



RIBBON COMMUNICATIONS
SUSTAINABILITY REPORT
2021-2022



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MESSAGE FROM OUR CEO

The ability to connect to anyone, anytime, anywhere, safely and securely, in an instant, is now a global necessity. Connectivity is an enabler of so many aspects of our lives - chatting real-time with family and friends, the plethora of devices in our homes and cars that enrich our lifestyle, remote working that is now fundamental to the economy, advanced remote health care services, and so much more! It's an enabler of a low-carbon economy, lowering the need for business travel with online collaboration and reducing commuting through work from home options. Access to connectivity is also a great social springboard, bringing education, healthcare, commerce and communications in all forms to the underserved populations in our global society, giving everyone the opportunity to participate in a dynamic digital world, unrelated to where they live or other social status.

The aspiration to achieve universal access to advanced Internet and communications technology is undisputed, as reflected in UN Sustainable Development Goals 9, target 9c: *"Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020"* In practice, "broadband for everyone" has not yet been fully achieved, but with each year that passes, progress is being made. Ribbon's converged communications software and network solutions are part of this progress. Our contribution goes beyond technology and innovation; it's a key to

advancing social justice and a greener planet. Our approach includes a special focus on bridging the digital divide by making it easier for rural and underserved communities to acquire high-speed Internet connectivity. At Ribbon, we are passionate about delivering technical solutions for our customers and those that depend on them. In 2021, we continued to combat the ongoing challenges caused by the global pandemic and political unrest in Europe, which have disrupted supply chains and business continuity for many. We have consolidated our merged business and expanded our presence in many markets. We have successfully promoted the advancement



Integration of environment, social and governance (ESG) matters into our business strategy and practice remains a priority.



Bruce McClelland
President and Chief Executive Officer

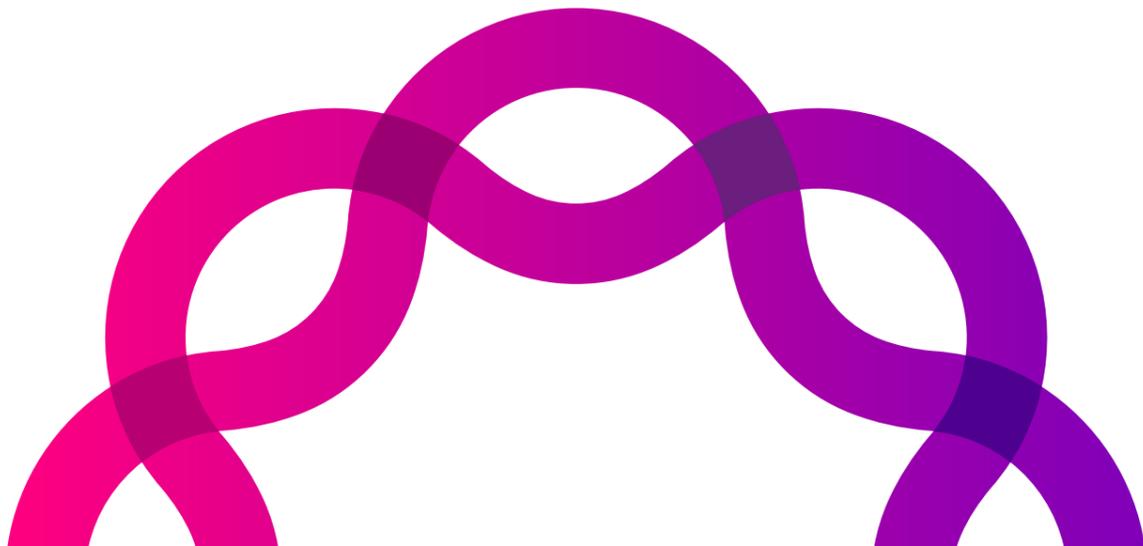
of new technologies which will help prepare our customers for the 5G revolution, such as network virtualization, network slicing, open networks and multilayer network optimization. We continue to drive network transformation with our new IP Wave framework that helps customers automate and optimize networks. And we continue to lead the industry in the pursuit of eliminating telephone fraud with the expansion of Ribbon Call Trust.

Integration of environment, social and governance (ESG) matters into our business strategy and practice remains a priority. In 2021, we made solid progress against our "Three by Thirty" strategic targets: we reduced absolute carbon emissions, increased the percentage of women in management roles and established new standards, supplier assessments and audit protocols throughout our supply chain. We are firmly committed to doing business in an ethical and responsible manner, and you will find many

additional examples of our progress in 2021 and 2022 in this report. While we certainly made progress in achieving our goals, we are not satisfied and are dedicated to investing the right resources and engaging our people to accelerate the pace of achievement. On my many visits of our facilities in the past year, whether virtually or in person, I have always been impressed by the dedication, focus and skill of our Team Ribbon. Through our continued work together, we will meet and exceed the goals we have set for ourselves to be a productive and conscientious member of the communities we are a part of.

Thank you for your interest in this report. We welcome your feedback.

Bruce McClelland
President and Chief Executive Officer



SUSTAINABILITY HIGHLIGHTS

82% ↑

of employees confirmed they would recommend Ribbon in our global employee survey

13.5 ↑

training hours per employee on average across our workforce, up from 12 hours in 2020

10% ↓

reduction achieved in absolute Scope 1+2 carbon emissions in 2021 compared to our 2018 base year

98% ↑

of contract manufacturing operations now included in Scope 3 emissions

18% ↑

women in management roles, up from 16% in 2020

10% ↓

reduction in our total injury rate from 0.177 in 2020 to 0.158 in 2021

73% ↑

waste diversion, up from 68% in 2020

78% ↑

of in-scope suppliers provided responses to our conflict minerals survey, representing a 19% increase in the number of suppliers responding

28% ↑

of new hires were women, up from 23% in 2020

700

employees volunteered more than 2,500 hours in Ribbon's 2021 Global Day of Service

73% ↑

cumulative reduction in equipment and laboratory space compared to non-optimized operations

80%

response rate from priority suppliers in our Supplier Code of Conduct assessment, and enhanced monitoring mechanisms for supplier conformance

Supporting our Customers

Introduced IP Wave, our framework for IP Optical networking solutions, helping customers automate and optimize networks

Expanded Ribbon Trust Call technology to help customers in North America secure millions of phone calls per day

Engaged with new rural and Tribal customers in North America to help bridge the digital divide



ABOUT RIBBON



Our Business

Ribbon Communications (Nasdaq: RBBN) delivers communications software, IP and optical networking solutions to service providers, enterprises and critical infrastructure sectors globally. We engage deeply with our customers, helping them modernize their networks for improved competitive positioning and business outcomes in today's smart, always-on and data-hungry world. Our innovative, end-to-end solutions portfolio delivers unparalleled scale, performance, and agility, including core to edge software-centric solutions, cloud-native offerings, leading-edge security and analytics tools, along with IP and optical networking solutions for 5G. Ribbon maintains a keen focus on our commitments to Environmental, Social and Governance (ESG) matters and reports to our stakeholders through this annual Sustainability Report. To learn more about Ribbon, please visit rbbn.com.

Our Values

- **Team:** We work as One Team, advancing together towards common and clear goals.
- **Passion:** We take pride in and celebrate our achievements.
- **Customer:** We strive to be a trusted advisor to our customers by listening to them, anticipating their needs and offering best in class solutions.
- **Innovation (Creativity):** Ribbon's competitive advantage relies on our ability to offer innovative, creative and state-of-the-art technology.

Our Products

Ribbon's industry-leading portfolio of technology products is designed to ensure that calls and data are efficiently routed and securely transmitted over many of the world's largest communications networks today and prepare for the networks of tomorrow. Our offerings fall into two broad categories:



Underpinning everything we value, is the Ribbon concept of TRUE:



Transparency **R**espect **U**npretentious **E**mpowerment

We are open and transparent in everything we do, creating trust among employees, customers, partners, and vendors.

Cloud and Edge

Secure, anywhere access
to real-time communications

A range of cloud-based and hardware solutions that include VoIP (Voice over Internet Protocol) applications and voice calling for collaborating apps, as well as security applications and fraud mitigation through identity assurance for robocalling.

IP Optical Networks

Flexible, secure, efficient and
expandable data transport

A solution portfolio providing cybersecure multilayer optimized IP and optical transport including carrier ethernet for businesses and networks, enabling efficient and flexible expansion of capabilities, including 5G, for service providers, utilities and critical infrastructure users.

For more information about our solutions, please see: <https://ribboncommunications.com/solutions>
For videos about our products, please see: <https://www.youtube.com/c/RibbonCommunications/videos>

Our Customers

Our global telecommunications customers include fixed-line, wireless, cable, internet and service providers. Our enterprise customers include businesses of any size as well as large and distributed enterprises across various sectors with a concentration in government, healthcare and education sectors. We sell to customers via our direct sales team as well as through indirect channels that include resellers, system integrators and service providers. Independent software vendors also partner with Ribbon to source our software solutions and market them through their sales channels. Many of Ribbon's solutions have been certified and deployed by governmental agencies around the world including the U.S. Department of Defense.



Ribbon by the Numbers

\$845 million

Total revenue (2021)

1,000+

Customers

3,600+

Employees

1,000+

Patents

\$195 million

R&D spend (23% of total revenue)

140

Countries

Awards and Recognitions



Named to Newsweek's Most Responsible Companies 2022

ranking 7th among 39 software & telecommunications companies



EcoVadis Silver Sustainability Rating in 2022

placing Ribbon in the top 16% of our peer companies in the Information and Communications Technology sector



Honored in 2022 Lightwave Innovation Reviews

for our Muse Network Planner (MNP) that enables IP Optical network optimization



2021 Award for Excellence in Network Equipment Sustainability

at the Annual TIA QuEST Forum Sustainability Awards that recognize companies for outstanding performance and innovation in sustainability practices which are calculated using the results of TIA's Sustainability Assessor tool

SUSTAINABILITY AT RIBBON

IN THIS SECTION:

- Stakeholder Engagement
- Material Topics
- Sustainability Strategy and Targets



As we progress our sustainability strategy, we are expanding and deepening our engagement on core issues, including at the Board of Directors level, while improving core processes such as data collection, supply chain management and resource efficiency. We believe that an intentional approach to sustainability makes us a better company and member of the community.



Patrick Macken
Executive Vice President and Chief Legal Officer

STAKEHOLDER ENGAGEMENT

At Ribbon, we welcome engagement at all levels of the organization to help us understand the needs of stakeholders and position ourselves to respond effectively.

RIBBON'S KEY STAKEHOLDER GROUPS



- Customers
- Employees
- Suppliers
- Society and Planet



- Capital Markets
- Regulators
- Industry



- Financers
- Communities
- Influencers

During 2021, we engaged with stakeholders in several ways to understand their perspectives and expectations of Ribbon in our rapidly changing world. Examples of engagement throughout the year can be found in the different sections of this report. See also [Our Approach to Stakeholder Engagement](#).

We deepened our engagement with our industry peers through the appointment of Ribbon's President and CEO, Bruce McClelland, to the Board of Directors of the Telecommunications Industry Association (TIA).

I'm very excited to join the TIA Board of Directors and help drive our industry forward. We face both tremendous opportunities and many challenges; TIA and its members are well positioned to provide the global leadership required to capitalize on these opportunities and address the challenges head-on.



Bruce McClelland
President and Chief Executive Officer, Ribbon, and Director, TIA

Stakeholder interest in sustainability

Feedback from our stakeholders in particular, customer and investor groups, indicates a growing interest in sustainable business practice and a demand for greater transparency on different aspects of our business. Many of our major customers are incorporating sustainability requirements as a condition of participation in business tenders, requiring qualification as a customer vendor, or benchmarking sustainability performance as a factor in procurement decisions. In 2021, we responded to more than 73 individual customer questionnaires or requests for information on our sustainability programs and performance, which is more than double the number in 2020 and continues a clear trend of increasing customer interest in sustainability and ethical conduct.



66%

In 2021, 66% of our annual global revenue was influenced by sustainability considerations and requirements from our customers.

92%

of 2021 revenue from Ribbon's top 20 global customers (by spend) was linked to sustainability requirements.

Ribbon brand engagement

In 2021, we conducted a study among more than 150 customers, partners and prospects with the intent of understanding how they perceive Ribbon and their degree of trust in our Company and our products. Key insights from this study were:

67%

of respondents agreed that Ribbon is a brand they can trust

70%

of respondents agreed that Ribbon offers reliable products and services

77%

of customers confirmed they are likely to increase business with Ribbon next year

I was extremely pleased to see that Ribbon ranked relatively high on brand trust, reliability of products, pricing, and transparency in communication with customers. We pride ourselves on our solutions and services and it is great to see that our customers trust us and believe that we are honest. These also happen to be key pillars of our core values – so it is very encouraging that these values are resonating with our customers.



Bitia Milanian
Senior Vice President, Global Marketing



MATERIAL TOPICS

As part of a comprehensive materiality assessment in 2021, we defined the sustainability material topics for our global Ribbon operations. The results of the materiality assessment were approved by our Executive Team and supported by our Board of Directors. For further details, including definitions of material topics, see [Our Approach to Materiality](#).

Ribbon's Top 15 Material Sustainability Topics

Business Integrity

Business ethics

Responsible supply chain management

Business continuity & recovery

Secure and Inclusive Technology

Data privacy management

Cybersecurity & information security

Access to connectivity

Digital inclusion

Low Carbon Economy

GHG emissions & reductions

Sustainable products

Advanced technologies & innovations

Digital transformation

Future-Fit Workforce

Diversity, equity and inclusion

Employee engagement

Occupational health & safety

Employee training and development

See also [Our Approach to Materiality](#) for details of our process and topic definitions.



SUSTAINABILITY STRATEGY AND TARGETS

We aspire to be proactive about driving sustainability and further embedding sustainable practices throughout our business, in line with the expectations of stakeholders. Informed by stakeholder input in our materiality assessment, our four-pillar sustainability strategy and targets help drive our performance. Our strategy is also aligned with critical global issues addressed by the United Nations Sustainable Development Goals (SDGs).

Strategy	Trusted Technology for People and Planet			
Pillars	Business Integrity	Secure and Inclusive Technology	Low Carbon Economy	Future-Fit Workforce
Long-term Goal	Be a positive and trusted force in business through ethical conduct in all that we do	Be the provider of choice for safe and secure network and communications technology	Contribute to decarbonizing the global economy through innovative technologies and resource efficiency	Empower and engage a diverse workforce to deliver trusted technology for a low carbon economy
Alignment with the UN SDGs	 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	 13 CLIMATE ACTION	 8 DECENT WORK AND ECONOMIC GROWTH

Our Three by Thirty Sustainability Targets

Progress in 2021

Comment

Climate Change

Reduce direct carbon emissions by 30% by 2030 from a base year of 2018 (Scope 1+2 CO₂e)

10% reduction achieved in absolute carbon emissions in 2021 compared to 2018.

Our robust Optimization Program at global sites continues to help reduce our carbon footprint.

Diversity & Inclusion

Increase women in management to 30% of all management roles to be held by women by 2025

Women in management roles increased from 16% in 2020 to 18% in 2021.

We continue to implement new training and mentoring programs to enhance our progress to meeting this target.

Supply Chain

Achieve 30% of our Tier 1 suppliers audited with zero major non-conformances against Ribbon's Supplier Audit Protocol

Assessment of supply chain completed and framework for ESG risk assessment developed.

Initial engagement with priority suppliers completed and risk-prioritized supplier audit plan for 2022 in place.

We are 83% complete on our assessment of our priority suppliers, and are working to address the remaining 17% before year end (2022).

SOLUTIONS TO HELP CUSTOMERS GROW

IN THIS SECTION:

- Leading Technology for Always-On Connectivity
- Accelerating Network Transformation
- Advancing Network Security
- Bridging the Digital Divide
- Focusing on Quality and Service

We make huge efforts to anticipate and meet the diverse needs of our customers around the world. In the rapidly evolving global telecommunications landscape, connectivity is everything. Customers need the capabilities to grow their networks in ever innovative and cost-effective ways. In today's cloud-enabled world, this requires bigger, faster and more reliable networks that are easily installed, expanded and upgraded as technology improves.



Steven Bruny
Executive Vice President, Sales, Americas



LEADING TECHNOLOGY FOR ALWAYS-ON CONNECTIVITY

Providing customers with best-in-class solutions to meet their communications technology and network needs is a core value at Ribbon. Customers trust us to solve their most challenging communications requirements, enabling people and devices to connect anytime, anywhere. We deploy the most advanced technology available to help customers push the boundaries of what's possible today to deliver a better tomorrow for people, business, communities, cities and countries. Whether the focus is on secure, anywhere access to real-time communications (through our Cloud & Edge solutions) or flexible, secure, efficient and expandable data transport (through our IP Optical Networks solutions), we believe Ribbon delivers beyond expectation.



\$195M

In 2021, our investment in R&D amounted to \$195 million (23% of total revenue).

Our technology helps customers to:

- **Offer connectivity solutions that improve lives** with cloud-based broadband, providing reliable platforms for remote working, meeting and conferencing, e-commerce, telehealth, virtual learning and education, on-demand entertainment and more.

- **Achieve the highest possible levels of security** to prevent fraudulent use of phone and internet services to protect users.
- **Minimize their carbon footprint** through eliminating physical installations and providing cloud-based licenses and upgrades that build on existing platforms without the need for equipment replacement.
- **Provide end-users with multiple, flexible service options** to meet diverse needs in different markets.
- **Comply with regulations in local markets**, where applicable, that prescribe technology or energy efficiency frameworks.

We place great emphasis on innovation and tailor our investments to meet the requirements of our customers and markets. Ribbon continues to invest in developing trusted solutions, addressing both new technology needs while reducing the environmental impacts of our products.

Enabling 5G

5G is the fifth generation of wireless mobile standard of broadband technology, reaching potential speeds of a minimum 10,000 Mbps with less than one millisecond latency—an entirely new scale of performance and speed, enabling transformation in the way we connect, work, consume, enjoy media and live our lives.

5G is probably the most transformational force I've encountered in my decades-long career in the tech and telecom industries because it has the potential to change every experience given the faster speeds, unimagined use cases and numerous promising opportunities to push the envelope and do things in entirely new ways.



Bitá Milanian
Senior Vice President, Global Marketing

- 5G promises to deliver much more than higher data rates and more capacity. It can enable new kinds of ultra-reliable, mission-critical services. It can enable doctors to remotely control medical procedures and see their patients online in service of better care for lower cost.
- 5G can more effectively connect virtually everything, ranging from sensors that can dramatically improve environmental initiatives to drones and robots that can provide public safety and security.
- 5G can make remote learning more experiential with high-definition video collaboration and learning through virtual reality, augmented reality and extended reality.

However, 5G also brings new challenges for network providers, specifically regarding network optimization and latency issues in a 5G environment. Bandwidth required by 5G is expected to increase more than 10-fold versus 4G, and new traffic models will be required. Billions of IoT devices will be connected to the networks and more users than ever before will rely on seamless connectivity across networks and devices. With 5G deployment already rolling out in several countries, Ribbon is at the center of this technology transformation. With advanced solutions such as network virtualization, network slicing, open networks and multilayer network optimization, Ribbon is a key partner in creating our 5G future.

In 2021, Rogers Communications, a leading North American service provider, was one of the first companies to select our advanced IP Optical Networks solution to upgrade its transport network to support multiple 400 Gigabits-per-second (400G) connections for increased capacity across its national footprint. This deployment enabled Rogers to help future-proof their network and extend their leadership in 5G services deployment across Canada.

Facilitating Hybrid Working

The COVID-19 pandemic tested the strength of telecommunications networks, accelerating almost overnight the use of remote platforms in almost every country in the world. New hybrid working environments have been adopted by companies virtually everywhere. Together with our business partners around the world, we are delivering our voice, security and analytics solutions to national and multi-national organizations, allowing them to migrate legacy assets gradually and seamlessly to secure, cloud-based communications technology.

Recent examples include:

- Ribbon and Infosys, a global leader in next-generation digital services and consulting, are collaborating to deliver an integrated IT Managed Services offering to global enterprises. The integrated solution, which enables global enterprises to seamlessly migrate from legacy switchboard communications systems to Microsoft Teams Phone System Direct Routing, has already been deployed globally by one of the world's largest automobile brands.
- Ribbon broadened its collaboration with TD Synnex, a Fortune 200 provider of services for the technology industry, to expand the use of our Cloud and Edge portfolio in the Caribbean and Latin America regions. The full portfolio includes Ribbon's Microsoft-certified SBCs, analytics, media gateways, policy and routing capabilities and an advanced application server platform.

In 2021, we delivered more than 700 days of training both in person and virtually to support our customers with knowledge and capabilities to enhance their use of our products.

Hybrid work is completely changing the basic tenets of business communications. Across the globe, Ribbon is helping businesses facilitate the transition to hybrid work environments by making it easier for organizations to securely migrate to cloud-based communications across all industries, especially in regulated sectors like financial services and healthcare.



Dave Hogan
Vice President Growth Segments, Ribbon

Reducing the barriers for business to use Microsoft Teams at an enterprise level, with immediate, automated configuration of potentially thousands of users is a tremendous advantage for businesses, especially small businesses, and for remote working. A unified telecoms solution offers significant advantages at relatively modest cost to the business. Our partnership with Microsoft Teams is a perfect example of a collaborative approach that benefits developers, providers and users.



Mark Cobbold
Vice President, Product Management

Helping Customers Comply with Carbon Legislation

We continue to implement initiatives to help our customers comply with environmental legislation, in particular, emissions reductions, which are increasingly being adopted at the municipal level, in addition to state or national levels in different countries. For example, the City of New York's Local Law 97 (LL97) caps carbon emissions from approximately 50,000 residential and commercial properties in the city with an aim to reduce carbon emissions by up to 80% by 2050. Ribbon, a critical supplier to communications technology and Internet providers in the city, continues to engage collaboratively with customers to modernize networks, replace network switches and support lower emissions communications infrastructures to meet legislation deadlines. We are engaged with many customers around the world with similar carbon efficiency objectives.

Driving Efficiencies for Enterprise Users

Ribbon works with many partners to deliver our products and services to our customers around the world, as well as facilitate the deployment of our services on established enterprise-focused platforms such as Microsoft Teams. In this way, we are able to provide a broader range of users with flexible, efficient, secure and reliable connectivity for office-based or remote working. In early 2022, for example, Ribbon joined Microsoft's new Operator Connect Accelerator for Microsoft Teams as an ecosystem partner. The Operator Connect Accelerator enables service providers to provide tools for faster onboarding of the Operator Connect facility, which connects multiple enterprise users to Microsoft Teams. Our software as a service (SaaS) solution, Ribbon Connect for Operator Connect, offers service providers pre-built solutions to help them provide Operator Connect services faster.

ACCELERATING NETWORK TRANSFORMATION

Thousands of service providers and enterprises around the world depend on our business-driven network transformation solutions. As communications technology demand increases, legacy technology based on embedded transceiver modules for optical transport are neither cost nor energy efficient in today's environment. Our power-cost optimized interoperable solutions use high density technology, which means that the networks can deliver significantly more transport using fewer resources than ever before. This enables our customers to minimize the carbon footprint of their operations and save on energy costs while doing so. In the current period, Ribbon is progressing more than 15 global network modernization initiatives for large customers, alongside our regional and national projects in more than 140 countries.

Network optimization means creating networks that are hugely more efficient than at any time in the past. The key to optimization is multilayer—designing efficiency into each layer with higher capacity possibilities coupled with lower energy use per bit. Recent studies indicate up to 30% in energy savings. Power consumption is a critical element of network growth for our customers.



Sam Bucci
Executive Vice President & General Manager, IP Optical Networks Business Unit

Enhancing Network Agility

In 2021, Ribbon introduced IP Wave, our framework for IP Optical networking solutions, that enables service providers to address major network and operational challenges by building, deploying, managing and future-proofing their multilayer data and optical networks. IP Wave solutions fuse optimized hardware and automation software within an open architecture to give service providers the agility they need to rapidly create and deliver innovative services. Our offering enables high-bandwidth optical transport everywhere, multilayer integration and open architectures, providing complete network flexibility at an overall lower cost per bit and lower power consumption.

As networks become increasingly more complex, the operational paradigm has to shift to more open-architecture based solutions that help service providers automate and optimize their networks to drive value from their existing investments, while giving them the ability and agility to quickly deliver new revenue-generating services. That's exactly what IP Wave delivers: Automation; Optimization and Openness.



Jonathan Homa
Senior Director, Portfolio Marketing

Some recent deployments by Ribbon include:

- High-capacity fiber optic network in Namibia:** NamPower, Namibia's largest power utility, deployed IP Optical Networks portfolio for its "The GridOnline" project. The GridOnline provides a comprehensive backbone for operators across the country to leverage high-capacity bandwidth reliably, both domestically and internationally. Fully implemented in 2021, the network combines Ribbon's Apollo Optical Transport solutions with our Neptune IP over DWDM. Ribbon's Muse interactive network planning tool enables NamPower to carry out offline network planning and simulations to optimize use of resources.
- Virtualizing voice services in Turkey:** We partnered with Odine, a virtualized infrastructure and solution integrator, to enable next-generation voice interconnect services for the mobile and fixed networks of Turkish telecommunication services provider Turkcell. The comprehensive solution, deployed in Turkcell's core network, includes Ribbon's SBC and routing solutions in a best in class, virtualized Element Management System (EMS) helping increase Turkcell's agility and reduce capital and operational expenditure over the solution lifecycle, benefiting Turkcell's user base in 81 cities across four countries.
- Upgrading traffic capacity in Israel:** Ribbon is supporting Bezeq, Israel's largest telecommunications service provider, to carry increasing IP traffic loads via a new 400G optical backbone network, leveraging Ribbon's Apollo family of optical transport and switching platforms that can be configured dynamically to meet growing and shifting traffic patterns and lower cost per bit. Our advanced solution offers Bezeq immediate readiness for 400G wavelengths, high scalability and cost efficiencies, while enabling Bezeq's consumer, business and wireless customers nationwide to benefit from next-generation connectivity.

Virtualization and cloudification of existing services is a foundational step in our digitalization journey and also helps us lower costs and simplify operations through centralized management while enabling real-time resource allocation. We selected Ribbon and Odine based on their domain expertise, innovation, and disruptive solutions.



Dr. Gediz Sezgin
Chief Technology Officer, Turkcell

Supporting Critical Infrastructure

Ribbon has a long history of supporting critical infrastructure such as power, water, oil and gas utilities and rail networks. Utilities are under increasing pressure to improve their services, reduce carbon emissions and increase safety. This can be achieved through digitized networks that support IoT (Internet of Things) devices to achieve better control of network resources and remote assets in real-time. The communications network is fundamental to transporting digitized data efficiently, while continuing to support mission-critical services (like supervisory control and data acquisition (SCADA) systems), and the monitoring and control of Intelligent Electronic Devices (IEDs). In these cases, the reliability of our networks is paramount, as they help protect and often save lives.

Rail network communications in France

In early 2022, Ribbon was selected, together with longtime partner Kontron Transportation, to upgrade the French national railway SNCF's communications network. The project involves replacing obsolete WDM (Wavelength Division Multiplexing) equipment in the Paris region with Ribbon's next-generation WDM, including the latest in Optical Transport Networking (OTN) switching technology. The new network offers SNCF benefits including increased scalability to handle growing network demands; flexibility in routing services across the network; and the ability to guarantee highly flexible, secure operations communications and services. The upgrade will help SNCF further enhance its network performance, capacity and reliability.

Power utility Internet service in the U.S.

In 2021, The Federal Communications Commission awarded Tri-Co Connections, the broadband Internet subsidiary of Tri-County Rural Electric Cooperative, \$1.1 million in annual support for 10 years to bring fiber-optic internet service to portions of Potter, Tioga, Bradford and Lycoming counties across north-central Pennsylvania. To help build this new connectivity offering, Ribbon was selected to provide a next generation Ethernet Virtual Private Network (EVPN) to support both critical infrastructure (power utility) and telecommunications services.

Transforming Education Networks

For many years, Ribbon has engaged with national Research and Education Networks (RENs) to provide the most advanced technology to support multiuser connectivity for national academic network, facilitating collaboration and complex research and flexible usage for hundreds of thousands of users in each network. We are now seeing a new wave of demand from RENs to further upgrade and expand their capabilities by adding router capacity and higher speed 400G service.

Ribbon's recent REN deployments include

- **Transforming a REN in Trieste, Italy**

The University of Trieste is a public research university in Northern Italy, serving more than 16,000 students. It needed to replace its existing REN (LightNet) that could no longer scale to meet the ever-increasing demands of users, in particular to support distributed high-performance, computing-based research. To deliver a cost-efficient and easy to manage solution, Ribbon's three-year, fully turnkey open project replaced existing legacy network infrastructure deployed in the city of Trieste and the regional extension of the network connecting universities and research centers. Ribbon's unique REN solution employs our proprietary network architecture that has proved highly successful across RENs in Europe.

- **Upgrading REN capabilities in Holland**

SURFnet, the Dutch National Research and Education Network, serving over 190 institutions and 1 million users, sought to expand network performance and reliability for its connected institutions while introducing new capabilities to the network for better efficiency. Ribbon upgraded SURFnet's optical backbone, installing more than 11,000 km of fiber to provide enough 400G bandwidth capacity, optical routing flexibility, high service availability and optical encryption to support current users and many more for years to come.

ADVANCING NETWORK SECURITY

Enhancing communications security is a fundamental differentiator for Ribbon. We understand that our customers seek the best protection available for their networks and their users to combat the multitude of fraudulent interventions that continue to increase as voice over cloud becomes more prevalent. Ribbon offers interoperable solutions for customers to protect their users from malicious attacks, nuisance and robocalls, as well as to help them comply with STIR/SHAKEN legislation that service providers in North America must implement.

STIR/SHAKEN is a framework of interconnected standards that provides phone call security. The goal of STIR/SHAKEN is to restore end users' confidence and trust in receiving phone calls by requiring service providers to authenticate, sign and verify caller identity to protect users from malicious attacks, nuisance and robocalls.

Ribbon Call Trust™ portfolio delivers advanced identity assurance, validates phone calls and combats robocalls. Call Trust integrates Ribbon's market-leading security, call control, routing and analytics solutions with machine learning modeling to deliver advanced protection against robocalls and fraud attacks, while ensuring calls are from legitimate sources. The Ribbon Identity Hub is a new solution that serves as the central processing point for identity data and machine learning reputation assessment.

In Europe, demand for enhanced phone call security is also accelerating. For example, in France, new legislation requires operators to implement anti-fraud protocol by mid-2023. Ribbon is pleased to have been selected by most of the largest carriers in France to implement our proven Call Trust technology.

Protecting Against Distributed Denial of Service (DDoS) Attacks

Distributed denial of service (DDoS) attacks continue to be a major issue for communications service providers, putting critical systems at risk, undercutting service level agreements and causing significant reputational damage. In 2021, there were 9.7 million DDoS attacks globally (netscout.com), crippling networks and adding significant expense to correct. Ribbon enables customers to achieve strong protection against DDoS attacks through our session border controllers (SBCs) supported by a comprehensive set of security capabilities that enable our customers to detect and mitigate the effects of a DDoS attack on their critical VoIP services.

In 2021, in North America, Ribbon's STIR/SHAKEN-compliant Call Trust technology was deployed by several customers, protecting users in millions of phone calls every day.

Bridging the Digital Divide

The digital divide is the gap between those who have access to the Internet, communications technology and digital literacy training, and those who do not. While the digital divide is prevalent across the globe, it is also a challenge in the U.S., where approximately 19 million Americans—6% of the population—lack access to fixed broadband service at threshold speeds. In rural areas, nearly 14.5 million people (25% of the rural population) lack access to broadband. In tribal areas, nearly one-third of the population lacks access¹. With the acceleration of remote and hybrid working over the past two years due to the COVID-19 pandemic, bridging the digital divide has become a priority everywhere.

Ribbon has supported service providers in rural communities across America for decades. We are committed to this important mission and encourage all to join forces to—once and for all—level the playing field and fuel economic growth and opportunities while bringing vital services to Americans regardless of where they happen to live.



Elizabeth Page
U.S. Rural Markets Director



For Ribbon, expanding access to broadband has been a priority for many years, especially in rural America. We have developed strong relations with independent local service providers who bring broadband to communities that are often overlooked by larger providers that primarily target large urban user populations. We maintain an ongoing relationship with the National Tribal Telecommunications Association (NTTA) and offer a full suite of advanced services to meet Tribal needs.

¹ Eighth Broadband Progress Report, Federal Communications Commission. <https://www.fcc.gov/reports-research/reports/broadband-progress-reports/eighth-broadband-progress-report>

Recent Ribbon deployments in rural America and tribal communities include:

- A New Network in Southern New Mexico:**

Ribbon is supporting Mescalero Apache Telecom, Inc. (MATI) to modernize its legacy network to support dramatically increased online traffic and next-generation services for hundreds of subscriber households across the Mescalero Apache Reservation. MATI is making a significant investment in local infrastructure to bring state of the art offerings to their service area. The new network includes Ribbon's multilayer service platforms deployed across a 100G backbone. It will serve as the central transport core for local businesses as well as MATI's residential subscribers, completely replacing existing platforms and designed for future scalability.

- Next Generation Connectivity in South Dakota:**

The Cheyenne River Sioux Tribe Telephone Authority (CRSTA) selected Ribbon to bring the latest communications technology and service to its Tribal lands. CRSTA provides modern communications services over approximately 1,500 miles of fiber optic cables reaching 20 communities spread over 2.8 million acres of land. Home to four Tribes, the Cheyenne River Sioux Reservation needed to modernize its communications infrastructure to support today's rapidly growing online traffic and provide all residents of the Reservation with equitable access to advanced technology. Our multilayer service platforms will deploy across a 100G backbone to enable current and future connectivity and enhanced communications.

- Broadband Expansion in Rural Communities:**

Colorado-based Viaero Wireless and Viaero Fiber Networks provide advanced communications services to underserved rural communities in Colorado, Kansas, Nebraska and Wyoming. In 2021, Viaero selected Ribbon's suite of integrated IP and DWDM solutions to upgrade its existing fragmented network to provide extra fiber optical capacity and backhaul for mobile networks. The new Ribbon solution at Viaero carries all mission critical services including mobile backhaul, 911 services, Internet and other data communications flows in a single, highly efficient, multilayer integrated network. Dozens of rural communities and thousands of residential, mobile and business subscribers can now benefit from this advanced technology.



Deploying a state-of-the-art telecommunications network on Tribal lands is critical to the long term viability of keeping Tribes at par with the rest of the world. Ribbon continues to bring this kind of technology to members of the National Tribal Telecommunications Association (NTTA) and Indian Country in general. NTTA's mission is to be the national advocate for telecommunications and broadband service on behalf of its member companies and to provide guidance and assistance to members who are working to provide modern telecommunications services to Tribal lands. Ribbon has been a partner to help make that dream happen.



Godfrey Enjady

General Manager, Mescalero Apache Telecom, Inc. and President, NTTA

We are committed to delivering reliable, affordable services that keep our customers connected regardless of where they are within the world. Enhancing our fiber transport allows us to dramatically increase our network capacity and expand our offerings and services.



Ron Christensen

President, Viaero Fiber Networks

FOCUSING ON QUALITY AND SERVICE

Ribbon customers rely on our trusted solutions to deliver the functionality we promise, quality they can depend on and compliance with all applicable regulations.



Product Quality, Compliance and Certifications

Ribbon is committed to complying with applicable environmental legislation and regulations in all countries. A selection of our main regulatory obligations includes:

- Restriction of Hazardous Substances (RoHS/ RoHS II/RoHS 3 Directives) in Europe and RoHS in China
- Waste Electrical and Electronic Equipment (WEEE) directive in Europe
- CE Marking designation – indicating compliance with EU legislation
- Batteries Directive – governing composition and disposal
- Packaging Directive - governing composition and disposal
- International Standards for Phytosanitary Measures No. 15 (ISPM 15)
- IEC 62368-1 Safety Standards for ICT and AV Equipment

In 2021, we took several steps to improve our compliance procedures including a comprehensive review for all new regulations on a country-by-country basis, establishing a legal prime point of contact with environmental knowledge, and improved our reporting procedures. Further, we established bi-weekly reviews with our external environmental compliance provider, and quarterly shipment reviews to ensure compliance in each market.

We also voluntarily certify our key sites to several quality management standards and aim to apply the same standards to operations at non-certified sites.

Our Certifications:

- **ISO 9001:2015:** Quality Management System (QMS)
- **TL 9000: R6.3/5.7:** Quality Management System standard designed by the TIA / QuEST Forum
- **SI 10000:2013:** Social Responsibility (Israeli Standard) covering our sites in Israel
- **ISO 14001:2015:** Environmental Management System (EMS)
- **ISO 17025:2015:** Laboratory Testing Competency
- **ISO 22301:2019:** Business Continuity Management System (BCMS)
- **ISO 27001:2013:** Information Security Management System (ISMS)
- **ISO 45001:2018:** Safety Management System

Service and Operations Quality

We constantly monitor the quality of our service to customers against our quality standards and service KPIs tailored to our different business segments. Our sites regularly undergo external recertification audits. In 2021, five of our Cloud and Edge sites in four countries were externally audited over a total number of 15 auditor days.

Service quality: We measure the quality of our service to customers against KPIs including on-time delivery as promised, lead-time for delivery, complete shipments and quality of product on arrival, measuring our performance against industry standards and internal targets to drive improvement of the customer experience. In our Cloud and Edge business in 2021, our aggregated customer experience score across a range of KPIs was 83.3%.

Customer satisfaction: Customers are requested to complete satisfaction surveys after each service event. In our IP Optical Networks operations in 2021, we received approximately 220 customer responses that demonstrated customer satisfaction at a level of between 4.5 and 4.7 on a scale of 5. In our Cloud and Edge segment, customer satisfaction ranged between 9.12 and 9.43 on a scale of 10, ranking higher than industry averages noted in recent Technology & Services Industry Association (TSIA) Transactional Surveys.

ENVIRONMENTAL STEWARDSHIP

IN THIS SECTION:

- Climate Change
- Resource Efficiency in Our Supply Chain
- Product Sustainability

These days, no-one can fail to understand that our planet may face disaster if human-induced impacts on the environment are not addressed. In our business, customers are increasingly demanding carbon emission solutions throughout their supply chains. As a supplier to most of the major telecommunications and network services providers around the world, Ribbon takes this seriously. Through power-efficient innovation and streamlined operations, we are playing a role in future-proofing our industry.



Sam Bucci
Executive Vice President, Sales, APAC & EMEA

CLIMATE CHANGE

The information technology and telecommunications (ICT) sector is an enabler of a low-carbon economy. In a 2019 report by The Carbon Trust, *"The Enablement Effect: The impact of mobile communications technologies on carbon emission reductions,"* it is noted that the level of avoided emissions enabled by mobile communications technologies is 10 times greater than the carbon footprint of the ICT industry. In other words, ICT generates a tenfold positive carbon impact. As a significant player in this industry, the benefits of our products

and services are enabling our customer base to be more climate resilient and reduce the climate impacts of doing business.

Beyond our impact in the industry, we monitor and aim to increase the efficiency of our in-house resource use, by setting a climate target for emissions reductions by 2030, and by maintaining a program of energy and resource efficiency throughout our operations.

Our Climate Target

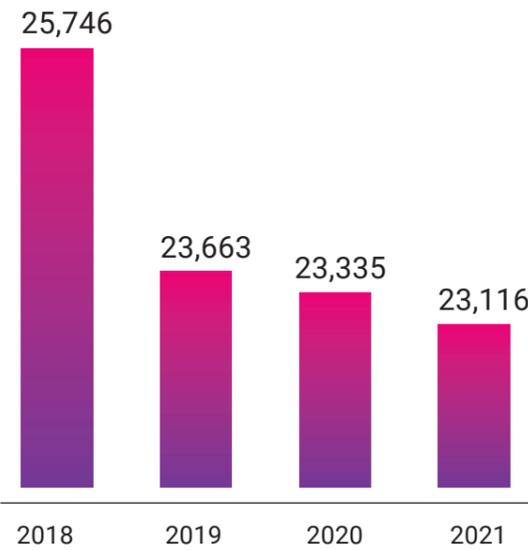
Target	Performance	Comment
Reduce direct carbon emissions by 30% by 2030 from a base year of 2018 (Scope 1+2 CO ₂ e)	10% reduction Scope 1+2 CO ₂ e emissions compared to 2018	Our robust Optimization Program at global sites continues to help reduce our carbon footprint.

39%

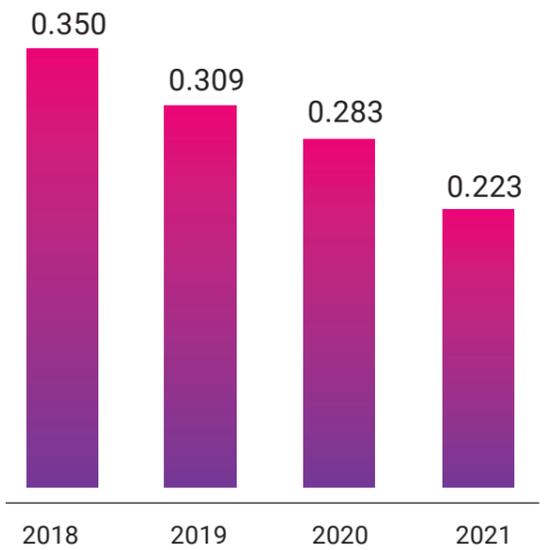
reduction in GHG emissions per million \$ revenue

In 2021, we achieved an absolute reduction of 10% GHG emissions versus our base year of 2018. However, on a revenue basis, this represents a **39% reduction in GHG emissions per million \$ revenue**, showing that as our business grows, we are becoming even more carbon efficient. On a square meter basis, we have reduced GHG emissions by 36%.

TOTAL SCOPE 1+2 GHG EMISSIONS (METRIC TONS CO₂e)



TOTAL SCOPE 1+2 GHG EMISSIONS INTENSITY (METRIC TONS CO₂e PER M²)



Electricity accounts for 85% of our total energy consumption worldwide. We will accelerate opportunities to reduce the impact of our electricity use in the following ways:

- Maintain energy efficiency measures supported by energy audits and implementation of identified potential energy savings.
- Complete program of conversion to LED lighting at all our sites—currently only one site globally has yet to complete this conversion, and this is scheduled within the next 12 months.
- Transition to renewable electricity where feasible at sites operated by Ribbon, including exploring, where possible, collaborative arrangements with owners of our leased sites.
- Continue to optimize our global site operations by resizing and relocating sites to be closer to customers and reduce surplus space.
- Consider application of an internal carbon pricing mechanism as a basis for understanding relative carbon performance of our sites and decision making on operational changes.
- Research nature-based solutions as a means to achieve reduced emissions when all other options to reduce electricity consumption and other carbon savings are complete.

For more about our approach to climate change and environmental efficiencies, see our [Environmental Policy](#).

OPTIMIZATION PROGRAM AT GLOBAL SITES

Ribbon continues to occupy 70 facilities around the world. Some locations are dedicated to sales and customer services, while a significant number of sites support complex technical operations, deployed to progress three main types of activity:

- R&D and Customer Support Laboratories for software design & verification, equipment testing and certification
- Application centers for Proof of Concept and Interoperability testing of customer solutions
- Data centers for running our internal operations

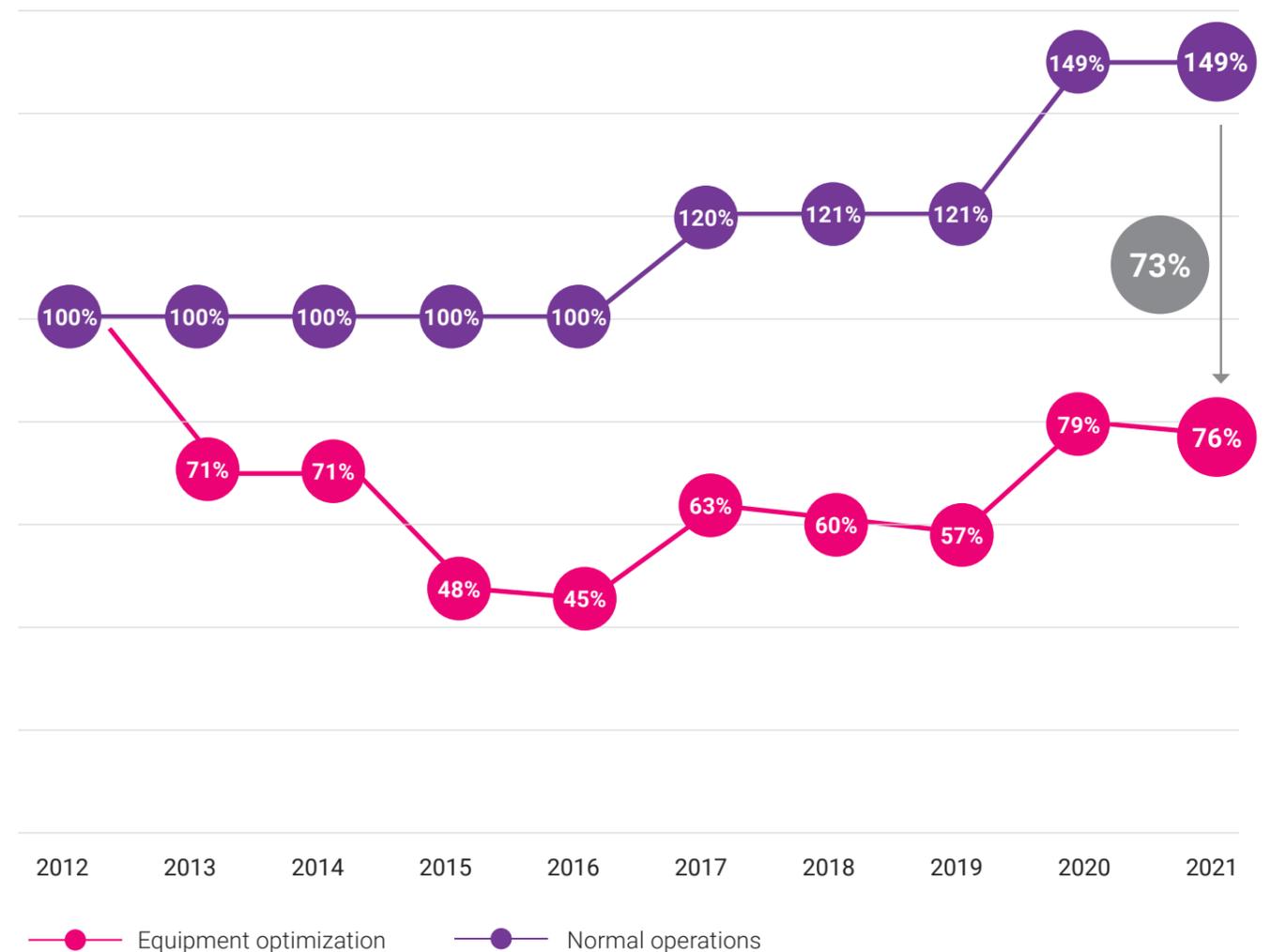
These facilities house operational telecommunications equipment in the form of server racks, cabinets and electronic equipment with supporting cables and components. Each site requires a steady supply of electricity to power the equipment and associated HVAC systems to maintain a climate-controlled operational environment. Over time, the requirements of individual sites may evolve, depending upon product development demands or the volume of customer equipment required for interoperability testing. Similarly, efficiency opportunities arise through the transfer of data storage to the cloud to reduce physical hardware needs and processing, and product development that reduces equipment size.

For the past several years, Ribbon has augmented the number of operational sites and necessary laboratory equipment to meet product development requirements, as well as through acquisition of new technologies. Through these changes, we have succeeded in minimizing our overall site space and reducing global energy

consumption while supporting business development and meeting customer needs. Wherever possible, we consolidate equipment into fewer sites, partly to accommodate testing in proximity to our customers for ease of collaboration, and partly to make best use of available space. At the same time, we are constantly upgrading old equipment with new power-efficient options, such as replacing aging HVAC systems, and reducing overall equipment inventory.

By the end of 2021, we reduced the number of equipment racks in our laboratories and data centers by 24% since the start of our program in 2012, including a 3% reduction in 2021 alone. Conversely, without these optimization efforts, the number of equipment racks and their associated power consumption would have increased by 49% over the same period of time.

RIBBON'S EQUIPMENT OPTIMIZATION PROGRAM



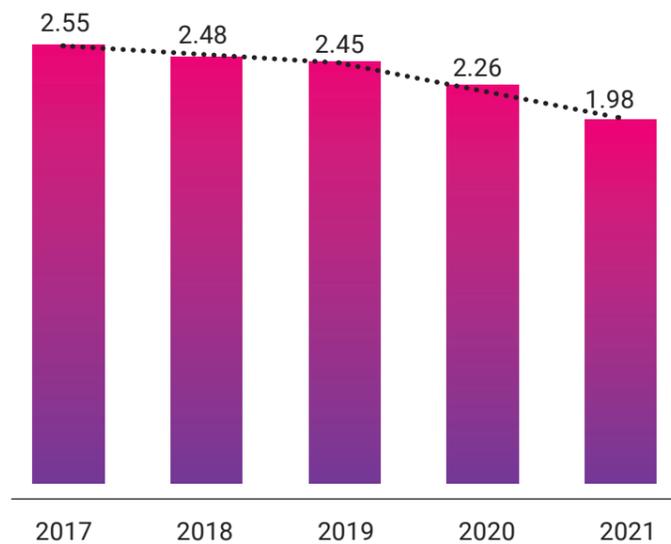
73%

The cumulative effect of our Optimization Program has been a net reduction of 73% of our equipment and laboratory space since 2012.

22%

Our Optimization Program has contributed to a reduction in Ribbon’s global electricity consumption of 22% per sq.m. over the past five years.

ELECTRICITY CONSUMPTION (GJ/M²)



With the vast majority of our energy consumption going to support our laboratories and data centers, a carefully planned and executed program of equipment and space optimization has enabled us to support business growth while reducing electricity needs. In 2022 and beyond, we expect to deliver further energy savings as our Optimization Program continues.

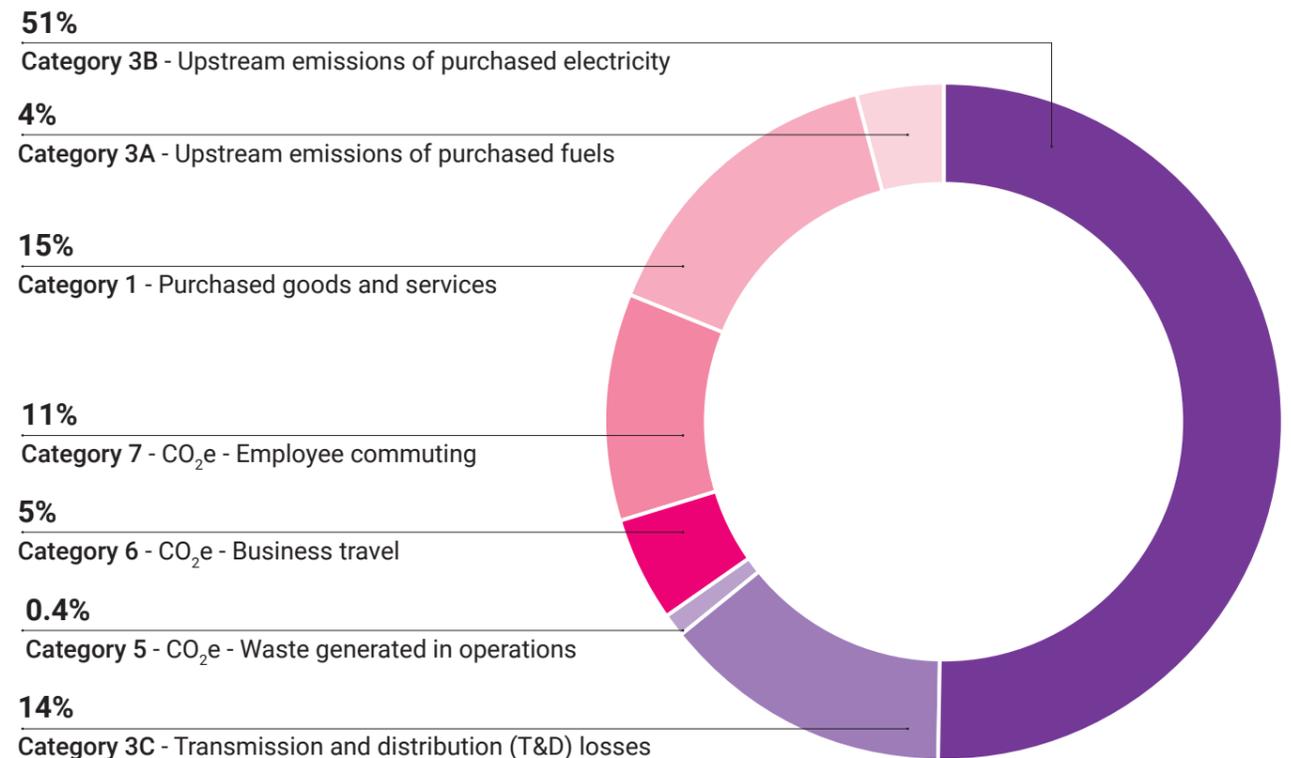


Doug Carles
Vice President, Global Real Estate and Facilities

Scope 3 Emissions

In 2021, we expanded our Scope 3 measurement to include seven Scope 3 reporting categories, including business travel (reported since 2017) and employee commuting (reported for the first time in 2020). Overall, in 2021, our Scope 3 emissions amounted to 12,234 metric tons of CO₂e.

GLOBAL SCOPE 3 EMISSIONS 2021



Note: Does not sum to 100% due to rounding.

The most significant element of our Scope 3 emissions is the upstream emissions of purchased electricity accounting for 51% of the overall Scope. As we continue to focus on a reduction in electricity consumption in line with our climate change target, these upstream emissions will reduce correspondingly. The next major Scope 3 element reflects emissions from purchased goods and services. Our reporting in this category includes 98% of our contract manufactured supply. We engaged explicitly with our four contract

manufacturers this year to obtain reports of Scope 2 (electricity) emissions relating to our manufacturing (see section: [Responsible Supply Chain](#) for further details). Using 2021 as a base line, we will work with our contract manufacturers to review opportunities for reducing emissions in the future. Additionally, in 2022, we are working to review Scope 3 emissions generated through logistics and transportation of our products, and hope to include this data in our next report.

RESOURCE EFFICIENCY IN OUR SUPPLY CHAIN

We aim to deliver resource efficiency throughout our entire product lifecycle, starting with identification of requirements for our development teams through to responsible end-of-life management of our products. Our hardware products are designed for long life use, including features for reparability of components and spare part availability. We expand the usability of our hardware by adding software components. Where possible, at end of use, we redeploy hardware from customers back to our sites for reuse by our R&D, Verification and Operations teams.

Environment Management System

We maintain an Environment Management System (EMS) in accordance with ISO 14001:2015 Environmental Management Standard. In 2021, all our primary facilities were certified to this standard, with the exception of our Bengaluru, India facility, which is scheduled to complete certification in 2023 and Hangzhou, China, which is under review. Overall, more than 80% of our facilities by square meters are ISO 14001 certified.

In line with our EMS requirements, we regularly conduct internal audits across key environmental functional areas and environmental compliance. In 2021, we completed 12 internal audits with zero critical findings and a single minor nonconformance, which has now been addressed. Our audit results demonstrated good evidence of continual improvement in our processes.

Waste management

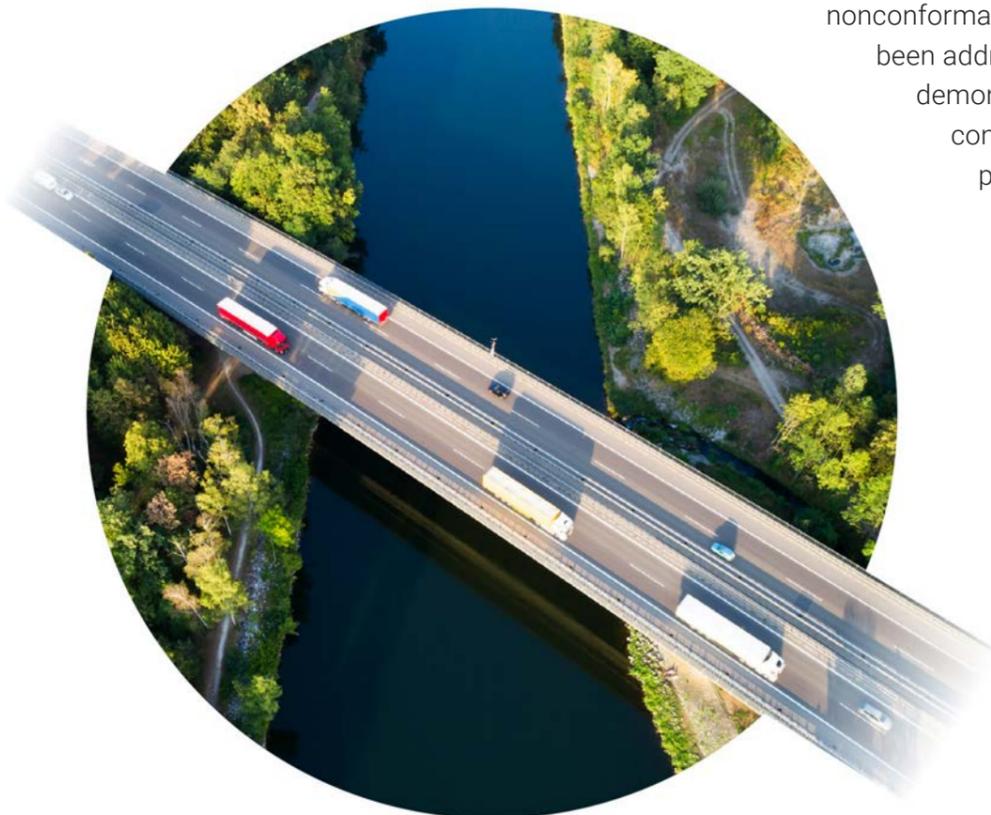
We generate modest amounts of waste through our operations, most of which is non-hazardous and recyclable, such as paper and cardboard used for packaging and electronic waste from our laboratory operations. We aim to minimize internal waste through material reuse, recovery or repurpose. For example, we reuse packaging wherever possible and aim to procure packaging that is sustainably sourced and recyclable. Examples of action taken to minimize or sustainably manage waste in 2021 include:

- Elimination of plastic bubble wrap, enabled through the procurement of shredders to enable use of cardboard shreds for packaging bulk.
- Clearance of 200 metric tons of electronic waste from our global laboratories which we sent for recycling.
- Reinforced awareness for employees through training on waste reduction and segregation and new signage at our facilities.
- Ongoing refurbishing and internal reuse of IT hardware.
- Issued a new packaging policy to our suppliers to drive use of sustainable packaging for all material procured in our global supply chain.

Optimizing Logistics

We aim to minimize the environmental impact of our logistics by reducing the travel distance of shipped components between warehouse locations and customer premises and increasing land rather than air shipments. We collaborate with our customers and sales teams for accurate and early forecasting for effective planning of optimal shipment loads. Wherever possible, we aim to source components locally, in the country of the assembly operations, to minimize our inventory and carbon footprint through optimized logistics.

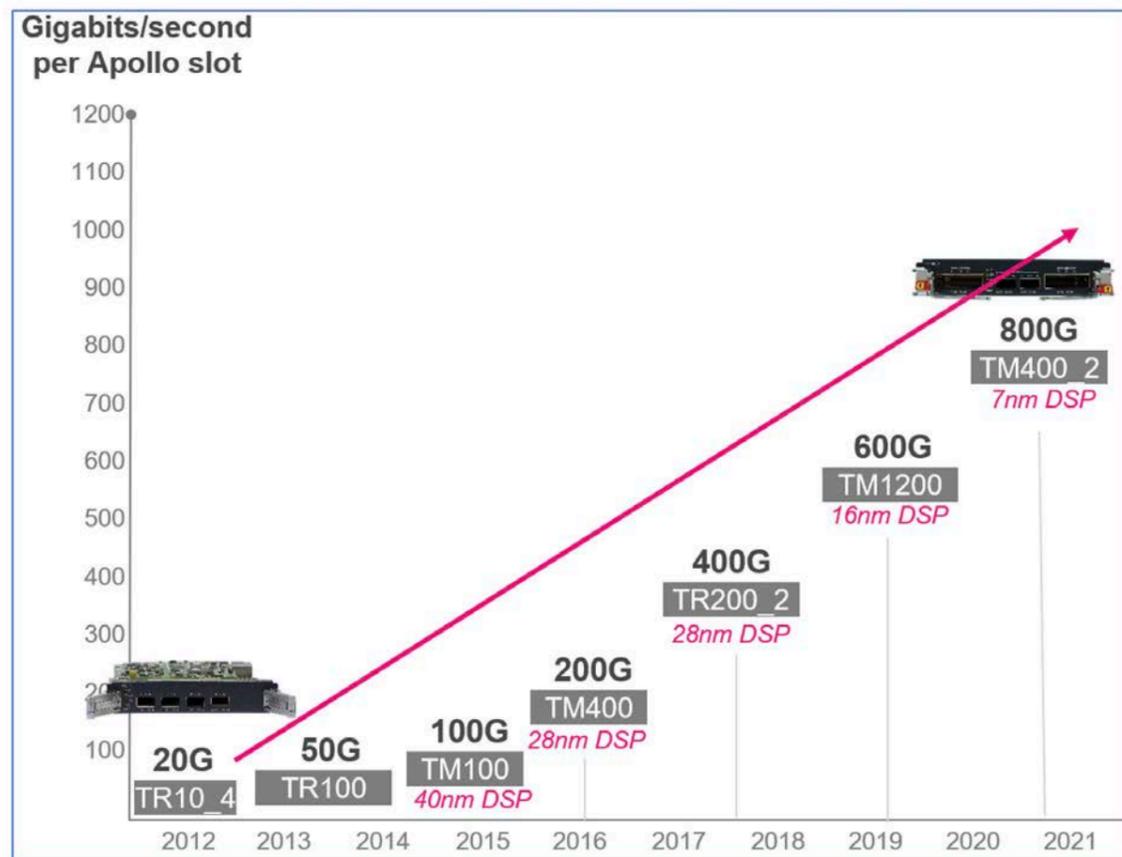
Over several years, we have been working with our customers to enable improved forecasting and lead times to allow ground shipments rather than air freight to reduce greenhouse gas emissions through product shipment. Globally in 2021, more than 85% of our products shipped by weight were sent overground.



PRODUCT SUSTAINABILITY

Our design for sustainability approach drives us to constantly examine our products with a lifecycle view to reducing environmental impacts through all phases, including design, material sourcing, manufacturing, use and end-of-life. For example, for over 10 years, we have invested in optimizing our Apollo product platform to deliver higher traffic loading while reducing the power needed for operations.

In 2021, we introduced the TM400_2 line card, designed for use in Apollo's metro and long-haul optical transport system line. This high-end, first-to-market technology allows optimal flexibility to deliver up to 800G of capacity with support for independently configurable traffic lanes for multiple customers with added cost efficiencies and network flexibility over embedded optical solutions.



The TM400_2 adds to a long line of capacity improvements that deliver higher power-efficiency ratios.

25 times more

Our Apollo products continue to deliver higher optical capacity with significant DSP (digital signal processor) reductions to provide more traffic from each unit, with a 40-fold capacity improvement in 10 years. Overall, these improvements translate to 25 times more fiber capacity and 16 times less power per gigabit of traffic.



We are currently completing our next generation development of our Apollo optical transport hardware that is expected to deliver a further traffic expansion to 1200G in 2022 that will deliver even greater flexibility for our customers and further reduction in power consumption needs per gigabit.

SOCIAL IMPACT

IN THIS SECTION:

- Team Ribbon
- Community Investment

Building a business for the future relies upon many things – strategy, innovation, robust financial planning and controls, risk management, good governance and more. But what makes it all work is the commitment and skill of the people on our team and the positive working culture we create. At Ribbon, we are One Team and we do all of this.



Miguel Lopez
EVP, Chief Financial Officer

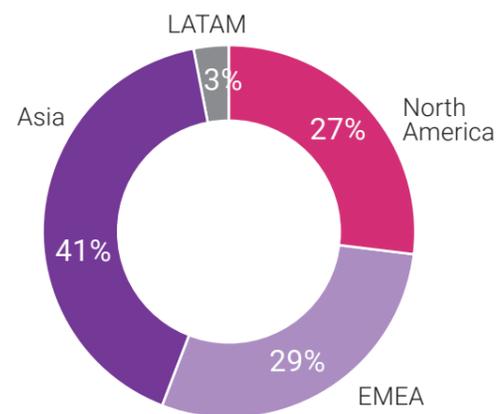
TEAM RIBBON

We aim to create an environment where people feel engaged, inspired, empowered, challenged and included. We strive to be an employer of choice and provide thousands of individuals with opportunities to contribute, while developing professionally and helping transform communications technology through innovative solutions for accessible and secure networks in our markets around the globe. In 2021, we continued our efforts to fully integrate all of Ribbon as One Team, aligning processes that will improve our ability to attract, retain and engage employees.

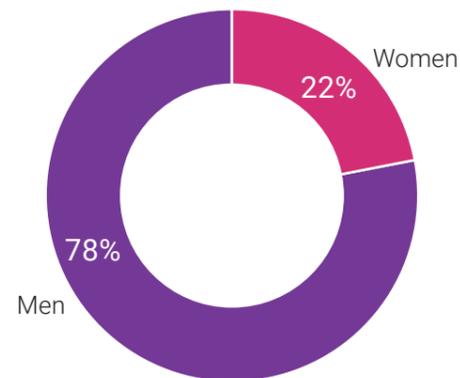
To learn more, see <https://ribboncommunications.com/company/sustainability/employment>

Team Ribbon in 2021

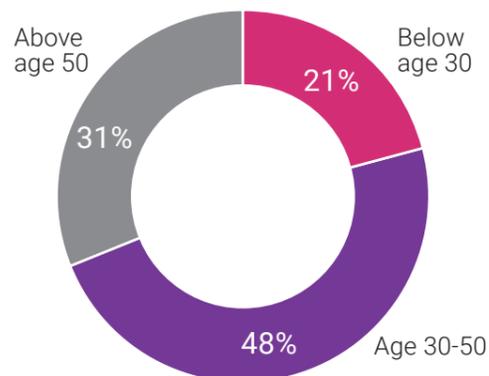
EMPLOYEES BY REGION



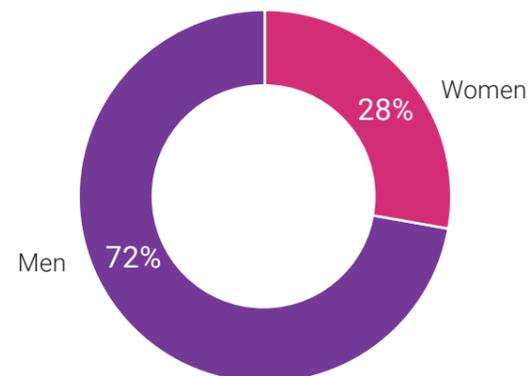
EMPLOYEES BY GENDER



EMPLOYEES BY AGE GROUP



NEW HIRES BY GENDER



Ribbon employees bring a wealth of experience and loyalty to our mission, providing a high degree of stability that our customers appreciate.

29%

of our workforce has more than 15 years' seniority and over 10% has more than 25 years' seniority.

Intimate customer knowledge and continuity of service is a significant differentiating factor in our business. At Ribbon, with almost half our workforce having been with the company for more than 10 years, we can support our customers year after year with an understanding of both where they have come from and where they want to go.



Steve McCaffery
EVP Sales, APAC & EMEA

Employee Benefits

We offer a fair and competitive total rewards package to our employees. We maintain a program of benefits that is tailored to local market norms in each region to support employees. Our benefits packages are reviewed annually in each country and are in line with current market practices. In most countries we offer, in addition to statutory benefits, medical, dental, vision, life and disability insurance. We also offer market competitive paid time off and leave plans.

Annually, Ribbon participates in a number of global compensation surveys and conducts a full compensation review, to ensure our compensation packages remain competitive. In 2021, approximately 60% of the global workforce received a base salary increment.

Employee Engagement

In December, we conduct our annual Employee Experience Survey with more than 2,000 employees submitting their responses to 18 questions. In 2021, the responses indicated a positive trend in satisfaction and engagement, with several of the highest scores showing an improvement compared to 2020.

Key areas of high satisfaction among employees in 2021

90%

feel they belong at Ribbon

88%

feel that Ribbon cultivates a flexible work environment

88%

indicate that their supervisor is attentive and provides them with the professional and personal support they need

82%

would recommend Ribbon to their friends and colleagues

81%

think that Ribbon's leaders and employees demonstrate the company's core values day-to-day

Employees showed great appreciation and support for our company-wide communication processes and senior leadership presence. For example, our Chief Executive Officer's program of day-long, virtual site visits continued, enabling Bruce McClelland to meet with employees to learn about the challenges and support needed at the local level. Bruce's virtual visits in 2021 included India and Ireland with a focus on mid-level management, and other virtual visits throughout the year, engaging a wider range of employees in Israel, U.S. Asia and Latin America. In early 2022, in-person visits resumed and Ribbon's senior management team including the CEO visited India, UK and Israel.

Opportunities for improvement in employee engagement ascertained from the Employee Experience Survey include reinforcing:

- Sense of mission and future direction of the company
- Career opportunities at all levels
- Recognition and appreciation

Ribbon's "RealTime Rewards" program enables recognition of employee achievements and contributions and reinforces a "thank you culture". This online program allows anyone to nominate a colleague for recognition. In 2021, almost 1,000 rewards were delivered to employees who received a cash benefit of between \$25 and \$100, or other non-monetary recognition.

These opportunities are in part the result of Ribbon's growth through acquisition, as well as the impact of the pandemic period in 2020 and 2021, which was unsettling for all. We continue to work to reinforce our One Team value and collaborative working culture while enhancing our career development planning to provide more support for individuals wishing to progress within the Company. Following the Employee Experience Survey results, our response has included a range of actions, many of which build on existing programs while others were completed in early 2022 or are in progress.

Employee Development

- Expansion of self-directed learning licenses to meet employee training needs
- Continued iTECH, iGROW and iLEAD live-webinar series offering education in technology, Ribbon's products, industry best practices, and soft skills
- Introduction of Leadership Development Programs for all managerial levels
- Relaunching our internal career site

Compensation & Benefits

- Annual global compensation review and relevant adjustments
- Employee Restricted Stock equity participation opportunity
- New employee profit sharing cash incentive plan developed

Strengthen Sense of Belonging

- Communications to improve employee understanding of Ribbon's business strategy, brand and mission
- Reinforcing our "thank you culture" with roll out of the Ribbon Real Time Rewards recognition and appreciation platform to Ribbon employees globally

Communications

- Launch of Yammer as Ribbon's social media platform to enable effective, immediate two-way communication
- Leadership Round Table Series for employees, hosted by senior leaders who share perspectives on the business and other professional and personal insights

Ribbon Hybrid Work

- Creation of the Ribbon Hybrid Work Framework, providing employees with an option to work flexibly, including from home 2-3 days per week.

Also in 2021, we created Ribbon Engagement Committees, employee-led groups at each of our major locations, charged with delivering programs of locally relevant activities and events that facilitate networking, enable exchange of ideas and help enhance employee satisfaction, productivity, and engagement in local communities. Members of these committees supported our annual Ribbon Global Day of Service Day planning and execution (see section: [Community Investment](#)).

Learning and Development

We continue to invest heavily in our employees' growth and development. Career growth is a core value ingrained in Ribbon's culture and practices. We approach career development as a partnership between employees, managers and the Company.

- Employees are responsible for proactively managing their careers, increasing their skills, and maintaining a high level of performance.
- Managers are responsible for actively encouraging and supporting employees in their career planning, using available resources, tools, and processes to help employees find the best match between their abilities and the needs of the organization.
- The Company is responsible for creating and providing opportunities for growth based on performance excellence, talent and potential, and for encouraging mobility between job families and departments.

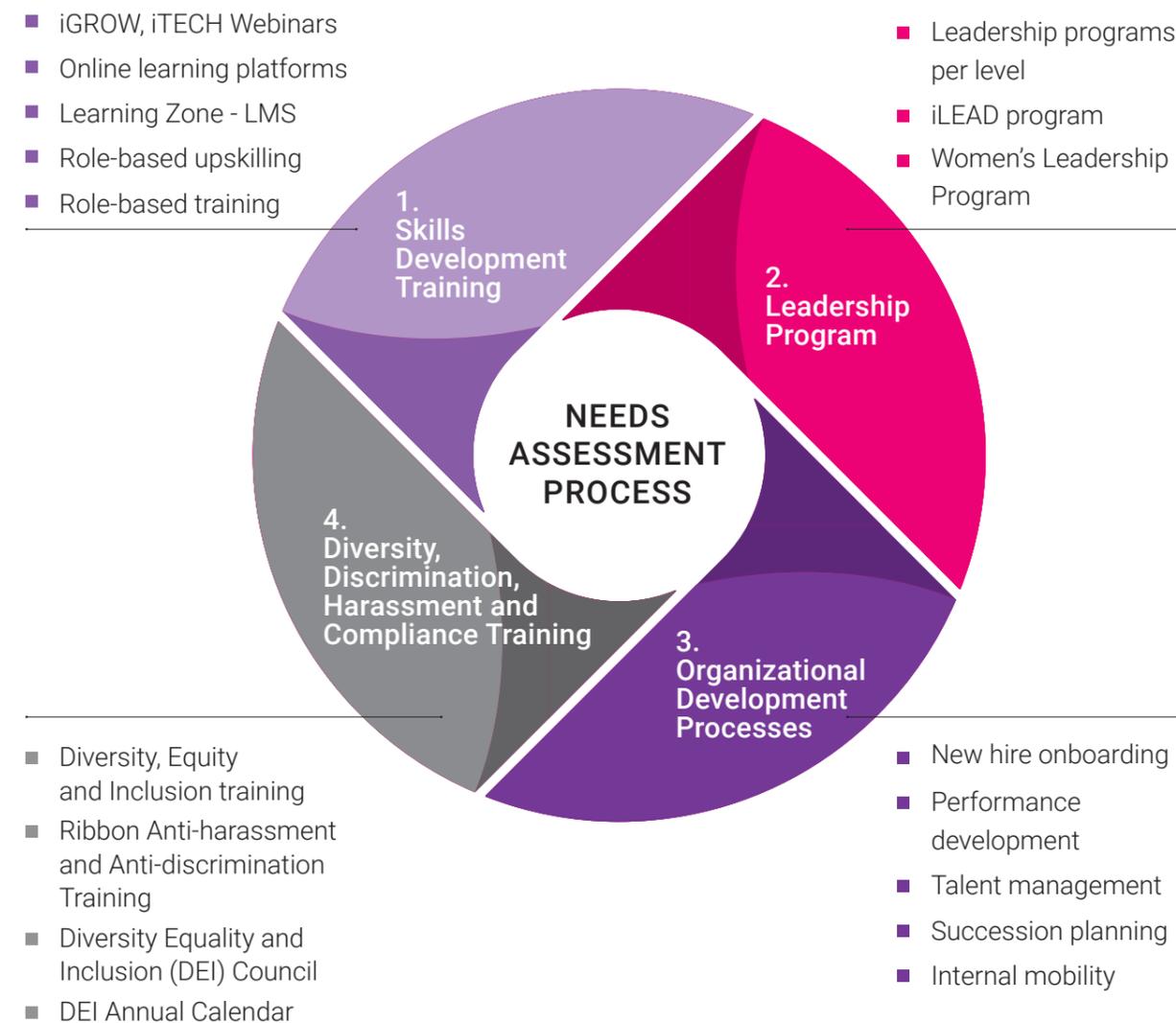
Career development and learning go hand-in-hand at Ribbon. Through the use of career development and various other tools, our employees determine how and where they would like their careers to evolve and have the opportunity to identify and leverage learning resources that will support them in their journey. In addition, through ongoing feedback and performance reviews, employees can identify growth areas and set learning goals.

Our training programs utilize a combination of in-person and online programs and include core modules, some of which are mandatory, relating to ethical conduct, products and services, safety, human rights and anti-corruption, as well as additional tailored programs on topics such as

leadership, management, project management and competency development. We encourage employees to take a proactive role in their professional and personal development and offer options for self-registration for online courses and webinars, in addition to structured training programs.

In 2021, we completed the major task of creating a unified online platform for enterprise learning, migrating training materials from all learning sources to an entire learning library which is available to all Ribbon employees. Annually, we conduct a systematic Learning Needs Assessment using information relating to business and organizational development needs, employee performance development reviews and employee surveys. Using this tool, an annual learning and development program is created.

KEY ELEMENTS OF OUR LEARNING AND DEVELOPMENT PROGRAMS



- **iGROW:** Designed for all Ribbon employees, this program provides an opportunity to expand knowledge and skills and support personal and professional development through live webinars on different topics including personal effectiveness skills, communication and more.
- **iTECH:** Designed especially for technical and R&D employees, this program provides live webinars in advanced technical topics and in-depth knowledge about the Company's products and solutions.
- **On-Demand Courses:** The program offers our employees easy access to the latest and most relevant content through a variety of internal and external resources and learning materials online including via external platforms. In 2021, we granted more than 1,670 licenses and employees took more than 20,000 courses.

In 2021, employees participated in 13.5 training hours per employee on average across our workforce, up from 12 hours in 2020.

Career opportunity and internal mobility

Ribbon encourages employee advancement and development within the Company. We believe that in many instances, the best talent can be found within the Company, and internal mobility serves both the interests of employees and of the Company. Employees can set alerts for new openings based on their career goals and apply for any job based on their preferences and job requirements. In 2021, 250 employees took the opportunity to take a new role, including promotions to roles of greater responsibility.

Succession planning

We aim to proactively identify one or more successors for current and future key positions arising from business needs. We use a 9-grid tool to map roles, performance and potential as input to our succession planning process. In 2021, all key positions were mapped to the 9-grid tool and one or more successors were identified for each.

Performance development

Our annual Performance Development Process took place in an updated format in late 2021. The new process includes an employee self-evaluation phase, in which all employees are encouraged to reflect on their accomplishments, strengths, and opportunities. Thereafter, managers complete their evaluations and meet with their direct reports to review performance and establish goals together for the coming year. Throughout the year, we maintain ongoing dialogue with check-in sessions and real-time feedback, with flexibility to update goals.

In 2021, 97% of employees participated in a formal performance development review, including 100% of managers.

Diversity, Equity and Inclusion (DEI)

We believe that having a diverse group of people who contribute different perspectives and viewpoints is critical to the success of our organization. We are committed to fostering and maintaining a diverse workforce and equitable policies and programs within a culture of inclusion.

Traditionally, gender diversity (attraction, development, promotion and retention of women) in the technology industry has been challenging. Improving our gender diversity, in particular at management levels, is a priority for Ribbon. However, we recognize that diversity is about far more than gender and we aspire to achieve representation and active inclusion of employees who represent many dimensions of diversity in our business over time. We want to create an environment where leaders buy into the value of belonging, both intellectually and emotionally, resulting in all employees feel they belong and connect to Ribbon. To learn more, See Ribbon's [Approach to Diversity, Equity and Inclusion](#).

Our Strategic DEI Target

By 2025

30% of Ribbon's management positions will be held by women

Performance

Women in management roles increased from **16%** in 2020 to **18%** in 2021.

Comment

We continue to implement new training and mentoring programs to enhance our progress to meeting this target.

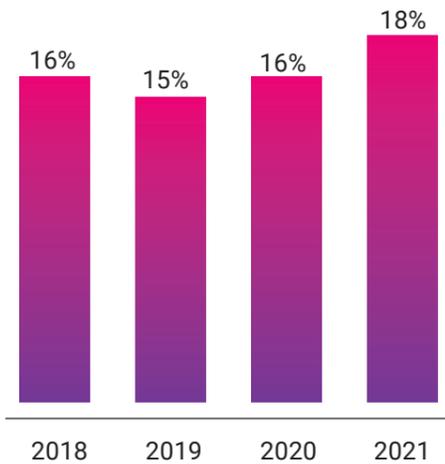
28.4%

In 2021, women accounted for 28.4% of new hires, up from 23% in 2020.

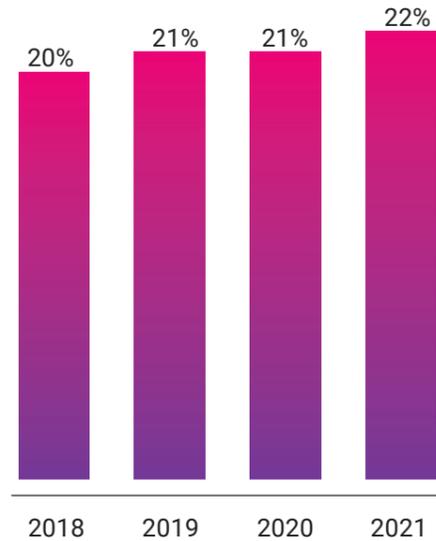
18%

Women in management roles increased from 16% in 2020 to 18% in 2021.

WOMEN IN MANAGEMENT



WOMEN IN ALL ROLES



We believe that numbers are only a starting point; our commitment to DEI runs much deeper. Therefore, we have undertaken a major, comprehensive program to enable different channels of development and learning across the Company. Our objective is to sharpen cultural and organizational paradigms to make every employee's lifecycle at Ribbon more inclusive and free of bias.



Yael Ashuach
Head of Global Organization Development and Training Manager

In 2021 and early 2022, we progressed many aspects of DEI awareness and practice:

- DEI Survey:** We conducted a survey to understand employee perceptions of gender diversity at Ribbon and seek insights that will help formulate ongoing strategy and plans. While overall feedback was positive, with 87% of respondents confirming that our employees appreciate others whose gender, backgrounds and beliefs are different from their own, we gained insights about underrepresentation of women in leadership and other aspects of advancing women at Ribbon.
- DEI Training:** We developed a dedicated tutorial to help all employees improve their diversity awareness and contribute to advancing an inclusive culture. All employees completed this online mandatory tutorial.

- DEI Round Tables:** Our recently established DEI Council, brings together team members from different business units and backgrounds to lead the Ribbon DEI strategy, set a holistic framework to enhance equitable opportunities for all employees and further diversify our workforce. The DEI Council and other Ribbon leaders hosted a series of 14 round table meetings for employees to hear more about our DEI efforts and share ideas on how to promote a more inclusive environment. Almost 450 employees attended these virtual and in-person meetings and shared insights that will help advance our DEI performance.
- DEI Leadership Development Program:** Our leaders play an important role in setting the tone for making Ribbon a diverse, welcoming workplace for all employees. During 2021, we created learning content specifically designed for the people in leadership roles to provide them with practical ways to advance a culture of DEI within their teams. The program included workshops on overcoming biases and barriers to inclusion and tools to promote a DEI culture.
- Global Diversity Day:** Ribbon's inaugural annual Global Diversity Day was held in 2021 to engage employees in inspiring dialogue led by expert guest speakers on topics such as gender equality in the workplace and personal accountability for diversity. We also celebrated Pride Month, encouraging our employees to embrace our differences and promote inclusion and belonging.
- International Women's Day (IWD):** To further raise awareness and celebrate the achievements of women at Ribbon and in general, we supported IWD with our annual company-wide campaign of activities, including a webinar with

a panel discussion among women leaders at Ribbon.

- Women's Leadership with Board Member, Tanya Tamone:** Board Member, Tanya Tamone, is passionate about ensuring strong women representation at the leadership level at Ribbon. Tanya hosted a roundtable session with women leaders at Ribbon to explore how Ribbon can support their development and seek their suggestions. This session is one of several planned for 2022 and inputs are used to help shape our new Ribbon's Women's Leadership Program (see below).

In 2022, we created a new Ribbon Women's Leadership Program, aiming to:

- Address the obstacles that women face in order to pursue their ambitions in leadership and management roles
- Identify the gender bias we see within the workplace and possible solutions
- Build a collective space for ideas and a community for change
- Increase the visibility and influence of women at Ribbon
- Develop personal mindset and tools to create opportunity, influence and mentor others
- Foster a strong women leadership pipeline in the organization

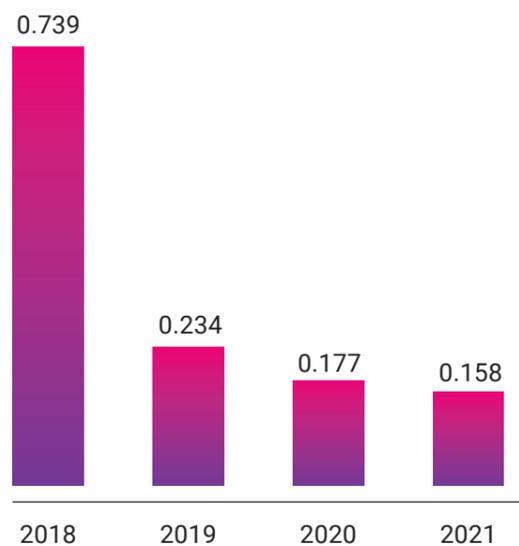
The first cohort will include 20 women, scheduled to start in September 2022.

Employee Safety, Health and Wellness

The health, safety and wellbeing of our employees is of paramount importance to Ribbon. We believe that all accidents are preventable, and that with the right culture, training, and tools, we can achieve an injury free workplace. Our strong record of positive health and safety performance helps build trust in our business while demonstrating our commitment to deliver on one of our core responsibilities towards our employees and their families.

10%
In 2021, we achieved a further reduction of 10% in our total injury rate.

**INJURY RATE PER YEAR:
TOTAL WORKFORCE**



We ensure our workplaces comply with applicable safety regulations wherever we work and promote a culture of safe working and collaboration to eliminate work hazards. We reinforce safety awareness and safety risk management through regular training at all our operating locations. Ribbon operations are aligned with ISO 45001:2018 Safety Management System that applies across all our operations and covers all employees. Sites are audited regularly in line with the ISO 45001 standard at least every three years at each site. See [Our Approach to Health, Safety and Wellbeing](#).

Employee wellbeing

Beyond occupational health and safety, Ribbon promotes health and wellness for all those in the Ribbon family and aims to raise awareness among employees through our biennial Wellness Month and other activities throughout the year. We provide health and wellness related benefits in different countries in line with local market norms, such as medical insurance, dental insurance and more for employees and in many cases, with extended cover for employee families. We also focus on aspects of wellbeing such as mental health and deliver educational programs to raise awareness of mental health issues and support employees in seeking help. In 2022, we plan to launch a new Ribbon Wellness Program for all employees.

HEALTH AND WELLNESS TRAINING TOPICS

For all employees	Emotional resilience	Identifying and preparing for challenges
	Understanding the absence of face-to-face interaction	Motivation and self-discipline
	Mental health	Overworking and work life balance
For managers	Remote leadership	Transition to remote work and virtual collaboration
	Hosting great online meetings	Trust and confidence within teams
	Rewire and re-orientate	Promoting holistic wellbeing in the teams



COMMUNITY INVESTMENT

We aspire to help create a better quality of life in the communities in which we live and work. We encourage our employees around the world to engage in community service and play an active role in local life.

\$275,000

In 2021, Ribbon's total community investment amounted to \$275,000, including cash and in-kind donations and the value of more than 3,000 total hours of employee volunteering.

Global Day of Service: Since 2010, Ribbon allows a day of paid time off for all employees to volunteer and contribute to local causes in their communities. Our Global Day of Service has become a week-long series of opportunities for our employees to participate in volunteering activities around the world. During the week, Ribbon employees support nonprofits ranging from some of the most well-known charities like the Make-a-Wish Foundation to local organizations that are close to the communities in which our employees live.

700

In October 2021, 700 employees engaged to support more than 50 nonprofits in our communities in 16 countries, volunteering more than 2,500 hours of service during this month.

This is the fifth year that Ribbon has made a difference in children's lives by helping to grant their one true wish. We are extremely grateful and proud to work with a true committed partner who supports us no matter what is going on in our world!



Denise Bar-Aharon
Co-Founder & CEO, Make-A-Wish Israel

Make-a-Wish Israel is part of the global Make-a-Wish Foundation, which is active in 45 countries, granting transformational wishes to children with critical illnesses. Ribbon teams in Israel have supported Make-a-Wish Israel for several years, holding an annual sale of donated home-made baked goods in our Global Day of Service week to raise funds to grant wishes.

Additional activities during Global Day of Service in 2021 included:

- **U.S.:** Employees at our Plano site spent the day landscaping a maternity home.
- **Canada:** Employees prepared lunches and snacks for residents of an Ottawa community shelter and food bank for low-income families.
- **Germany:** Employees worked with Gain International to sort school bags and clothes for shipment to low-income countries.
- **UK:** Employees planted 3,000 trees at a community park.
- **Japan:** Employees sorted donated relief supplies at the Food Bank Kanagawa Organization.

- **Mexico:** Employees organized and delivered boxes of food to 150 children with cancer, and their families.
- **India:** Employees participated planting trees in Bangalore and spent time at local children's care organizations for children with special needs, or children who are homeless or orphaned.

See our teams in action during the Ribbon Global Day of Service 2021.

In addition, as part of our long-term Corporate Social Responsibility (CSR) strategy in India, our goal is to integrate social considerations in our business operations by providing financial support to nonprofits that focus on children's health and education. In 2021, Ribbon distributed \$135,000* to 8 organizations, including the Bharti Foundation, Child Reach and Chiranthana.

*This figure is included in Ribbon's total community investment.



Volunteering throughout the year

Ribbon employees do not wait for the Global Day of Service to volunteer in local communities to advance causes close to their hearts. Every large Ribbon site maintains a local engagement program which employees enthusiastically support. For example, in the U.S., we hosted an event for nearly 100 female veterans of the U.S. Armed Forces. We flew these veterans from Chicago, Illinois to Washington D.C. to participate in a day-long celebration honoring their past service to the U.S. as part of the [Operation HerStory](#) program.

ROBUST GOVERNANCE

IN THIS SECTION:

- Corporate Governance
- Compliance and Ethics
- Responsible Supply Chain

Our efforts to advance sustainable practices at Ribbon are underpinned by governance practices that ensure oversight and accountability for delivering our strategy and conducting our Company in an ethical manner. From strong support of the Board of Directors, through a committed leadership team, our holistic approach encompasses our actions to generate positive impacts through our business and in our extended supply chain.



Brian P. W. Green
Global Sustainability and Real Estate

Corporate Governance

We are committed to building long-term value and assuring the success of the company for our stockholders and stakeholders, including the employees, customers, suppliers and the communities in which we operate. To help achieve these goals, we maintain sound corporate governance practices and controls.

Board of Directors

Our Board of Directors is charged with overseeing company performance, compliance programs and procedures and effective risk management as well as providing guidance to the Chief Executive Officer and senior leadership on strategic matters. The Chairman of the Board is Mr. Shaul Shani.

Ribbon Communications' Board of Directors*

Total number of directors (including the Chair)	9
Separation of Chair and Chief Executive Officer roles	Yes
Independent directors	6 (67%)
Lead independent director	Yes
Non-executive directors	8 (89%)
Directors with financial expertise	7 (78%)
Directors with technology expertise	6 (67%)
Directors with ESG expertise	5
Women directors	2 (22%)
Directors from ethnically diverse groups	3 (33%)
Age span of directors	51-74 (average age: 65)
Tenure of directors	2-5 years (average years: 3)

*As per Proxy Statement filed on April 8, 2022

Board committees: Our Board has four standing committees: the Audit Committee, the Compensation Committee, the Nominating and Corporate Governance Committee and the Technology and Innovation Committee. Each committee is composed entirely of independent directors as defined under applicable rules, including Nasdaq rules. All members of the Audit Committee meet the independence requirements of Rule 10A-3 under the Securities Exchange Act of 1934, as amended, and all members of the Compensation Committee meet the heightened independence requirements for Compensation Committee members under the Nasdaq rules.

Board engagement on sustainability: Our Board is fully committed to upholding ethical conduct and corporate sustainability. Progress in sustainability is an agenda item at every Nominating & Corporate Governance Committee meeting and the Board reviews our strategy and guides future direction. During the past year, the Board has been a critical partner in reviewing progress against our sustainability our strategy, goals and targets.

For more about our Corporate Governance, see:

<https://investors.ribboncommunications.com/corporate-governance/governance-highlights>

For more about our Board of Directors, see:

<https://ribboncommunications.com/company/about-us/board-directors>

Risk Management

Ribbon's Board of Directors is responsible for assessing the Company's approach to risk management and overseeing management's execution of its responsibilities for identifying and managing risk. Significant strategic risks are overseen and evaluated by the full Board while other risks are overseen by Board committees. In our annual risk assessment process, we review the business impact of risks and assign likelihood and impact scores to risk areas including business continuity, security, privacy, environmental, health and safety, human rights and others. We maintain a risk tracking tool to manage all corporate risk information in a single location allowing risk exposure and mitigation to be reviewed efficiently.

In 2021, we introduced a centralized, standardized risk documentation process to align risk assessment procedures throughout the company and enable consistent use of our enterprise risk tracking tool across four key management systems and risk areas:

- Business Continuity Management System (BCMS)
- Physical and Information Security (ISMS)
- Health and safety at our facilities
- Environmental Management System (EMS)

Following our risk assessment in 2021, we completed several actions to address our identified risks, including:

- Multiple detailed reviews with IT and user groups to ensure service list completeness.
- Identification of Single Point of Failure (SPoF) applications and required improvements.

- Enhancement to review process to ensure ongoing improvement throughout the year.
- Discontinuation of multiple services to simplify services and reduce risk exposure.

A priority identified for 2022 is Disaster Recovery Planning (DRP) across our global business. We have more than 50 DRP actions in place that are under review for action in 2022 to further improve safeguards in this critical risk area.

Business Continuity

Ribbon actively maintains a Business Continuity Management System (BCMS) to ensure stability of our global operations following a potential disruption or catastrophic event, such as a natural disaster, pandemic, cyber-attack or other similar events within the supply chain. The BCMS defines procedures to limit the impact from the loss of key internal services on our Customer Operations, Services and R&D Programs.

Our BCMS is mandated by Ribbon's Executive Management Team and aligns with the requirements of the ISO 22301:2019 Standard. Each year we perform a Business Impact Assessment (BIA) and conduct quarterly business continuity drills based on relevant catastrophe or disaster scenarios.

Our robust approach to business continuity allows our customers the peace of mind that our operations will continue to function during a disruptive event. We receive many inquiries from our customers about our BCMS and many customers download our BCM certificates each year. In 2021, we continued to optimize and improve business continuity processes including the use of remote platforms and virtual troubleshooting to address ongoing challenges resulting from the COVID-19 pandemic.

Compliance and Ethics

Ribbon conducts its business in accordance with the highest ethical standards and in compliance with all applicable governmental laws, rules and regulations in every country in which we operate. Our global programs are designed to ensure compliance throughout our organization while striving to eliminate potential compliance breaches occurring through lack of awareness. We provide compliance training to employees throughout the year, with a strong focus on anti-harassment, anti-discrimination and anti-bribery and corruption. In 2021, Ribbon was not subject to any fines or sanctions related to noncompliance in any area of our business. See [Our Approach to Compliance](#).

Anti-Corruption

We believe that a zero tolerance for corruption, bribery and any other form of illegal payments is the right approach for every business. Businesses that take a stand against corruption and bribery foster trust among stakeholders, protect themselves from risk and contribute to the development of a fair and orderly society for the benefit of all. Ribbon did not receive any criminal or civil charges alleging corruption or bribery by Ribbon in 2021. See [Our Approach to Anti-Corruption](#).

Ethical Conduct

Upholding ethical conduct throughout our business is foundational to our ability to create value for our stakeholders. We aim to act in accordance with the principles of integrity, accountability, and fair dealing in all our interactions, which applies without exception to all officers and employees of Ribbon. We expect the same standards of ethical conduct from those involved in our business—including partners, suppliers and contractors.

Our Code of Conduct: Our [Code of Conduct](#) is our guide to ethical and lawful behavior and sets clear expectations for all employees. All Ribbon employees are required to complete the Code of Conduct training upon joining the company and again each year. At the end of the annual certification process, employees must certify they agree to continue to abide by the provisions of the Code and respond to survey questions

aimed at uncovering ethics concerns. To ensure ethical conduct is always top of mind, Ribbon's Legal Department regularly sends emails to all employees reminding them of our commitment to ethics and of the reporting options available to them. In 2021, 100% of employees completed Code of Conduct initial training or recertification, monitored by our internal audit team.

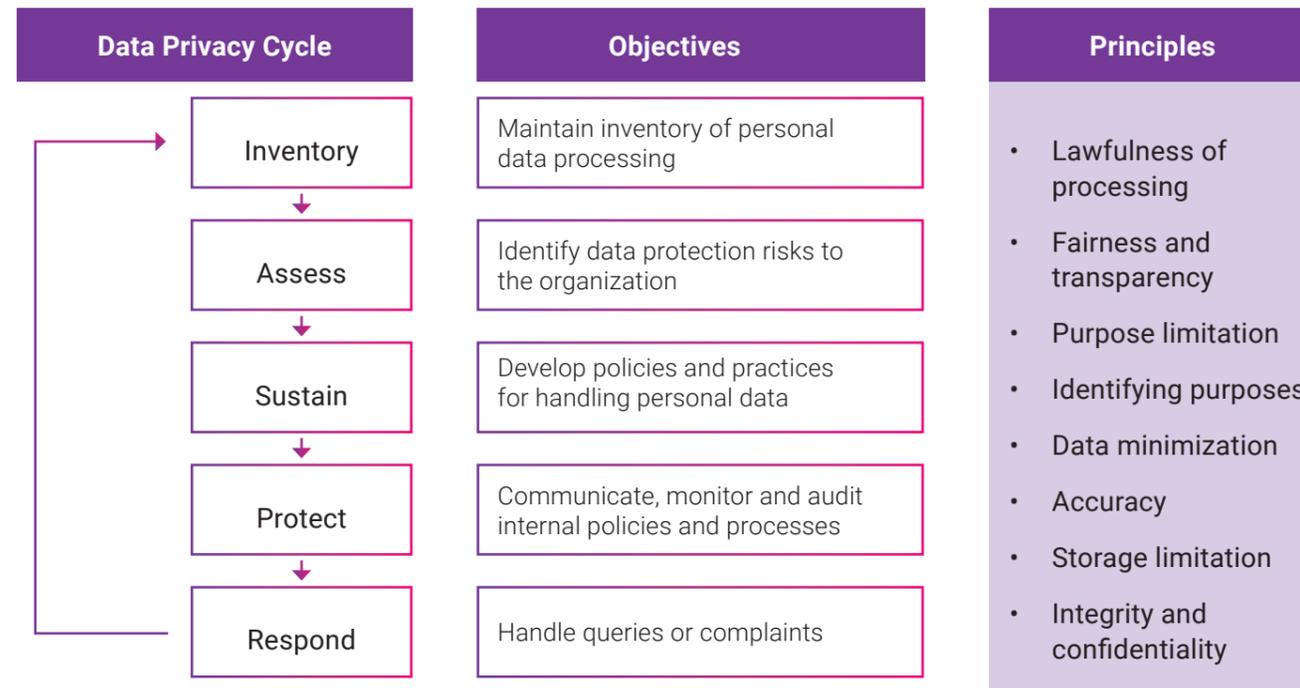
Reporting Ethical Breaches: Ribbon employees have a variety of reporting channels available to them to report issues and concerns under our Code of Conduct. We encourage reporting by employees. Ribbon prohibits retaliation against any employee who reports ethical or other misconduct in good faith. Ribbon received one report alleging acts of bribery by a Ribbon employee in 2021; the report was promptly investigated and appropriate action taken including additional training for all employees in the region where this incident occurred and extra safeguards implemented.



Information Security and Data Privacy

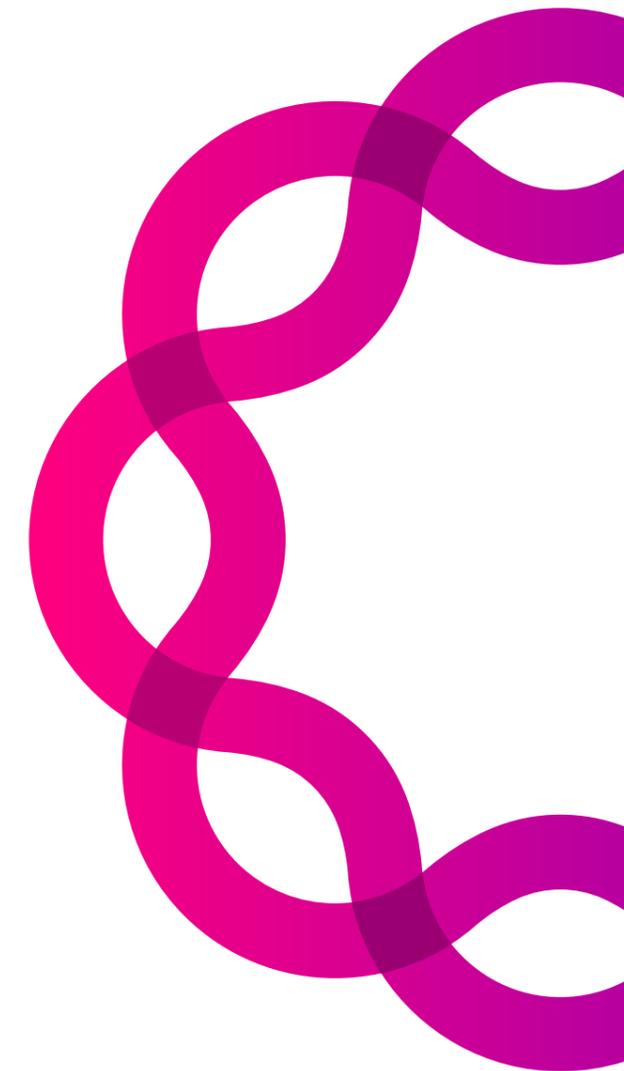
Ribbon is committed to protecting the personal data of our customers, partners, suppliers, affiliates and employees wherever we conduct business around the globe. We apply industry best practices for information security and data protection controls and maintain an information security architecture that includes data risk assessments, vendor risk assessments, contract reviews for both customers and vendors and a regular program of data privacy training for Ribbon employees. Certain Ribbon operations are certified to ISO 27001 Information Security Management Quality Standard and undergo annual self-assessments and external audits. In 2021, no major non-conformances were discovered in our ISO 27001 adherence.

Ribbon maintains an active data protection program which continuously monitors compliance to applicable data protection laws and the rapidly evolving data protection landscape. Our program focuses on compliance with the EU General Data Protection Regulation (GDPR) and UK GDPR through robust data protection policies and practices. See [Our Approach to Information Security and Data Privacy](#).



Ribbon's data-protection cycle is supported by industry-leading privacy operations platforms and expert toolsets.

In 2021, we launched a new mandatory annual Cybersecurity Awareness Training course which was completed by all employees.



Responsible Supply Chain

We view our suppliers as critical partners in our ability to deliver our products and services to meet our customers' requirements. We expect them to uphold the standards of ethical conduct, labor and human rights protection and environmental stewardship both in the spirit and to the letter of our [Supplier Code of Conduct \(SCoC\)](#), which is aligned with the [Responsible Business Alliance standard v7.0](#). In 2021, we established and implemented enhanced mechanisms for monitoring supplier conformance to our SCoC as we aim to meet our strategic supply chain target by 2025. Ribbon did not receive any reports of alleged violations of the Ribbon SCoC by any suppliers or business development agents in 2021. See also [Our Approach to Responsible Supply Chain Management](#).

Our Supply Chain Target

Target

By 2025, audit **30%** of our Tier 1 suppliers with actions complete to ensure **100%** adherence to Ribbon's Supplier Code of Conduct.

Performance

Assessment of supply chain completed and framework for ESG risk assessment developed. Initial engagement with Mission Critical suppliers completed and risk-prioritized supplier audit plan for 2022 in place.

Comment

We are **83%** complete on our assessment of our priority suppliers, and are working to address the remaining **17%** before year end (2022).

Ribbon's extended supply chain includes more than 5,000 active suppliers of goods and services across all our business divisions globally. Of these, we engage third-party manufacturers to build core components. In 2021, the following five contract manufacturers accounted for at least 18% of our total supplier spend and 100% of product manufacturing.

- Eastcom
- Flex
- Hawkeye Technologies
- Maysteel Industries
- Sanmina Corporation

We maintain long-standing relationships with our third-party manufacturers, all of which are large, reputable companies that maintain strong sustainability and corporate citizenship programs in their own right as well as confirming their adherence to our SCoC and enabling audits of their facilities for Ribbon manufacturing.

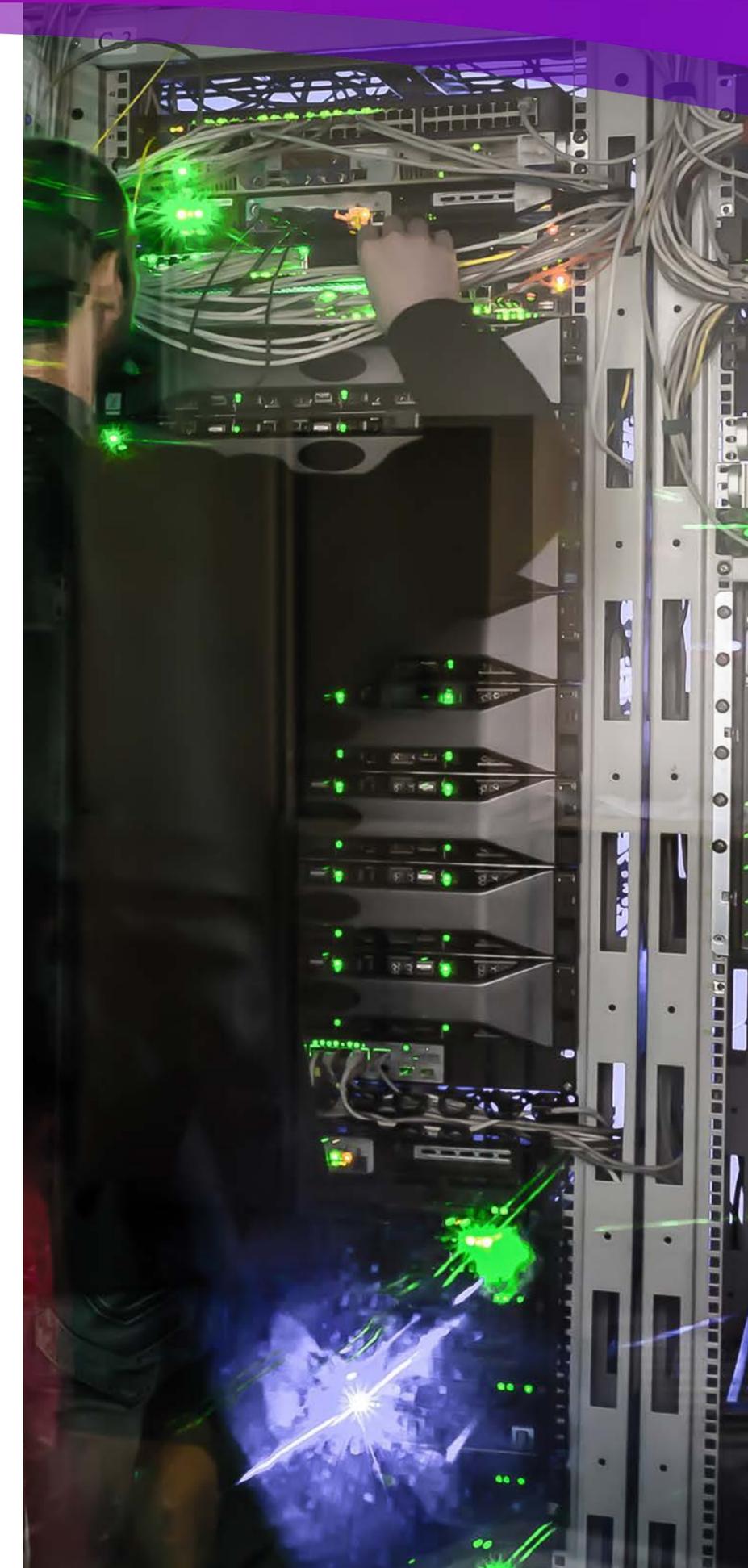
Key elements in our approach to monitoring ethical conduct in our supply chain in 2021 included:

- **Criminal conduct screening:** Ribbon screens prospective suppliers for criminal conduct—including modern slavery, forced labor and

human trafficking by using a risk intelligence data base called Refinitiv. Ribbon will not enter into a business relationship with a supplier who has a conviction or other adverse finding on the issues of child labor or forced labor. In 2021, 0% of the suppliers that were screened using Refinitiv had criminal histories related to child labor, human trafficking or forced labor.

- **Supplier auditing:** Ribbon conducts audits of its contract manufacturers through virtual audits and on-site visits. Ribbon also conducts quarterly business reviews of performance and confirms that suppliers adhere to the principles of the Responsible Business Alliance. In 2021, Ribbon did not receive any employee or supplier reports alleging slavery, human trafficking, or forced labor in Ribbon's supply chain.

- **Aligning supplier ethical conduct assessments:** Ribbon has in the past used a variety of methods to conduct supplier assessments and sustainable procurement practice, depending on the type of supplier and goods or services provided. In 2021, we aligned our assessment of risk for our entire supply base, irrespective of the type of products supplied. The main objective was to identify overall risks and trends to inform our procurement teams. As a first step, we delivered new training to our procurement and supply chain experts to enable a shared understanding and common vocabulary for all discussions.



Focus Areas for Planned Ethical Conduct Supplier Assessments



Working conditions and labor rights



Environmental compliance and areas of improvement



Freshwater usage and water stress at supplier locations



Community outreach of Ribbon's suppliers including Corporate Social Responsibility scores from external ratings agencies



Employee health and safety



Carbon footprint and energy usage of outsourced production



Waste and responsible disposal methods, and minimization of hazardous waste



Business continuity plans and disaster preparedness



Conflict minerals management



Responsible use of chemicals and substances of concern



Material efficiencies, especially in packaging and logistics



Responsible sourcing of materials used for Ribbon products

Identifying priority suppliers

We defined an initial target group of priority suppliers that includes suppliers with a high proportion of Ribbon procurement spend (Tier 1) and others that provide an essential product or service that would significantly disrupt our business if not reliably supplied (critical suppliers). Priority suppliers always include our four third-party manufacturers and additionally, a range of material and component suppliers to our different business divisions. By combining a supplier spend analysis of more than 2,000 suppliers, conducted by our finance team, with critical suppliers identified by business unit regardless of spend, we developed a list of priority suppliers that together represented 63% of Ribbon's total supplier spend in 2021.

Assessing priority suppliers

Many of the suppliers in this category share

their environmental, social and governance (ESG) performance with Ribbon on a quarterly or annual basis. We reviewed and verified their performance against ESG scores using industry leading registers and tools including, where available, EcoVadis, a tool we use to rate our own performance as a B2B supplier. We also reviewed supplier websites to assess alignment with their overall commitments to ethical conduct.

Engaging with priority suppliers

We issued additional, supplier-specific, tailored questionnaires to more than half of our priority suppliers in 2021, inviting them to engage with us on important sustainability topics such as business continuity, climate change preparations, energy sourcing, environmental management, ISO certificates, diversity and inclusion, workplace standards, health and

safety management, and other topics covered in our SCoC. We received an 83% response rate 2021, and are continuing to engage to achieve a complete response rate by the end of 2022. Responses from our priority suppliers are reviewed and may lead to further actions with suppliers to improve alignment to our standards and sustainability objectives through our supply chain.

Auditing suppliers

Based on our analysis of suppliers across our entire supply base, and feedback from priority suppliers, we assess each supplier annually on a risk scale. Our aim is to conduct ESG audits on the top 30% of Tier 1 suppliers by spend prioritized by risk. For example, priority suppliers that are assessed as high or medium risk will be audited annually and any non-conformances will be required to be addressed with urgency.

Tier 1 Supplier ESG Risk Assessment 2021

Low Risk

82%

Medium Risk

18%

High Risk

0%

Priority Supplier Spotlight

Ribbon enjoys a longstanding relationship with Sanmina Corporation spanning over 15 years—one of our largest contract manufacturers representing the major portion of our contract manufacturing spend. Ribbon's products (SBCs, Gateways and C15 and C20 softswitches) are manufactured at Sanmina's Guadalajara site in Mexico. Sanmina provides quarterly reports to Ribbon's supply chain management covering:

- Employee satisfaction and actions taken to improve
- Employee work hours including overtime
- Employee turnover (including specific turnover on Ribbon production lines)
- Health and safety performance including injury rates
- Environmental performance including carbon footprint

Ribbon's team meets quarterly with Sanmina in Guadalajara to review business progress and EHS performance and agree to any necessary corrective or improvement actions for the upcoming quarter. Both Ribbon and Sanmina find this relationship beneficial, enabling business continuity with minimum risk, and open dialogue to resolve issues as they arise.

Here at Sanmina we are proud of our long-standing relationship with Ribbon over many years. We share similar values in many areas including Corporate Social Responsibility, health and safety and environmental concerns. We have set challenging goals to reduce our carbon emissions by 40% by 2030 and aim to be net-zero by 2050. We have created a portfolio of opportunities for each location and are working on prioritization and implementation using multiple forms of clean energy such as solar, wind, biomass, hydro and geothermal to aid in the reduction of GHG emissions. We are committed to improve the lives of the people we employ and the relationship within our communities, just as the Ribbon team are doing. At Sanmina, the health and safety of our employees is fundamental to our corporate culture, driving our decisions and business practices. We are so proud of our achievements that we have been able to work with Ribbon's customers and invite them to our plant so they can experience the production line and see the working conditions of our teams. We look forward to many further years building the hardware for Ribbon's customers and improving the world in which we all live.



Oscar Maldonado
Vice President, Human Resources, LAM, Sanmina Corporation

Responsible Procurement

In 2021, we established a new internal Responsible Procurement Policy that defines all the elements relating to supplier management and procedures such as ethical procurement standards and supplier assessments, inspections, investigations, and reviews. All 32 employees in procurement roles were trained in this policy in early 2022.

Conflict Minerals

We aim to source components and materials from companies that share our values regarding environmental responsibility, ethical conduct and respect for human rights, including sourcing of conflict-free minerals. We maintain systems to investigate the sources of 3TG minerals (tin, tungsten, tantalum and gold) with an aim of

ensuring that conflict minerals do not enter our supply chain. In 2021, Ribbon contacted 858 in-scope suppliers (excluding distributors and service providers) of Ribbon products with a request to provide information about their use and exposure to conflict minerals. Information obtained from suppliers enabled further investigation to identify conflict minerals risk in our extended supply chain. We work to engage suppliers who have not responded in order to complete our overall conflict minerals risk exposure.

78%
Approximately 78% of in-scope suppliers provided responses to our conflict minerals survey.

Over the years, the pool of in-scope suppliers engaged by Ribbon has expanded as Ribbon's business has grown. Ribbon's ability to secure

responses from a greater number of suppliers is the result of consistent efforts to work effectively with suppliers to gain the required information. As a result, we have seen an improvement the rate of response in the past five years, giving us confidence that we are improving our control over conflict minerals elimination from our supply chain.

19%
In 2021, the total number of in-scope manufacturers responding to Ribbon's conflict minerals survey increased by 19% versus 2020, and by more than 30% over the past five years.

See our [Conflict Minerals Policy](#) and our [2021 Conflict Minerals Report on Form SD](#).

APPENDIX

This section contains our formal disclosures and data tables in line with the sustainability reporting standards applied in this Report as well as explanations of key terms and topics referenced.

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ABOUT THIS REPORT

This is Ribbon Communications' third global annual Sustainability Report, presenting our global operations. In this report, we share the ways in which Ribbon makes a positive contribution to the economy, the environment and people through our core business, and account for our environmental, social and governance (ESG) performance through 2021 and early 2022.

Data in this report relate to the 2021 calendar year and prior years where noted. The report includes examples of practice and operational updates through 2021 and early 2022. Our last Sustainability Report was published in 2021. The scope of information in this report includes global business operations owned and operated by Ribbon, unless otherwise stated, and aligns with the scope of our annual reporting on Form 10-K. For our Annual Report on Form 10-K, please see: <https://investors.ribboncommunications.com/financial-information/annual-reports>

This report was prepared in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Standards, Core option. The selection of content for this report was informed by a robust stakeholder analysis and assessment of material topics conducted in early 2021, which remain relevant in the current reporting period. The report Appendix also includes our disclosure in line with the Sustainability Accounting Standards Board (SASB) Technology Hardware Standard and an overview of our climate change impacts using the Taskforce on Climate-related Financial Disclosures (TCFD) framework. These disclosures can be found in the Appendix of this report.

The data in this report was not verified by an independent third party. We believe our data monitoring and tracking is robust and is confirmed through internal checks, audits and quality certifications by third parties.

Data and information in this report may differ from information published in Ribbon's Annual Report, due to the different nature of disclosures and methodologies. In such cases, for regulatory disclosure requirements, the Annual Report takes precedence. In the event of any perceived discrepancy, or any other query or observation, as well as for any feedback or suggestions, we invite you to contact us.

Please write to:

Brian Green

Global Sustainability

sustainability@rbbn.com



GLOSSARY

5G: This is the next generation wireless network technology that will transform how we use the internet. 5G will deliver unprecedented scale and speed, enabling entirely new ways of living, working, consuming entertainment and connecting with others, from telehealth to electric mobility, to smart cities, to remote working and much, much more. 5G requires a step-change in network architecture and infrastructure. Networks around the world are currently preparing for 5G and it is expected to roll out over the next 3-5 years.

IoT (Internet of Things): A system whereby all devices (with an on/off switch) can be connected to the Internet and to other devices to create instant information and potential automation of many routine decisions.

IP (Internet Protocol): These are the rules for routing and addressing packets of data so that they can travel across networks and arrive at the correct destination. Data traversing the internet is divided into smaller pieces, called packets.

IP Optical Networking: An integrated, multi-layer system that combines IP routing and optical transport technology for optimum efficiency.

Latency: This is how the industry refers to the time it takes for a data packet to travel from one designated point to another. Very low latency – our objective – means that the time is shorter, so communications are faster.

LTE (Long-Term Evolution): In most countries, mobile data communications are carried on systems supporting the 4G LTE standard. These systems allow for the latest in high-speed data for mobile phones and other mobile devices for streaming voice calls, video, and data from social media and streaming services. Mobile phone industry standards often use Voice over LTE (VoLTE) for delivering voice as a data stream within the LTE data transmission.

NEBS (Network Equipment-Building System): NEBS is the most common set of safety, spatial and environmental design guidelines applied to telecommunications equipment in the United States.

Network Functions Virtualization (NFV): A procedure that increases and improves network function by managing networks, defined by the decoupling of network functions from proprietary hardware appliances and using these functions as virtual machines (VMs).

Network slicing: Network slicing allows a network operator to provide dedicated virtual networks with functionality specific to the service or customer over a common network infrastructure. Network slicing is a necessary option to support the numerous and varied services envisioned in 5G.

NTr (Network Transformation): This describes the process of conversion of current physical network hardware and infrastructure to virtualized networks and adoption of cloud services and functions to enable accelerated and enhanced connectivity around the world.

Robocalling: Robocalling has emerged over the past few years quite extensively and refers to telephone

calls from an automated source that deliver a prerecorded message. Robocalls are typically delivered simultaneously to large numbers of people. While there are positive uses for robocalling, such as emergency calls or public service announcements, the downsides are troublesome: harassment, spoof calls, scams, threats and fraud, and these must be mitigated.

REN (Research and Education Network): Specialized Internet service dedicated to supporting the needs of the research and education communities within a region or country, usually built with a high-speed backbone network, often offering dedicated channels for individual research projects.

RTC (Real-time Communications): RTC includes phone calls, video conferencing, chat, text messaging, desktop sharing, and team collaboration.

SBC (Session Border Controller): A communications element that ensures RTC traffic is properly routed between network providers, ensuring differing protocols are understood so that calls can be delivered across different networks securely. An SBC secures and controls a SIP network by admitting (or not admitting) and then directing communications between two end devices on the network, such as a VoIP call between two phones or a video conference between multiple devices. SBCs are deployed at the network perimeter so they can control and secure real-time communication sessions for both enterprises and service providers.

SIP (Session Initiation Protocol): The primary protocol that establishes the connection between two endpoints and closes the connection when the call is finished.

Software Defined Networking (SDN): An architecture designed to make a network more flexible and easier to manage through flexible and adaptable software controls.

STIR/SHAKEN: This stands for Secure Telephone Identity Revisited (STIR) and Signature-based Handling of Asserted Information Using toKENS (SHAKEN). STIR/SHAKEN references a framework of standards that improve call security by authenticating caller IDs.

Streaming: This refers to transmitting or receiving data (especially video and audio material) over a computer network as a steady, continuous flow, allowing playback to start while the rest of the data is still being received. Streaming is possible with high-speed connections and low latency.

VoIP (Voice over Internet Protocol): A system that allows users to make voice calls using the internet, rather than a telephone landline.

WDM (Wavelength Division Multiplexing):

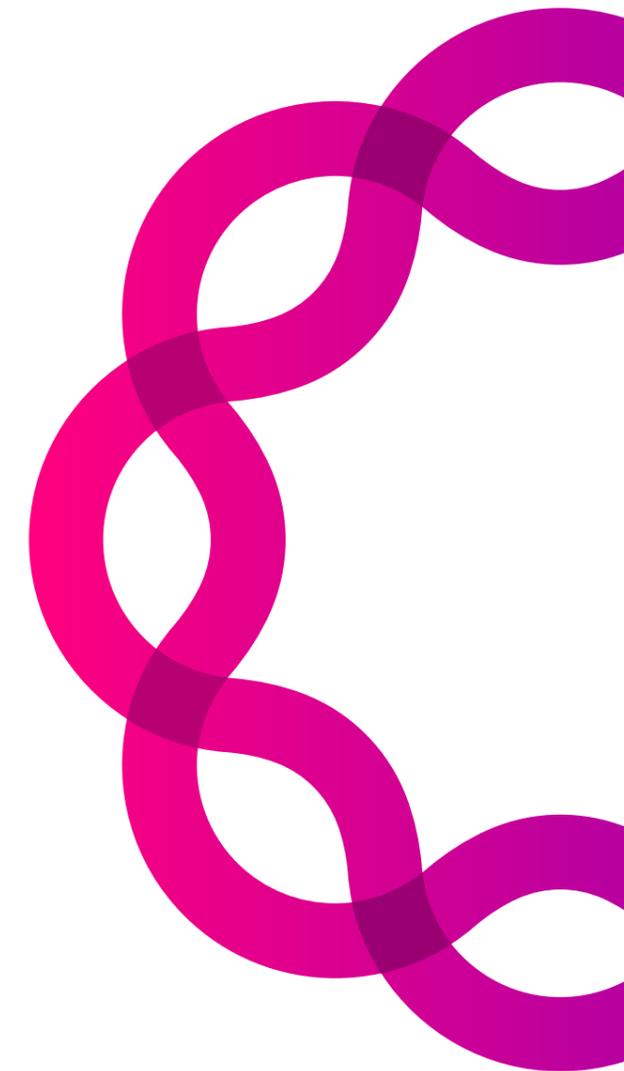
A technology which loads a number of optical carrier signals onto a single optical fiber by using different wavelengths, enabling bidirectional communications over a single strand of fiber,

x-haul: Typically associated with the new 5G networks, x-haul is the ability to transport data from different points in the data transport network backwards or forwards to give maximum speed, flexibility and utilization of bandwidth.

GRI CONTENT INDEX

GRI 102: General Disclosures 2016

Reference	Description	Page reference or response
102-1	Name of the organization	RIBBON COMMUNICATIONS INC.
102-2	Activities, products, and services	7
102-3	Location of headquarters	Plano, Texas, U.S.
102-4	Location of operations	7
102-5	Ownership and legal form	7
102-6	Markets served	7
102-7	Scale of the organization	7
102-8	Information on employees	48
102-9	Supply chain	29
102-10	Significant changes	None.
102-11	Precautionary Principle	22
102-12	External initiatives	48
102-13	Membership of associations	48
102-14	Statement from senior manager	3
102-16	Values, principles, standards	6
102-18	Governance structure	36
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102-44	Key topics and concerns raised	49
102-45	Entities included	43
102-46	Report content and topic Boundaries	43
102-47	List of material topics	11
102-48	Restatements of information	49
102-49	Changes in reporting	None.
102-50	Reporting period	43
102-51	Date of most recent report	2021
102-52	Reporting cycle	43
102-53	Contact point	43
102-54	Reporting in accordance with the GRI Standards	43
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102-56	External assurance	43



GRI CONTENT INDEX: MATERIAL DISCLOSURES

Material priority	GRI Standard	Management Approach* Location	GRI Topic-Specific Disclosures	Page	Omissions
Business ethics	GRI 205: Anti-Corruption 2016	Our Approach to Anti-Corruption	205-3	Confirmed incidents of corruption and actions taken	None.
	GRI 419: Socioeconomic Compliance 2016	Our Approach to Compliance	409-1	Non-compliance with laws and regulations in the social and economic area	37
GHG emissions & reductions	GRI 302: Energy 2016	Environmental Policy	302-1	Energy consumption within the organization	50
			302-3	Energy intensity	50
	GRI 305: Emissions 2016	Environmental Policy	305-1	Direct (Scope 1) GHG emissions	51
			305-2	Energy indirect (Scope 2) GHG emissions	51
			305-3	Other indirect (Scope 3) GHG emissions	51
			305-4	GHG emissions intensity	52
Cybersecurity & information security	Ribbon Indicator	38		ISO 27001 certification & NIST compliance	38
Access to connectivity	GRI 203: Indirect economic impacts 2016	14	203-2	Significant indirect economic impacts	14-19
Sustainable products	GRI 302: Energy 2016	26	302-5	Reductions in energy requirements of products and services	26
Diversity, equity and inclusion	GRI 405: Diversity and Equal Opportunity 2016	Our Approach to DEI	405-1	Diversity of governance bodies and employees	57
Employee engagement	GRI 401: Employment 2016	Our Approach to Employment	401-1	New employee hires and turnover	55
Occupational health & safety	GRI 403: Occupational Health and Safety 2018	Our Approach to Health, Safety & Wellbeing	403-1	Occupational health and safety management system	56
			403-2	Hazard identification, risk assessment, and incident investigation	56
			403-3	Occupational health services	56
			403-4	Worker participation, consultation, and communication on occupational health and safety	56
			403-5	Worker training on occupational health and safety	56
			403-6	Promotion of worker health	56
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			403-8	Workers covered by OHS management system	56
			403-9	Work-related injuries	56
			403-10	Work-related ill health	56
Data privacy management	GRI 418: Data privacy 2016	Our Approach to Information Security and Data Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	None.

* Refers to GRI Standard 103 (2016) including 103-1, 103-2, 103-3

Material priority	GRI Standard	Management Approach* Location	GRI Topic-Specific Disclosures	Page	Omissions	
Employee training and development	GRI 404: Training and Education 2016	Our Approach to Employment	404-1	Average hours of training per employee	57	
			404-2	Programs for upgrading employee skills and transition assistance programs	30	
			404-3	Employees receiving performance reviews	57	
Digital inclusion	GRI 203: Indirect economic impacts 2016	Our Approach to Digital Inclusion	203-2	Significant indirect economic impacts	18	
Advanced technologies & innovations	GRI 203: Indirect economic impacts 2016		203-2	Significant indirect economic impacts	14-18	
Responsible supply chain management	GRI 414: Supplier Social Assessment 2016	Our Approach to Responsible Supply Chain Management	414-1	New suppliers that were screened using social criteria	100% of new Tier 1 strategic global suppliers	
Business continuity & recovery	Ribbon Indicator			ISO certification ISO 22301:2019	57	
Water**	GRI 303: Water 2018	Environmental Policy	303-1	Interactions with water as a shared resource	53	
			303-2	Management of water discharge-related impacts	53	
			303-3	Water withdrawal	53	
Waste**	GRI 306: Waste 2020	Environmental Policy	306-1	Waste generation and significant waste-related impacts	25	
			306-2	Management of significant waste-related impacts	25	
			306-3	Waste generated	54	
			306-4	Waste diverted from disposal	54	
			306-5	Waste directed to disposal	54	
Community**	GRI 413: Local Communities 2016	34	413-1	Operations with local community engagement	34	

* Refers to GRI Standard 103 (2016) including 103-1, 103-2, 103-3

** Not identified as material for Ribbon.

Data Tables and Disclosures

102-8 Information on employees

Employees by region, gender and contract	2019			2020			2021		
	Men	Women	All	Men	Women	All	Men	Women	All
North America	1,001	230	1,231	926	221	1,147	807	196	1,003
EMEA	895	278	1,173	840	254	1,094	813	245	1,058
ASIA	1,119	310	1,429	1,104	313	1,417	1,156	360	1,516
LATAM	118	13	131	107	16	123	100	21	121
All employees	3,133	831	3,964	2,977	804	3,781	2,876	822	3,698
Percentage full time contracts	99%	93%	98%	99%	94%	99%	99%	94%	98%
Percentage permanent contracts	79%	21%	99%	100%	98%	99%	99%	99%	99%

Notes: Employee data represents headcount, year-end. Full time is equivalent to >30 hours per week.

102-12: External initiatives

Ribbon engages with EcoVadis for supply chain assessment.

102-13: Membership of associations

Around the world, Ribbon plays a role in several associations including the Telecommunications Industry Association (TIA). See our website for a list of industry organizations in which Ribbon participates: <https://ribboncommunications.com/partners/industry-organizations>

102-40: List of stakeholder groups

10 stakeholder clusters (in alphabetical order):

- **Capital Markets:** including banks, financiers, investors and investment analysts, and rankers and raters of ESG performance
- **Communities:** including local communities, resident associations, and local interest groups
- **Customers:** including all different customer categories and sales channel partners
- **Employees:** including current and potential employees, employee families and retirees, and employee representatives
- **Financers:** including banks, insurance agencies and financial service providers
- **Industry:** including peers, industry associations, industry opinion leaders and standard setters
- **Influencers:** including sustainability standard setters, global or national sustainability organizations, corporate responsibility opinion leaders, UN and international institutions, media and social media

- **Regulators:** including national government and local municipalities and licensing authorities
- **Society and Planet:** including Non-Governmental Organizations, non-profits, humanitarian, human rights and environmental organizations and academia
- **Suppliers:** including suppliers, vendors, contract manufacturers and relevant supplier associations

102-41: Collective bargaining agreements

Employees covered by collective bargaining agreements	2019	2020	2021
North America	1	1	1
EMEA	717	643	652
ASIA	0	0	0
LATAM	10	12	13
All employees	728	656	666
Percentage of total employees	18%	17%	18%

102-42: Identifying and selecting stakeholders

See [Our Approach to Stakeholder Engagement](#)

102-43: Stakeholder engagement

See [Our Approach to Stakeholder Engagement](#)

102-44: Key topics and concerns raised

Stakeholder	Key topics raised	Nature of engagement
Capital Markets	Compliance, ESG disclosure	Investor meetings, analyst questionnaires
Communities	Local economic impact and support	Community engagement, volunteering events
Customers	Value, quality, service, innovation, ethical conduct, sustainability	Meetings, ESG questionnaires
Employees	Clear strategy, career opportunities, recognition and appreciation	Meetings, CEO visits, engagement and pulse surveys, performance reviews
Financers	Compliance, sound financial performance	Meetings
Industry	Collaboration, active support for technology development and industry reputation	Working groups, industry meetings and events
Influencers	Sustainability performance, ESG disclosure	Meetings, presentations, conferences
Regulators	Compliance, ESG disclosure	As needed
Society and Planet	Sustainability strategy and performance, engagement on key issues	Meetings as needed, conferences and events, response to queries
Suppliers	Fair dealing, opportunity to grow, clear requirements and feedback	Meetings, business reviews, industry events

Note to energy and emissions data compilation

- Energy and emissions data covers all Ribbons sites operational in 2021 with a population of more than 25 employees approximately. Sites with fewer employees are smaller sales offices and we do not closely track consumption or usage. In general, our data represents approximately 80% of our employees. Ribbon's operational sites change from year to year as customer demand changes and we relocate operations to deliver efficiencies.
- We apply an operational control basis.
- In 2021, we converted to a global online platform for recording environmental data using the UL360 tool. We included three years of data in the tool and values have been updated for prior years where minor discrepancies were found. Going forward, we now have auditable data that is monitored throughout the year using the online platform.
- Energy conversion factors apply UK Government GHG Conversion Factors for Company Reporting for each reporting year.
- Emissions conversion factors use International Energy Agency (IEA) factors for electricity generation by country by year with trade adjustments applied. We report CO₂, N₂O, CH₄ factors supplied by IEA.
- Market based emissions are applied in one location only (Maidenhead, UK) where we have Certificates of Origin from our site landlord. All other site emissions reporting is location based.
- We have significantly expanded our Scope 3 reporting this year and now include 98% of our contract manufacturer electricity usage and other Scope 3 categories. We continue to work on improving our Scope 3 reporting.
- MT refers to metric tons.
- YOY means year-on-year, a comparison with prior year performance.

302-1: Energy consumption within the organization

Energy Type	Units	2018	2019	2020	2021	YOY
Natural gas	GJ	16,724	19,826	17,348	23,883	38%
Diesel	GJ	1,619	1,744	935	1,110	19%
Gasoline	GJ	16,121	14,359	23,445	12,081	-48%
LPG/Propane	GJ	0	0	0	4	
Total Scope 1 energy gases and fuels	GJ	34,464	35,930	41,728	37,078	-11%
Purchased electricity	GJ	179,426	184,223	183,028	202,452	11%
Renewable electricity purchased	GJ	2,574	3,046	3,725	3,068	-18%
Total Scope 2 energy	GJ	182,000	187,268	186,752	205,519	10%
Total energy consumption	GJ	216,464	223,198	228,480	242,597	6%

302-3: Energy intensity

Intensity by type	Units	2018	2019	2020	2021	YOY
Scope 1 Fuels and gases	GJ/employee	12.35	12.81	14.35	13.19	-8%
Scope 2 Electricity	GJ/employee	65.23	66.79	64.22	73.14	14%
Total energy intensity/employee	GJ/employee	77.59	79.60	78.57	86.33	10%
Scope 1 Fuels and gases	GJ/m ²	0.469	0.469	0.505	0.357	-29%
Scope 2 Electricity	GJ/m ²	2.48	2.45	2.26	1.98	-12%
Total energy intensity/m²	GJ/m²	2.95	2.92	2.76	2.34	-15%
Scope 1 Fuels and gases	GJ/\$M	59.636	63.806	49.453	43.881	-11%
Scope 2 Electricity	GJ/\$M	314.93	332.56	221.32	243.23	10%
Total energy intensity/\$Million	GJ/\$M	374.57	396.37	270.78	287.11	6%

305-1: Direct (Scope 1) GHG emissions

305-2: Energy indirect (Scope 2) GHG emissions

Scope 1 - Gases and fuels	Units	2018	2019	2020	2021	YOY
Natural gas	mt CO ₂ e	959	1,127	983	1,215	24%
Diesel	mt CO ₂ e	198	129	69	73	6%
Gasoline	mt CO ₂ e	2,762	1,007	1,643	771	-53%
LPG/Propane	mt CO ₂ e	0	0	0	82	N/A
Total Scope 1 GHG emissions	mt CO₂e	3,919	2,263	2,695	2,141	-21%
Scope 2 - Electricity		2018	2019	2020	2021	YOY
Purchased electricity market based	mt CO ₂ e	21,641	21,218	20,483	20,795	2%
Renewable electricity purchased	mt CO ₂ e	187	183	177	179	2%
Total Scope 2 GHG emissions	mt CO₂e	21,827	21,401	20,660	20,975	2%
Total Scope 1+2 GHG emissions	mt CO₂e	25,746	23,663	23,355	23,116	-1%
Scope 1+2 Market based	mt CO ₂ e	25,746	23,663	23,355	23,116	-1%
Scope 1+2 Location based	mt CO ₂ e	22,109	23,677	24,380	23,725	-3%

305-3: Other indirect (Scope 3) GHG emissions

Scope 3 emissions	Units	2018	2019	2020	2021
Category 1 - Purchased goods and services	mt CO ₂ e	-	-	-	1,832
Category 3A - Upstream emissions of purchased fuels	mt CO ₂ e	-	-	-	441
Category 3B - Upstream emissions of purchased electricity	mt CO ₂ e	-	-	-	6,237
Category 3C - Transmission and distribution (T&D) losses	mt CO ₂ e	-	-	-	1,720
Category 5 - CO ₂ e - Waste Generated in Operations	mt CO ₂ e	-	-	-	47
Category 6 - CO ₂ e - Business travel	mt CO ₂ e	3,343	3,416	632	594
Category 7 - CO ₂ e - Employee commuting	mt CO ₂ e	-	-	1,198	1,363
Total Scope 3 GHG emissions	mt CO₂e	3,343	3,416	1,830	12,234

305-4: GHG emissions intensity

Intensity by type	Units	2018	2019	2020	2021	YOY
Scope 1 GHG emissions intensity	mt CO ₂ e /employee	1.40	0.81	0.93	0.76	-18%
Scope 2 GHG emissions intensity	mt CO ₂ e /employee	7.82	7.63	7.10	7.46	5%
Scope 1+2 by employee	mt CO₂e /employee	9.23	8.44	8.03	8.23	2%
Scope 1 GHG emissions intensity	mt CO ₂ e /m ²	0.05	0.03	0.03	0.02	-37%
Scope 2 GHG emissions intensity	mt CO ₂ e /m ²	0.30	0.28	0.25	0.20	-19%
Scope 1+2 by square meters	mt CO₂e /m²	0.350	0.309	0.283	0.223	-21%
Scope 1 GHG emissions intensity	mt CO ₂ e /\$M	6.78	4.02	3.19	2.53	-21%
Scope 2 GHG emissions intensity	mt CO ₂ e /\$M	37.77	38.00	24.48	24.82	1%
Scope 1+2 by revenue	mt CO₂e /\$M	44.55	42.02	27.68	27.36	-1%
Scope 3 GHG emissions intensity	mt CO ₂ e /employee	-	-	-	4.35	-
Scope 3 GHG emissions intensity	mt CO ₂ e /m ²	-	-	-	0.12	-
Scope 3 GHG emissions intensity	mt CO ₂ e /\$M	-	-	-	14.48	-
Scope 1+2+3 all types						
Scope 1+2+3 GHG emissions intensity	mt CO ₂ e /employee	10.46	9.59	8.95	12.58	41%
Scope 1+2+3 GHG emissions intensity	mt CO ₂ e /m ²	0.397	0.351	0.315	0.341	8%
Scope 1+2+3 GHG emissions intensity	mt CO ₂ e /\$M	50.52	47.76	30.84	41.84	36%

303-1: Interactions with water as a shared resource

Ribbon is not a water intensive business. We use small volumes of water for hygiene, cooling and irrigation purposes. We aim to minimize our consumption wherever possible with water-saving devices across our sites.

303-2: Management of water discharge-related impacts

Our water discharge is non-toxic and is treated through municipal water grids.

303-3: Water withdrawal

Water withdrawal	Units	2018	2019	2020	2021	YOY
Municipal water	megaliters	27.45	31.44	21.68	40.74	88%
Water intensity	m ³ /employee	9.84	11.21	7.45	14.50	95%
Water intensity	m ³ /m ²	0.37	0.41	0.26	0.39	50%
Water intensity	m ³ /\$M	47.49	55.83	25.69	48.21	88%

Note: Several of our sites are leased and water is not effectively metered by all the landlords of our leased facilities. With increased demand from Ribbon and other users, landlords are investing in improved water metering and usage reporting. We expect this will increase the accuracy of our water usage reporting in the future. In 2021, our data represents approximately 70% of our overall estimated consumption.

306-3: Waste generated
306-4: Waste diverted from disposal
306-5: Waste directed to disposal

Type of Waste	Units	2018	2019	2020	2021
Plastic	Metric tons	0	0	6	0
Board, paper	Metric tons	25	42	33	33
Chemical	Metric tons	4	0	109	0
Organic	Metric tons	0	0	113	4
Electronic Waste (WEEE)	Metric tons	0	0	0	200
Dry Mixed Recycling (paper/cans/plastic containers)	Metric tons	152	132	84	107
Other	Metric tons	0	2	9	21
TOTAL	Metric Tons	181	176	353	367
Non-hazardous diverted waste from disposal					
Recycling (including energy recovery)	Metric tons	152	46	164	200
Other recovery operations	Metric tons	0	0	40	47
Non-hazardous waste directed to disposal					
Incineration (with energy recovery)	Metric tons	0	0	0	4
Landfill	Metric tons	0	144	108	95
Other disposal operations.	Metric tons	0	0	0	0
Total non-hazardous waste diverted	Metric Tons	152	46	205	247
Total non-hazardous waste disposed	Metric Tons	0	144	108	99
Total non-hazardous waste	Metric Tons	152	189	313	345
Hazardous waste diverted from disposal					
Recycling (including energy recovery)	Metric tons	0	0	20	0
Other recovery operations (IT waste)	Metric tons	4	2	8	21
Hazardous waste directed to disposal					
Incineration	Metric tons	0	0	0	0
Landfill	Metric tons	0	0	0	0
Total hazardous waste diverted	Metric Tons	4	2	28	21
Total hazardous waste disposed	Metric Tons	0	0	0	0
Total hazardous waste	Metric Tons	4	2	28	21
Total non-hazardous waste	Metric Tons	152	189	313	345
Total hazardous waste	Metric Tons	4	2	28	21
Total waste	Metric Tons	156	191	341	367
Total waste diverted	Metric Tons	156	47	233	268
Total waste disposed	Metric Tons	0	144	108	99
Total waste diverted	%	100%	25%	68%	73%
Total waste disposed	%	0%	75%	32%	27%

401-1: New employee hires and turnover

		Men < 30	Men 30-50	Men > 50	Women < 30	Women 30-50	Women > 50	All Men	All Women	Total
2021: New hires	North America	25	35	33	16	10	5	93	31	124
	EMEA	22	47	14	9	13	3	83	25	108
	ASIA	163	71	4	100	9	0	238	109	347
	LATAM	8	9	0	1	5	0	17	6	23
	Total	218	162	51	126	37	8	431	171	602
2021: New hire rates	North America	0.68%	0.95%	0.89%	0.43%	0.27%	0.14%	2.51%	0.84%	3.35%
	EMEA	0.59%	1.27%	0.38%	0.24%	0.35%	0.08%	2.24%	0.68%	2.92%
	ASIA	4.41%	1.92%	0.11%	2.70%	0.24%	0.00%	6.44%	2.95%	9.38%
	LATAM	0.22%	0.24%	0.00%	0.03%	0.14%	0.00%	0.46%	0.16%	0.62%
	Total	5.90%	4.38%	1.38%	3.41%	1.00%	0.22%	11.65%	4.62%	16.28%
2021: Leavers	North America	20	31	73	10	14	19	124	43	167
	EMEA	14	62	19	4	20	8	95	32	127
	ASIA	101	76	4	47	15	1	181	63	244
	LATAM	3	7	3	0	0	0	13	0	13
	Total	138	176	99	61	49	28	413	138	551
2021: Turnover rates	North America	0.54%	0.84%	1.97%	0.27%	0.38%	0.51%	3.35%	1.16%	4.52%
	EMEA	0.38%	1.68%	0.51%	0.11%	0.54%	0.22%	2.57%	0.87%	3.43%
	ASIA	2.73%	2.06%	0.11%	1.27%	0.41%	0.03%	4.89%	1.70%	6.60%
	LATAM	0.08%	0.19%	0.08%	0.00%	0.00%	0.00%	0.35%	0.00%	0.35%
	Total	3.73%	4.76%	2.68%	1.65%	1.33%	0.76%	11.17%	3.73%	14.90%

Note: Turnover rates include both voluntary and involuntary turnover.

403-1: Occupational health and safety (OHS) management system

We maintain a comprehensive set of OHS standards that are applied throughout Ribbon's operations.

403-2: Hazard identification, risk assessment, and incident investigation

Work related hazards are identified through workplace inspections and safety observations as defined in our OHS Management System.

403-3: Occupational health services

Ribbon does not provide occupational health services onsite.

403-4: Worker participation, consultation, and communication on occupational health and safety

Safety Committees operate at all Ribbon sites and include representation from management and employees.

403-5: Worker training on occupational health and safety

We provide OHS training online or in classroom format, where relevant, for all new employees and annual safety refreshers for all employees. For employees in specific roles, such as in our laboratories, targeted safety training is delivered, covering specific risks associated with identified roles.

403-6: Promotion of worker health

Ribbon promotes health and wellness and aims to raise awareness among employees through our annual Wellness Month and other activities throughout the year. We provide health and wellness related benefits in different countries in line with local market norms, such as medical insurance, dental insurance and more.

403-7: Prevention and mitigation of occupational health and safety impacts directly linked by business relationships

Our Supplier Code of Conduct requires our suppliers to ensure safe working conditions and a healthy work environment for their workers and uphold a detailed list of OHS standards. We audit our suppliers regarding conformance to our Code.

403-8: Workers covered by an occupational health and safety management system

All Ribbon employees are covered by our OHS management system.

403-9: Work-related injuries

Injury rate by year	2019	2020	2021
Employees and contractors	0.243	0.177	0.158

Work-related injuries		2020			201		
		Direct employees	Other workers	Total workforce	Direct employees	Other workers	Total workforce
Hours worked		6,058,000	738,000	6,796,000	6,295,000	1,288,000	7,583,000
Fatalities	Number	0	0	0	0	0	0
	Rate	0	0	0	0	0	0
Work-related injuries	Number	4	2	6	6	0	6
	Rate	0.1321	0.5420	0.1766	0.1906	0.0000	0.1582
Recordable work-related injuries	Number	0	0	0	0	0	0
	Rate	0	0	0	0	0	0
High-consequence work-related injuries	Number	0	0	0	0	0	0
	Rate	0	0	0	0	0	0

Notes:

- Injury rates are calculated per 200,000 hours for actual hours worked
- Work-related injuries includes all injuries including those requiring first aid but not necessarily resulting in lost workdays.
- In 2021, many employees continued to work from home for part of the working week. Safety data includes employees working from home.

403-10: Work-related ill health

Ribbon has not identified any significant cases of work-related ill health in 2021.

404-1: Average hours of training per employee

Training hours	2019	2020	2021
Managers	11,093	8,080	8,781
Non-managers	55,502	37,298	41,264
All employees	66,595	45,378	50,045
Average training hours per employee per year	10.78	12.00	13.53

Note: Split by gender was not calculated for 2021. We aim to report training by gender in 2022. Calculation of training hours excludes role-based in-job training.

404-3: Employees receiving performance reviews

Details of performance reviews	2019		2020		2021	
	Men	Women	Men	Women	Men	Women
Managers	92%	100%	100%	100%	100%	99%
Non-managers	100%	99%	99%	98%	97%	97%
Total by gender	98%	99%	99%	99%	97%	97%
Total	99%		99%		97%	

405-1: Diversity of governance bodies and employees

Employees by age group	2020			2021		
	< 30	30 - 50	> 50	< 30	30 - 50	> 50
Number of managers	4	298	367	3	372	301
Number of non-managers	737	880	1,495	771	1,403	848
Total employees	741	1,178	1,862	774	1,775	1,149
% of managers	1%	45%	55%	0%	55%	45%
% of non-managers	24%	28%	48%	26%	46%	28%
% of total employees	20%	31%	49%	21%	48%	31%

Board of Directors: Two Board members are women (22%) and two (22%) are underrepresented minorities. Total Board diversity: 44%

SASB DISCLOSURE

Topic	Code	Accounting Metric	Response
Product Security	TC-HW-230a.1	Description of approach to identifying and addressing data security risks in products	See response on page 59
Employee Diversity & Inclusion	TC-HW-330a.1	Percentage of gender and racial/ethnic group representation for management	8% women at executive and management level. 8% racial/ethnic representation at management level*
		Percentage of gender and racial / ethnic group representation for technical staff	7% racial / ethnic group representation for technical staff. Percentage of gender representation for technical staff not currently available
		Percentage of gender and racial/ethnic group representation for all other employees	23% of all non-management employees at Ribbon are women. 3% of racial/ethnic group representation among non-management non-technical employees at Ribbon.
Product Lifecycle Management	TC-HW-410a.1	Percentage of products by revenue that contain IEC 62474 declarable substances	Zero
	TC-HW-410a.2	Percentage of eligible products, by revenue, meeting the requirements for EPEAT registration or equivalent	Our products are not registered with EPEAT
	TC-HW-410a.3	Percentage of eligible products, by revenue, meeting ENERGY STAR® criteria	We do not currently apply ENERGY STAR® criteria for our products.
	TC-HW-410a.4	Weight of end-of-life products and e-waste recovered (metric tons)	Not available
Percentage of end-of-life products and e-waste recovered recycled		Not available	
Supply Chain Management	TC-HW-430a.1	Percentage of Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent - all facilities	Ribbon supplier facilities are audited using Ribbon's internal standards, guided by ISO. 100% of Tier 1 facilities were audited in 2021.
		Percentage of Tier 1 supplier facilities audited in the RBA Validated Audit Process (VAP) or equivalent - high-risk facilities	Ribbon supplier facilities are audited using Ribbon's internal standards, guided by ISO. 100% of Tier 1 facilities were audited in 2021.
	TC-HW-430a.2	Tier 1 suppliers' non-conformance rate with the RBA Validated Audit Process (VAP) or equivalent and corrective actions	Zero major non-conformances were found in audited suppliers in 2021 against Ribbon's internal standards.
Materials Sourcing	TC-HW-440a.1	Description of the management of risks associated with the use of critical materials	Ribbon does not have a critical material risk, given our minimal use of such materials. In any event, we do not stockpile materials and maintain mitigations plans for all materials that can be substituted if necessary.

* Racial / ethnicity data is based on voluntary self-identification and many employees choose not to self-identify. We believe our data includes approximately 44% of the workforce. Rates have been calculated against the total workforce and are therefore likely to be understated.

Code	Activity Metric	Response
TC-HW-000.A	Number of units produced by product category	More than 60% of revenues come from services. The remaining sales are hardware in different forms, but specific numbers of units shipped is not currently tracked globally.
TC-HW-000.B	Area of manufacturing facilities	All Ribbon manufacturing is outsourced. Ribbon has no owned or operated manufacturing facilities.
TC-HW-000.C	Percentage of production from owned facilities	0%

Product Security: TC-HW-230a.1

Description of approach to identifying and addressing data security risks in products

- Product security considerations, risk assessments, hazard identification and protection measures are built into Ribbon processes at every state of our product lifecycle through concept, planning design validation, maintenance and end-of-life.
- Ribbon R&D supports an active program to ensure that our products are as secure as possible, based on working with leading frameworks and standards over several years. We incorporate learnings from:
 - The Open Web Application Security Project ® (OWASP)
 - The CERT Coordination Center (CERT/CC)
 - Most Dangerous Software Errors (CWE/SANS)
 - Center for Internet Security (CIS)
- Our product security program also manages a set of processes and policies that support maintaining highest possible levels of security such as: Vulnerability Resolution Policy, Incident Response Process, and other processes.
- Ribbon's product R&D organization utilizes a variety of tools to help manage and maintain product security. Tests are also run with an AddressSanitizer (ASan) instrumented load.
- Ribbon engineers receive mandatory annual security training that combines commercial security training along with proprietary training content.

TCFD OVERVIEW

This is our overview of climate-related financial disclosures in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). TCFD is a voluntary, consistent framework for disclosure aiming to provide information to investors, lenders, insurers and other stakeholders.

For further information, see also our [CDP Climate Change submissions on the CDP website](#).

1. Governance

1.1 Board oversight

Ribbon's Board of Directors reviews and guides Ribbon's sustainability strategy and climate change goals and aspirations. Our overall sustainability strategy is led by Ribbon's Executive Vice President and Chief Legal Officer., who updates the President and Chief Executive Officer and Board of Directors regularly through the year.

1.2 Management's role

Our Executive Team takes responsibility for Ribbon's climate change strategy, under the leadership of Executive Vice President and Chief Legal Officer. In 2020, our Executive Team authorized the investment in a multi-year sustainability strategy, following a robust materiality assessment and selection of the most important sustainability topics that are relevant for Ribbon and Ribbon's stakeholders. The sustainability strategy comprises four pillars, one of which is Low Carbon Economy, addressing our aspiration to contribute to decarbonizing the global economy through innovative technologies and resource efficiency. As an initial target, we commit to reducing our direct greenhouse gas emissions by 30% by 2030 (Scope 1+2 CO₂e, from a base year of 2018), with an ultimate aspiration to achieve net zero emissions.

Within Ribbon, our Real Estate and Supply Chain Management divisions monitor our energy consumption and waste, tracking our performance at each of our sites around the world. These teams are responsible for recommending and implementing operational efficiencies and recommending capital investment where relevant to support improving our energy, emissions and waste performance.

2. Strategy

2a. Climate-related risks and opportunities

Ribbon is primarily a contributor to climate change mitigation through the products and services we provide that accelerate and amplify digital transformation, a proven, reliable enabler of a low carbon economy. Our business does not directly manufacture products, our infrastructure and direct greenhouse gas emissions are modest. We outsource our component manufacturing to large, reliable, robust third-

party manufacturers who have a presence in multiple international locations. This enables us to implement a flexible and efficient manufacturing and logistics landscape for each product line and target markets. This structure also facilitates business continuity to mitigate risks related to trade tariffs, natural disasters, critical material supply and other climate change impacts.

Risks: We review risks to our business annually in our Enterprise Risk Management program and seek to mitigate identified risks through risk management action tool and also through our Business Continuity Management System.

A preliminary assessment of climate change risks to our business indicates that there are no expected material impacts in the short term. In the medium to long term, we face potential disruption to services at our facilities, or disruption to Internet infrastructure that could affect our customers. These risks are mitigated through our considerable flexibility of manufacturing, strong supplier relationships and of operations from our R&D and testing sites. Our robust business continuity planning enables us to prepare effectively to safeguard against these risks.

Additionally, in the medium to long term, we may face risks from increasing carbon regulation and pricing. We do not expect that this will materially affect our business, given our low carbon footprint today, which is also a result of our ongoing successes at optimizing our operational efficiencies and reducing our carbon footprint for over a decade.

This gives us confidence that, as we plan to further reduce our carbon footprint, we expect this risk to reduce further in significance.

Opportunities: With Internet and Communications Technology (ICT) being a major contributor to sustainable development and a low carbon economy, we see significant business opportunity in the continuation of provision of or products and services that support digitization of communications and national digital transformations. Currently, we are attracting many customers on the basis of our positive sustainability performance and our ability to help them meet their own climate change objectives and help them protect themselves against energy price volatility and carbon tariffs. In 2021, 66% of our annual global revenue was influenced by sustainability considerations and requirements from our customers and 92% of 2021 revenue from Ribbon's top 20 global customers (by spend) was linked to sustainability requirements

2b. Impact on strategy

Ribbon intends to conduct a science-based analysis of potential climate change impacts on our business strategy, and we expect to disclose more extensively on this in future reports. Given the modest risk exposure of our business, we do not anticipate that a major strategic transformation will be required, but rather adjustments to new and emerging realities.

2c. Climate resilience

ICT is a major contributor to sustainable development and a low carbon economy and we see significant business opportunity in the continuation of provision of our products and services that support digitization of communications and national digital transformations. We deliver 5G and are developing the next generation of network infrastructure, we provide essential services for national governments, utilities, education and healthcare sectors. We believe we are supporting climate resilience in many markets around the world and expect accelerated and expanded demand for our products over time, as global digital transformation continues to advance, especially in emerging economies. In 2021, we invested 23% of our global revenue in innovation to continue to support the acceleration of a low-carbon digital economy.

3. Risk Management

3a. Process to identify climate change risk

Annually we use many expert sources of data, both internal and in the public domain to assign impact and likelihood scores to newly identified risks that may affect our business. Our Enterprise Risk Management program seeks to track mitigation of our identified risks through risk management actions and also through enhancements to our Business Continuity Management System.

3b. Process to manage climate change risks

Our Enterprise Risk Management program also seeks to review the previous scoring of identified risks and mitigate identified risks through risk management actions and also through our Business Continuity Management System. We maintain a companywide program that is carefully reviewed at each stage and involve reporting to our Executive management.

3c. Climate change integration

We have risk management, disaster preparedness, and business continuity plans that are fully integrated into our business planning and ongoing review. We believe these are robust enough to safeguard against climate change risks to Ribbon's business.

4. Metrics

4a. Metrics

Ribbon measures Scope 1+2 GHG emissions, and partial Scope 3 emissions. In 2021, we enhanced our disclosure with 98% of our Scope 3 contract manufacturing and other Scope 3 category reporting.

4b. Emissions performance

Scope 1 - Gases and fuels	Units	2018	2019	2020	2021	YOY
Natural gas	MT CO ₂ e	959	1,127	983	1,215	24%
Diesel	MT CO ₂ e	198	129	69	73	6%
Gasoline	MT CO ₂ e	2,762	1,007	1,643	771	-53%
LPG/Propane	MT CO ₂ e	0	0	0	82	N/A
Total Scope 1 GHG emissions	MT CO₂e	3,919	2,263	2,695	2,141	-21%

Scope 2 - Electricity	Unit	2018	2019	2020	2021	YOY
Purchased electricity market based	MT CO ₂ e	21,641	21,218	20,483	20,795	2%
Renewable electricity purchased	MT CO ₂ e	187	183	177	179	2%
Total Scope 2 GHG emissions	MT CO₂e	21,827	21,401	20,660	20,975	2%
Total Scope 1+2 GHG emissions	MT CO₂e	25,746	23,663	23,355	23,116	-1%
Scope 1+2 Market based	MT CO ₂ e	25,746	23,663	23,355	23,116	-1%
Scope 1+2 Location based	MT CO ₂ e	22,109	23,677	24,380	23,725	-3%

Scope 3 - Indirect emissions	Units	2018	2019	2020	2021	YOY
Category 1 - Purchased goods and services	MT CO ₂ e	-	-	-	1,832	24%
Category 3A - Upstream emissions of purchased fuels	MT CO ₂ e	-	-	-	441	6%
Category 3B - Upstream emissions of purchased electricity	MT CO ₂ e	-	-	-	6,237	24%
Category 3C - Transmission and distribution (T&D) losses	MT CO ₂ e	-	-	-	1,720	6%
Category 5 - CO ₂ e - Waste Generated in Operations	MT CO ₂ e	-	-	-	47	6%
Category 6 - CO ₂ e - Business travel	MT CO ₂ e	3,343	3,416	632	594	-53%
Category 7 - CO ₂ e - Employee commuting	MT CO ₂ e	-	-	1,198	1,363	N/A
Total Scope 3 GHG emissions	MT CO₂e	3,343	3,416	1,830	12,234	-21%

GHG emissions intensity

Intensity by type	Units	2018	2019	2020	2021	YOY
Scope 1 GHG emissions intensity	mt CO ₂ e /employee	1.40	0.81	0.93	0.76	-18%
Scope 2 GHG emissions intensity	mt CO ₂ e /employee	7.82	7.63	7.10	7.46	5%
Scope 1+2 by employee	mt CO₂e /employee	9.23	8.44	8.03	8.23	2%
Scope 1 GHG emissions intensity	mt CO ₂ e /m ²	0.05	0.03	0.03	0.02	-37%
Scope 2 GHG emissions intensity	mt CO ₂ e /m ²	0.30	0.28	0.25	0.20	-19%
Scope 1+2 by square meters	mt CO₂e /m²	0.35	0.31	0.28	0.22	-21%
Scope 1 GHG emissions intensity	mt CO ₂ e /\$M	6.78	4.02	3.19	2.53	-21%
Scope 2 GHG emissions intensity	mt CO ₂ e /\$M	37.77	38.00	24.48	24.82	1%
Scope 1+2 by revenue	mt CO₂e /\$M	44.55	42.02	27.68	27.36	-1%
Scope 3 GHG emissions intensity	mt CO ₂ e /employee	-	-	-	4.35	-
Scope 3 GHG emissions intensity	mt CO ₂ e /m ²	-	-	-	0.12	-
Scope 3 GHG emissions intensity	mt CO ₂ e /\$M	-	-	-	14.48	-
Scope 1+2+3 all types						-
Scope 1+2+3 GHG emissions intensity	mt CO ₂ e /employee	10.46	9.59	8.95	12.58	41%
Scope 1+2+3 GHG emissions intensity	mt CO ₂ e /m ²	0.397	0.351	0.315	0.341	8%
Scope 1+2+3 GHG emissions intensity	mt CO ₂ e /\$M	50.52	47.76	30.84	41.84	36%

For the basis of our reporting, please see: Note to energy and emissions data compilation in our 2021 Sustainability Report.

4c. Targets

Reduce direct carbon emissions by 30% by 2030 (Scope 1+2 CO₂e, from a base year of 2018).

Longer term, we aspire to achieve net zero greenhouse gas emissions.



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