em microelectronic

A COMPANY OF THE **SWATCH GROUP**

Sustainability Report 2022

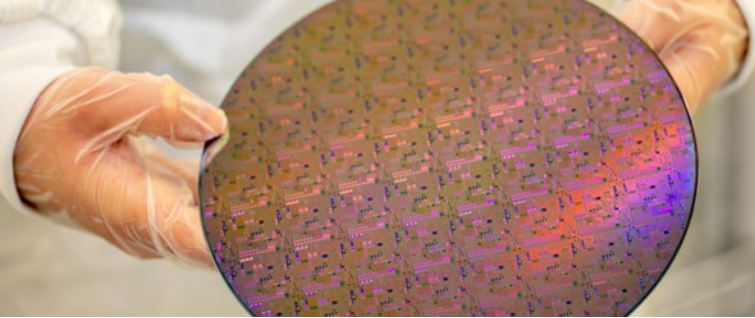# Contents

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Sustainability at EM

In 2022, we underwent the Ecovadis sustainability assessment for our practices around the environment, labor and human rights, ethics, and sustainable procurement.

We scored in the top half in all 4 categories, above the industry average for the manufacture of electronic components and boards. With an average of 53 points over 100, we were awarded the **Ecovadis Bronze Medal**.

The results and feedback we received will help us improve and strengthen our practices related to the categories mentioned above.

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Message from our CEO

Dr. Michel Willemin, **CEO**

We still have a lot to learn and a long way to go to achieve our ambitious goals. We are confident the efforts and commitments that we are engaging right now, combined with the skills and talents of our people, will keep us on the right track.

Sustainability becomes a more and more relevant topic to all the players in the semiconductor industry. Its complexity extends beyond our own premises, creating a tough setting to move ahead.

We are proud to pursue our roadmap that tackles the most important issues to us and our stakeholders. We must point out, however, that this roadmap is dynamic; as the semiconductor industry and its sustainability implications along the whole value chain continue to rapidly evolve, so does our roadmap.

Our sustainability efforts can be grouped into three main categories: our company, our products, and our supply chain.

For the first one, we continue to move forward with the topic of greenhouse gas emissions, while we will start to look deeper into other forms of environmental impact and other projects related to our facilities. For the sustainability of our products, we want to focus on both their applications for sustainability, as well as the sustainability of their manufacturing footprint. For our supply chain, we started looking even deeper into the environmental and social impact at our suppliers, going further with the standards we had established before.

Our Values

Respect for people

We value our coworkers, encourage their development, and reward their performance. We foster an environment of collaboration. We have a long-term commitment to our employees based on trust, honesty, and integrity.

Trustworthiness

We provide outstanding products and unsurpassed service that, together, deliver premium value to our customers. We develop relationships that make a positive difference in our customers' lives. We are a reliable partner.

Entrepreneurial teamwork

We work together in a hands-on way, across boundaries, to meet our customers' needs and help our company win. We encourage entrepreneurship and a can-do attitude.

Making a difference

We are never satisfied with "good enough". We are curious, adventurous, and creative. We honor our commitments. We observe, listen, understand, and assist.

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EM Microelectronic

At EM Microelectronic (EM), we design and manufacture ultra-low power integrated circuits (ICs) for small portable devices and Green Internet of Things (GIoT) applications. We merge our extensive talents and resources towards developing and manufacturing customized ICs, electronic modules and displays.

We are fully dedicated to time-honored Swiss culture in our relentless pursuit to achieve cutting-edge products and long-term customer loyalty.

Our products power high-performance, user-friendly devices with Swiss-quality microelectronics that strengthen our customers' value chains via long-term, sustainable partnerships and proximity.

635 employees
across 4 locations
Worldwide sales presence

1 **Marin, Switzerland** Headquarters
Sales & marketing | R&D | Production
2 **Prague, Czech Republic** R&D
3 **Bangkok, Thailand** Production
4 **Colorado Springs, USA** R&D

Main markets

Watches   **Communication**   **Consumer Electronics**   **Healthcare & Wellness**

Industrial   **IoT**   **Traceability & Logistics**   **Automotive**

EM Microelectronic is a fully owned subsidiary of Swatch Group, an international group active in the manufacturing of high-quality watches and jewelry. Within Swatch Group, we are part of the Electronic Systems segment. Together with our sister companies Micro Crystal and Renata, we provide complete solutions for various applications by merging individual expertise and synergies within the Group.

SWATCH GROUP
ELECTRONIC SYSTEMS

Governance

The EM Management Board is our leading corporate governing body. The Board is composed of 5 senior executive members, representing the highest management function in their areas, and is led by our CEO. The interaction for decision making between these 6 members takes into account the development of all departments within the company and the interests of our internal and external stakeholders. With weekly meetings in place, the Board is responsible for making the strategic decisions for EM's operation, including our sustainability strategy, and is accountable for the impact of these decisions on the economy, environment, and people.

Beat Sutter
Head of HR

Yvan Gonin
VP IC Operations

Michel Willemin
CEO

Paul Muller
VP Development

Stefan Barbu
VP Sales & Marketing

Rudi Schmid
CFO

Information Security Policy

Risk Management Policy

Quality Policy

Sustainability Roadmap

Supplier Code of Conduct

Social and Environmental Responsibility Principles of Conduct

As such, several policy commitments are in place to monitor this impact. These include topics such as quality and customer satisfaction, corporate and customer information, business relationships, labor and human rights, safe workplace, and environmental impact. The combination of the content of these policies is part of our Sustainability Roadmap, which serves as our mid- and long- term strategy for sustainability topics, including our expansion project in Marin.

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Supply Chain

In late 2022, we adopted Swatch Group's Supplier Code of Conduct, which covers the topics of labor and human rights, environmental protection, responsible supply chain, and ethics. This document was sent to our operational suppliers and we mandate from them to be aligned with these principles. We will further work with Swatch Group on how to follow up with the compliance of this Code of Conduct.

The safety of our products and the proper disclosure of any potential hazards are very important to us. For this, we follow different substance and material compliance regulations, such as the European Union's Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and the Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS). We make sure that the suppliers providing materials that remain in our products are compliant with these regulations. Furthermore, we provide our customers with the information they may need to meet the regulatory requirements of their specific markets in this topic.

Conflict minerals (tin, tungsten, tantalum, gold, cobalt) can be present in our products. We carry out an annual survey with our suppliers to assess the presence of non-conformant smelters of these minerals (based on the Responsible Minerals Initiative) and establish the necessary actions to phase the conflict minerals coming from these smelters out of our products.

Our supply chain management setup has been redefined in 2022. To further tackle sustainability issues, including the environmental and social impacts of our supply chain, we will work to establish an action plan focusing on our operational suppliers first. We will share the results in our next year's Sustainability Report.

Energy Harvesting

A micro power plant
on each electronic device

Aligning with EM's sustainability efforts, EM's product portfolio offers chip solutions for migrating systems that were traditionally powered by replaceable batteries towards sustainable energy sources.

With the unprecedented multiplication of electronic devices, customers and users in many verticals (IoT, consumer electronics, healthcare, industrial) have become extremely demanding in terms of their extended environmental responsibility, in particular when it comes to the power sources and electronic waste generation (batteries, chargers and cables).

EM has positioned solar and thermal energy harvesting and power management at the center of its efforts, offering permanent, no-maintenance power supply for numerous devices.

The energy is supplied directly by the environment, removing the need for recharge or battery replacement and recycling, combining convenience and user experience with environmental consciousness.

Solar powered smartwatches never require charging or battery change, Bluetooth® headsets can go on for unlimited period of time and connected thermostats require no maintenance thanks to EM's expertise in ultra-low power IC design and manufacturing. For solar energy harvesting, EM's special focus is to achieve the best efficiency under low illumination conditions, as this is where most users operate their devices and applications.

These applications of our products extend our sustainability efforts beyond our own operations, allowing our customers and their final consumers to transition to more environmentally conscious electronic devices.

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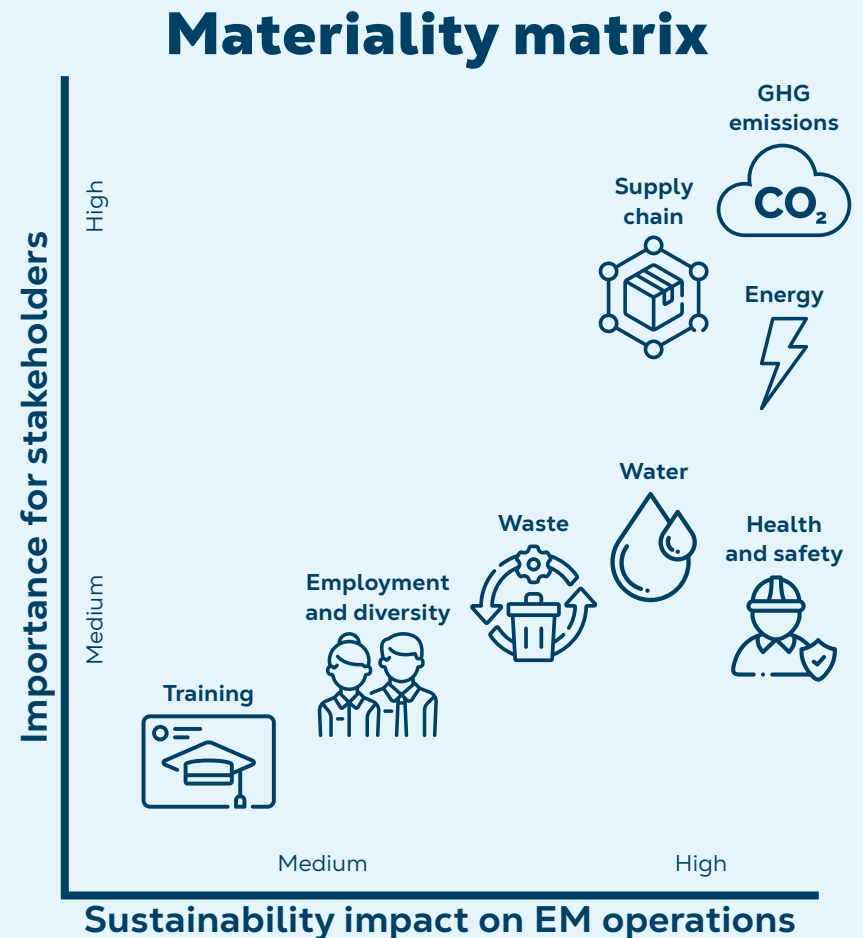Roadmap 2030

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Materiality Assessment

We redefined our materiality assessment for this report. The material topics established in last year's report, and others, were re-evaluated taking into consideration their potential sustainability impact on our operations, while still taking into account their importance for our stakeholders. We established as material topics the ones with at least a medium ranking on both parameters and with sufficient data available, as presented in our materiality matrix.

For example, throughout 2022, the topics of greenhouse gas (GHG) emissions and sustainable supply chain were very often consulted by our customers through formal requests on data or self-assessments, while the topic of energy consumption, specifically electricity, represented a challenge in Switzerland due to the uncertainty of the geopolitical situation in Europe. We take this type of feedback into consideration for defining our material topics, as well as consulting our stakeholders' own sustainability reports.

We engage with our stakeholders, including our materiality assessment, in different ways. Internally, feedback is constantly received from our Management Board, our coworkers, and Swatch Group. In this sense, we take into account the opinions of the people who know our company the best. Our external stakeholders include our customers, our suppliers, local government, as well as other companies in the semiconductor industry.

The interactions with these stakeholders take many forms of open communication: face-to-face meetings, requests, benchmarking on sustainability topics, self-assessments, among many others.

Bringing together all this information allows us to establish a clearer vision on what path to follow regarding sustainability as a semiconductor manufacturing company.

Materiality matrix

Importance for stakeholders

High

GHG emissions

Supply chain

CO_2

Energy

Medium

Water

Waste

Employment and diversity

Health and safety

Training

Medium   High

Sustainability impact on EM operations

About This Report

In alignment with Swatch Group's Sustainability Report 2022 and for purposes of data consistency, the third edition of our Sustainability Report covers the reporting period of October 1st, 2021 to September 30th, 2022 for environmental indicators and data, while calendar year 2022 (January to December) is used for the rest. The current report covers the operations from our manufacturing sites in Marin, Switzerland (EM Microelectronic-Marin SA) and in Bangkok, Thailand, which is part of our Swatch Group sister company ETA Thailand (ETA (Thailand) Company Limited).

As our sustainability reporting efforts continue to develop, there have been changes to some of the data presented last year in our Sustainability Report 2021:

- We updated the global warming potential (GWP) values of the process gases we use in semiconductor manufacturing and the refrigerants contained in our heating, ventilation and air conditioning (HVAC) equipment to the newly published values in the Intergovernmental Panel on Climate Change's (IPCC) Sixth Assessment Report (AR6).
- We updated the emission factors used for scope 1 emissions from energy consumption to the corresponding set from the Defra database for each annual period.
- For scope 2 emissions, location-based emission factors were updated using production mix emission factors from the Association of Issuing Bodies for our Marin production site and from the Energy Policy and Planning Office of Thailand for our Bangkok production site.

For any questions on this report, please contact us at *sustainability@emmicroelectronic.com*

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Environment

In 2022, we initiated a major construction project on our Marin site, supporting the long-term Swatch Group commitment to our activity. The new buildings will host several activities, including new facilities for our two Swatch Group sister companies on site.

This expansion is aligned with our vision for these buildings to be sustainable from their very conception. This includes dense building with high utilization, the non-use of fossil fuel for their operation, the installation of photovoltaic panels for self-generation of electricity, pursuing the Swiss Minergie certification for energy efficiency in buildings, as well as a certification for the responsible management of our green spaces. Furthermore, a thorough mobility plan for the employees has been approved by the local authorities and neighborhood stakeholders.

EM Microelectronic

TRUE
ULTRA–
LOW
POWER

by em microelectronic

Energy Consumption

S emiconductors are a key driver in many technological shifts towards a more sustainable society. It comes as no surprise that worldwide demand keeps increasing every year. This translates in higher production volumes and an increase in consumption of the resources required to manufacture high quality products that satisfy the needs for such technological shifts.

Energy consumption

GWh

- ● **Natural gas and biogas**   ●**Electricity**   ●**Other**
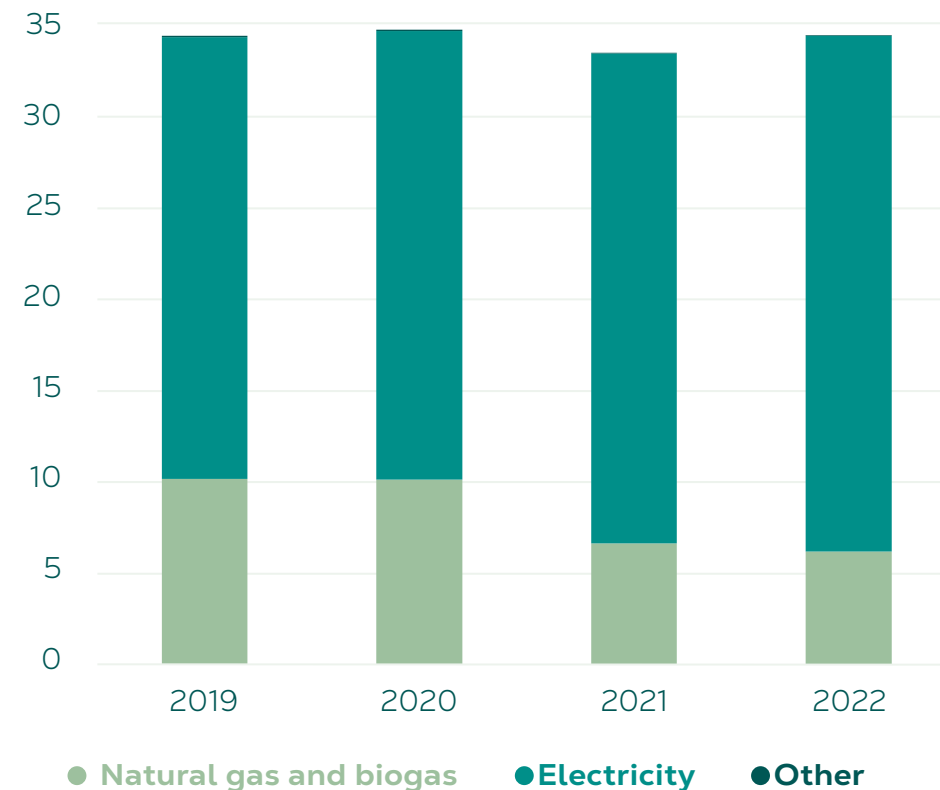
Normalized kWh / wafer

Energy intensity index
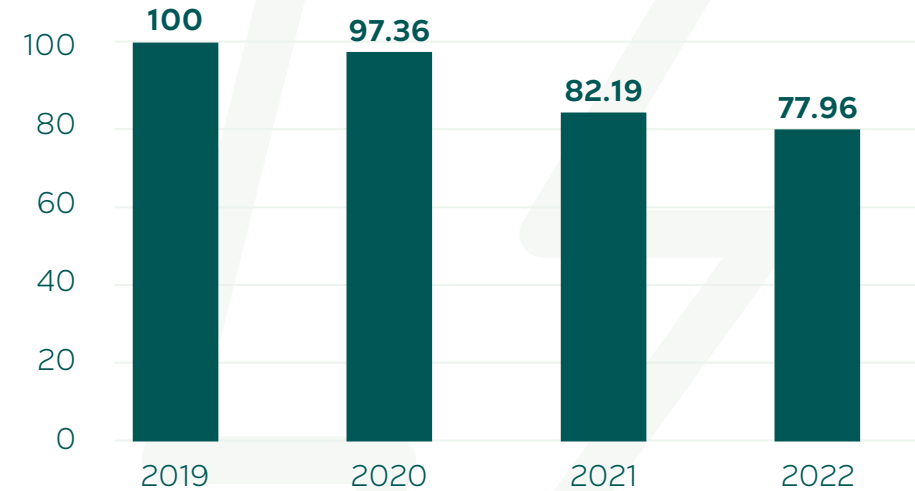
A s expected from a player in this industry, our overall energy consumption in 2022 increased compared to last year; however, we saw a reduction of energy consumed per unit produced. We are constantly implementing energy efficiency measures to ensure that the energy intensity of our activities does not increase at the same level as our absolute energy consumption. Process optimization and replacement of older equipment are the main actions in this task. The normalized values of our energy consumption divided by our production output show that we have been able to **continuously decrease our energy consumption per production output**: 77.96 in 2022, compared to 100 in 2019. Several projects and studies are taking place in 2023 to keep up with these efforts.
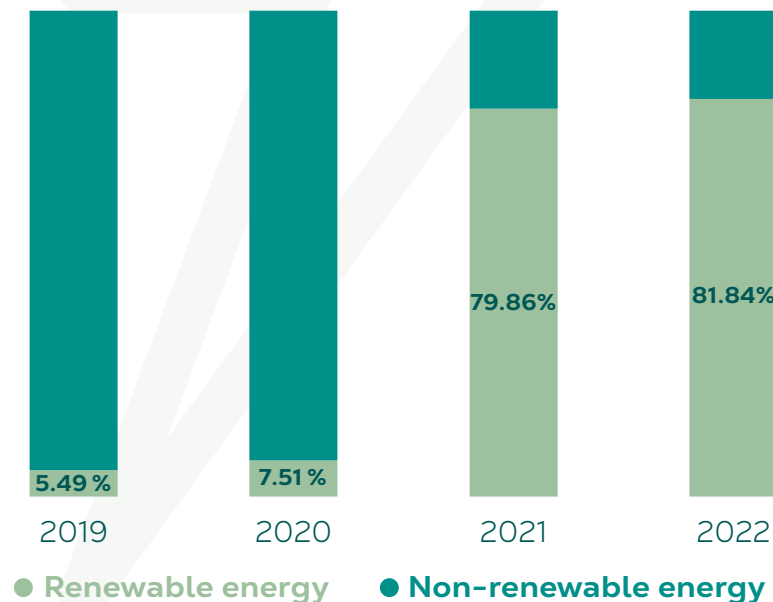
Energy Consumption

Natural gas, comprised of 10 % local biogas, is the second main source of energy, representing 17.95 % of our total energy consumption in 2022. Natural gas is used to satisfy our heating demands, our steam generation needs, and the operation of our scrubber to reduce our emissions into the atmosphere.

Other fossil fuels consumed are the ones used in our company vehicles and our backup generator, which together were less than 1 % of our energy consumption in 2022.

Proportion of renewable and non-renewable energy

Renewable energy   Non-renewable energy

We continue to adopt 100 % renewable electricity in our Marin manufacturing site. Combined with other sources, we reached 81.84 % of renewable energy in our energy consumption.

Semiconductor manufacturing is a highly electricity-intensive process. As such, our electricity consumption represented 81.92 % of our total energy consumption in 2022. As started last year, **100 % of the electricity consumed in our Marin manufacturing site came from renewable sources**, with the purchase of Guarantees of Origin for hydropower. To make sure that the electricity we consume keeps being 100 % renewable in the future, we are assessing the options that are best adapted to our production profile and location. ETA Thailand, owner of our Bangkok facilities, installed a photovoltaic system with an overall capacity of 1.3 MWp that satisfied 5.14 % of our electricity needs in this location.

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GHG Emissions

Our greenhouse gas (GHG) emissions estimations are based on the GHG Protocol as well as on the Intergovernmental Panel on Climate Change's (IPCC) **2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 6, Chapter 3: Electronics Industry Emissions** tier 2b method for our process emissions, combined with information directly from our abatement systems suppliers.

Most of our scope 1 and 2 emissions come from the consumption of natural gas (45%) and the fluorinated gases and N_2O used in the production of semiconductors (38%).

Aligned with Swatch Group's GHG reduction roadmap, we commit to climate neutrality by 2050 [1].

Overall, we continue to decrease the emissions in these two scopes, reaching an **absolute decrease of 69.57% in 2022**, compared to our baseline of 2019, and a normalized intensity per production unit decrease from 100 in 2019 to **23.70** in 2022. Several actions have contributed to this result, with the installation of a heat pump and the procurement of 100% renewable electricity in our Marin manufacturing site being the drivers of this transition so far.

GHG emissions

Year	Metric tons CO_2eq
2019	7,399
2020	7,276
2021	2,417
2022	2,252
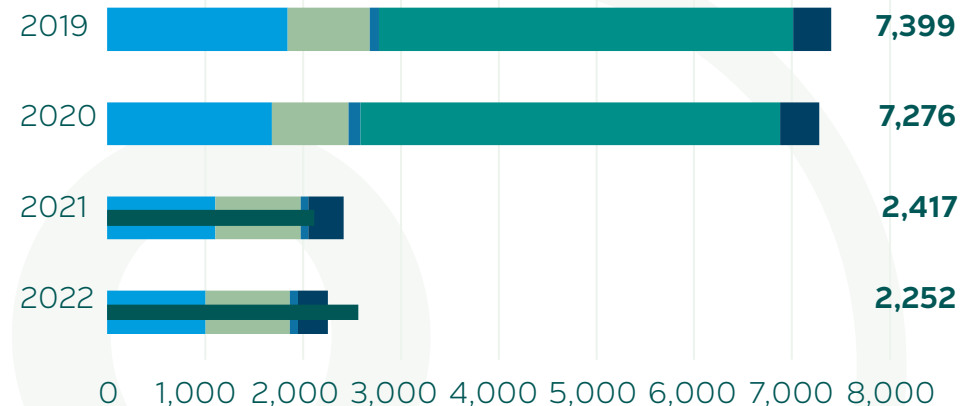
Metric tons CO_2eq

- Natural gas and biogas [2]
- Other scope 1
- Electricity Bangkok (location-based)
- Fluorinated gases and N_2O
- Electricity Marin (market-based)
- Scope 3 [3]

2 Excluding biogenic CO_2 from biogas.

3 Only categories of fuel- and energy-related activities, business travel, employee commuting, and upstream and downstream transport and distribution. Further assessments will take place to estimate supply chain emissions from the category of purchased goods and services.

1 As described in this section, several assessments are taking place for us to identify the efforts and timeline needed to become climate neutral for scope 1 and 2 emissions, which we envision taking place even before 2050. We will share the results of the assessments in our next year's Sustainability Report.

EM Microelectronic

GHG Emissions

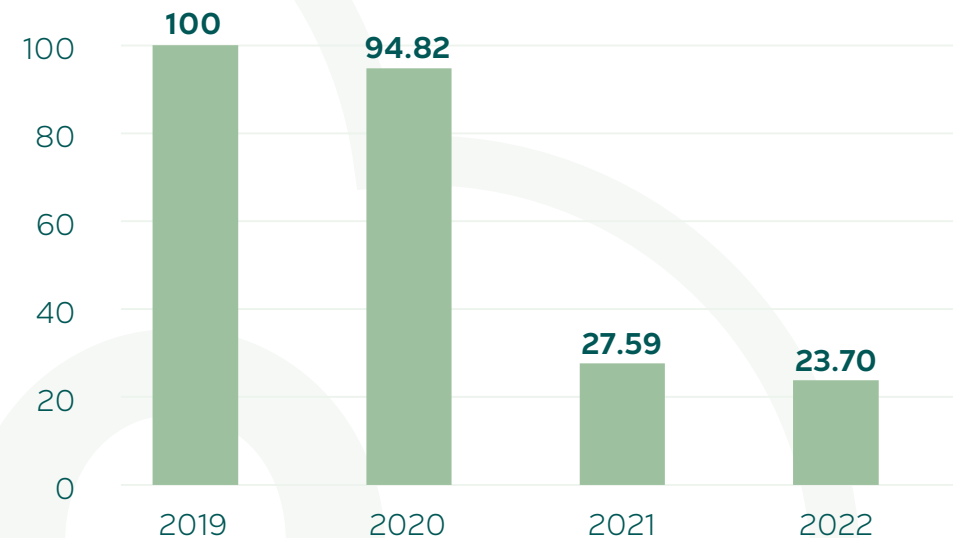As stated in the Energy section, natural gas plays an important role in our energy consumption, and even in the destruction of fluorinated gases in order to reduce their impact in the atmosphere. Assessments are starting in 2023 to establish whether it is possible for EM to transition away from natural gas entirely, or at least to a high degree, and the most efficient ways to do so without incurring in greater impacts in other areas.

Proportion of scope 1 and 2 emissions in 2022

Natural gas and biogas
45 %

Fluorinated gases and N_2O
38 %

Electricity Bangkok (location-based)
13 %
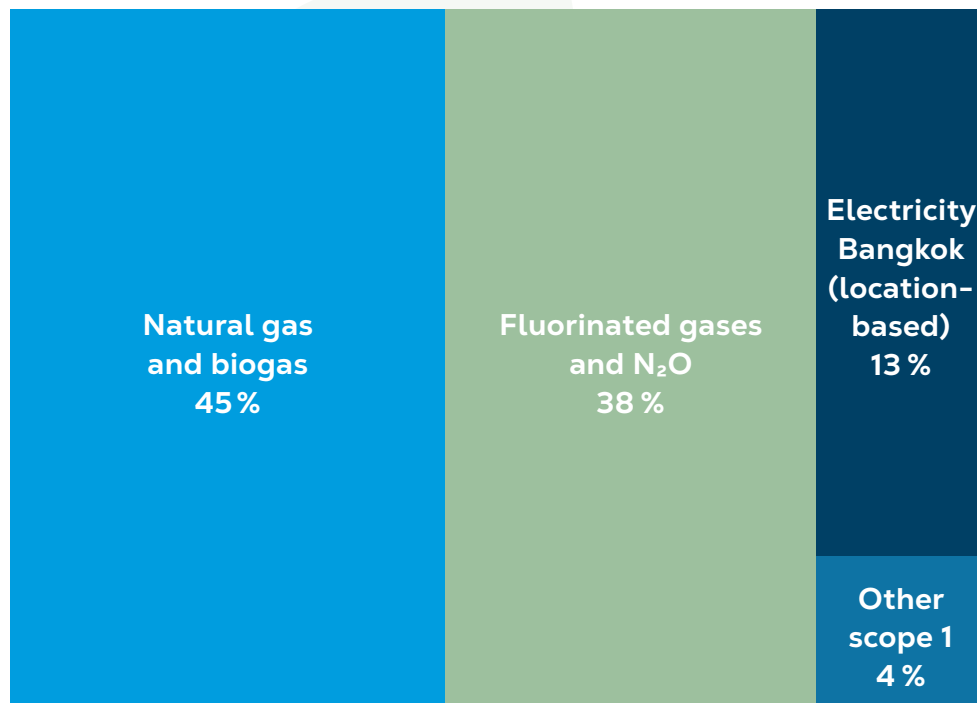
Other scope 1
4 %

Scope 1 and 2 emissions intensity index

Normalized kg CO_2eq / wafer

Year	Value
2019	100
2020	94.82
2021	27.59
2022	23.70

On the other hand, semiconductor manufacturing requires the use of perfluorocarbons (PFCs) and hydrofluorocarbons (HFCs), among other substances with very high global warming potential (GWP), to which currently there are no substitutes. As per Swiss environmental regulations, only 5 % of the consumption of these substances is allowed to be emitted to the atmosphere, which we achieve by using burn-wet abatement systems. Nevertheless, due to their high GWP, emissions from this source are still significant. Further actions will take place in 2023 to verify what the best-adapted options for our case are to ensure zero emissions.

GHG Emissions

Other sources of GHG emissions are the electricity consumption in our Bangkok manufacturing site and refrigerant leaks of our heating, ventilation and air conditioning (HVAC) equipment. The installation of a photovoltaic system by ETA Thailand combined with the increasing shares of renewable sources in the Thai electricity mix have further contributed to the reduction of our scope 2 emissions from this manufacturing site. Regarding refrigerants, future installations of HVAC equipment are to be functioning with low GWP refrigerants, such as R-1234ze or ammonia, on top of proper maintenance being provided to the equipment to minimize refrigerant leaks.

We understand that our responsibility does not end at the boundaries of our premises, with our scope 3 emissions being much higher than our scope 1 and 2 emissions combined. We continue to monitor the same categories from our last year's Sustainability Report: fuel- and energy-related activities, business travel, employee commuting, and upstream and downstream transportation and distribution.

As emissions from fuel- and energy-related activities are directly linked to our energy consumption, the different assessments and measures on energy efficiency will be detrimental to reduce these emissions, as well as the transition to renewable energy.

While business travel from our coworkers does not result in an impact comparable to other categories, the GHG emissions from business travel are expected to increase due to resuming the necessary face-to-face meetings with customers and suppliers worldwide after an extended period of travel restrictions linked to the COVID-19 pandemic.

GHG Emissions

As the first step of our future mobility plan, the commuting patterns of our coworkers in Marin were analyzed by external consultants, with the results showing a high share of single occupancy vehicle use in daily commuting. This data will allow us to establish a mobility plan that promotes the use of public transport, soft mobility, and carpooling, which should contribute to the reduction of emissions from commuting as well as helping to decrease local traffic. Other measures in place are the installation of two charging stations for electric cars and the promotion of participation in local biking initiatives, such as the Bike to Work campaign [1].

We continue to reduce our scope 1 and 2 emissions, with a reduction of 69.57% in 2022, compared to our 2019 baseline. We will further develop our assessments to include our whole value chain and tackle our greatest impacts in scope 3 emissions.

Emissions from our upstream and downstream transport and distribution increased significantly between 2021 and 2022, due to the rising demand of semiconductors worldwide. We will follow up in this topic by engaging with our transport suppliers and optimizing shipment packaging and transport routes.

The category of purchased goods and services is yet to be assessed, but based on rough estimations, we already know that emissions from this category will be the highest emissions of all. As explained in the Supply Chain section, we are starting a project in 2023 to further address this category by initially focusing on our main operational suppliers.
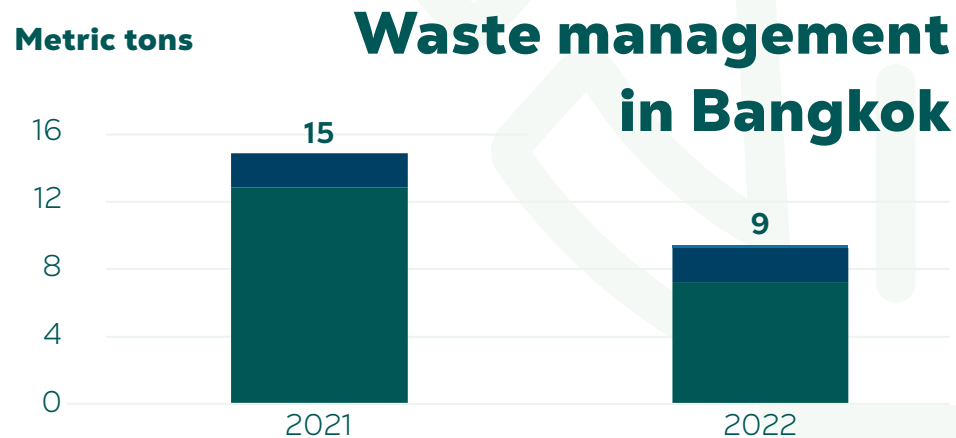
1 https://www.biketowork.ch/en

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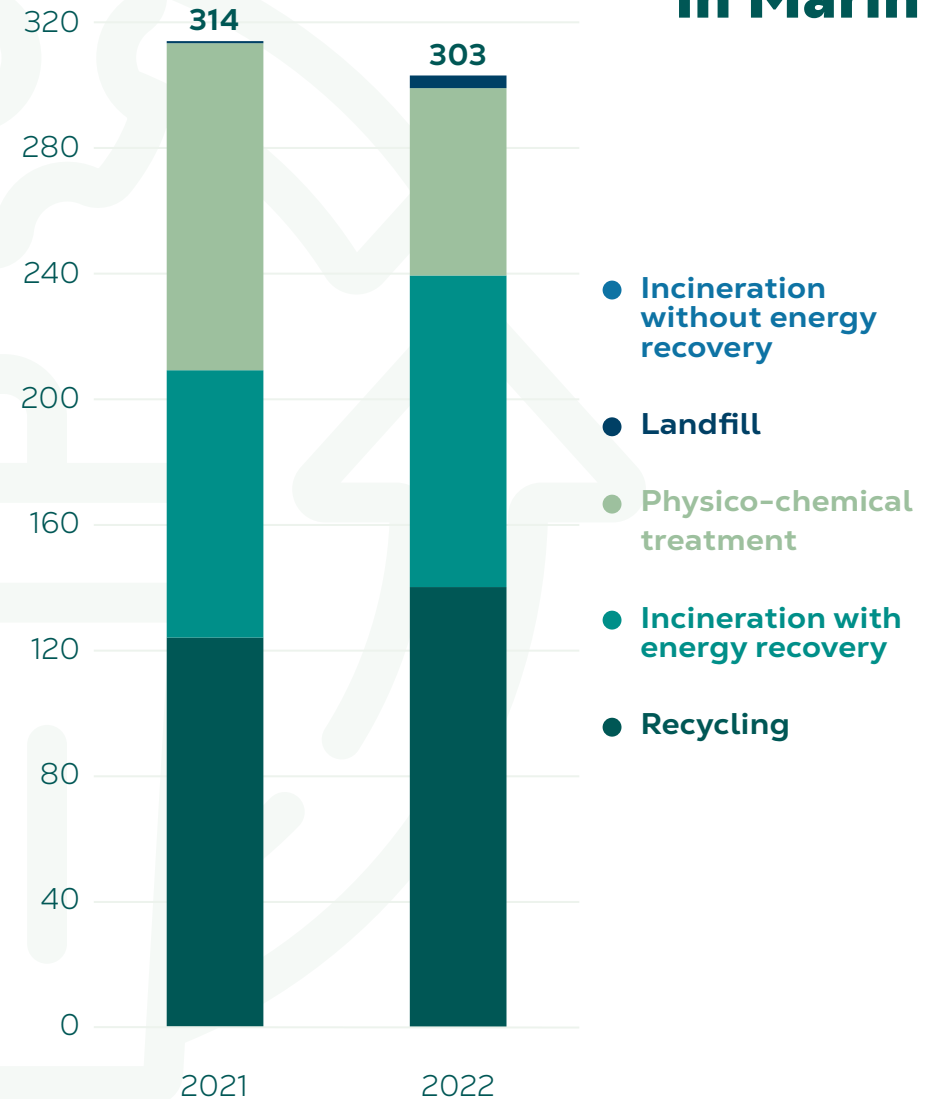Roadmap 2030

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Waste

In 2022, we generated 146.26 metric tons of non-hazardous waste and 166.34 metric tons of hazardous waste in our manufacturing sites. Our approach to waste management is maximizing the rate of valorization through recycling or energy recovery for both waste categories. In 2022, we reached **rates of valorization of 79 % in Marin and 77 % in Bangkok.**

Nevertheless, our greatest impact takes place in Marin, with 97 % of our waste generation. Thus, our focus heavily lies here, to both reduce the amount of waste generated and also keep increasing the rate of valorization.

Compared to last year, we **reduced waste generation by 5 %** and **increased the rate of valorization by 12 percentage points** on this site. Further projects and assessments will take place to identify the highest values we can strive for these two indicators, especially taking into account the nature of the waste generated, where chemicals play an important role and are not always suitable to be valorized.

Waste management in Marin

Metric tons

- **Incineration without energy recovery**
- **Landfill**
- **Physico-chemical treatment**
- **Incineration with energy recovery**
- **Recycling**

Waste management in Bangkok

Metric tons

EM Microelectronic

Water

In both our manufacturing sites, water withdrawal comes directly from the local water supply networks, satisfying the water requirements for production and the operation of our office facilities. Based on the Food and Agriculture Organization's (FAO) Aquastat [1], neither of our manufacturing sites are located in water stress areas of any level.

Through our wastewater treatment systems, we ensure that our water discharges to the local sewage networks are compliant with local regulations, thus avoiding pollution of nearby water bodies.

Since 2020, we have seen an increase in water withdrawal in Marin, which is attributed to the increase of production to satisfy the increasing demand for semiconductors worldwide. On the other hand, we have also seen a decrease in the water intensity level per production unit, with a normalized value of **88.95 in 2022**, compared to 100 in 2019.

We also saw an important decrease in our water recycling rate in Marin due to high conductivity in the water that saturated the anionic filters, which does not allow proper recycling, reaching **4.3 %** in 2022, compared to **10.5 %** in 2021. We acknowledge that this value is low, and we will engage to identify the ways in which we can increase our water recycling rate and decrease our overall water withdrawal.

Water withdrawal and normalized intensity index

Marin ● Bangkok ● Normalized intensity index
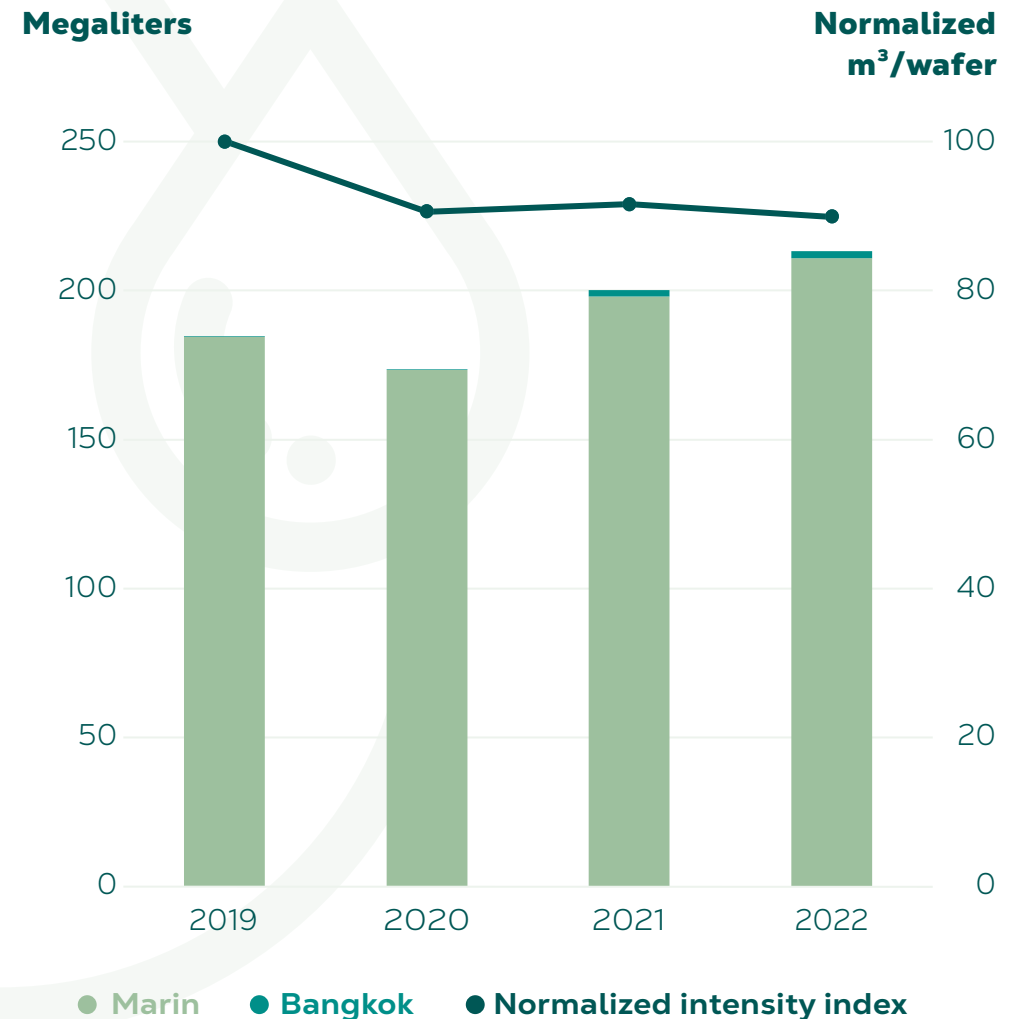
1 Statistics for Level of water stress by major river basin calculated on the water consumption.

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Employment and Diversity

In 2022, we had 400 coworkers in Switzerland and 147 coworkers in Thailand. Being our headquarters, our Marin site in Switzerland acts as an exchange hub of ideas, knowledge, skills and experiences between very talented and diverse people, coming from different professional and cultural backgrounds.
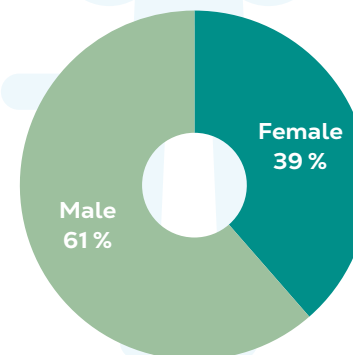
By being a company of Swatch Group, we are also part of the Swiss Watch Industry Employers' Association (CPIH, in French). As such, we follow the employment directives of the Collective Labor Agreement of the Swiss Watch and Microtechnology Industries, which includes topics such as protection of workers, working hours and holidays, compensation, among others. To represent and defend the interests of our coworkers, our Work Council develops a constructive cooperation with the Management Board.

On an individual and yearly basis, each coworker evaluates their own performance as well as the performance of their direct supervisor and the company, describing the strengths and areas of opportunity for all three. This allows direct and open communication between the management levels that reinforces all our coworkers' personal and professional development at EM.

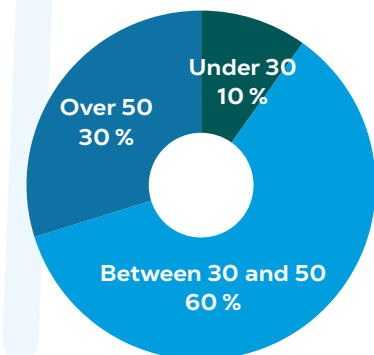We also propose team building events troughout the year to promote the collaboration and internal development of our teams. These include, for example, our Christmas dinner, our summer barbecue, and a curling exercise part of our International Sales Meeting.

Proportion of employees by gender in 2022

Female 39 %
Male 61 %

Proportion of employees by age group in 2022

Under 30 10 %
Over 50 30 %
Between 30 and 50 60 %

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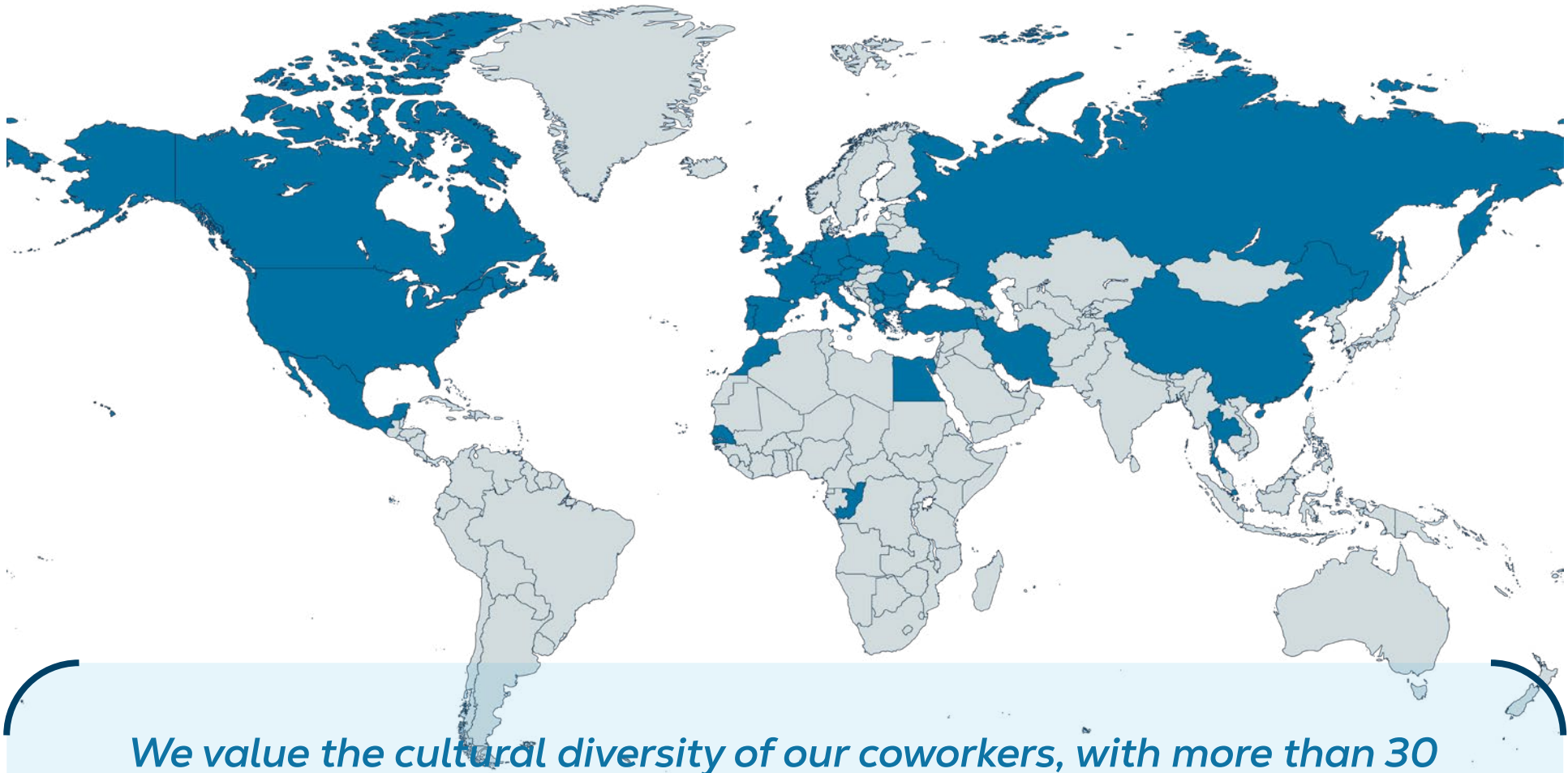
We value the cultural diversity of our coworkers, with more than 30 nationalities present at our Marin site exchanging ideas and experiences.

EM Microelectronic

Training

We believe continuous education is very important for the professional development of our coworkers, which positively impacts the success of our company and our activities.

Besides mandatory training, such as the safety training discussed in the next section, we highly encourage our coworkers to follow training programs both on technical skills and soft skills. In the Annual Staff Interview, our coworkers discuss their training needs with their direct supervisors, to establish what type of training programs they will be partaking in the following year, which is also communicated to our Human Resources department.

In 2022, the average training hours of our coworkers increased by 74.78% in Marin and by 87.16% in Bangkok, compared to 2021.

Average training hours per employee

	Marin		Bangkok	
	2021	2022	2021	2022
	8.21	14.35	2.57	4.81
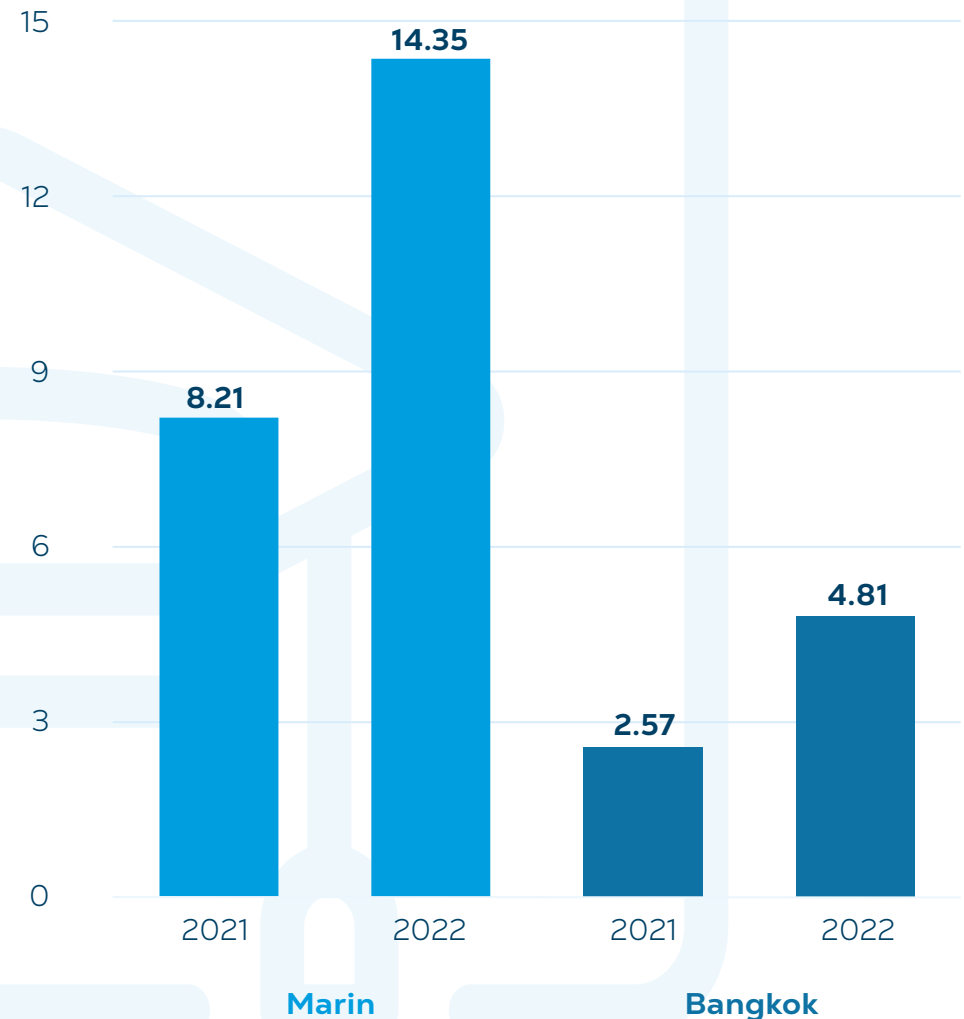
Occupational Health and Safety

Our occupational health and safety system in Marin follows the requirements from the Swiss Federal Coordination Commission for Occupational Safety (*CFST*, in French), the Swiss National Accident Insurance Fund (*SUVA*, in German), and the Swiss Watch Industry Employers' Association (*CPIH*, in French). The system covers all of our coworkers, as well as the other two Swatch Group subsidiaries on site.

Our Safety Officer has the task of supervising the compliance and proper implementation of the system. Through our EHS Committee taking place 3 times per year, our Safety Officer and safety leaders manage risks and incidents, and exchange best practices and lessons learned throughout the year, in order to continue minimizing future risks.

Our company's EHS regulations contain general principles concerning hygiene and accident prevention, behavior and order within the company, and environmental protection. The different types of hazards and the corresponding personal protection equipment are identified. The safety principles outlined in the regulations apply both to our coworkers as well as externals, such as visitors and contractors through dedicated safety instructions and training.

Internally, it is mandatory that all of our coworkers go through introductory safety training when they first join EM, regardless of the function. Every 3 years, it is also required for everyone to take follow-up training, ensuring the concepts and actions are known by everyone, as well as taking into account any changes in the system or premises. Our coworkers who perform functions which are exposed to specific risks and equipment at their workplace receive specific security and safety training adapted to the needs of the function.

We promote different actions and activities aimed to benefit our coworkers' health: seasonal flu vaccines in local pharmacies, participation in soft mobility initiatives, such as the Bike to Work campaign in the summer (where our coworkers travelled around 1,000 km in the summer of 2022) and the BCN Tour, as well as one-off actions before summer and winter.

In 2022, we saw a slight increase in work-related injuries resulting in no downtime and a slight decrease in work-related injuries resulting in downtime. However, compared to the benchmark from the CPIH for companies in the watchmaking and microtechnology sector in Switzerland, our statistics continue to be below the local average.

Incidence rate of work-related injuries in Marin, per 1 million hours worked

Legend: No downtime · Downtime · CPIH benchmark (years 2019, 2020, 2021, 2022)
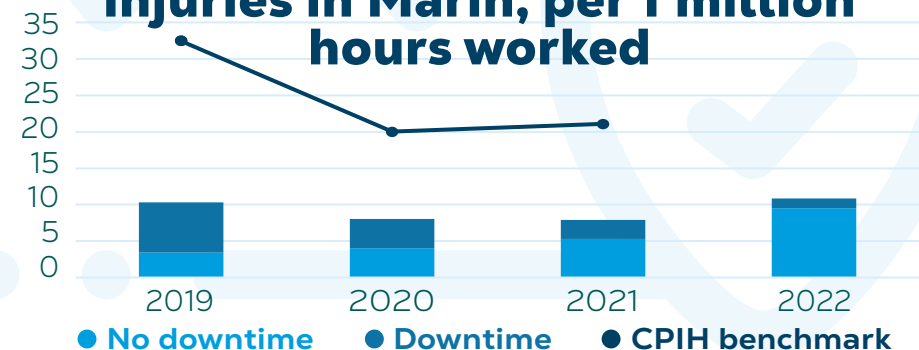
Our voluntary teams of fire brigade and first-aid brigade support all interventions on firefighting, health, rescue, chemicals, and natural disasters.

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SUSTAINABLE DEVELOPMENT GOALS

SDGs at EM

3 GOOD HEALTH AND WELL-BEING

We aim to minimize risks of negative impact of our activities on people's health.

4 QUALITY EDUCATION

We help our employees to develop their potential through continuous training programs.

6 CLEAN WATER AND SANITATION

We aim to increase efficiency in the use of water resources.

7 AFFORDABLE AND CLEAN ENERGY

We deploy programs to increase the energy efficiency of all our activities. We aim to increase the proportion of renewable energy.

8 DECENT WORK AND ECONOMIC GROWTH
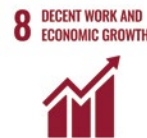
We focus on providing quality and employment throughout our extended supply chain.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

We foster open innovation with a wide range of universities, companies, and researchers all over the world.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

We work to minimize our waste in landfill, reduce our consumption of chemicals and eliminate hazardous material.

13 CLIMATE ACTION

We deploy programs to reduce our GHG emissions.

17 PARTNERSHIPS FOR THE GOALS

We work with universities and companies to boost sustainability in our technology and products.

Objectives

We modified some of our objectives related to the Sustainable Development Goals (SDGs) for 2030, based on internal feedback and a benchmark of other actors in the semiconductor industry.

However, the results of the multiple assessments taking place at our Marin production site will allow us to establish the actual potential we have in each module. Thus, we expect another update by next year, with 2019 still being the baseline for all.

Environment and energy

Module	SDG	Target 2030	Progress	Status in 2022 (2019 baseline)
Energy EM Microelectronic actively applies measures to increase its energy efficiency.	7 AFFORDABLE AND CLEAN ENERGY	Decrease global energy consumption per production output by 35%.		We achieved a reduction of 22.04%.
GHG emissions EM Microelectronic actively applies measures to decrease its GHG emissions.	13 CLIMATE ACTION	Decrease GHG emissions by 90% for scope 1 and 2.		We achieved a reduction of 69.57%.
Waste EM Microelectronic strives to reduce its non-valorized waste and its landfill waste.	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	Increase the total valorization rate up to a minimum of 90%. Limit the landfill rate to a maximum of 3%.		We reached 79%. Our landfill rate was 1.32%.
Water EM Microelectronic strives to decrease its water consumption in its manufacturing sites.	6 CLEAN WATER AND SANITATION	Increase the total recycling rate of water up to a minimum of 40% in Marin. Decrease water withdrawal per production output by 20%.		Water recycling rate was 4.3%. Further efforts will start in 2023 to increase this value. We reached 11.04%.

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Objectives

Products and Innovation

Module	SDG	Target 2030	Progress	Status in 2022
Sustainable products EM Microelectronic products are optimized with regard to their environmental impacts, social benefits and resource efficiency.	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	Systematic introduction of sustainability indicators in product development and production.		We are assessing how to establish sustainability indicators in our products.
Supply Chain EM Microelectronic suppliers comply with Swatch Group's Supplier Code of Conduct for socially and environmentally responsible supply.	8 DECENT WORK AND ECONOMIC GROWTH	100 % of fulfilled self-assessment questionnaires from our operational suppliers.		Some self-assessments were done by our suppliers in the past. This initiative will be relaunched in 2023.
Logistics EM Microelectronic optimizes its logistics in terms of energy consumption, emissions, and packaging.	17 PARTNERSHIPS FOR THE GOALS	Define and implement improvement measures together with transport service providers and customers. Find alternatives to reduce packaging and introduce more sustainable packaging materials.		Further discussions will take place in 2023. Some trials were started to reduce shipments. Further discussions with customers will continue in 2023.

Objectives

Safety and people				
Module	**SDG**	**Target 2030**	**Progress**	**Status in 2022**
Safety EM Microelectronic actively applies safety measures to maintain a very low rate of work-related injuries.	3 GOOD HEALTH AND WELL-BEING	Maintain our absence rate and incident rate below local median values.	●	Our incidence rate of work-related injuries continues to be below Swiss average values.
		Continue and develop EHS training programs for all of our employees.	◔	Several trainings already in place. The programs will be extended according to the identified needs, legal and company requirements.
Employee education EM supports the development and the engagement of its employees.	4 QUALITY EDUCATION	Continue to develop training programs for all our employees (safety, technology and innovation, management, design, production, maintenance).	◑	The average training hours of our employees increased by 75%, compared to last year.

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Data

This section presents a breakdown in table form of all the data collected and estimated for the material topics presented in this report, which was previously presented in graph form throughout the different sections.

Energy consumption, in MWh				
Source	**2022**	**2021**	**2020**	**2019**
Natural gas	**5,572**	5,996	9,129	10,027
Biogas	**619**	666	1,014	144
Fuel oil [1]	**22**	5	60	44
Vehicle fleet [1]	**24**	21	23	32
Electricity Marin	**27,472**	25,998	23,663	23,334
Electricity Bangkok	**786**	834	894	871
Total	**34,495**	**33,521**	**34,783**	**34,451**
Annual change	**2.90 %**	**-3.63 %**	**0.96 %**	**–**
Change from 2019	**0.13 %**	**-2.70 %**	**0.96 %**	**–**
Normalized intensity index	**77.96**	**82.19**	**97.36**	**100**
Renewable energy	**28,229**	26,770	2,614	1,891
Proportion of renewable energy	**81.84 %**	79.86 %	7.51 %	5.49 %

1 Based on gross calorific value

Sustainability at EM

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Data

GHG emissions, in metric tons CO_2eq

Source	Scope	2022	2021	2020	2019	Emission factor source
Natural gas [1]	1	1,003	1,106	1,685	1,843	UK Government
Biogas [1,2]	1	0.14	0.15	0.21	0.03	UK Government
Fluorinated gases and N_2O	1	861	870	779	840	IPCC AR6
Fuel oil [1]	1	6	1	16	12	UK Government
Vehicle fleet [1]	1	6	5	5	8	UK Government
Refrigerants	1	73	73	101	73	IPCC AR6
Electricity Marin (market-based)	2	0	0	4,295	4,235	Electricity supplier
Location-based	2	319	302	273	238	Assembly of Issuing Bodies
Electricity Bangkok (location-based and market-based)	2	303	361	395	387	Thai Government
Fuel- and energy-related activities [1]	3	754	752	–	–	ecoinvent database v3.8 cut-off, UK Government
Business travel	3	72	16	–	–	ecoinvent database v3.8 cut-off
Employee commuting	3	736	629	–	–	ecoinvent database v3.8 cut-off
Upstream and downstream transport and distribution	3	1,001	716	–	–	Transport suppliers
Scope 1		**1,949**	**2,056**	**2,586**	**2,777**	**–**
Scope 2 [3]		**303**	**361**	**4,690**	**4,622**	**–**
Scope 3 [4]		**2,563**	**2,112**	**–**	**–**	**–**
Total scopes 1 and 2		**2,252**	**2,417**	**7,276**	**7,399**	**–**
Annual change		**-6.83 %**	**-66.78 %**	**-1.67 %**	**–**	**–**
Change from 2019		**-69.57 %**	**-67.34 %**	**-1.67 %**	**–**	**–**
Normalized intensity index		**23.70**	**27.59**	**94.82**	**100**	**–**

1 Based on gross calorific value, 2 excluding biogenic CO_2, 3 market-based for Marin, 4 further assessments will take place to estimate supply chain emissions from the category of purchased goods and services.

Data

Waste categories and treatment methods, in metric tons

Waste category	Recycling	Incineration with energy recovery	Physico-chemical treatment	Landfill	Incineration without energy recovery	2022	2021
Hazardous waste	63.13	23.13	59.86	**0**	0.15	146.26	173.52
Non-hazardous waste	84.27	76.05	0	**6.02**	0	166.34	155.67
Total	**147.40**	**99.18**	**59.86**	**6.02**	**0.15**	**312.60**	**329.19**
Proportion	47.15 %	31.73 %	19.15 %	**1.92 %**	0.05 %	–	–

Water withdrawal, in m³

Indicator	2022	2021	2020	2019
Marin	210,890	197,927	173,415	**184,465**
Bangkok	2,265	2,217	100	**52**
Total	**213,155**	**200,144**	**173,515**	**184,517**
Normalized index	**89.95**	**91.63**	**90.68**	**100**

Data

Employee category breakdown

Employee category	Total		Marin		Bangkok	
	2022	**2021**	**2022**	**2021**	**2022**	**2021**
Female	**211**	209	95	89	116	120
Male	**336**	304	305	274	31	30
Under 30 years old	**54**	52	29	32	25	20
Between 30 and 50 years old	**330**	318	218	201	112	117
Over 50 years old	**163**	143	153	130	10	13
All employees	**547**	**513**	**400**	**363**	**147**	**150**

Training hours statistics

Hours of training	Marin		Bangkok	
	2022	**2021**	**2022**	**2021**
Total	5,739	2,981	707	386
Average per employee	14.35	8.21	4.81	2.57

Training hours statistics

Incident	Marin		Bangkok	
	2022	**2021**	**2022**	**2021**
Work-related injuries without downtime	7	4	0	0
Work-related injuries with downtime	1	0	0	0
Fatalities	0	0	0	0
Work-related ill-health	0	0	0	0
Hours worked	734,554	757,197	336,220	361,090

GRI Index

Statement of use	EM Microelectronic has reported the information cited in this GRI content index for the period 01.01.2022 to 31.12.2022 with reference to the GRI Standards.
GRI 1 used	GRI 1: Foundation 2021

GRI standard	Disclosure	Location
GRI 2: General Disclosures 2021	2-1 Organizational details	8, 13
	2-2 Entities included in the organization's sustainability reporting	13
	2-3 Reporting period, frequency and contact point	13
	2-6 Activities, value chain and other business relationships	8
	2-7 Employees	8, 25, 40
	2-9 Governance structure and composition	9
	2-11 Chair of the highest governance body	9
	2-12 Role of the highest governance body in overseeing the management of impacts	9
	2-22 Statement on sustainable development strategy	5
	2-23 Policy commitments	9
	2-29 Approach to stakeholder management	12
	2-30 Collective bargaining agreements	25
GRI 3: Material Topics 2021	3-1 Process to determine material topics	12
	3-2 List of material topics	12
	3-3 Management of material topics	On each section
GRI 302: Energy 2016	302-1 Energy consumption within the organization	16 - 17, 37
	302-4 Reduction of energy consumption	16 - 17, 37
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	23
	303-2 Management of water discharge-related impacts	23
	303-3 Water withdrawal	23, 39

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GRI Index

GRI standard	Disclosure	Location
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	18 - 19, 38
	305-2 Energy indirect (Scope 2) GHG emissions	18 - 20, 38
	305-3 Other indirect (Scope 3) GHG emissions	19 - 20, 38
	305-5 Reduction of GHG emissions	18 - 19, 38
GRI 306: Waste 2020	306-1 Waste generation and significant waste-related impacts	22
	306-2 Management of significant waste-related impacts	22
	306-3 Waste generated	22, 39
	306-4 Waste diverted from disposal	22, 39
	306-5 Waste directed to disposal	22, 39
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	28
	403-2 Hazard identification, risk assessment, and incident investigation	28
	403-3 Occupational health services	28
	403-4 Worker participation, consultation, and communication on occupational health and safety	28
	403-5 Worker training on occupational health and safety	28
	403-6 Promotion of worker health	28
	403-8 Workers covered by an occupational health and safety management system	28
	403-9 Work-related injuries	28, 40
	403-10 Work-related ill health	28, 40
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	27, 40
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	25, 40