability.

In 2024, we enhanced our in-house sustainability checklist tool, applied at key development stages, helping us track progress towards our 2030 sustainability goals and address upcoming regulatory requirements. At set project milestones, we assess and follow up on circularity ambitions and outcomes through project forums, with involvement from the management team.

Collaborations and partnerships
We have joined key industry networks to strengthen our knowledge and enable collaboration in sustainable business practices. These collaborations provide us with deeper insights into circularity, longevity, and sustainability and provide valuable insights to – and help us align with – upcoming regulations like the EU Ecodesign for Sustainable Products Regulation (ESPR). Our engagement with the Circular Business Lab at RISE and professors and researchers from the International Institute for Industrial Environmental Economics (IIIEE) at Lund University enhances our approach, bridging research and industry to drive circular innovation.

Knowledge is shared internally through our regular sustainable product and material forums, workshops, research initiatives, and the active involvement of the product sustainability manager in every project, as well as our circular design, repair, and recycling guidelines. Our ongoing commitment to collaboration and partnerships ensures we accelerate circularity in electronics and are prepared for future challenges in the consumer electronics industry.

Sustainability and power efficiency
We continue to improve the energy efficiency of our products, focusing on reducing power consumption in our speakers. Our efforts include developing energy-efficient hardware and software, as well as exploring renewable energy use for charging. We continue to collaborate closely with our suppliers to drive more energy-efficient solutions while building knowledge together. We have also gained wider insights of how our customers are using the products and updated calculation methodologies based on the updated knowledge.

Future goals and regulatory alignment
Looking ahead, we are focused on futureproofing our products for regulations like the ESPR and Battery Regulation. We have conducted training sessions for Original Design Manufacturers (ODMs) and battery suppliers to ensure compliance and are developing processes to offer batteries as spare parts, aligned with new logistics, packaging, and storage regulations.

As we move forward, we will continue to collaborate closely with our suppliers, stakeholders, and external experts to stay ahead of regulatory requirements and create products that are built for long-term durability.

Materials
The weight of headphones and speakers sold during 2024 is estimated to be around 4,701 tons. Adding to the material contained in the product, it is necessary to consider packaging 1,545 tons, user documentation 173 tons and shipping packaging 823 tons, representing a total of 7,241 tons.

Around 52% of greenhouse gas (GHG) emissions in 2024 were associated with the materials used in production, while 5.2% came from the end-of-life treatment of sold products.

Since 2022, all new headphones and speakers have been manufactured using post-consumer recycled plastic (ABS - Acrylonitrile Butadiene Styrene or PC - Polycarbonates), in addition to other plastics as Polyoxymethylene (POM) or Polypropylene(PP). 67% of the plastics

used for sold products in 2024 were post-consumed recycled (See table), meaning an important increase of 72% in comparison with 2023, mainly associated with the phase out of previous models with lower recycled plastics content.

Not limited to plastics, other post-consumer recycled materials such as textiles (nylon), leather (PVB leather), cardboard, paper pulp and more recently aluminium and thermoplastic polyurethane (TPU) have also been included.

In the case of paper, this material group represent 34.5% of the material used in 2024 sold products, with a total recycled content of 51% (40% in 2023). This includes the cardboard, paper and chemical pulp used in user documentation, shipping, and packaging. Since not only recycled materials has a positive environmental and social impact, but responsible materials certifications were also considered for this material group. Around 9% of the paper and cardboard used has Forest Stewardship Council (FSC) certificate, ensuring the responsible forest management.

Other important material groups are textiles and leather, with almost 200 tons and 28% recycled materials, using recycled PVB leather, but also with the introduction of water-based PU leather, outperforming PVC and standard PU leather.

During 2024, the use of recycled aluminium was incorporated in our products for the first time, 30% post-consumer and 70% post-industrial. In addition to 100% post-industrial recycled neodymium, an element classified as a rare-earth metal used in magnets. For the first time these recycled materials are being used in both material groups, aiming to reduce the environmental impact of metals and the electric and electronic components.

One of the recurrent findings from the different life cycle assessments (LCAs), as well as the GHG inventory, is the high impact associated with the electric and electronic components used in our products. We are constantly mapping out our materials to identify potential risks, develop the necessary strategies and take actions.

The complexity of the composition and supply chain of the electrical and electronic components, as well as the traceability of metals and minerals, represent a challenge for the industry. To develop an action plan to meet the goals set out in our sustainability strategy, we need to have a better understanding of the key metals and minerals contained in electrical and electronic components.

As part of the LCAs developed to our best-selling product in each product category – headband headphones, true-wireless headphones, portable speakers, homeline speakers, and amplifiers – we are mapping the metals and minerals contained in the electric and electronic components. These include cobalt, lithium, aluminium, gold, silver, copper, steel, neodymium, tin, tantalum and tungsten.

These minerals and metals are key in the industry and have a high social and environmental impact due the change in the land use, displacement of communities, use of hazardous substances in processes, child labor, greenhouse gases emissions, among others. Although the LCAs will help us as a reference and to develop the necessary lines of action, it is necessary to promote collaboration with suppliers. We also must develop information systems that allow us to obtain primary data, key to increasing certainty and encouraging informed decision-making, as well as the transparency.

Circular business models - enabling longevity
Our amplification business has been a prime example of enabling the longevity of Marshall products for over 60 years. Through our own inhouse service centre in Milton Keynes, UK, we offer consumer repairs of the amplifiers and support distributors and local authorised repair centres across the world with manuals and spare parts. Many amplifiers and cabinets that we produced in the sixties, are still played and loved by fans across the world to this day. We continue to build on this model and to prioritize easy access to service and spare parts for all amplifier customers. In 2024 alone, we onboarded over 130 new service centres for amplifiers in the Americas as we went from distributor led sales to a direct relationship with our retailers.

Headphone and Speakers material usage 2024

Material groups	Total (tonnes)	Recycled (%)
Duromers and foams	25.78	
Elastomers	199.16	0.08%
Electrical and electronical components	1,735.90	
Glues and tapes	45.90	0.56%
Metals	377.37	0.11%
Paper	2,497.98	51.19%
Plastic	916.21	66.92%
Textiles and leather	199.33	28.13%
Wood	1,242.97	
Total	**7,240.61**	

Table comment: *Ingoing material of final headphone and speaker products and its certified recycled content 2024*

Although the table only shows the materials used in headphones and speakers, we are working to incorporate information regarding amplifiers. Having this information, among other benefits, will help us to more accurately calculate the GHG emissions associated with the materials used in the amplifiers production. Among the actions is the LCA of the SV-20C model amplifier, which includes the mapping of the mentioned minerals and metals.

We lean into this strong longevity heritage from amplifiers as we look at implementing the circular business models to support our other product categories, working both on product refurbishment and repair.

Refurbishment
For many years, we have refurbished thousands of speakers and sold them through partner channels. During 2023, our commitment to longevity took a significant stride with the pilot of sales for refurbished products in Europe, Middle East, and Africa (EMEA) through our e-commerce channel. The products are refurbished by our service centres with the aim to give the customers the same experience as a new product would have given them. They come with the same uncompromised sound, a one-year warranty and are fully equipped with cables and manuals in the box. In 2024 we evaluated this pilot which led to sales of over 500 products across EMEA, and we are currently making some final tweaks for a broader roll-out of the programme in 2025. All in all, we refurbished over 10, 000 products in 2024 with the majority sold through partners.

Repair
For headphones and speakers, consumers can buy spare parts that are worn out or get displaced, such as cables and headphone ear-cushions through our own e-commerce. We also provide repair services through warranty claims and paid repair services after warranty on most of our speaker models. Our repair service partners are re-using parts when possible, and if not possible, they use original spare parts to ensure quality and safety. In 2023, we established the first service centre in Hongkong covering e-commerce repairs from the Asia-Pacific (APAC) region. Going forward, offering, and expanding our repair solutions to cover more products and more markets is one of our top priorities. In 2024 we repaired over 17, 000 products globally.

Return management system
Another key milestone for our after sales and circular business efforts was the introduction of a new return management system during 2024. Thanks to this new setup we can bring all partners and all product categories into one ecosystem. By gaining full control over the return and repair flow through all key steps in the consumer journey, we are creating a more transparent and efficient process. This leads to better resource allocation, improved service quality, and a more seamless experience for our customers as well as better data and analysis capabilities. ■

HUMAN RIGHTS

Marshall Group respects and supports internationally proclaimed human rights and aim to create a more equitable and sustainable society. As a global consumer electronics company, we seek to continuously assess and take action to uphold human rights for everyone impacted by our operations across our value chain. The International Bill of Human Rights, the OECD Guidelines for Multinational Enterprises on Responsible Business Conduct, and the International Labour Organisation's (ILO) Core Conventions guide our efforts in this area. We are a member of the UN Global Compact and adheres to its ten principles in the areas of human rights, working conditions, the environment and anti-corruption.

OUR EMPLOYEE AND SUPPLIER CODES OF CONDUCT MANIFESTS OUR COMMITMENT TO UPHOLD HUMAN RIGHTS PROMOTING FAIR WORKING CONDITIONS, HEALTH AND SAFETY.

The electronics industry has a complex supply chain that includes a risk of negatively impacting human rights. There is a clear need for a continued focus on risk control throughout the value chain. We are committed to respecting human rights in our own operations and our entire value chain, and do not tolerate child labour or any other form of forced labour in our own production or any suppliers or partners. We comply with applicable national laws and international standards wherever the Group operates. Our Employee and Supplier Codes of Conduct manifests our commitment to uphold human rights promoting fair working conditions, health and safety, the organisational rights of trade unions, and the right to collective bargaining.

Marshall Group Sustainability Report 2024

OWN WORKFORCE

At Marshall Group we believe that our people are the driving force behind our continued growth and success. This year, we have made significant strides in building an empowered workforce through strategic investments in talent acquisition, development, retention, and wellbeing. Our commitment to fostering a diverse and inclusive workplace is stronger than ever, ensuring we create a culture where every individual can thrive.

As part of our growth, we have focused on attracting top talent from diverse backgrounds to meet the demands of our growing organisation. By enhancing our recruitment processes and using modern tools, elevated by the Marshall brand, we have successfully attracted candidates with the skills, values, and passion that align with our company's vision. This has not only supported our operational needs but has also brought in new perspectives, enriching our team culture.

We believe that growth is a mutual journey between the company and its people. Through development and leadership training, and access to learning resources, we are equipping our people to excel in their roles and advance within the company. Our commitment to lifelong learning ensures that we remain adaptable in an ever-changing business landscape.

Our growth is deeply connected to the success and satisfaction of our people. By fostering a supportive and engaging work environment, we have significantly reduced employee turnover and built a loyal, committed team. Through regular feedback mechanisms, recognition programmes, and tailored career progression paths, we ensure our employees feel valued and motivated to contribute their best work.

As we continue our journey of growth, our people remain at the centre of our strategy. We are excited about the opportunities ahead, knowing that with our talent, diversity, and a culture of inclusion, we are well-positioned to meet new challenges and reach new milestones. Our focus on employee development, wellbeing, and retention ensures that we will continue to build a team that not only adapts to change but drives it.

Wellbeing

The wellbeing of all Marshall Group's employees is fundamental. We believe systematic efforts to promote physical and mental health at work are more important than ever as mental illness continues to increase in society. We aim to foster a culture of wellbeing, safety, and work life balance for our employees. This commitment goes beyond compliance with local laws and regulations, and we follow up on employee wellbeing through both our managers, our HR team as well as twice a year through our employee survey.

Health and safety management

With two production facilities, one in the UK and one in Vietnam, Marshall Group's internal health and safety initiatives are highly prioritised to ensure that every employee will return home safe and healthy every day. Poor health and safety practices at the production facilities may cause ill health or a workplace accident with substantial consequences for individual employees. Marshall Group works actively and systematically to minimise the risk of personal injury and ill health.

Harassment and discrimination

Marshall Group does not tolerate any form of discrimination or harassment whatsoever. We consider all discrimination and harassment to be an issue that concerns all employees. All employees are expected to contribute to a positive working environment, one where we respect one another's differences. No one may be discriminated against due to gender, transgender identity or expression, ethnicity, disability, sexual orientation, age, religion, or other beliefs. The act of discriminating against or harassing a colleague is considered an infringement of the employment contract. Likewise, no colleague should conceal or overlook any discrimination or harassment they witness. Any discrimination, bullying or harassment can be reported through our anonymous whistleblowing channel, HR, or management. Reported incidents are investigated to correct any damage and prevent reappearance.

Workplace representatives

Marshall Group's Work Environment group supports in creating a good work environment and employees can reach out to the group with work related questions, anything from physical working conditions in the offices to social interaction or stress. All interactions are anonymous.

Employee engagement survey

Through our bi-annual employee engagement survey, employees share their thoughts about their roles, their teams, and the company. This provides valuable insights into how our employees are feeling in terms of commitment, motivation, sense of purpose, alignment with our goals and their thoughts about the leadership. The employee engagement survey conducted during the fall in 2024 resulted in an employee engagement index of 7.74 out of 10. The areas with the highest scoring results were in leadership and pride of our products. The areas with the most opportunity for improvements were individual workload and collaboration/culture. To some degree this is naturally associated with the fact that the whole company and many departments have been going through structural changes due to the integration of Marshall Amps in 2023. The results of these changes and effects on the organisation is monitored closely by the management team, supported by the managers across the organisation.

As a follow-up on the employee survey, the management team are reviewing the results and considers any specific actions needed. In addition, all managers receive training and discuss the results with the team and jointly decide on actions.

New for 2024, was to start tracking the eNPS, employee Net Promoter Score. eNPS is a useful metric for assessing an organization's employee engagement. The metric offers a glimpse into how happy and satisfied our employees are and the likelihood of them staying and promoting our company to others. The eNPS calculated score ranges between -100 and 100 and the result landed on 18, which according to the eNPS scale, is a good result.

EMPLOYEES DATA

Characteristics of Employees in own workforce

Gender	Number of employees (headcount)
Male	412
Female	382
Other	-
Not reported	-
Total employees	**794**

Country	Number of employees (headcount)
Vietnam	260
Sweden	250
United Kingdom	196
China	52
USA	22
France	8
Hongkong	6

Worker type	Number of employees (headcount)
Office staff	446
Manufacturing staff	348

Health and Safety

Health and Safety indicators	2022	2023	2024
Sick leave, %	2,2*	4,2*	1.98**
Number of Fatalities	-	0	0
Lost Time Injury (LTI)***, Number of incidents	-	1	2
Non Lost Time Injury (NLTI), Number of incidents	-	25	1

* Data covering fulltime employees in Sweden, China, USA, France and partly United Kingdom and Hongkong corresponding to38% of the employees.

** Data covering fulltime employees on all sites.

Diversity metrics

Gender distribution leadership positions (headcount)	Chief	Vice President	Director
Total, number of persons	8	10	37
Male, number of persons	6	8	23
Female, number of persons	2	2	14
Male, %	75	80	62.16
Female, %	25	20	37.84

Employee age distribution (headcount)	2023
Under 30 years, %	14.18
30-50 years, %	66.54
Above 50 years, %	17.01

Employee engagement survey*

Employee engagement	2022	2023	2024
Employee engagement index 1-100*	80	81	N/A
Response rate, %	72%	82%	77%
eNPS – score range –100 to 100**	N/A	N/A	18
Response rate, %	N/A	N/A	77%

* Data is currently not covering manufacturing staff due to separate surveys being conducted for the two types of employees.

** Changed scale in 2024 to eNPS. Changes were made to measure more accurately employee satisfaction and loyalty. Vietnam factory is excluded from the survey results.

Talent
We have a broad mix of competencies in-house and hire new talents to a variety of disciplines, from design to acoustics, production operator to software, sales to development engineer, marketing to e-commerce and a lot more in between. Finding and retaining the best talents is key to ensure we can continue to grow and reach our ambition and strategy as well as strengthen our culture. A workforce that truly reflects our world is the foundation of an inclusive culture and helps us to produce great products and sounds.

Talent acquisition and onboarding
We connect with a global talent pool and source top talents from all over the world. We believe that it is essential that we have a clear, objective, and modern recruitment process where each candidate gets the same opportunities and is evaluated on their merits. This starts at the recruitment stage. By research, we know that biases have an effect of the choices we make as humans. The primary thing we need to do is to constantly look over when, how and where in our recruitment process biases risk slipping in. To reduce these risks, our talent acquisition team are trained in unconscious biases. They apply competence based and structured interview methods and support hiring managers throughout the entire process.

New employees enter a global onboarding programme including a two-day introduction training to learn about all things Marshall, buddy programme, and several mandatory online trainings to be completed within three months. In production, additional trainings are added to the onboarding to ensure safety for everyone. We also have a separate leadership onboarding programme set out to introduce the essential management responsibilities.

Talent development
Equally important to finding the right talent is retaining and developing the talents we have. Cultivating leadership, providing career paths, room for growth, learning and development are areas we work with to further strengthen our workforce.

Clear career paths
At Marshall, we have clear and transparent career paths for both experts and leaders to enable talent growth and be an attractive employer. Each title and grade on the scale comes with clear and transparent expectations. To enable clarity, consistency and prevent discrimination of promotions we have a Talent mobility approval framework and process, where leaders can request promotions of employees in their team and where decision are based on the same criterions for everyone.

Learning and development opportunities
Marshall Group provides employees with a selection of learning opportunities to grow, develop and retain talents. Each department has a budget for skills training courses, and this is allocated based on performance and development needs. During 2024, several trainings have also been offered to a larger group within the company through our learning platform. These include e.g. product trainings, mandatory anti-bribery and anti-corruption training e-learning course applicable for all employees, as well as training in diversity and inclusion and data protection. Trainings are planned by managers and leaders and offered to upskill and reskill employees as needed in their job role, ranging from mandatory introductory, to advanced trainings.

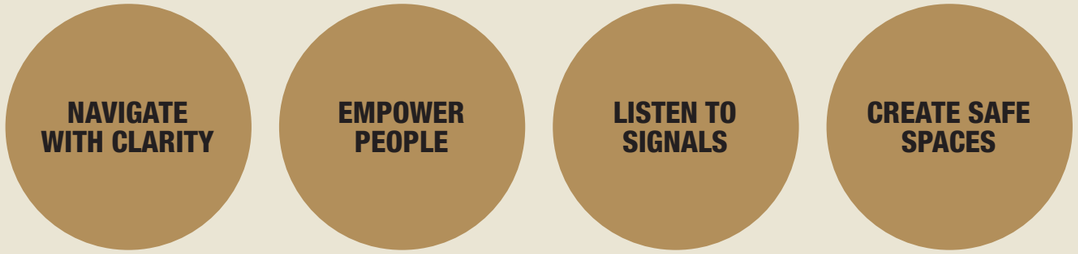
Performance review
We always encourage a close and frequent dialogue between leaders and their team members on performance and individual growth. At the end of each year, an organised and mandatory performance review between leaders and employees occurs and is documented digitally in our HR system. Before each performance review, people managers and leaders get trained in the process which is finalised with structured one-to-one development conversations between employees and managers. We also add a 360 review to collect more feedback from peers, and people leaders also get reviewed by their team members. The performance review process is transparent to all employees and the results are used in talent mobility requests and serve as one of several criteria in the yearly salary review.

Individual goal setting
We have an individual goals framework to empower everyone to create individual goals that contributes to Marshall Group ambition and strategy. It is essential to have clarity on company goals, so everyone knows where we are heading and how to contribute. All employees are trained in the framework, how to enter goals in our HR system, and how to monitor progress throughout the year. Everyone's individual goals are followed up mid-year as part of the yearly performance review.

Team development
Actively with team development is key to building strong and high performing teams.
The talent development team supports the organization with facilitation of team building activities when needed. In 2024, we have also launched a team development hub with a selection of curated sessions and habit boosters designed to guide teams through growth and development. These sessions are self-guided, featuring animations and clear instructions, making them easy to implement for leaders in their teams. The hub includes a foundational programme to get started and to ensure regular follow-up and consistency. People leaders can decide how to pace the programme with their teams.

Leadership
A present and harmonised leadership is fundamental to fuel our ambition, execute our strategy, care for our people, continue building strong teams and develop individual talents.

OUR LEADERSHIP PRINCIPLES



Our leadership principles are our common ground of leadership and guide for how to show up to each other. We believe leadership is a mindset that everyone can develop, and we are keen to create a positive leadership culture since it has a significant impact on our business and people every day. We introduce and train our people leaders frequently and use the leadership principles as a baseline. ■

Marshall Group Sustainability Report 2024

LEADING WITH PURPOSE

Mick Goodyear, VP Manufacturing & Milton Keynes Site Lead

In 2024 we launched a global leadership development programme named “Cultivating Leadership” for all people leaders. The goal with this programme was to create a unified Marshall Group leadership fit for now and future to empower the whole organisation. The purpose was also to strengthen the leadership toolbox and to enable cross department collaboration by building strong relationships and to help leaders to break down silos.

In this programme, we uncovered a variety of theories, tools and models connected to our leadership principles and practiced together. We created a playbook to gather all resources, help guide the sessions and that leaders could use as a workbook to reflect and take notes. We also included a 360-leadership review to enable structured feedback – an important part of growing and developing as a leader.

One of the participants in the leadership programme was Mick Goodyear, Vice President Manufacturing & Milton Keynes Site Lead. He describes the methods presented during the programme as valuable tools for people leaders at Marshall. He emphasises that the programme enhances overall leadership skills by equipping leaders with a more holistic approach, which is essential in effective leadership.

The programme also helped Mick become more versatile and reflective in his leadership approach, gaining deeper insight into what drives and motivates others. Additionally, it provided participants with the opportunity to learn from one another, drawing inspiration from how different teams are led, which he describes as highly valuable. A core element of the programme was the leadership principles, which reinforce the importance of transparent leadership – ensuring feedback flows both ways between employees and leaders to foster mutual growth. Goodyear notes that these principles encourage greater clarity and efficiency in communication, ultimately shaping more open and mindful leaders.

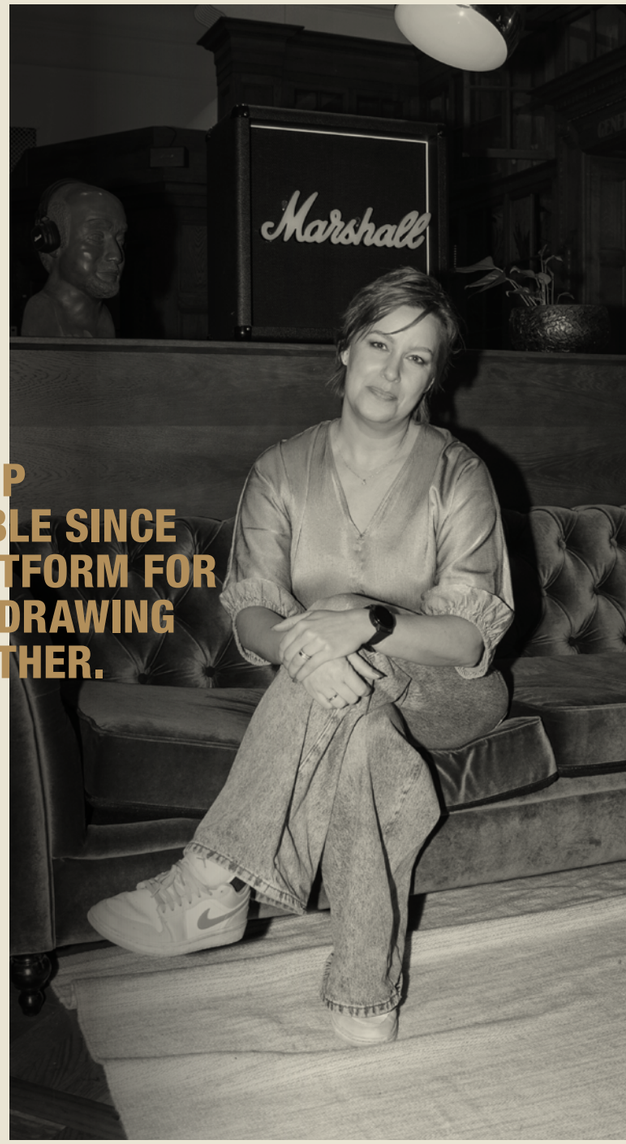
MICK BELIEVES THAT EMPOWERING TEAMS AND ENSURING ALIGNMENT IS KEY TO DRIVING SUCCESS.

Looking ahead, strong leadership at Marshall will remain crucial, as effective leadership means successfully guiding both people and the organisation. Mick believes that empowering teams and ensuring alignment is key to driving success. He emphasises that as Marshall continues to grow as a business, its people leaders must evolve alongside it to reach new heights.

Another participant of the leadership programme is Sara Lundström, Director of Hardware at Marshall. She sees people leaders as stewards of the organisation, ensuring teams work together towards shared goals. Being a people leader at Marshall means caring not only for employees but also for the brand and its customers.

Sara found the leadership programme highly valuable since it provided a common platform for sharing experiences and drawing inspiration from one another. She appreciated that the practices and tools introduced were research-based and immediately applicable to daily leadership. She firmly believes the programme has contributed to her growth as a leader. The programme also served as a reminder of the importance of self-reflection in leadership. Applying both the leadership principles and insights from the programme has given her a clearer understanding of Marshall’s leadership expectations. At the same time, these principles hold her accountable, ensuring that her team can provide feedback and assess whether she upholds them. Since completing the programme, Sara reflects more on her leadership style, frequently asking herself whether she has “navigated with clarity” or if improvements are needed. She also recognises the importance of creating safe spaces where employees feel comfortable sharing their thoughts.

SARA FOUND THE LEADERSHIP PROGRAMME HIGHLY VALUABLE SINCE IT PROVIDED A COMMON PLATFORM FOR SHARING EXPERIENCES AND DRAWING INSPIRATION FROM ONE ANOTHER.



Sara Lundström, Director of Hardware

Looking ahead, she believes Marshall’s leadership will continue focusing on empowerment, with clarity in decision-making remaining central. Leadership must also adapt to an ever-changing and complex world, using strategies that sustain Marshall’s success and empower its workforce. ■

RESPONSIBLE SUPPLY CHAIN

The consumer electronics industry is associated with great challenges in terms of human and environmental health, from mineral sourcing to the end-of-life treatment of products. At Marshall Group, we are committed to improving workers conditions throughout the entire supply chain. Responsible sourcing for us means protecting the human rights of the workers across our supply chain, while asking for more environmentally preferable materials and production practices.

Supplier Code of Conduct
In addition to our Employee Code of Conduct, we have a Supplier Code of Conduct that clearly lays out our expectations in the areas of human rights on our direct suppliers and their sub-suppliers. The code is the foundation in our relationship with our suppliers and an integrated part of the purchasing process and is included in all supplier agreements. We regularly update this document on issues such as management, labour and human rights, health and safety, environment, and ethics.

In 2024, we joined the Responsible Business Alliance (RBA), the world's largest industry coalition for responsible supply chains. Looking ahead, we plan to integrate our separate responsible sourcing practices into a common strategy with the aim of higher transparency and to minimize the negative environmental and human rights impact in the supply chain. In 2025 we will integrate the RBA Code of Conduct into an updated Marshall Group Supplier Code of Conduct covering the entire Group.

Collaboration with suppliers
As the risk for human rights violations increases as visibility decreases deeper into the supplier tiers, Marshall Group's close collaboration with the Tier 1 suppliers is crucial to improve the transparency of our supply chain. The characteristics and number of Tier 1 suppliers vary depending on the product category. Our amplifiers are manufactured inhouse and ingoing materials are purchased directly from hundreds of Tier 1 suppliers. Headphones and speakers are designed in collaboration with a selected number of Original Design Manufacturers (ODMs) who are contractually responsible for the purchasing of ingoing materials and components.

Collaborating with all suppliers to mitigate risks and ensure compliance to ethics, corporate compliance matters, and product compliance is essential. Every ODM Marshall Group enters into an agreement with, is required to adhere to the Supplier Code of Conduct, including evaluating and monitoring its suppliers of its content. At the same time, we know the immaturity of our industry in this area is evident, as we often meet suppliers who have never been asked about sustainability performance. To improve workers' conditions higher up in the supply chain, collaboration and knowledge is essential.

By working closely and on a long-term basis with a selected number of manufacturers who share our values, while maintaining a high presence at our factories, we have seen a positive response in labour conditions at our Tier 1 manufacturers and a general willingness to work actively with sustainability related issues and advances in responsible sourcing programmes.

For headphones and speakers, we work in close collaboration with, train, and audit all the ODMs on our Supplier Code of Conduct, pushing our requirements up the supply chain together with the suppliers.

Supply chain due diligence - Amplifiers
For amplifiers, a supply chain due diligence process has been in place since 2022. Our amplification business has a global supply chain with a large supplier base. To identify, assess, monitor, manage and mitigate potential risks, we conduct supplier due diligence consisting of document-based assessment. Risks associated with suppliers could be, for example, country ESG risks, unethical practices, labour violations, environmental non-compliance, or geopolitical instability. The well-structured supplier due diligence process allows Marshall Group to mitigate these risks proactively. By having an established due diligence process in the supply chain, we can maintain transparency, minimize risks, ensure compliance, and safeguard the long-term sustainability and reputation of the Group.

Supplier audits - Headphones and speakers
Since 2019, we have run a supplier development programme for headphone and speaker ODMs. Through the programme, we engage closely with our active ODMs with the help of local, trained, and certified personnel, to ensure a minimum standard of responsible practice and understanding. In the programme, we assess and audit active and potential ODMs, maintain quarterly dialogues, and provide training on our Supplier Code of Conduct.

Auditing across the supply chain is a way of ensuring that suppliers act in accordance with the requirements set out in our Supplier Code of Conduct. The audits allow us to gain insight into our suppliers' practices and track progress. They increase transparency and help to hold us accountable for the conditions in our supply chain. They result in a score from A (highest rating) to D (lowest rating), based on any non-compliance and the severity of these issues. When a non-compliance is identified, we follow up and work in collaboration with the suppliers to solve any issues and implement improvements within a reasonable time. If this is unsuccessful, we reserve the right to terminate our contract with the supplier.

Since the start of the supplier development programme in 2019, the audit scores have been considered in our sourcing processes, and we have prioritised manufacturers with high scores and shared values. Marshall is auditing all ODMs that want to be part of our supplier base, and the audit score shall not be lower than B. The audit scores have continuously improved since the start of the programme.

Transparency beyond Tier 1
During 2024, we have started to implement parts of the RBA tools into our due diligence work.
The majority of our ODMs as well as some Tier 2 material and component suppliers have been audited by a third-party auditor through RBA, with plans for further audits in 2025. In addition, Marshall Group performed our own audits on the remaining ODMs and deeper into our tiers to make the supply chain visible and transparent beyond Tier 1 manufacturers. In 2024, we performed six audits of active or potential Tier 2 material and component suppliers. ■

Audits in numbers	2019	2020	2021	2022	2023	2024
Marshall audits	0	7	12	10	16	13
RBA audits	0	N/A	N/A	N/A	N/A	4
Other third-party audits*	0	3	3	6	0	N/A

Audit score active ODM sites (%)	Missing	D	C/Silver	B/Gold	A/Platinum
Marshall audits	14%	0%	43%	43%	0%

Supplier development program		2020	2021	2022	2023	2024
ODMs	Number of active ODMs sites	10	10	6	7	7
	% of active suppliers with annual audit score	50%	80%	100%	86%	86%
	% of active ODMs signed our Supplier Code of Conduct	23%	69%	100%	100%	100%
Material and component suppliers (Tiers 2-3)	Number of active material and component suppliers included in our supplier development program	1	4	4	7	12

Marshall Group Sustainability Report 2024

COMMUNITY ENGAGEMENT

INCLUSION, EQUALITY, AND PASSION FOR MUSIC GUIDE US IN THE INITIATIVES WE CHOOSE TO ENGAGE IN.

Marshall Group put great emphasis on community engagement. We want our community engagement efforts to reflect our values and what our employees care about. Inclusion, equality, and passion for music guide us in the initiatives we choose to engage in. We also want to make sure we can contribute timely as events unfold where we could be a positive force, financially or through collective action. By strengthening the local community through activities and collaboration with organizations, authorities, and other stakeholders, Marshall Group aims to promote access to culture and diversity and inclusion in the industry. For instance, Marshall Group supports the music community through independent venues and NGOs, and engage in activities that can also include donations and voluntary work.

In 2024, Marshall Group supported several ongoing and new community partners such as Youth Music, Women in Vinyl, The SIMS Foundation, and Music Venues Trust.

We once again sponsored the “Youth Music Awards”, particularly the Original Group Award, and gifted the winners with some of our world class headphone and speaker products. Youth Music has been a longstanding partner, providing young people with opportunities within the music industry.

We also continued our support to Women in Vinyl, a longstanding partner, to enable them to publish their book “The Art of Making Vinyl”. We were also happy to financially support scholarships for two recipients to deepen their knowledge of the vinyl industry.

As a part of our Marshall Funhouse programme at the SXSW Festival in the US, we invited the students at School of Rock to open each day of our event by performing, giving them a chance to showcase their talents in front of an audience. At the end of the festival, we donated the entire backline to the school to replace the damaged and rundown equipment they had been using. We also gave a financial donation to a local organisation, The SIMS Foundation, which provides substance and mental health support to musicians, music industry professionals, and their dependent family members.

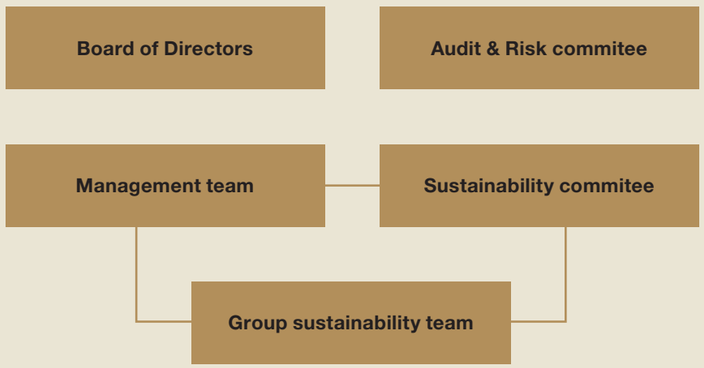
In 2024, Marshall, streetwear brand Awake NY, and the Queens Museum in New York partnered up in support of the Queens Teens Institute for Art & Social Justice, with a collective commitment to breaking down barriers to the arts, creative industries, and museum spaces. Through zine workshops, product gifting, and financial contributions we encouraged young people to express themselves.

Our work with the Willie Mae Project kicked off in late 2024, with a financial donation and gifting of headphones to be used in their mobile workshops and at their main studio. Plans to continue the partnership are in motion for 2025. In late 2024, we also formalized our continuous partnership with Fryshuset in Stockholm, providing youth’s access to rehearsal spaces and music studios, which will allow for new projects together in 2025 and beyond.

Our focus is to help build a better future where we can achieve the biggest impact through local engagement, but the urgency of the present is sadly often also a factor. Our largest charitable donations in 2024 were made to UNICEF, UNHCR and SOS Children’s Villages, following the ongoing conflicts and wars around the world. ■

SUSTAINABILITY GOVERNANCE

Committing to sustainable operations requires a governance structure that allows us to manage our impacts, risks, and opportunities in a responsible manner. The main purpose of having sustainability governance at Marshall Group is to ensure that we walk the talk and maintain trust from our stakeholders, including colleagues, customers, suppliers, investors, and representatives from communities we engage with and affect. Our governance structure provides a framework to support us in delivering on our key policies and guidelines. It helps ensure we operate responsibly and in line with our values. We continually focus on strengthening our policies, trainings, and processes to establish strong business conduct and ethics.



Board of Directors
The Board has overall responsibility for overseeing sustainability and compliance, including approval of policies and strategies related to sustainable development. The Board receives quarterly progress reports regarding sustainability issues.

Audit and Risk committee
The Audit and Risk Committee is a sub-committee of the Board, overseeing the identification, evaluation, and management of risks, including sustainability and compliance risks.

Management team
The CEO has delegated responsibility for managing and overseeing the implementation of the company's sustainability ambition and strategy to the Vice President (VP) of Communications and Sustainability.

Sustainability committee
The Sustainability Committee oversees Marshall Group's sustainability performance and strategic progress while helping to prioritize and secure resources. It also engages with and updates the management team and the Board on sustainability impacts, risks, and opportunities. The committee includes the Chief Financial Officer, Chief HR Officer, Chief Legal Officer, Chief Product Officer, Chief Commercial Officer and VP of Communications and Sustainability.

Group sustainability team
The Senior Group Sustainability Manager holds overall responsibility for implementing and driving performance against our strategies, policies, and goals across all key business areas. The team also includes a Social Impact Manager and an Environmental and Circularity Specialist.

Compliance management
Corporate compliance is managed by Marshall Group's legal team. Product compliance is managed by the quality and product compliance team. This includes assessing, testing, and certifying products according to global requirements. The team assesses product safety, materials and solutions during product development and manages compliance during the product life cycle, such as certification maintenance and extended producer responsibility obligations.

Ethical business conduct
Marshall Group is committed to the highest standards of ethical conduct and integrity in our business activities everywhere we operate. Our Employee Code of Conduct outlines the expected behaviour of our employees and helps us navigate everyday situations.

Employees' managers are responsible for ensuring that employees have understood the content of the code and to guide them when uncertainties arise. The management team is responsible for implementing and ensuring compliance with the Employee Code of Conduct.

Anti-bribery and corruption
Marshall Group does not tolerate any form of bribery or corrupt activity engaged in by its employees, partners, or consultants. Being an international company with suppliers and partners in parts of the world where there is a considerable risk of corruption, it is our responsibility to make our position clear in writing as well as in daily representation.

Our Non-Tolerance Statement is included in our Employee Code of Conduct as well in the Supplier Code of Conduct. The Anti-Corruption Policy is based on risk analysis and covers operational areas in the value chain with higher exposure to corruption risks. It is outlined in accordance with relevant international and local legislations.

In 2023, a mandatory anti-corruption training for all employees was launched. The anti-corruption training is done via a digital training platform.

All product manufacturers are obligated to sign our Supplier Code of Conduct as they enter business relationships with Marshall Group. We also conduct on-site sustainability audits and provide supplier training in our Supplier Code of Conduct.

Whistleblowing system
Marshall Group uses an external whistleblower provider for employees to report suspected misconduct in a work-related context. The whistleblowing system allows for anonymous reporting of misconduct without fear of sanctions, disadvantages, or other retaliation. All reported incidents are managed confidentially.

Marshall Group's Chief Legal Officer has overall responsibility for whistleblowing instructions and procedures. Incidents reported through our whistleblowing system are managed by our Chief Legal Officer, Chief HR Officer, and VP of Communications and Sustainability. Routines are described in our Whistleblowing Policy.

During 2024, two incidents were reported through the system. The incidents were assessed as not being formal whistleblowing cases and were instead managed by our HR department.

Keeping up with the changing regulatory landscape
The regulatory landscape for sustainability is undergoing rapid evolution, driven by growing environmental, social, and economic imperatives. We welcome this push from regulators, steering the industry to more sustainable practices, and we embrace sustainability as a strategic imperative. Navigating the complexities of the regulatory landscape is however becoming trickier, with local regulations at times contradicting, and we need to seize opportunities for long-term value creation and resilience in this rapidly changing world.

Our focus in 2024 was preparing the company for the upcoming reporting regulations from the EU – the Corporate Sustainability Reporting Directive (CSRD) – while also staying on top of the increasing regulatory demands on a product level, not least within repairability, such as right to repair laws on regional and local level.

NETWORKS AND EXTERNAL COMMITMENTS

Marshall Group is a member of key associations and initiatives that are directly or indirectly related to our material sustainability topics.

Responsible Business Alliance
During 2024, Marshall joined the Responsible Business Alliance (RBA), the world's largest industry coalition dedicated to responsible business conduct in global supply chains. Through our membership we collaborate with other members, suppliers, and other stakeholders to improve working and environmental conditions and business performance through leading standards and practices, such as their Code of Conduct, audit, and due diligence systems.

UN Global Compact
In August 2023, Marshall Group became signatory of the UN Global Compact. Global Compact is the world's largest sustainability initiative for companies. The framework contains ten principles on corporate social responsibility. The principles are based on international conventions on human rights, labour rights, the environment and anti-corruption. We are proud to be affiliated with the UN Global Compact and are committed to adhering to the ten principles of sustainable business.

UN Sustainable Development Goals (SDGs)
Marshall Group uses the UN's Sustainable Development Goals (SDGs) to guide and inspire us in developing our sustainability agenda. The SDGs are a universal call to action on society's biggest global challenges. The 17 goals were adopted by all UN Member States in 2015 and provide a roadmap to countries, businesses, and civic society on how to mobilise for a more sustainable and equal world.

UN Race to Zero
Marshall Group is a member of the UN Race to Zero campaign. It rallies non-state actors – including companies, cities, regions, financial institutions and educational establishments – to take rigorous and immediate action to halve global emissions by 2030 and deliver a healthier, fairer zero carbon world.

Science Based Targets initiative (SBTi)
The Science Based Target initiative (SBTi) is a partnership between CDP, the UN Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) that defines and promotes best practice in emissions reductions and net-zero targets in line with climate science, including providing a second opinion on the ambition level of targets set by corporates and other entities. In 2024, Marshall Group reaffirmed its commitment to SBTi by reviewing its 2023 GHG emissions and are in process to complete the application in 2025.

Cradlenet Network
Marshall Group is a member of Cradlenet Network, which is a platform for knowledge and networking with the ambition to accelerate Sweden's transition to a circular economy.

ChemSec PFAS Movement and SIN list Advisory Committee
ChemSec is a non-profit environmental organisation which advocates in favour of stricter regulatory controls on hazardous chemicals, working with businesses on reducing the use of hazardous substances and promote substitution to better materials. Marshall Group is a member of ChemSecs movement to support a wide ban of all PFAS and was during the year nominated to the Substitute It Now (SIN) list Advisory Committee

Research Institutes of Sweden (RISE)
Marshall Group has partnered with the Circular Business Lab (CBL) at RISE, a membership-based collaborative innovation space for collaboration between academia and industry to identify circular materials and processes, to transition and develop circular business.

Sweden-China Trade Council (SCTC)
Marshall Group are members of the Sweden-China Trade Council and its Sweden-China Forum for Sustainable and Responsible Business. SCTC is an independent, non-political, and member-funded association. SCTC focuses on increasing members' knowledge on operating in China in general, and on current trends and policies as well as relevant challenges and opportunities for the Swedish business community in Chinese business life.

MATERIALITY, RISK MANAGEMENT AND REPORTING METHODOLOGY

In 2024, our work has continued to ensure that our sustainability strategy supports efficient business operations, performs in line with our ambition and covers all our material sustainability topics.

We conducted a double materiality analysis in line with EU's Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS) which will affect Marshall Group from 2025 an onwards. The double materiality analysis determined our material sustainability topics and sub-topic and will allow us to systematically report on all material sustainability aspects of our operations and address progress and targets for each of our material topics.

MARSHALL GROUP'S DMA RESULTS

Material environmental topical standards

- Climate Change
- Pollution
- Water and marine resources
- Biodiversity and ecosystems

Material social topical standards

- Circular economy
- Own workforce
- Workers in the value chain
- Affected communities
- Consumers & End-Users

Material governance topical standards

- Business conduct

STAKEHOLDER ENGAGEMENT AND DIALOGUE

Having an ongoing dialogue with different stakeholders, such as colleagues, customers, suppliers, industry peers, policy makers, investors and society, is of vital importance. The multitude of perspectives among the stakeholders help us innovate and prioritise as we develop our sustainability engagement. By openly sharing experiences and giving feedback, our stakeholders help us deliver on our promises and keep ahead of global developments.

	How we engage	Key topics and concerns
End-consumers and retailers	Consumer surveys in key markets including the sustainability area. Social media, customer support, emails. Ongoing dialogue on sustainability of products with key retailers. The World Tour, an annual meeting for key retailers and partners to share progress and discuss our business.	Climate impact Repair, reuse and recycling services Third party certificates and eco labels Consumer health and safety Product durability and quality Supply chain social responsibility Compliance on legal and regulatory requirements
Employees and potential candidates	Ongoing dialogue e.g. through weekly 1-1 with manager, annual performance review with manager and employee engagement survey. Intranet, emails, company meetings and events. Community engagement activities.	Wellbeing Climate impact Diversity and inclusion Consumer health and safety Employee attraction and retention Supply chain social responsibility
Licensee partners	Meetings, emails, workshops. Licensee sustainability guidelines and requirements.	Waste and resource use Sustainable and recycled materials Compliance on legal and regulatory requirements
Suppliers	Request for information. Contracts and policies. Site visits, audits and trainings. Meetings and emails.	Growth Long-term partnerships Contribution to economic development Employee attraction and retention Standardisation
Investors	Annual General Meeting. Annual Report. Investor newsletter.	Product durability and quality Compliance on legal and regulatory requirements Financial sustainability and growth
Society	Annual Report. Participation in various research projects. Active member of various networks, participating in meetings and workshops.	Climate impact Circularity Repair and product standardisation Chemicals

RISK MANAGEMENT

Marshall Group's risk management processes include identifying, evaluating, and securing commercial, operational, financial, legal, and regulatory risks, which also comprise sustainability related risks. The CEO is responsible for risk management which is primarily managed by the management team in close collaboration with their operating units who are responsible for handling risks in their area of responsibilities.

Marshall Group's approach to sustainability is defined from both a risk and an opportunity perspective. Since 2017, we have had the ambition of performing an annual top-down risk analysis focusing on sustainability and compliance related risks, including interviews with all members of the management team, to identify risks in their operational area of responsibility. The latest structured sustainability risk analysis was finalised in 2020, showing that we need to keep improving our supply chain, especially in terms of mineral and metal sourcing, make our products more sustainable and improve the external communication, especially with our customers, about Marshall Group's sustainability work. In 2024 a new risk assessment was initiated as part of the double materiality analysis according to the ESRS requirements.

SUSTAINABILITY RISK MANAGEMENT TABLE

Area	Material impact	Value chain scope	Management
Environment	**Environmental impact** From a lifecycle perspective, our products environmental impact comes from extraction of materials, manufacturing, energy use while using the product, end-of-life treatment and transport and distribution. Apart from managing legal requirements, such as those linked to chemical management, Marshall Groups' brand could be exposed if associated with causing negative environmental impacts.x	- Product design - Raw material extraction - Component assembly - Final product assembly - Marshall Group operations and sales - Product distribution and repair - Consumer use - End- of-life treatment	- Continuous environmental impact mapping - Life cycle analysis - Sustainability policy - Sustainable design guidelines and building awareness of sustainable design - Continued improvements on recycled content of products and packaging - Chemical analyses of materials and products - Efficient production planning and optimise logistics, including evaluating alternative modes of transport - Sustainability audits of manufacturers - Taking extended producer responsibility for end-of-life - Piloting circular business models - Improving accessibility of consumer information
Human rights	**Supply Chain Impact** The consumer electronics industry's complex supply chain poses human rights risks, especially in sourcing metals and minerals. These include child and force labour, unsafe working conditions, and low wages, particularly in mining and manufacturing. Ongoing risk control is essential throughout the value chain.	- Raw material extraction - Component assembly - Final product assembly - Marshall Group operations and sales - Product distribution and repair - Consumer use - End- of-life treatment	- Marshall Group Supplier Code of Conduct - Sustainability training for product manufacturers and sourcing managers - Audit of product manufacturers, both Marshall Group audits and third-party audits - Risk analysis
Anti-corruption	**Bribery and corruption** Marshall Group is an international company with suppliers and partners in parts of the world where there is a considerable risk of corruption. Marshall Group advocates free and fair trade, strives for open and fair competition and ethical conditions within the legal frameworks of the countries in which it operates. If Marshall Group does not follow these principles, it can jeopardise the company's reputation and can also result in fines.	- Raw material extraction - Component assembly - Final product assembly - Marshall Group operations and sales	- Supplier Code of Conduct - Employee Code of Conduct - Anti-corruption policy - Risk analysis - Anti-corruption training - Audit of product manufacturers - Routines for follow-up of irregularities
Employees & social conditions	**Talent attraction and retention** Marshall Group's ability to attract and retain top talent is essential for maintaining expertise across its business-critical areas. Managing much of the value chain in-house requires skilled employees in key positions to drive innovation, efficiency, and long-term growth. Ensuring competitive working conditions, career development opportunities, and a strong workplace culture is vital to securing and retaining the right talent.	Since Marshall Group manages much of the value chain in-house, skilled employees are needed at every stage, from innovation and engineering to production, logistics, and service.	- Quality-assured and transparent recruitment process - Skills development according to individual needs - Employee wellbeing focus - Inclusive workplace culture - Performance management and feedback - Competitive compensation and benefits
	Wellbeing The wellbeing of our employees is extremely important, especially given the physically and mentally demanding nature of certain roles within our operations. We believe that systematic efforts to promote both physical and mental health at work are more important than ever, particularly as mental health challenges continue to rise in society. Our goal is to foster a culture of wellbeing, ensuring equal development opportunities and a safe, harassment-free workplace. This commitment extends beyond compliance with local laws and regulations.	Since Marshall Group manages much of the value chain in-house, employee wellbeing is essential at every stage, from innovation and engineering to production, logistics, and service.	- Employee Code of Conduct - Working with our culture and values - Diversity and inclusion strategy - Employee engagement survey - Systematic working environment work, including a work environment committee that meets quarterly - Sports and wellness activities - OneLab a health platform that identifies ill health and offers the right care at the right time.

REPORTING METHODOLOGY

In preparation for reporting in compliance with the new regulation CSRD from 2025 and onwards, this report has been influenced by the ESRS.

GHG Protocol

When measuring, analysing, and reporting carbon dioxide emissions (CO2) and other GHG emissions, Marshall Group uses the global GHG Protocol standard for its calculations. The different GHG emissions are calculated into CO2 equivalents (CO2eq) depending on their global warming potential. When breaking down Marshall Group's emissions according to the structure of the GHG Protocol, the emissions are divided into three scopes:

Scope 1: Direct emissions from operations. This includes both emissions generated at company facilities and by vehicles. Since we have chosen to use a financial approach when declaring our emissions, only the corresponding emissions, in our case, to the mobile combustion from leased or owned vehicles, fuel consumed by on site heaters and fugitive emissions (refrigerants) were registered in this section.

Scope 2: Indirect emissions from purchased electricity, heating and cooling associated with the operations of Marshall Group's production sites in the United Kingdom and Vietnam, as well as the offices located in Stockholm (HQ), Shenzhen, New York, London, Paris and Hong Kong.

Scope 3: Indirect emissions associated with the value chain generated by our products, including upstream and downstream emissions. The Scope 3 categories that Marshall Group has not included are upstream and downstream leased assets, processing of sold products, franchises, and investments. These categories are either not relevant or applicable for our operations GHG accounting.

Scope 1. Company vehicles
For calculating the emissions associated with the company's vehicles, either owned or leased, two different methodologies were followed depending on the data available: fuel-based or distance-based.

Fuel-based calculation was based on the reported fuel consumption per fuel type nd the corresponding emission factor.

$$\sum(Fuel\ consumption\ per\ type\ (litres)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{litres}\right))$$

In those cases when it was not was possible to obtain the fuel consumed, then distance travelled by vehicle type and the corresponding emission factor were used to calculate the emissions.

$$\sum(Distance\ traveled\ per\ vehicle\ type\ (km)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{litres}\right))$$

It is relevant to mention that in the case of electric vehicles, the emissions were allocated to Scope 2 Purchased electricity, as well as to the Scope 3 category Fuel and energy-related activities (category 3).

Stationary combustion
Stationary combustion refers to the fuel consumed in our facilities, in this case for heating. The calculation was based on the energy demand during the year and the corresponding emission factor per type of fuel.

$$\sum(Energy\ used\ (kWh)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{kWh}\right))$$

Refrigerants used
This category includes emissions generated in our facilities based on the refrigerants purchased for refill during the year. It was calculated using the emission factor per refrigerant type.

$$\sum(Refrigerant\ purchased\ per\ type\ (litres)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{litres}\right))$$

Scope 2. Purchased electricity, heating, and cooling
Our Scope 2 emissions were calculated based on the energy consumption measured by each of Marshall Group's offices and production sites and the corresponding emission factor (for purchased electricity: location-based ; and market-based).

$$\sum(Energy\ consumption\ per\ type\ (kWh)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{kWh}\right))$$

For offices in a co-working space, i.e. in London and Hong Kong, an emission factor based on number of employees and working days was used to calculate emissions. Since emissions was based on proxy and not actually measured it was decided to include those emissions in the Scope 3 category Fuel and energy-related activities (category 3).

Scope 3. Category 1: Purchased goods and services
Since purchased goods and services is a very broad category, different methodologies were used to calculate its emissions. For headphones and speakers we followed a mass-based approach using the materials composition per product registered in the Bill of Materials (BOM) together with the emission factor associated to each material.

$$\sum(Energy\ consumption\ per\ type\ (kWh)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{kWh}\right))$$

A similar approach was followed for calculating emissions associated to the spare parts, service parts, accessories, and other extra materials [such as] packaging, printed instructions, labels and stickers.

Since there is no specific BOM for each of these products, a general emission factor based on high demand or representative products was used to calculate its emissions. As an example, in the case of electric and electronic components purchased to be sold as spare parts we used the printed circuit board assembly (PCBA) emission factor per gram.

$$\sum(Weight\ per\ unit\ (grams)\ *Emission\ factor\ (\frac{tCO2eq}{grams}))$$

To calculate the emissions associated with the materials used for production of amplifiers, we used the registered purchased materials and a spend-based emission factor calculated based on one reference Marshall amplifier Life Cycle Assessment (LCA).

$$\sum(Amount\ spent\ per\ material\ (USD)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{USD}\right))$$

With regards to the licenses, fridges were the only products valid and relevant to include in the calculation which was based on the number of fridges purchased and an emission factor (adjusted by weight) based on a general fridge LCA.

$$Units\ [per\ product]\ \ *Emission\ factor\ (\frac{tCO2eq}{unit})$$

In addition to the materials, we also calculate emissions from the product assembly. Since it was not possible to get specific values for all the headphone and speaker models, the energy required for assembly and the emission factor per unit were derived from products with an LCA.

$$\sum(Units\ per\ product\ *\text{Energy used for assembly}\ (kWh)*\text{Emission factor}\ (\frac{tCO2eq}{kWh}))$$

To calculate emissions associated with indirect purchases including both office supplies and services such as equipment repair, marketing, research and development, we used a spend-based methodology. All our offices and production sites were included in the calculation.

$$\sum(Amount\ spent\ per\ type\ (USD)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{USD}\right))$$

Category 2: Capital goods
Emissions associated with capital goods was calculated following a spend-based methodology using the amount spent on machines, tooling and equipment required for the production and the corresponding emission factor as input.

$$\sum(Amount\ spent\ per\ type\ (USD)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{USD}\right))$$

Category 3: Fuel and energy-related activities
The category complements the emissions from purchased electricity, heating and cooling in Scope 2, in such a way that it includes the well-to-tank emission factor, i.e. it considers the production, processing and delivery of a fuel or energy vector, as well as the losses generated during the transmission of electricity.

$$\sum(Energy\ consumption\ per\ type\ (kWh)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{kWh}\right))$$

[1] Average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data).
[2] Emissions from electricity that companies have purposefully chosen (or their lack of choice).

As mentioned earlier, emissions in this category also includes the energy consumed in the offices in Hongkong and London, based on number of employees.

$$\sum(Number\ of\ employees\ )\ x\ Energy\ consumption\ \left(\frac{tCO2eq}{kWh}\right)x\ Emission\ factor\ \left(\frac{tCO2eq}{kWh}\right))$$

Category 4 and 9: Transportation and distribution (upstream and downstream)
Emissions from upstream and downstream transportation was calculated based on product weight, transport distance per transport mode and corresponding emission factors. The registers on product transportation, which includes both weight and the origin-destination, was used to estimate the distance the products travelled throughout the supply chain.

$$\sum(Products\ (tonnes)\ x\ Distance\ travelled\ per\ mode\ (km)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{km*tonnes}\right))$$

In addition to the emissions associated with transportation and distribution we calculated emissions from warehousing based on the volume stored during the year – using an average weight per volume – and a general emission factor.

$$Warehousing\ (tonnes)\ *Emission\ factor\ (\frac{tCO2eq}{tonnes})$$

Category 5: Waste generated in operations
Emissions from waste generated in operations were calculated using two different methodologies since there were various levels of information available and diverse types of operating units within the Marshall Group. For the production sites and the headquarters we used an emission factor per type of material and waste treatment.

$$\sum(Material\ type\ per\ waste\ treatment\ (tonnes)\ x\ Emission\ factor\ \left(\frac{tO2eq}{tonnes}\right))$$

For the other offices, we used an average emission factor per employee since there were no specific emission factors available.

$$\sum(Number\ of\ employees\ )\ x\ Emission\ factor\ \left(\frac{tCO2eq}{employee}\right))$$

Category 6: Business travel
Emissions from business travel were calculated using different methodologies. In cases when emissions were already pre-calculated by the service provider then those calculations were used. For air travel, a specific emission calculator – which estimates the emissions based on the distance between airports, number of passengers and ticket class was used.

$$\sum(Pre-calculated\ emissions\ (tCO2eq))$$

If no pre-calculated emissions report was provided, then spend-based emission factors associated with respectively flight and train tickets, taxis, rental and private cars on duty, as well as hotels were used.

$$\sum(Amount\ spent\ per\ type\ (USD)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{USD}\right))$$

For rental and private cars on duty, we also used either a distance-based or a fuel-based methodology for the emissions calculations, depending of the info available.

$$\sum(Distance\ travelled\ per\ mode\ (km)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{km}\right))$$

$$\sum(Fuel\ consumption\ per\ type\ (litres)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{litre}\right))$$

Emissions from hotel nights on business trips were calculated using the number of hotel nights and specific emission factors per country.

$$\sum(Hotel\ nights\ per\ country)\ \ x\ Emission\ factor\ \left(\frac{tCO2eq}{night}\right))$$

Category 7: Employee commuting
Emissions from employee commuting were calculated based on two employee surveys: one in 2021 at the production sites in Milton Keynes and Vietnam; and one in 2022 at the offices in Stockholm, London, Hong Kong, Shenzhen, Paris and New York. The surveys identified transport habits (mode and distance) and average number of days that employees work from home for each location. Total emissions were then calculated for all employees, using the mode of transportation, distance travelled in an average week and the corresponding emission factors. Although the surveys were not answered by all the employees it was assumed that the results were representative for each office.

$$\sum(Number\ of\ employees\ per\ mode\ of\ transport\ \ x\ Distance\ travelled\ (km)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{employees}\right))$$

Category 11: Used of sold products
Estimated emissions from the used of sold products were based on registered sales volume during the year taking the country where the products were sold into consideration to determine the electricity emission factor. In addition to an estimate of the use of the product and the electricity consumption, the calculation took the product's entire lifespan into account.

The speakers' power consumption was divided into three operational modes: off, on and stand-by. For amplifiers, two operational modes were considered: on and off. Only one operational mode – on – was considered for the fridges. The emissions were calculated using the total power consumption for the products' whole lifespan.

$$\sum(Power\ measurement\ per\ mode\ (kWh)\ x\ Usage\ per\ mode\ (hours)\ x\ Lifespan\ (years))$$

For the portable headphones and speakers, the power consumption was calculated based on the number of times that the product must be charged per year. For this calculation it was necessary to consider the product playtime, i.e. the number of hours a product can be used after being charged.

$$\sum(\frac{Days\ per\ year}{Playtime\ (hours)}\ x\ Usage\ \left(\frac{hours}{day}\right))$$

For the portable headphones and speakers, the power consumption was calculated based on the number of times that the product must be charged per year. For this calculation it was necessary to consider the product playtime, i.e. the number of hours a product can be used after being charged.

$$\sum(Number\ of\ times\ to\ be\ charged\ by\ product\ (\frac{times}{year})\ x\ Battery\ capacity\ (kWh)\ x\ Lifespan\ (years))$$

Emissions associated to the use of sold products were then calculated using the power consumption and its corresponding emission factor together with the number of sold units of a product per country.

$$\sum(Units\ per\ [sold]\ product\ )x\ Power\ consumption\ per\ product\ (kWh)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{kWh}\right))$$

Category 12: End of life
The estimated emissions from end of life was calculated based on the product's material composition and the emission factor associated with the waste treatment for each material as well as the registered sales volume. This calculation was only done for headphones and speakers.

$$\sum(Units\ per\ product\ )*\left(\sum(Material\ per\ type\ \ (grams)\ x\ Emission\ factor\ \left(\frac{tCO2eq}{grams}\right))\right)$$

Emissions from spare parts, service parts, accessories and other materials were calculated using a mass-based approach and an emission factor per gram using a general material composition due to the lack of a specific BOM.

$$\sum(Weight\ per\ unit\ (grams)\ *Emission\ factor\ (\frac{tCO2eq}{grams}))$$

The fridges end-of-life emissions were calculated based on number of sold fridges and an emission factor adjusted by weight based on a general fridge LCA.

$$Units\ \ *Emission\ factor\ (\frac{tCO2eq}{unit})$$

NOT INCLUDED: The Scope 3 categories that Marshall Group has not included are: upstream leased assets (8); downstream leased assets (13); processing of sold products (10); franchises (14); and investments (15). These categories were either not relevant or applicable for our GHG accounting.