



# Sustainable

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# Sustainability

# Sustainability

## Our Approach

Not long ago, sustainability used to be seen as just a competitive advantage in certain markets and value chains. However, in response to the continuing environmental degradation and the global shift in ecological awareness, local, national and international policies and regulations have become increasingly more demanding making sustainability imperative for the future. Today, it is not only a global issue but the driving force throughout our entire industry. Apart from being a leader in our markets, our customers, investors and employees expect us to show leadership in environmental stewardship and to care for our people and communities.

Now, more than ever, players in the chemical industry are expected to take responsibility for their ecological footprint and not only related to the manufacturing of their products alone but also for responsibly acquiring raw materials and considering the environmental impacts at every stage in the products' lifecycle. With the shift towards a circular economy, the environmental 3 Rs – reduce, reuse, recycle are now key considerations.

### The 3 Rs of the environment



**RECYCLE**  
**REDUCE**  
**REUSE**

From our foundation in 1965, we have learned that we need to constantly be prepared for the future with all its changes and challenges. As our business expands around the world, so are our sustainability priorities and our ambitions. Beyond just seeing it as our duty, SONGWON's approach is a pragmatic one involving small but relevant, concrete steps over the time. At SONGWON, we aim to make sure that every business activity or development project we work on is as ecologically and economically sustainable as possible. We want to be part of creating things that last.

## Strengthening our commitment

For SONGWON, sustainability is a business approach that enables the creation of long-term value through embracing the opportunities and managing risks derived from economic, environmental, social and technological developments. Over the past several years, we have been taking significant measures to ensure our commitment and responsibility toward health, safety and sustainability is embedded in every aspect of our business – from operations to innovations and strategic planning, through to realizing it in all of our daily activities. Although the organization has made good progress towards sustainability, there is a real eagerness at all levels of the company to do more to achieve our goals.

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### SONGWON strives to:

#### **Avoid**

cease producing waste where possible

#### **Reduce**

minimize the levels of waste we produce

#### **Re-use**

make multiple use of items as many times as possible

#### **Recycle**

recycle what we can after re-using

#### **Dispose**

discard what does remain in a responsible way

#### **Discover**

seek to find new and innovative solutions

*We  
stand for*

#### SUSTAINING PEOPLE & THE ENVIRONMENT

Committing to deep, ongoing sustainability, social and ecological responsibility, while creating value through innovation represents the very core of what SONGWON has been all about since our foundation.

#### DOING THINGS RIGHT

Conducting our business and our affairs in full compliance with all relevant laws and regulations and in accordance with the highest ethical standards is one of our top priorities.

#### ACHIEVING WITH PRIDE

Receiving recognition and acknowledgement for the dedicated efforts of our people makes us proud and encourages us to forge ahead.

For the 3<sup>rd</sup> consecutive year we have been awarded the EcoVadis\* gold recognition level for Corporate Social Responsibility which places SONGWON among the top 3% of all businesses assessed.

#### SENDING CLEAR SIGNALS

Demonstrating that we take our responsibilities and obligations seriously, and have always been committed to transparency is very important to us. Each year in our Sustainability Report, we communicate our impacts, strategies and contributions to sustainable development in accordance with the GRI Standards.

\* EcoVadis is an independent rating agency specializing in sustainable development and performance monitoring.



To accelerate our efforts, SONGWON's management further strengthened our commitment to sustainability and our role as a contributor to the circular economy by appointing the company's 1<sup>st</sup> Chief Sustainability Officer (CSO). SONGWON's CSO is responsible for enhancing the level of sustainability across the organization, developing a comprehensive strategy that integrates all of our sustainability efforts and positioning SONGWON as an enabler of the circular economy.

#### Some of SONGWON's successful 2019 initiatives to achieve more sustainability in our plants:

- optimizing the use of steam during the distillation step
- recycling (partial) of washing solvents and mother liquors after the crystallization step
- reusing the steam condensate as boiler feeder water
- installing solar panels on the warehouse roof
- using an inverter to save electricity
- recovering solvents from the final product drying step
- direct recycling in crystallization of the recovered solvents
- improving process by eliminating the use of solvents
- reusing recovered products, intermediates and raw materials from tars and solid wastes



## Our approach towards a circular economy

We recognize and embrace our responsibility towards the environment and society. At SONGWON, we want to lead by example. Through our commitment to supporting the United Nations' Sustainable Development Goals (SDGs), we want to encourage other players in the plastics value chain to shift from a linear to a circular economy and to seek sustainable solutions that consider the entire lifecycle of plastics.

## Message from the CSO

"Sustainability is a group-wide challenge that involves our entire global team constantly striving to create better environmentally-sound solutions which are ethically sourced, generate less waste, using better materials, less packaging and delivering more value for our customers. For example, by developing additives which contribute to further improving the quality of plastics for recycling, we can contribute to making the overall process more ecological, faster and more efficient and support the transition from a linear to a

circular economy. However, only by coordinating and managing our approach across the organization, can we achieve SONGWON's sustainability goals.

SONGWON's ambitions are clear; we want to be a shaper, collaborator and valuable player in the emerging circular economy and do what we can to make a positive impact on the world around us. Every journey starts with a first small step and the more steps we take the closer we get to our goal."

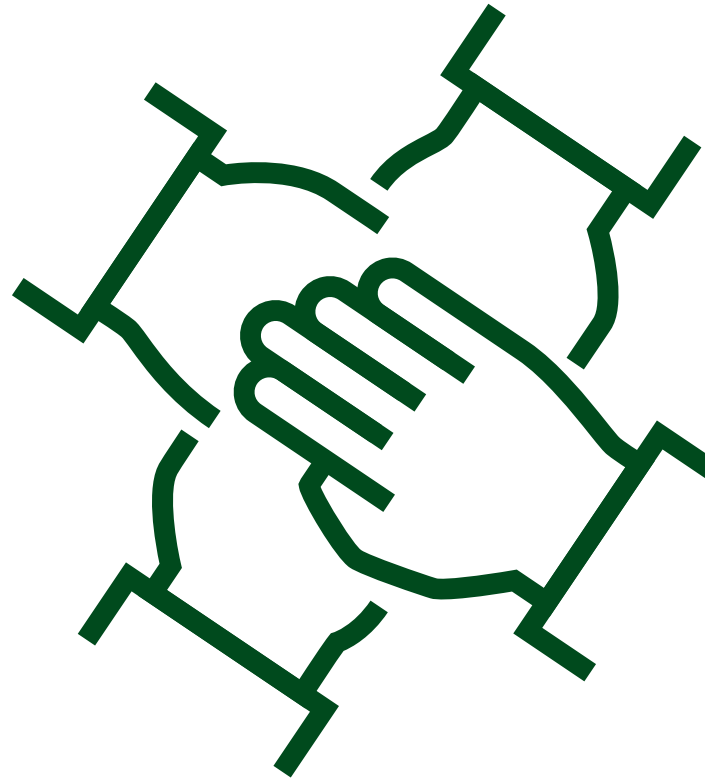


# Sustainable Value

SONGWON's global team is committed to sharing the expertise it has, and working closely with customers to develop products, applications and solutions that meet both SONGWON's and our customers' sustainability needs. Our technological expertise and innovation make it possible for us to deliver sustainable products and solutions that can help our customers address a wide variety of issues relating to the design, performance, recycling and lifecycle of plastics. Furthermore, SONGWON's stabilizers enable product lifetime extension (durability), reduce the amount of plastic required and hence decrease the emission of CO<sub>2</sub> and the consumption of fossil resources. In addition, our Coatings solutions, which we supply in a variety of physical forms, can be either water- or solvent-based. We're intensely focusing our efforts to replace solvent- with waterborne coating technologies and to reduce generation of volatile organic compounds (VOCs).

By developing more applications that reduce the consumption of energy and resources, SONGWON is adding value - value for our customers, our people, our investors as well as value for society and for future generations. At SONGWON, we strive to integrate sustainability into every breakthrough we make and develop products that benefit both society and the environment. We also place importance on increasing performance while developing value-creating features that contribute to technological and sustainable advancements in a wide range of applications.

Furthermore, as a leading organization, we agree that all players in the plastics value chain need to contribute to developing a roadmap for a circular economy for plastics and find sustainable solutions that consider the entire lifecycle of plastics. In line with this, we perform LCAs (lifecycle assessments) which help us to understand where negative impacts occur upstream. It also improves our ability to support customers by providing the transparency they need to secure sustainability in their supply chains. In this way we actively help our customers to measure and reduce their environmental impacts.



## Collaboration

We have been working for many years to become a more sustainable business and focused particularly on the specific challenges that we face in our industry and aligning our business targets with environmental and social requirements. SONGWON's business partners are included in this process and we make a point of actively engaging in dialogue with our stakeholders on sustainability issues.

Enabling change means seeking alternatives and to progress, we understand how imperative it is for us to engage with customers and/or suppliers or other relevant stakeholders. We also know that working together within SONGWON and with others is the best way to deal with and manage the major challenges facing both our industry, the communities we operate in and ultimately the world. With regards to this, finding sustainable solutions is only be possible if we engage and collaborate across the entire value chain which is why SONGWON actively works with suppliers, trade partners, regulators and organizations. We also seek every opportunity to join forces with other businesses, cooperate with partners and do our part to drive the industry's transition towards a more sustainable circular economy. For us, working together is the key.



SONGWON is one of the 1<sup>st</sup> chemical companies in the world to package its products in 20kg PE-bags made with 50% recycled PE (Christian Knappik, Key Account Manager/Business Unit Chemical Industry, RPC bpi nordfolien, with Hwasik Jung, Ulsan Plant Manager & Cord Manegold, Global Business Manager Main AO's & Blends).



**“The key to this success has been our open discussions and innovative collaboration. Everyone involved in this partnership is motivated to find solutions to the challenges we face together as an industry and we are very pleased that SONGWON’s dedication and passion to doing what is possible to make the world a little better, matches our own.”**

Andrew Green,  
CEO | bpi group

# Collaborating for the circular economy

Our drive to collaborate has enabled us to lead the way in sustainable packaging and label printing. Successfully partnering with the German innovative packaging specialists, Berry bpi group, SONGWON now uses specially developed heavy-duty PE-bags to package 20kg of product. The bags are made of recycled materials originating from different waste streams, including industrial printed bags that have already been used. Furthermore, all of the solvents that are required for de-inking are also recycled continuously in a closed loop process.

Both the SONGWON and Berry bpi group recognize that our obligation as plastics industry players is to manage our operations at the lowest environmental impact and to provide our customers with the solutions for dealing with our products at the end of their useful life. Working together with Berry bpi group puts SONGWON in an optimal position to better help and support our customers meet their own sustainability targets.



# Responding to market demands

Over the years, we have always secured a competitive advantage and remained a step ahead by keeping a close eye on trends, especially relating to demand. In the past couple of years, we have noted that the global market for flame retardants (FRs) has been growing steadily in part due to the increasing demands from the automotive and construction industries to meet stringent fire safety standards.

To take advantage of the trend and capitalize on the opportunity, SONGWON teamed up with Europe's leading manufacturer of non-toxic FRs for wood, Nordreat AS. Working together with them led to the launch of our new synergist technology, SONGFLAME® FR at the K 2019. The new synergists offer high-performance and competitive advantages to an extensive range of applications and were also designed to fuel the growth of halogen-free solutions for a wide variety of materials. Our two organizations are now currently working together to further develop new, safer and more environmentally friendly FR solutions for the wood construction sector.

The steady growth witnessed in the global market for flame retardants (FRs) is partly driven by the automotive and construction industries' demand to meet stringent fire safety standards. At K2019, SONGWON launched its new SONGFLAME® FR synergist technology that offers high-performance and competitive advantages to an extensive range of applications. Our two organizations are now currently working together to further develop new, safer and more environmentally friendly FR solutions for the wood construction sector.



**“We have been very impressed by SONGWON’s leadership and its long-term vision and investment in making safer, more environmentally friendly solutions in FR. We’ve also been delighted to experience a real drive to bring joint-projects to completion.”**

Aki Borgentorp,  
Chief Executive Officer | Nordreat AS



# OUR DRIVE FOR MORE *sustainability*

- agro-waste boiler, Panoli
- PE bags made from recycled materials
- LEDs in Ulsan
- FCE\* certified printed materials
- de-inking solvents continuously recycled
- climate partner\*\* label
- switched to renewable energy
- stabilizers prolong lifetime of polymers
- DHL Go Green initiative member
- product label reduction

\* FSC (Forest Stewardship Council)

\*\* Climate Partner supports companies in climate protection.

# Corporate Social Responsibility (CSR)

To continue delivering the most advanced high-quality solutions, providing the best-in-class service for customers and contributing to more sustainability in our industry are main priorities for us. But we always aim to go an “extra mile” more than just those things. First and foremost, we are fully committed to being a responsible company that is continually improving its ecological footprint, as well as taking care of our people and the communities we serve. At SONGWON, giving back to the communities we serve is ingrained in the culture and values of our business. It is a common thread that runs across our global organization. It both unites and inspires us.

We have always believed that performance and responsibility are inseparable. Our belief that these two vital aspects belong side by side, forms the very core of our company culture. Both our approach to CSR, and how we conduct our business in general, are founded on SONGWON's values of passion, integrity, excellence, credibility, teamwork understanding the needs of our customers and our communities.

As an integral part of our business, CSR underpins SONGWON's strategy and helps us to manage our impact on society by contributing to a more sustainable way of doing business. Maintaining SONGWON's reputation as an organization operating with the utmost integrity, and an industry player dedicated to continually improving our ecological footprint, as well as taking care of our people and the communities we serve is essential to our success.

Furthermore, our growth and long-term success is dependent on the overall health of the economy, our environment and society, and on the continual succession of diverse and highly talented people. CSR guides us in managing our impact on society, as well as contributing towards a more sustainable way of doing business. It ensures that we consciously consider the direct and indirect impacts of our operations on all SONGWON's stakeholders including our employees, partners, customers, suppliers and the local community.

Our commitment to CSR also directs us to apply ethical and socially-responsible management approaches to complement considerations relating to the environment. We are dedicated to improving the sustainability, performance and consistent quality of all the products in our broad portfolio. Our efforts also

extend to optimizing the way we treat our people, the communities we serve and the environment around us. Most importantly, we seek positive ways to support our local communities and initiatives that address some of the wider issues that affect us as global citizens.

## Caring for those in need

Even though health is one of our basic human rights, there are an estimated that 400 million people around the world who have no access to healthcare. Once again in 2019, SONGWON supported the efforts of a number of healthcare initiatives and medical missions to help efforts that enable people to lead better, healthier lives.

For several years, we have supported medical missions to the Siem Reap Province in northwestern Cambodia. It is the 2<sup>nd</sup> poorest province in the country with mortality rates that are almost double the regional average (according to WHO Western Pacific Region). Cambodians suffering extreme poverty, many of who live in isolated rural regions also suffer immensely from ill-health and little access to healthcare. SONGWON financially supports medical missions that enable Korean medical professionals to travel to Cambodia and provide free basic medical treatment and necessary surgery to people in need there.

In 2019, SONGWON supported the Dr. Jang Gi-ryeo Surgery Mission at the Hebron Medical Center located in Phnom Penh, the capital of Cambodia. There are also many underprivileged people living in the city who have very limited or no access healthcare. SONGWON's sponsorship makes it possible for medical experts specialized in cancer treatment from other countries, to perform necessary cancer-related operations on Cambodians who would not have been able to get this treatment otherwise. This mission is named after the renowned Korean surgeon, educator, and philanthropist, Dr. Jang Gi-ryeo and run by his grandson, Dr. Jang Yeogoo.

This year, SONGWON also continued to support initiatives in the developing country of Laos. Similar to the medical missions to Cambodia, we contributed to the Laos Medical Camp making it possible for Korean Blue Cross Medical Corps volunteer experts to provide medical treatment free-of-charge to those in need in Laos.



# A love of helping people

Dr. Jang Gi-ryeo (August 14, 1911 – December 25, 1995) is known as the greatest doctor of all time in Korea. He devoted his life to helping the poor and during his lifetime, established many free medical clinics and founded the Blue Cross Medical Cooperative – Korea's first medical insurance union.

Our support of initiatives in his name that honor the love he had of helping people goes back a long way. SONGWON's founder Kyoung-jae (KJ) Park and Dr. Gi-ryeo Chang were friends. Pictured here is a handwritten message that Dr. Chang wrote to Kyoung-jae (KJ) Park which hangs proudly on a wall at our Ulsan facility. The message refers to the 3 virtues: "Faith, Hope and Love. But the greatest of these is Love.



Another initiative we have supported for a number of years is the Dr. Jang Gi-ryeo memorial initiative of the Korean Blue Cross Medical Cooperative's medical camp which also makes free medical treatment possible for those who are unable to afford it themselves.

Another charitable program in memory of Dr. Jang Gi-ryeo that SONGWON supports is referred to as "Healing Shoes" which is for underprivileged children in Laos and Cambodia. It takes place during the medical camp and in addition to the program's various educational activities, young people are given shoes and school materials like books and pens.

SONGWON also supported the Blue Cross' new initiative: the Blue Cross Puppet Theater Corps. The theater was formed especially to bring children with rare diseases some joy and happiness.





# Reaching people in need



During one of the final Dr. Chang Surgery Camps in 2019, a young 12 year old Cambodian girl heard one of the local broadcasts about the camp. She had been ill since she was 9 years' old but could not receive the surgery she needed due to financial difficulties. She made the long and difficult journey to the camp and when she arrived, the medical team promised her the surgery in their first tour of 2020 and took a picture as a token of their commitment. This young girl is just one of many people who are receiving the urgent care they need from Dr. Chang Surgery Camp and it is people like her that we are proud to be able to support.

# Raising awareness

Our CSR efforts extend to include new initiatives directed towards raising awareness of health-related issues. Cleanliness is an essential element to remaining healthy and this year SONGWON supported a Korean health and welfare initiative called "Cleaning Hands". The program provides students with valuable information on the importance of keeping hands as clean as possible. We also supported the Blue Cross Youth Corps program which educates Korean medical healthcare students on how to handle various types of medicine but also on ways to discard medicine waste properly to prevent polluting and damaging the environment.

SONGWON also actively participated in an initiative established by the Khalifa Industrial Zone of Abu Dhabi (KIZAD), in cooperation with the Center of Waste Management – Abu Dhabi (Tadweer). The clean-up campaign for employees across the industrial zone was launched to raise awareness and promote environmental preservation and encourage residents to be more socially responsible. SONGWON employees worked together with over 100 people from Abu Dhabi Ports and from 11 other companies situated at KIZAD to remove waste from the area, which was then collected for sorting and recycling.





# EH&S

## Total commitment to EH&S

To remain a sustainable organization, we know that creating the most value for our stakeholders means that we require not only environmental stewardship but also a safe, injury-free, healthy working environment. Safety, health and environmental protection lie not only at the center of our responsibility to our employees, customers and suppliers but also to the communities we serve.

Health and safety and protecting the environment, have always been a main priority for us. Using a

proactive approach, we make sure that SONGWON's EH&S strategy is fully implemented, embraced and complied with at every level of the organization. We are all proud of the significant progress we have made in these important areas in the past several years. At SONGWON, ongoing improvement is a key part of our overall sustainability strategy and we are committed to further building on the solid foundation we have successfully laid. Aligned with this aim, we have implemented EH&S policies, procedures and standards for performance in all of our facilities across the globe to ensure we remain in compliance with applicable laws and regulations.

## In 2019

### THE EH&S TEAM:

- prepared IEC (Integrated Environment Control) – will be ongoing until 2022
- submitted CCA (Chemical Control Act) after conducting an off-site consequence analysis for hazardous chemicals & handling facility inspection
- created risk management plans for chemicals requiring accident preparation as required by CCA
- conducted HAZOP (Hazard & Operability) & K-PSR (KOSHA process Safety Review) study under PSM (Process Safety Management) of existing Maeam and Ulsan on-site processes
- ran a PSM self inspection for the Ulsan, Maeam & Suwon plants
- submitted PSM document for the new TBA Storage Tank installation in Maeam plant
- carried out risk assessments (checklist & HAZOP study) under MOC (Management Of Change)
- implemented safety walks for the Ulsan, Maeam, Suwon & Panoli plants
- conducted the yearly health inspections
- installed gas and leakage detectors & CCTV to detect hazardous chemicals leaks at Ulsan and Maeam plants
- reduced GHG emissions and saved costs through continuous replacement of metal-halide lights with LEDs
- replaced halogen extinguisher systems with sprinklers in the warehouse at the Ulsan site
- renovated the facilities handling of harmful chemical substances according to legal standards
- installed trenches for hazardous chemical storage in the loading & unloading area of the Ulsan and Maeam plants
- replaced natural gas fired steam boiler with an agro-waste fired steam boiler at the Panoli plant
- carried out LCAs (lifecycle assessments) for SONGWON's main AOs







Full compliance with social and environmental regulations is firmly anchored in our corporate philosophy and we strive to maintain natural resources and advocate environmental awareness both within and outside the company. Protecting employees, our facilities and the environment, as well as strongly advocating the sustainable use of natural resources and promoting environmental awareness are major components of our company's mission statement, and are of prime importance to SONGWON. Observing social and ecological concerns is the only way to ensure that we can achieve sustainable economic success for future generations.

SONGWON's continual dedication to the long-term health and safety of our people and protecting the environment, in which we operate, has led to vast improvements and also raised the level of EHS awareness across our entire global organization. The safety culture within SONGWON is not cultivated by a top down approach but relies on everyone working together in an environment where the protection of every individual is non-negotiable. Every member of SONGWON's global team is committed and actively participating in identifying and managing risks, and always seeks ways to protect the environment and improve the health and safety of our operations. This collective and dedicated approach underpins our commitment to sustainability leadership to all of SONGWON's stakeholders.

## Aiming for zero accidents

As a leading manufacturer, we continually monitor and seek to optimize the safety standards of our facilities, and do our very best to ensure accident-free operations. SONGWON's management emphasizes and promotes safety in every aspect of our daily operations and in all our facilities worldwide. Fully convinced that all accidents are preventable and that by applying safe working practices, hazards can be safeguarded against or removed, the management does everything in its power to create and support the safest working environment.

Furthermore, it is only possible to ensure accident-free manufacturing with a team of dedicated, safety-aware employees who are constantly alert and on the lookout for anything that might possibly be a threat to general safety and well-being. It is our belief that achieving best-in-class, zero accident safety is possible when our people have the right attitude, direct their efforts to eliminating or controlling risks and make the

right decisions accompanied by the most appropriate actions.

Throughout 2019, we continued our efforts to increase the EH&S awareness across our global team. In addition to extensive guidance for hazardous chemical management safety, we held trainings and delivered comprehensive information and best practices related to EH&S issues. In this respect, we use chemical accident videos and the EH&S materials created both by SONGWON and by official external authorities. As a result of ongoing training, we have been able to raise the PSM grade (Process Safety Management) at our Ulsan plant.

Our continual investment in intensive EH&S education and trainings instills higher levels of awareness relating to critical issues and encourages a proactive sense of responsible care among all the levels of the global organization. The management at SONGWON stresses EH&S as a top priority and this is strongly supported across the organization by SONGWON's managers who directly address root causes of workplace injuries, such as handling equipment incorrectly and encourage following appropriate safety procedures and best practices. In 2019, we had 2 recordable accidents across all our manufacturing sites, which include not only SONGWON employees but our contractors as well. Since 2008, this is the lowest value the organization has achieved and it continues to pursue a zero accident goal.

Accidents of any kind which occur at SONGWON must be reported. We compile the accident report data in our global database and carefully classify any injuries that may have occurred according to the local laws and record-keeping criteria. Accident report data involves all SONGWON Industrial Co. Ltd employees, as well as any contractors operating in our plants.

We continued to apply OCA (Offsite Consequence Analysis) and the RMP (Risk Management Plan) in accordance with the new Korean regulation (Chemical Control Act) and undergo regular safety inspections and assessments by the Korea Ministry of Environment. In order to enhance our efforts, we also cooperated with KISA (Korea Industrial Safety Association).

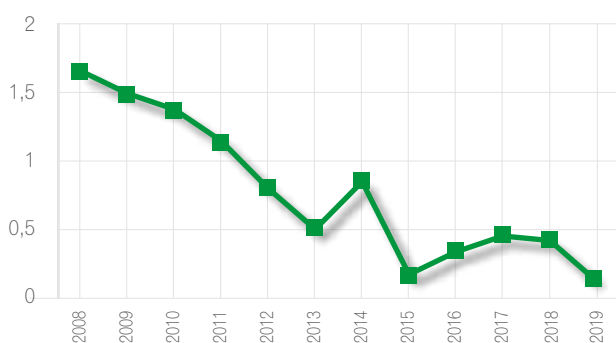
Preventative measures were also installed in 2019, in keeping with SONGWON's continuous improvement strategy. At our Ulsan and Maeam plants, gas and leakage detectors & CCTV are now fitted to make sure that any hazardous chemicals leaks are detected and

can be dealt with quickly. In the Ulsan warehouse, in addition to fire detectors, we replaced the gas extinguishing systems with sprinklers. Furthermore, we continued to implement even more stringent procedures. To improve our existing operating procedures as well as strengthen process areas, SONGWON makes it a priority each year to carry out continual investigations and assessments of all the possible risks within the organization. Twice a year, safety walk inspections are carried out in Ulsan, Maeam and Suwon in South Korea as well as at the Panoli plant in India. Joint emergency drill training with the local fire station and relevant government agency also took place this year at the Ulsan, Maeam and Suwon sites.

In 2019, a Process Safety Review (K-PSR) was done with operators which enabled us to identify and subsequently improve process risks and we will continue these reviews in 2020.

#### TRCR: Total Recordable Case Rate

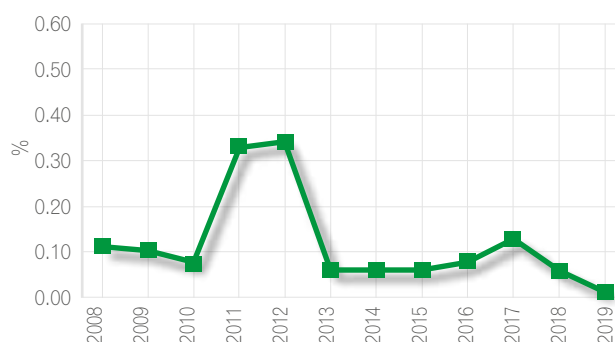
Recordable accidents \*200,000 / total working hours



The Total Recordable Case Rate (TRCR) in 2019 reached 0.14 and SONGWON registered a 0.001% Total Lost Day Rate (LDR). For the 9<sup>th</sup> continuous year, there were no fatalities and the organization achieved a zero Occupational Diseases Rate (ODR) and 0.0146% Absentee Rate (AR).

#### LDR: Lost Day Rate

total lost days/total worked hours



## Environmental awareness

SONGWON is dedicated to continually reducing the environmental impact of its business activities. The management team fully backs the development of processes that save energy, lower emissions and reduce the company's overall carbon footprint to ensure that SONGWON is able to meet its long-standing commitment to contributing to a more sustainable world.

The organization has a well-established and rigorous program for optimizing processes and increasing SONGWON's general competitiveness by lowering costs, as well as significantly reducing energy consumption, waste production and CO<sub>2</sub> emissions. To reduce our manufacturing technologies' overall pollution impact throughout 2019, we focused our efforts on substantially reducing the organic content in our wastewater and solid salts.

In line with our EH&S performance continual improvement strategy, we have started to implement the necessary technical improvements back in 2018 and now SONGWON is fully compliant with South Korean EH&S rules – such as the Chemical Control Act, relating to the integrated control of pollutant discharging facilities.

Compared to 2018, SONGWON achieved a volume reduction of waste water sludge in 2019, with a decrease in the sludge moisture content of 32% at Maeam and 69% at Ulsan.



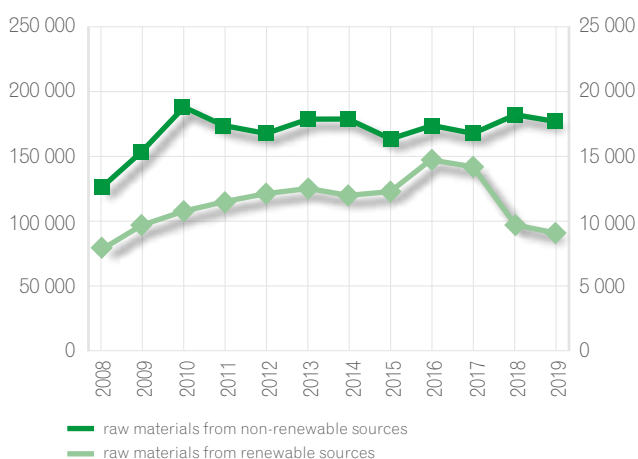


## Materials

### Raw Materials

Wherever possible, SONGWON has always aimed to find opportunities to use raw materials from renewable sources. The fact that the majority of the raw materials we require are metals or oil derivatives unfortunately means that there are actually very few key raw materials that we can acquire renewably. Stearyl alcohol derived from palm kernel oil is the only raw material available from renewable sources and only represents circa 5% of the total raw materials SONGWON needs.

**Raw Materials Used**  
in tons



### Recycled materials

Already back in 2018, SONGWON successfully consolidated the technology to recover raw materials that were previously disposed of as a final product in the organic wastes by applying a reverse reaction. Where the technology has been a success, SONGWON has seen the double benefit of reducing the environmental impact and recycling ca. 11% of the material. This amount corresponds to approximately 2250 t/y, of the raw material that was used in the production.

## Energy

In January of 2015, South Korea launched its national ETS (KETS, Korea Emission Trading System) – a cap-and-trade program. This type of ETS is mandatory (threshold: company > 125,000 tCO<sub>2</sub>/year, installation > 25,000 tCO<sub>2</sub>/year) for operating companies with voluntary opt in. Participation for SONGWON is mandatory.

### SONGWON's initiatives

SONGWON has a range of ongoing initiatives which are contributing to the organization reducing its energy needs and have led to providing energy-efficient or renewable energy-based products and services.

We have a program in place that involves the incineration of all the volatile organic compounds (VOC) produced in the plants, making it possible for us to generate all the steam we require for SONGWON's manufacturing process. In the Maeam plant, 3 incinerators have been in operation for 8 years, and an efficient steam generator based on the LNG (liquefied natural gas) has been used for the past 7 years.

At the Ulsan plant, SONGWON has been replacing the metal-halide lights throughout the plant with more energy efficient LEDs which has already led to noticeable benefits. Due to the fact that LED lights use only approx. 25% of the energy needed by a metal-halide light and have a much longer service-life, the plant is succeeding in reducing energy consumption as well as overall costs. Furthermore, LEDs emit less heat making them much safer for our operators and we are saving approx. 900MW and 410 tCO<sub>2</sub> per year.

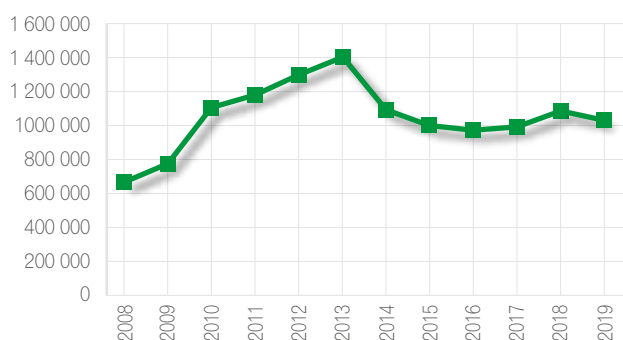
In addition to these, we also have implemented several energy consumption reduction initiatives to improve the long-term efficiency of SONGWON's operations and products. SONGWON's total annual energy consumption in 2019 increased by 9.8% compared to the previous year. This was the result of an increase in production volumes of almost 4% over 2018 in relation to the increase of IBL production volume in Maeam.



## Direct energy consumption

Approximately 100% of SONGWON's direct energy consumption is in the form of natural gas and most of it is used for generating steam and heating oil. SONGWON consumed 1,037,293 GJ, which marks a 4.4% drop in consumption over 2018.

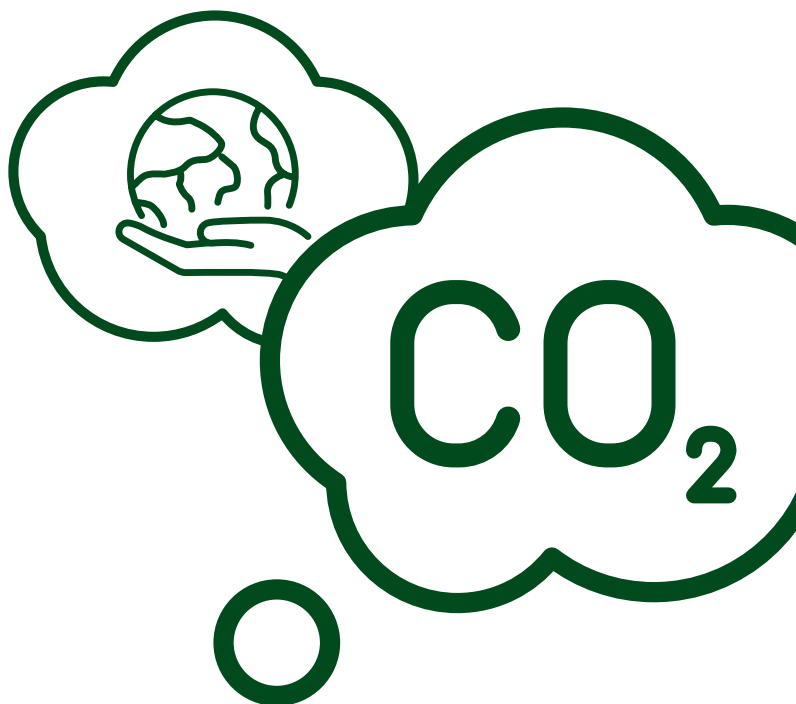
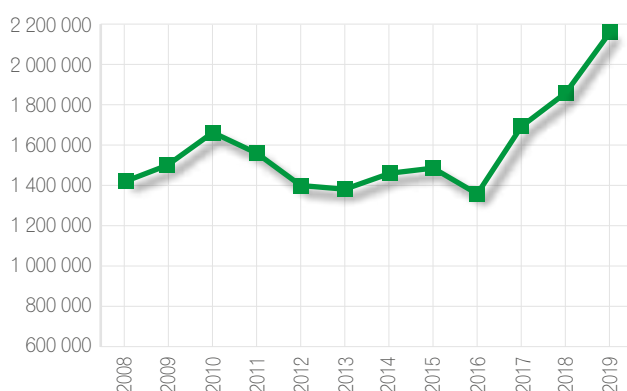
**Direct Energy Consumption**  
In GJ (gigajoules)



## Indirect Energy Consumption

SONGWON purchases almost 68% of the electricity and steam for its plants from the local utility companies who are using renewable energy sources.

**Indirect Energy Consumption**  
In GJ (gigajoules)



## Emissions

In South Korea, individual energy reduction measuring activities are not calculated singly and separate from each other but as follows:

$$\frac{\text{emission allowance} - \text{actual emissions}}{\text{emission allowance}} = \text{emission reduction}$$

(Unit: tCO<sub>2</sub>eq/year)

Actual emissions are measured under South Korean law according to the "Guideline for the Greenhouse Gas Target Management System" and "The Allocation and Trade of Emission Allowance of Greenhouse Gas Act".

### This is applied as follows:

Emission = Fuel consumption × NCV × EF × GWP, where:

- NCV = Net Calorific Value
- EF = Emission Factor
- GWP = Global Warming Potential

## Direct & indirect greenhouse gas emissions

SONGWON directs its efforts to progressively reducing carbon emissions. We confirmed our commitment to a 7.5% reduction in general greenhouse gas emissions by 2020 compared to 2013 (GIR, Greenhouse Gas Inventory and Research Center). We are proud to report that in 2019, SONGWON was already 15% above our committed target. Although production volumes will increase by about 23% in 2020, compared to the production volumes in 2013, we will still maintain a reduction. In 2019, our direct GHG emissions were 78,733 tCO<sub>2</sub> and our indirect GHG emissions amounted to 71,991 tCO<sub>2</sub>. Overall, compared to 2018, SONGWON achieved a total reduction in GHG emissions of 1.17% in 2019.

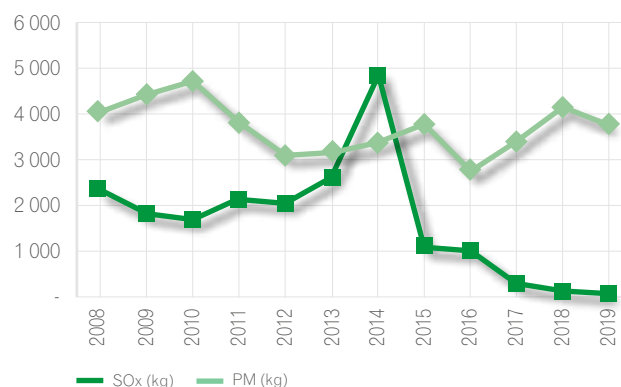
SONGWON believes that this positive achievement will most likely be achievable thanks to the purchase of steam generated from renewable energy and waste heat via an exothermic chemical reaction.

The data SONGWON has reported here includes the direct and the indirect emissions from our electricity and steam purchases and in 2019, there were no other indirect emissions for the organization to record.

## Significant air emissions

Nitrogen oxide (NO<sub>x</sub>), sulfur oxide (SO<sub>x</sub>) and particulate matter (PM) emissions are automatically measured in SONGWON's manufacturing facilities by in-line analyzers. These values are sent in real-time to the relevant government agencies.

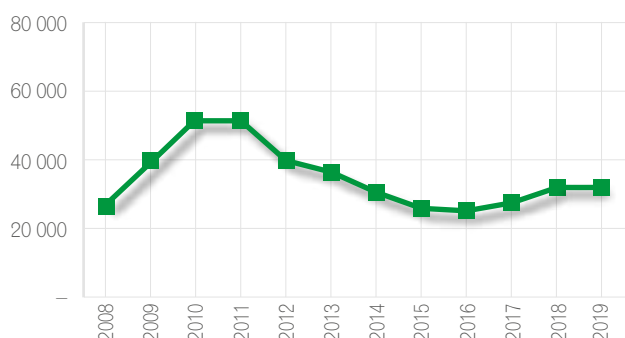
### SO<sub>x</sub> and Particulate Matter in kg



Compared to the year 2018, SONGWON recorded a 41% reduction in SO<sub>x</sub>, a 9% reduction of PM and a 2.3% increase in NO<sub>x</sub> air emissions in 2019.

The overall 1% average increase in air emissions compared to 2018 was partially due to the increased manufactured volumes (4%) and the greater steam demand generated by our incinerators. In addition, the newly installed analytical equipment at our sites enables us to make more accurate and continuous assessments of even very low SO<sub>x</sub> concentrations in the air emissions we generate. In keeping with our strategy of improvement, we have ongoing action plans in place for bettering our emission levels going forward.

### NO<sub>x</sub> in kg



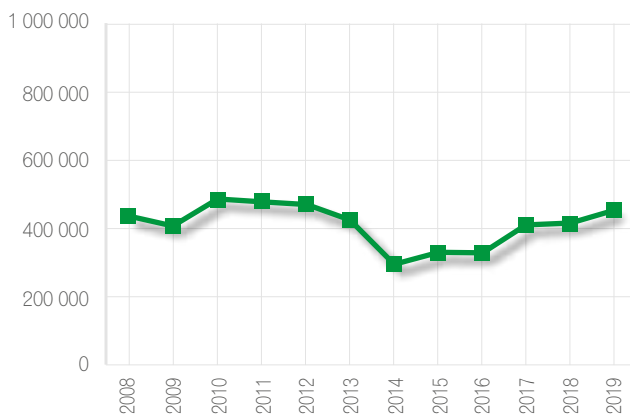
## Water

### Total withdrawal of water by source

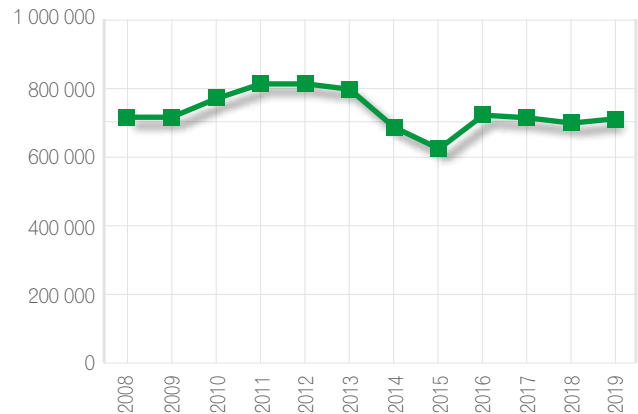
According to the direct onsite measurements made, SONGWON's total water consumption increased by 9.6% compared to 2018.

SONGWON purchases the water it needs for its Ulsan, Maeam and Panoli plants from the local municipality and suppliers. The water required by SONGWON's Suwon plant is directly sourced from underground.

#### Water Withdrawal

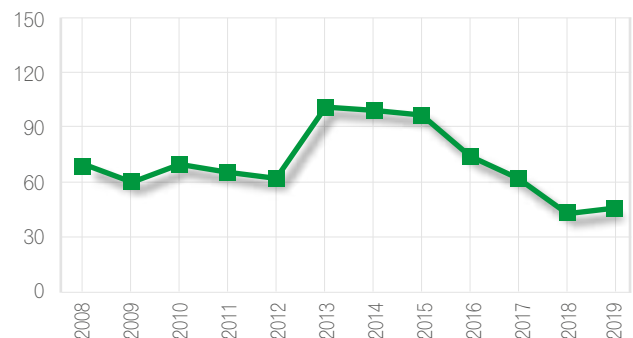


#### Water Discharged



During 2019, SONGWON continued to significantly improve the wastes it incinerated, the quality of the water discharged during the year, and the landfilled wastes. Due to the increased IBL production volume, the average COD (chemical oxygen demand) of SONGWON's manufacturing sites increased though from 42 to 54 ppm in 2019.

#### Discharged Water Quality COD (ppm)



## Effluents & Wastes

### Total water discharged

The total amount of water discharged by SONGWON's manufacturing facilities is internally treated and then conveyed to the central water treatment plants in the local municipalities. It is there that the organic content is reduced further and then released into the sea or discharged to a regional water treatment facility (e.g. as in Panoli, India).

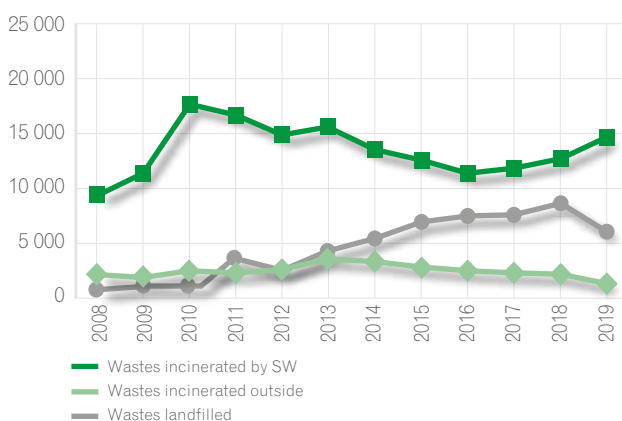




## Other wastes

This year, SONGWON'S operations generated 23,103 tons of hazardous wastes. Compared to 2018, the total hazardous waste disposed by SONGWON in 2019 decreased by 11%. In addition, waste incinerated externally also decreased by 22% and the organization reduced the amount of landfilled wastes by 29% over the previous year.

**Wastes Disposed Outside of SONGWON**  
in tons



## Significant spills

Since 2008, SONGWON has not had any spills to record or report. There were also none recorded or required to report in 2019.

## Biodiversity

SONGWON does not own, lease or manage anything that is in, or near protected areas or areas of high biodiversity. Also, to the best of our knowledge, none of SONGWON's activities, products or services significantly impact biodiversity.

## Non-compliance

Throughout 2018, SONGWON was in full compliance of all environmental rules and regulations and did not receive any fines.

**“EH&S has long been a fundamental part of SONGWON’s values and our sustainability agenda. We have clearly established targets and processes in place to ensure real progress as we work towards maintaining safe operations and creating resource- efficient, environmentally sound solutions.”**

Seongjin Song,  
Leader of Manufacturing & EHS

# GRI Sustainability Reporting Standards (GRI Standards)

## Our approach to GRI

This report has been prepared in accordance with the GRI Standards: Core option.

It is aligned with the four GRI reporting principles:

- stakeholder inclusiveness
- sustainability context
- materiality
- completeness

These have been taken from the guidance in GRI 101: Foundation 2016.

We have consistently applied these GRI principles to varying degrees throughout this report.

## Category: Content

### Stakeholder Inclusiveness:

During the course of the year, we meticulously ensure that we identify SONGWON's key stakeholder groups and engage with them. Through various discussions between SONGWON's management, we have applied the Stakeholder Inclusiveness principle to the context of this report and matched its contents to our stakeholders' interests and expectations. We also believe that we have provided clear explanations on the various ways we engage with stakeholders, provided details relating to our understanding of their interests and expectations as well as how SONGWON has responded to these.

### Sustainability Context:

After examining global trends towards sustainability within the regional and local contexts in which operate, we have identified various priorities among these contexts. In this report, we communicate how we address these priorities and present SONGWON's sustainability performance with regard to both our corporate performance and global sustainable development goals. Furthermore, the report highlights our commitment to monitoring SONGWON's performance relating to material sustainability issues and how we direct our efforts towards continuous improvement.

## Materiality:

For us, this report is not only made for our stakeholders, but is also a tool we can use to measure and review our operations. The material topics the report covers are priority issues for our operations which have been determined by the Board and Executive Committee and integrated into SONGWON's strategy. They reflect the most relevant economic, environmental and social impacts and contributions which have the biggest potential impact on stakeholders as well as on SONGWON's ability to create long-term sustainable value.

## Completeness:

This principle has been implemented by examining specific and material topics to ensure that sufficient detail and all information of significant concern to stakeholders, and relevant to the assessment of SONGWON's economic, environmental and social performance has been reported. It also serves to facilitate the determination of the boundaries of topics and enables stakeholders to assess SONGWON's performance during the reporting period.

## Category: Quality

### Accuracy

All the information presented in this report is aligned and in accordance with GRI Standards. We have aimed to achieve maximum accuracy and to make the information traceable, accurate and reliable while clearly identifying where estimates or limitations in our published information exist. In order to confirm accuracy, our financial results are also audited by the Group's auditor.

### Balance

We have aimed to achieve balance throughout the report by providing and evaluating SONGWON's performance in terms of challenges and opportunities based on material issues and future targets, and making references to those occurring in the reporting year. In addition, we report on our positive performance as well as areas that require us to improve and re-evaluate. Each year, we also fully report on the same KPIs as in the previous year, independent of whether SONGWON's performance has improved or declined.

## SONGWON's categories:



### Clarity

We have designed the content of this report to be easily navigated and read. The straightforward language style is presented in such a way as to clearly communicate the information with visuals to highlight and support key data. For this reason, we have aimed to avoid the use of complex technical references, industry jargon and excessive detail. Keeping sustainability in mind and to cater to personal preferences, SONGWON's report can be downloaded or printed as required.

### Reliability

The information in this report has been reviewed by SONGWON's senior management, business leaders and the Group's auditor, Ernst & Young Han Young. Throughout the report, sources of all third party / external information provided in the text have been included.

### Comparability

Applying the GRI Standards makes SONGWON's annual report more comprehensive and transparent. The guidelines also make it possible for SONGWON to be easily compared with other companies around the world due to the fact that the GRI Standards are used internationally. Furthermore, our previous Annual Reports are all available for comparison on the SONGWON website ([www.songwon.com](http://www.songwon.com)) and we have provided year-on-year data following GRI disclosures wherever appropriate.

### Timeliness

SONGWON is committed to reporting sustainability information at least once a year. The information presented in this report relates to FY2019. In addition to this report, SONGWON's financial performance information is published in quarterly reports. All this information is available throughout the year on the company's website and aligned with the organization's annual financial reporting schedule.



# SONGWON's Stakeholders



## GRI Topic Specific Standards

SONGWON has selected Environmental, Economic and Social as the relevant GRI topic-specific standards based on our material topics. As outlined in the GRI content index, we have provided information on the specific indicators relevant to our business for each topic-specific standard, as well as our management approach that best communicates the most material aspects of our sustainability performance at the level (global or local) that is most meaningful to report, including whether there were impacts within the organization or outside of it.

### GRI 200: Economic

Through all of SONGWON's operations, we aim to secure the organization's financial success and thus long-term value creation for our stakeholders. We know this can be achieved through implementing our long-term strategy, recognizing and managing risks and opportunities, as well as providing transparent information to our stakeholders.

Our strategy has four key focus areas: business focus, growth, geographical focus, and innovation.

SONGWON provides expertise and high-quality products to different industries, for a myriad of important applications. We are dedicated to creating long-term value, providing sustainable solutions, and strengthening the competitive position of our customers.

At SONGWON, we are focused on building a balanced product portfolio in order to support targeted growth and we are continuing with our expansion strategy to strengthen our presence in emerging markets and consolidating our position in existing ones.

### GRI 300: Environmental

Our sustainability strategy supports SONGWON's business goals and enables us to continuously reduce our environmental footprint. At the same time, we are working to ensure that we give something back to both our employees and society as a whole. Our global sustainability commitment is directly managed by our Executive Committee. The Committee is also responsible for overseeing the execution of all activities relating to achieving our sustainability goals.

All of SONGWON's initiatives are designed to ensure that we focus on those areas where we, as a company, have the greatest impact. They also provide us with a clear direction that enables us to strive for a better performance.

### GRI 400: Social

At SONGWON, we emphasize the importance of our people for the company's long-term success: they manage strong brands, develop innovative products and support our customers around the world. Building and sustaining long-term, trustful relationships with our employees and all those who work for or with SONGWON is essential to our organizational success.

# SONGWON's GRI Content Index

This report has been prepared in accordance with the GRI Standards: Core option.



"For the GRI Content Index Service, GRI Services reviewed that the GRI content index is clearly presented and the references for all disclosures included align with the appropriate sections in the body of the report."

## GRI Content Index

GRI Standard	Disclosure	Description	Page number(s)	Omissions / Direct Answers
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### GRI 101: Foundation 2016 [GRI 101 does not include any disclosures]

### GRI 102: General Disclosures 2016

#### Organizational Profile

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	102-2	Activities, brands, products, and services	34-35; 232-233	
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	102-4	Location of operations	30-33	
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#### Strategy

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#### Ethics and integrity

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## Stakeholder engagement

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	102-41	Collective bargaining agreements	84	
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	102-54	Claims of reporting in accordance with the GRI Standards	110; 234	
	102-55	GRI content index	114-117	
	102-56	External assurance	234	

## Material Topics

GRI Standard	Disclosure	Description	Page number(s)	Omissions / Direct Answers
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### Economic Standards: 200 Series

#### Economic Performance

GRI 103: Management Approach 2016	103-1		110-111	
	103-2		113	
	103-3		113	
GRI 201: Economic Performance 2016	201-1	Direct economic value generated and distributed	138-139; 176-178; 192; 202-203; 219-220; 224	
	201-3	Defined benefit plan obligations and other retirement plans	199-200	

### Environmental Standards: 300 Series

#### Energy

GRI 103: Management Approach 2016	103-1		100; 103; 105-106	
	103-2		100; 103; 105-106	
	103-3		100; 103; 105-106	
GRI 302: Energy 2016	302-1	Energy consumption within the organization	105-106	

#### Emissions

GRI 103: Management Approach 2016	103-1		103; 105-106	
	103-2		103; 105-106	
	103-1		103; 105-106	
GRI 305: Emissions 2016	305-1	Direct GHG emissions	107	
	305-2	Indirect GHG emissions	107	
	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	107	

## Social Standards: 400 Series

### Employment

GRI 103:	103-1		80; 84
Management	103-2		80; 84
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