



九天化工集团有限公司
JIUTIAN CHEMICAL GROUP LIMITED

ENHANCED EFFICIENCY GREATER PRODUCTIVITY

SUSTAINABILITY REPORT 2018



Table of Contents

1. Highlights	1
1.1 Corporate profile	1
1.2 Message to stakeholders	2
1.3 Scope of sustainability report	3
1.4 Restatements	3
1.5 Sustainability contact	3
2. Our approach to sustainability	4
2.1 Sustainability organisational structure	4
2.2 Sustainability strategy	5
2.3 Consulting our stakeholders.....	6
2.4 Sustainability materiality.....	7
3. Our performance	8
3.1 How we measure our performance	8
3.2 Quality management	9
3.3 Production safety	12
3.4 Environmental protection	14
3.4 Employee well-being	18
Appendix A: Sustainability scorecard	20
Appendix B: GRI content index	21

1. Highlights

1.1 Corporate profile

Jiutian Chemical Group Limited (九天化工集团有限公司) (**Jiutian** or the '**Company**'), together with its subsidiaries (the '**Group**'), are engaged in the manufacture and production of dimethylformamide (**DMF**) and methylamine in the People's Republic of China (**PRC**). We are also involved in the processing and sale of consumable carbon dioxide and oxygen.

The business is divided into three main business divisions:

- DMF division producing DMF as its main product and methylamine as our secondary product;
- Sodium Hydrosulfite division producing Sodium Hydrosulfite; and
- Gas and Oxygen 18 division producing consumable carbon dioxide, Oxygen 18 and deuterium-depleted water.

We are located in Henan Province in the People's Republic of China (**PRC**). Whilst economic development and industrialisation in the PRC began on the eastern and southern coast, this process has begun to spread rapidly inland, including to Henan and its surrounding regions, where cost of labour, land and raw materials are significantly lower.

As a result, industrialisation and urbanisation are occurring at a rapid pace in these regions, and the consequent establishment of factories producing a wide range of consumer products is driving the demand for chemicals such as DMF and methylamine. Being the only significant DMF producer in the Henan Province (within 500km from the plant), we are well-positioned to take advantage of this trend.

In addition, our location in the PRC's Coal Belt allows us to enjoy a cost advantage over other PRC DMF producers due to our secure and low-cost access to the coal-based raw materials that are used in the manufacture of our products. Our production efficiency and cost-effective supply chain management strategy, which include direct piping-in of raw materials from our main supplier, has provided us a relative cost advantage against our competitors.

Henan Province is also on the Beijing-Guangzhou railway and its capital Zhengzhou, has one of Asia's largest railway stations and network. Zhengzhou has been developed into a logistics central station for cargo transportation. This will further reduce the transportation costs of our products. Our customer base in China consists of customers in Henan, the surrounding provinces adjacent to Henan, namely Hebei, Shaanxi, Shanxi, Hubei, Shandong, and Anhui, and provinces in the Yangtze Delta Region, namely, Jiangsu and Zhejiang.

Some of our customers are manufacturers of downstream products that use methylamine and DMF, while others, especially those located further away in the Yangtze Delta Region, are trading intermediaries that distribute these chemicals to customers that use these chemicals in their manufacturing processes. With our second DMF/methylamine facility of 120,000 annual ton capacity completed in late 2007, we have emerged as one of the world's largest manufacturers of DMF with a total annual capacity of 150,000 tons of DMF and methylamine.

Jiutian was listed on the Mainboard of Singapore Exchange Securities Trading Limited (**SGX-ST**) on 4 May 2006, and subsequently transferred to the Catalist Board of SGX-ST.

1.2 Message to stakeholders

On behalf of the Board of Directors of Jiutian Chemical Group Limited, I am pleased to present the Sustainability Report for the financial year ended 31 December 2018 (**FY2018**).

As a leader in DMF and methylamine production in China, Jiutian is poised to take a leading role in the environmental, health and safety (EHS) aspects to ensure sustainability of our operations and fulfil our responsibility towards our stakeholders.

In FY2018, we continue to engage in constructive dialogue with our stakeholders and focus on our four key pillars of Quality Management, Production Safety, Environmental Protection and Employee Well-being.

During the year, we have increased our operational efficiency at Anyang Jiutian and increased the plant capacity utilisation rate from 65% to 75% for DMF production and maintained plant capacity utilisation rate at 100% for methylamine production. This efficiency forms a solid base upon which we can grow our business.

Looking ahead, we remain optimistic. The major maintenance of our DMF and methylamine plants undertaken in 3rd Quarter 2017 has allowed our plants to operate at a higher efficiency in FY2018. We will continue to focus on proper and ongoing maintenance and replacement of our facilities going forward.

We are aware that the Chinese government's emphasis on environmentally-friendly industrial operations will necessitate us in keeping abreast of related regulatory developments and consequently improving our operations to comply with these changes. This pro-active stance will in turn place Jiutian on a more sustainable growth trajectory.

In addition, we wish to confirm that the Board has considered sustainability issues as part of its strategic formulation. The Board has determined the material environmental, social and governance (**ESG**) factors and overseen the management in monitoring these material ESG factors.

As part of Jiutian's commitment to sustainable development, we will continue to strive to do business in a responsible way.

On behalf of the Board of Directors

HAN LIANGUO

Non-Executive and Non-Independent Chairman

1.3 Scope of sustainability report

The scope of the report covers information on material sustainability aspects of Jiutian, namely the Group's significant subsidiary, Anyang Jiutian Fine Chemical Co., Ltd (安阳九天精细化工有限公司) (**Anyang Jiutian**), from 1 January 2018 to 31 December 2018 unless otherwise specified. This should sufficiently address stakeholders' concerns in relation to sustainability issues arising from the major business operations of the Group.

This report is prepared in accordance with the Global Reporting Initiative (**GRI**) Standards: Core Option as it provides a set of an extensive framework that is widely accepted as a global standard for sustainability reporting. It also considers the Sustainability Reporting Guide in Practice Note 7F of the Singapore Exchange Securities Trading Limited (**SGX-ST**) Listing Manual Section B: Rules of Catalist (**Catalist Rules**). In preparing our report, we applied the GRI's principles for defining report content and report quality by considering the Group's activities, impacts and substantive expectations and interests of its stakeholders.

The data and information provided within the report have not been verified by an independent third party. We have relied on internal data monitoring and verification to ensure accuracy.

1.4 Restatements

No restatements were made from the previous report.

1.5 Sustainability contact

We welcome your views and feedback on our sustainability practices and reporting at admin@jiutianchemical.com.



2. Our approach to sustainability

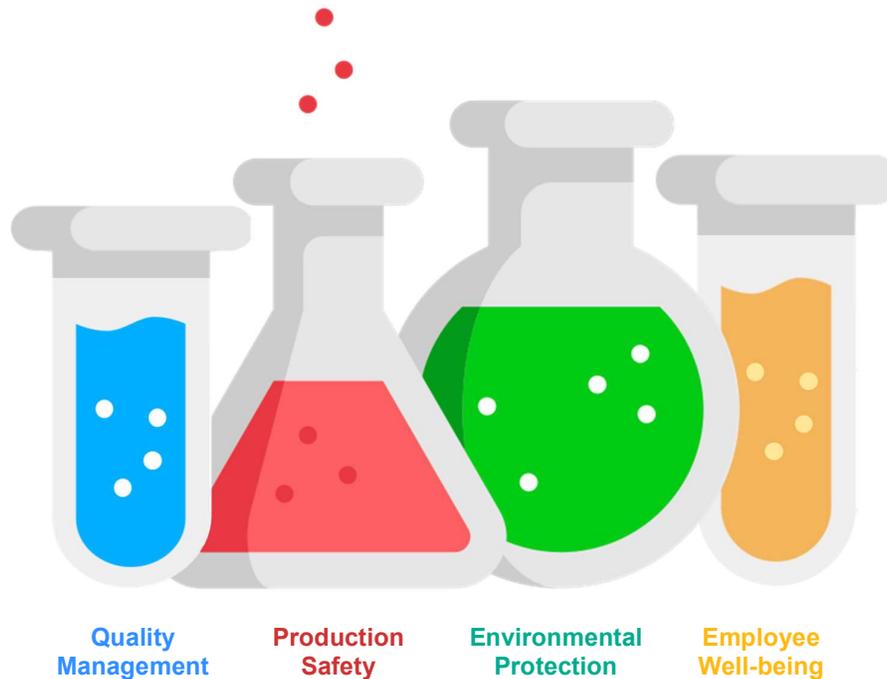
2.1 Sustainability organisational structure

Sustainability is a vital part of our corporate strategy for achieving long-term growth. The values we create for our people, the environment and society at large very much influence our financial performance. In order to better accommodate our sustainability goals and values, we have developed a sustainability organisational structure to move things forward.



2.2 Sustainability strategy

At the Group, our sustainability strategy aims to create integrated values. Together with disciplined execution of our strategy and a commitment to doing business responsibly, we commit to deliver value to all our stakeholders through the following:



The sustainable strategy is underpinned by our comprehensive internal policies on the following:

- Production Safety Management (安全生产管理), which covers aspects on safety culture, safety training and development, occupational health and safety, handling of hazardous chemicals, fire safety and prevention, equipment maintenance and supplier management.
- Environmental Protection Management (环境保护管理), which covers aspects on source pollution management, air pollution monitoring, proper discharge of solid and liquid waste and pollution management, and pollution management diagrams for our production of DMF and methylamine.
- Emergency Response Management (应急预案), which covers aspects on emergency response procedures in the event of serious safety or environmental incidents.
- Human Resources Management (人事管理), which covers aspects on employee handbook, department-specific performance evaluations, rewards and penalties.

The strategy is also guided by external sources, including the Global Reporting Initiative Standards and Sustainability Reporting Guide in Practice Note 7F of the Catalist Rules.

The rest of this report covers our progress and performance against each of these areas, and the impact we have on the economy, environment and society as a result.

2.3 Consulting our stakeholders

We recognise the need to continuously develop our responsible business approach in order to address growing stakeholder expectations around our impact on the economy, environment and society. As such, we periodically consult with our stakeholders to determine the issues that are most relevant to them and Jiutian.

An overview of our approach and rationale is set out below (with stakeholders listed in alphabetical order), together with the feedback we have received.

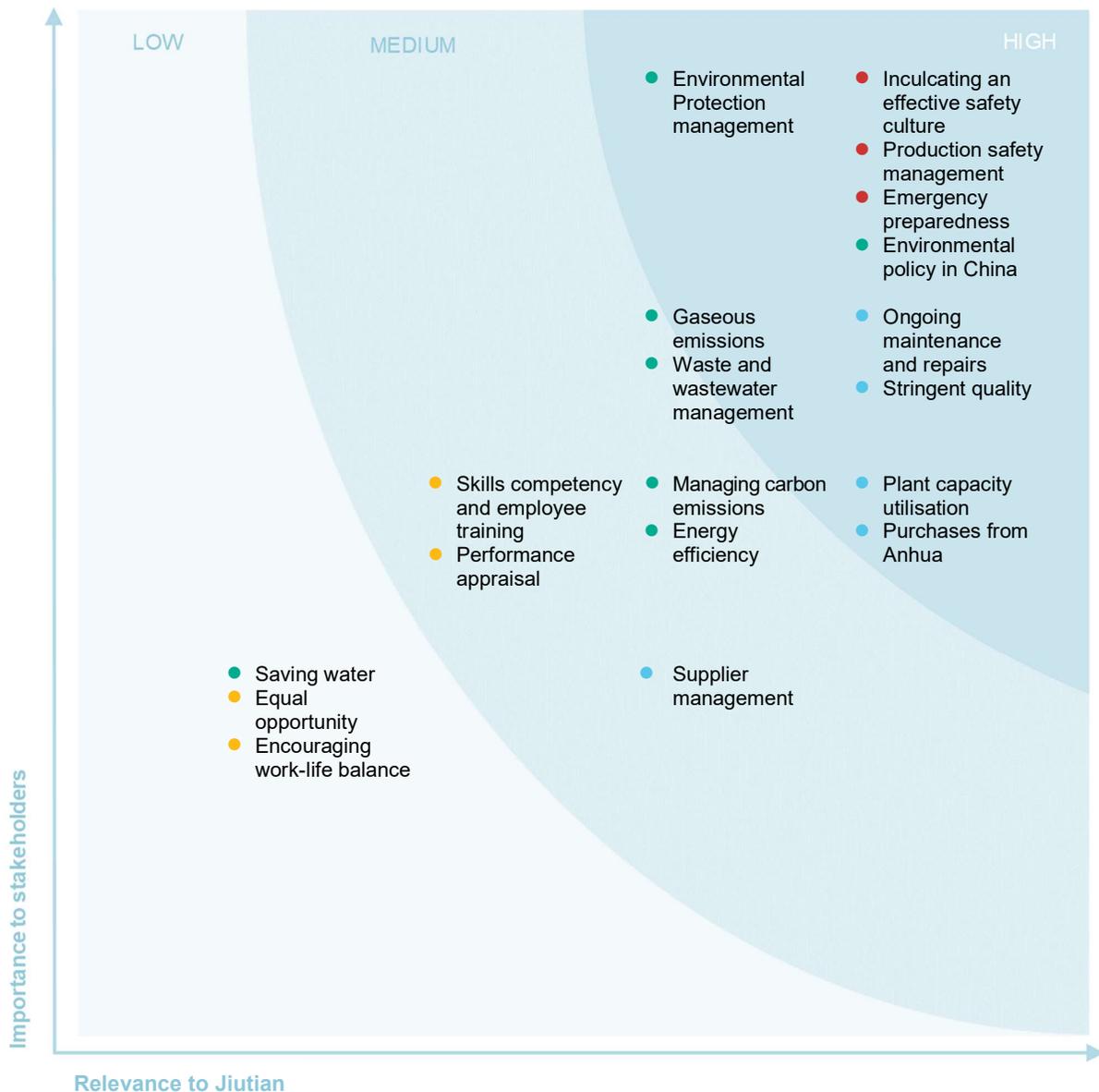
Stakeholders	How we listen	Why we do it	What you've told us
Customers	<ul style="list-style-type: none"> Industry association meetings Meetings with customer's procurement department 	<ul style="list-style-type: none"> Ensure ability to meet customer's requirements in terms of quality and delivery timeliness 	<ul style="list-style-type: none"> Provision of high purity chemicals Ability to meet delivery timelines
Employees	<ul style="list-style-type: none"> Internal updates and communication Events and functions 	<ul style="list-style-type: none"> Improve employee's capabilities through internal and external training Improve employee's well-being through managing health and safety, and upkeep of estates 	<ul style="list-style-type: none"> Health and safety Career progression Benefits and rewards External courses
Regulatory authorities (Governments, SGX)	<ul style="list-style-type: none"> Regular updates and communication Reports and compliance Periodical meetings with government bodies 	<ul style="list-style-type: none"> Adhere to environmental regulations for chemical production Good relationship between continuing sponsor and Company, facilitating dialogue with SGX 	<ul style="list-style-type: none"> Compliance with relevant laws and regulations
Shareholder and investors	<ul style="list-style-type: none"> SGX Announcements Shareholder's meeting Annual reports Regular updates and communication 	<ul style="list-style-type: none"> Committed to delivering economic value to our capital providers through a strong financial performance and our methods of engagement with them. 	<ul style="list-style-type: none"> Long-term profitability Sustainability matters Group's performance against targets Compliance with all relevant requirements
Suppliers	<ul style="list-style-type: none"> Meetings with supplier's sales department Negotiation of bulk discounts 	<ul style="list-style-type: none"> Ensure availability of quality supplies for uninterrupted chemical production at a reasonable cost 	<ul style="list-style-type: none"> Ability to meet Company's quality standards Ability to meet Company's delivery timelines

2.4 Sustainability materiality

Based on the stakeholder engagement, we developed our sustainability materiality matrix containing material aspects which are aligned with our principal business and operational risks, and formed our sustainability strategy which has shaped our approach to sustainability reporting, as illustrated in the diagram below.

We have also developed metrics to help us measure our progress, as indicated in our sustainability scorecard in **Appendix A**. We will review and adjust the matrix each year, as the external and business context changes.

The aspect boundaries 'within' the organisation are limited to our Anyang Jiutian, whereas the aspect boundaries 'outside' the organisation include customers, employees, regulatory authorities (governments, SGX), shareholder and investors and suppliers.



3. Our performance

3.1 How we measure our performance

Our sustainability strategy is embedded into the appropriate parts of our business, with dedicated teams for each focus area, and coordination by our relevant departmental managers.

Progress will be tracked in two key ways: measuring performance against metrics, and evaluating how well the programmes have advanced through a series of 'commitments'.

Metrics and targets

We have established key performance indicators for each of the four focus areas outlined in our sustainability strategy. Periodically, we plan to introduce new metrics and update targets to ensure alignment with our strategy.

Commitments

To ensure we have a robust sustainability programme in place, we have included the key commitments for each area of our sustainability strategy. The progress we have made against each key commitment is indicated using the symbols shown in the table below.

We track and review our sustainability programme with the Board of Directors at least once a year.

Symbols used to indicate progress against commitments

Symbol	Meaning
	New commitment this year
	Not started
	In progress
	Complete
	Ongoing commitment: no end date

3.2 Quality management

Overview

Anyang Jiutian is primarily engaged in the manufacture and production of high purity DMF and methylamine to support the needs of our customers, mainly for their use as feedstock in the production of polyurethane (**PU**). We have established comprehensive procedures to ensure quality throughout the production process.

In addition, we believe that effective management of our supply chain can help us conserve resources, optimise processes, increase productivity and promote positive corporate values. We are dedicated to the consistent implementation of our procurement policies and procedures across our entire operation.

Plant capacity utilisation

In FY2018, due to higher demand for our products, we have increased our operational efficiency at Anyang Jiutian and increased the plant capacity utilisation rate for DMF production from 65% to 75% and maintained plant capacity utilisation rate for methylamine production at 100%. This efficiency forms a solid base upon which we can grow our business.

We will continue to track and report on the plant capacity utilisation rate for DMF and methylamine.

Ongoing maintenance and repairs

In FY2018, no major maintenance was planned for the DMF and methylamine production lines, as the production lines are still operating smoothly since the last major maintenance in August 2017.

Regular maintenance and repairs continue to be carried out periodically, which does not affect the daily operations of the chemical plants. Such activities may comprise minor technological improvements, maintenance and repairs on piping, meters and insulation, and other structural reinforcements. These maintenance and repairs will improve production efficiency and quality, and ensure that the chemical plant will run smoothly during the harsh winter months. In FY2018, total expenditure on maintenance and repairs amounted to close to ¥15 million.

Even as the DMF and methylamine facilities have been in production for more than 10 years, the Production, Equipment and Technical Departments are always on the look out to improve the efficiency and effectiveness of the current production work flow through process improvement initiatives. In FY2018, total expenditure on process improvements amounted to close to ¥8 million.

We will continue to track and report on maintenance and repairs and process improvements made at Anyang Jiutian.

FY2018 Progress

75%

DMF plant capacity utilisation rate

100%

Methylamine plant capacity utilisation rate

¥15m

Investment on maintenance and repairs

¥8m

Investment on process improvements

100%

Product acceptance rate by our customers

Stringent quality management

We are totally committed to customer satisfaction with quality products delivered through our stringent quality management process. Effective from October 2018, Anyang Jiutian has been certified to be compliant with the requirements of ISO9001:2015 (Quality Management System). This certification has a validity of three years.

The main raw materials for DMF and methylamine are methanol and liquid ammonia. Each incoming raw material shipment will be subject to stringent analysis and inspection by our in-house laboratory to ensure that the raw materials meet our production requirements for high purity chemicals. Shipments that cannot meet the purity requirement are entirely rejected and returned to the suppliers. Ongoing production are also subject to hourly quality inspection to ensure the consistency of DMF and methylamine production.

Backed by our stringent quality management process, Anyang Jiutian achieved 100% product acceptance rate by our customers in FY2018. As part of our strategy, we seek to continue to achieve 100% product acceptance rate by our customers.

Purchases from Anhua

Commencing from 1 January 2005, Anyang Jiutian signed a 20-year raw materials and spare parts purchase agreement with our principal supplier and shareholder, Anhua Group (**Anhua**), including the supply of coal, distilled water, steam and electricity. We continue to enjoy a close working relationship with Anhua to ensure the quality and consistent supply of these essential raw materials and utilities to our facilities at a reasonable price.

Supplier management

Anyang Jiutian purchases entirely from reliable local suppliers. A secure and stable supply chain is very important to ensure the smooth and uninterrupted operation of our production activities. As such, we have established a set of Supplier Management Policies (供应商管理办法) to be applied to all our suppliers.

Some of the areas covered by our policies include:

- Supplier classification,
- New supplier qualification and authorisation,
- Supplier evaluation,
- Supplier disqualification,
- Supplier selection through fair competition, and
- Inventory management.

Commitments: Quality management

Track and report plant capacity utilisation rate for DMF and Methylamine

Plant Capacity Utilisation for DMF (%)



Plant Capacity Utilisation for Methylamine (%)



FY2018 progress



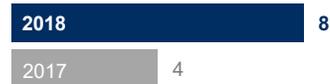
- Due to higher demand for our products, we have increased our operational efficiency at Anyang Jiutian and increased the plant capacity utilisation rate for DMF production from 65% to 75% and maintained plant capacity utilisation rate for methylamine production at 100%.
- This efficiency forms a solid base upon which we can grow our business.

Track and report ongoing maintenance, repairs and improvements

Maintenance and repairs (¥million)



Process improvements (¥million)



FY2018 progress



- Although there's no major maintenance planned for the DMF and methylamine production lines in FY2018, regular maintenance and repairs continue to be carried out periodically.
- Anyang Jiutian continues to improve the efficiency and effectiveness of the current production work flow through process improvement initiatives.

Full compliance with ISO9001:2015 (Quality Management System)

Achievements

- ISO9001:2015 certified since October 2018.

FY2018 progress



- Anyang Jiutian is fully compliant with the requirements of ISO9001:2015 since October 2018.

Achieve 100% product acceptance rate by our customers

Achievements

- Achieved 100% product acceptance rate by our customers

FY2018 progress



- Backed by our stringent quality management process, Anyang Jiutian continues to achieve 100% product acceptance rate by our customers.

3.3 Production safety

Overview

Safety is of paramount importance in the chemicals industry, and we have always stressed the importance of production safety in all our operations, especially when we deal with hazardous chemicals in each stage of our production process.

We believe that one of the keys to improving safety is the creation of a more effective safety culture – one that does not emphasise production over safety.

Inculcating an effective safety culture

Safety in the chemical industry relies heavily on following correct procedures. Having an effective safety culture is hence very important. By building an effective safety culture, we can not only reduce injuries, we can also strengthen production, increase operational agility and move ahead on the journey to becoming a high-performance business.

Anyang Jiutian is fully compliant with China's production safety policy and has regularly renewed the requisite Production Safety License (安全生产许可证) on our production facilities. We enforce strict safety regulations and take stringent measures to ensure the safety aspects of our production facilities and processes.

As part of our strategy, we seek to continue to be fully compliant with China's production safety policy with zero production stoppage due to safety incidences and zero serious accidents.

At Anyang Jiutian, our Safety Committee is headed by our General Manager, and supported by our Vice General Manager (Technical), Equipment Manager, Production Manager and Safety Manager.

Daily safety briefings are held before each production shift with weekly and monthly safety meetings to summarise and incorporate lessons learnt. There are also periodic sharing sessions from each department to highlight on important safety aspects.

New employees are required to attend company and departmental orientation trainings where safety features prominently in the topics which are covered. They are also required to familiarise themselves on all safety aspects in relation to their job scope.

In June 2018, we kicked off a full month of activities in conjunction with the Production Safety Month to strengthen safety awareness and safety aspects in our daily operations. We also organise monthly safety competitions between different production shifts and reward the winning team with additional salary incentives. We believe that this is an effective motivational tool to improve production without compromising safety.

FY2018 Progress

0

Production stoppage due to safety incidences

0

Serious incidents

0

Workplace injuries

Production safety management

We are totally committed to production safety and have established a set of Production Safety Management Policies (安全生产管理制度) that requires all employees to adhere to the relevant safety laws and regulations and company standards. Effective from October 2018, Anyang Jiutian has been certified to be compliant with the requirements of OHSAS18001:2007 (Health & Safety Management System). This certification has a validity of three years.

Our employees are required to familiarise themselves with and uphold safety standards in order to achieve “Safety First, Effective Prevention, and Comprehensive Management” (安全第一、预防为主、综合治理).

Some of the areas covered by our policies include:

- Effective safety culture,
- Safety training and development,
- Occupational health and safety,
- Handling of hazardous chemicals, and
- Fire safety and prevention.

Emergency preparedness

While we emphasise on preventing safety incidents, we also prepare the employees to handle and respond to emergencies, including potential explosions, fire and chemical spills. This is very important to reduce and limit the impact and casualty as a result of the any safety incidents that may happen in our line of work.

In addition to departmental trainings and refresher courses, we also conduct annual fire safety and emergency preparedness drills involving company personnel and the local fire station.

In November 2018, we kicked off a full month of activities in conjunction with the “119” National Fire Prevention Month to strengthen fire safety and emergency preparedness awareness within Anyang Jiutian and our local community, focused on the following areas:

- Case studies on major fire incidents in recent years,
- Response to emergency situations at work and at home,
- Usage of fire safety equipment, and
- Usage of gas masks.

Commitments: Production safety

Full compliance with production safety laws and regulations

Achievements

- Achieved zero production stoppage due to safety incidences and zero serious accidents

FY2018 progress

- Focusing on inculcating an effective safety culture, upholding production safety and emphasising emergency preparedness, we continue to achieve zero production stoppage due to safety incidences and zero serious accidents.

Full compliance with OHSAS18001:2007 (Health & Safety Management System)

Achievements

- OHSAS18001:2007 certified since October 2018.

FY2018 progress

- Anyang Jiutian is fully compliant with the requirements of OHSAS18001:2007 since October 2018.

3.4 Environmental protection

Overview

Environmental protection is fast gaining traction in China amongst policy makers and the public. This move has posed significant implications, especially to the chemicals industry. As one of the largest producers of DMF and methylamine in China, Anyang Jiutian is committed to ensuring our full compliance with national environmental regulations.

Comprehensive policies are developed to ensure the Anyang Jiutian's commitment towards environmental protection, reducing carbon emissions, preventing pollution, and minimising waste can be achieved during our daily operations.

Environmental policy in China

Environmental policy in China is set by the National People's Congress and managed by the Ministry of Environmental Protection of the People's Republic of China. The central government issues strict regulations for which the actual monitoring and enforcement is largely undertaken by the local governments.

In January 2015, a new environmental law came into effect, covering land, water and air pollution. It contains strict penalties, including seizing of the property of illegal polluters, with company executives subject to prison sentences of 15 days. There is no upper limit on fines. More than 300 different groups will be able to sue on the behalf of people harmed by pollution.

Anyang Jiutian is fully compliant with China's environmental policy and has obtained the requisite clearance on its environmental protection facilities since November 2015.

As part of our strategy, we seek to continue to be fully compliant with China's environmental policy with zero environmental incidents and zero fines on contravention of environmental regulations.

To address the increasingly stringent national environmental policy in China, Anyang Jiutian's management requires all environmental matters to be addressed as high priority through the following steps:

- Manage and analyse the root causes of environmental incidents in a timely manner,
- Adopt a conscientious and persistent attitude towards the improvement of processes, and
- Maintain an open mind towards the adoption of new and advanced technology and management methods.

FY2018 Progress

0

Environmental incidents

¥0

Fines on contravention of environmental regulations

4.50kgCO₂e

Carbon footprint per tonne of production

100%

Gaseous emissions that meets local emission standards

100%

Wastewater discharge that meets local emission standards

1.74m³

Wastewater discharge per tonne of production

0.57m³

Water consumption per tonne of production

50%

Water recycled and reused

Environmental protection management

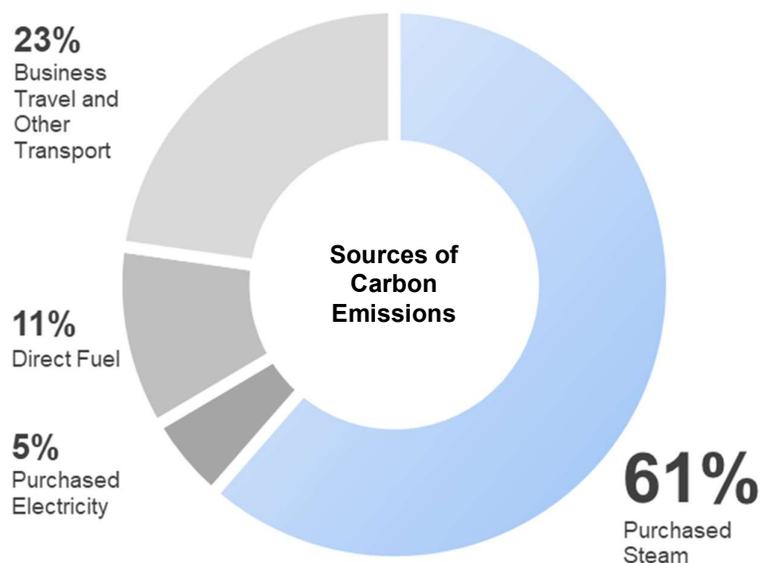
At Anyang Jiutian, our Environmental Protection Committee is headed by our General Manager, and supported by our Vice General Manager (Technical), Equipment Manager, Production Manager and Safety Manager. They will oversee all environmental protection matters in the Company.

We are totally committed to environment protection and have established a set of Environmental Protection Management Policies (环境保护管理制度) that requires all employees to adhere to the relevant environmental protection laws and regulations and company standards. Effective from October 2018, Anyang Jiutian has been certified to be compliant with the requirements of ISO14001:2015 (Environmental Management System). This certification has a validity of three years.

Some of the areas covered by our policies include:

- Source pollution management,
- Air pollution monitoring,
- Proper discharge of solid and liquid waste
- Pollution management, and
- Pollution management diagrams for our production of DMF and methylamine.

Managing carbon emissions



To determine the carbon footprint, we collect energy usage data from each our businesses and then calculate our total annual greenhouse gas (GHG) emissions. We follow the GHG Protocol established by the World Resources Institute and the World Business Council for Sustainable Development, the standard manual for measuring corporate GHG emissions. Using the “control method”, we include 100% of the emissions associated with businesses which we directly control. Our carbon footprint includes:

- All fuels used directly by our companies (Scope 1 emissions)
- All purchased electricity and steam used in our facilities (Scope 2 emissions)
- Impact of business travel, and transportation of goods to our customers (optional Scope 3 emissions)

In FY2018, Anyang Jiutian generated a carbon footprint of 1,223.77 tonnes of carbon dioxide emission (**tCO₂e**) with a carbon emission intensity of 4.50 kgCO₂e per tonne of production, representing a 12% increase from the previous year. The emission mainly arises from purchased steam used in the production process which accounted for more than 61% of the total carbon emission of Anyang Jiutian.

The increase in carbon emission intensity is due to the following reasons:

- 3% reduction in carbon emission intensity resulting from more efficient utilisation of direct fuel, electricity and steam used in production activities. This is a result of the various energy efficiency efforts undertaken by Anyang Jiutian in FY2018.
- 15% increase in carbon emission intensity mainly resulting from transportation of goods to our customers. As some of our competitors continue to be affected by plant closures due to China's stringent environmental policy, we have continued to grow our customer base in FY2018. This has resulted in an increase in the number of trips and geographical distribution of customers, leading to an increase in transportation costs to distribute our goods to our customers.

We recognise that reducing carbon emissions in our daily operations has a positive effect on climate change. As such, Anyang Jiutian has committed to reducing our carbon footprint per tonne of production by 3% by FY2025, from a FY2018 baseline.

Energy efficiency

Production facilities are energy-intensive structures and energy consumption, comprising of purchased electricity and steam, constitutes a significant proportion of our operating expenses. By investing in energy efficiency, we not only help protect the environment but can also lower our financial costs.

To enhance our existing assets, we have allocated considerable resources to process improvement initiatives over the years. We have optimised eco-efficiency in our production operations to cut our energy consumption with the primary goal of reducing our carbon footprint. For example, we are improving the energy efficiency of our boilers through regular maintenance and refurbishment. Occasionally, we also introduce more extensive process improvements through our major maintenance exercise.

Gaseous emissions

DMF and methylamine production produce fumes containing hydrogen sulphide and ammonia respectively. These obnoxious fumes need to be securely collected and treated before they can be safely released into the atmosphere.

Hydrogen sulphide gas from DMF production will undergo a desulphurisation process to remove the presence of sulphur to a level of less than 0.1 parts-per million (**ppm**). On the other hand, ammonia gas from methylamine production is recovered, purified and recycled as feedstock for the production.

As a result, the fumes released into the atmosphere will be able to meet the requirements of the gas emission standard of the Henan Province. As part of our strategy, we seek to continue to ensure that 100% of our gaseous emissions meet the local emission standards.

Waste and wastewater management

Waste materials from the production of DMF and methylamine are not significant. Any waste engine oils and materials recovered from maintenance of piping, meters and insulation will be aggregated in a locked and isolated container and disposed through proper biohazard disposal channels.

Wastewater disposal is handled by Anhua on the Company's behalf. Anhua's facilities are able to handle up to 15,000 m³ of wastewater a day, through a set of parallel biological treatment tanks.

As a result, the treated wastewater discharge will be able to meet the requirements of the water emission standard of the Henan Province. As part of our strategy, we seek to continue to ensure that 100% of our wastewater discharge meet the local emission standards.

In FY2018, Anyang Jiutian had a wastewater discharge intensity of 1.74 m³ per tonne of production, representing a 23% decrease from the previous year. A larger amount of wastewater was discharged in the prior year due to runoffs from major maintenance and cleaning of DMF and methylamine production towers. The volume of wastewater discharged exceeds municipal water consumption due to water from condensed steam produced during production of DMF and methylamine.

Saving water

In Anyang Jiutian, water is extensively used as a natural coolant to ensure that our reactor towers are maintained at the correct temperature during chemical production. Where possible, Anyang Jiutian already has procedures in place to utilise recycled water for its processes.

In FY2018, Anyang Jiutian had a water consumption intensity of 0.57 m³ per tonne of production, representing a 34% decrease from the previous year. In addition, up to 50% of municipal water consumption is being recycled and reused, up from 27% in the previous year. Increase in water recycled and reused is in line with the increase in volume of DMF and methylamine production in the current year.

We will continue to track and monitor our performance on wastewater discharge, water consumption, and water recycling. Progress and performance improvement will be reported every year.

Commitments: Environmental protection

Full compliance with environmental laws and regulations

Achievements

- Achieved zero environmental incidents and zero fines on contravention of environmental regulations.

FY2018 progress

- We are fully compliant with China's environmental policy with zero environmental incidents and zero fines on contravention of environmental regulations.
- 100% of gaseous emissions meets local emission standards.
- 100% of wastewater discharge meets local emission standards.

Full compliance with ISO14001:2015 (Environmental Management System)

Achievements

- ISO14001:2015 certified since October 2018.

FY2018 progress

- Anyang Jiutian is fully compliant with the requirements of ISO14001:2015 since October 2018.

Reduce carbon footprint per tonne of production by 3% by FY2025 (from a FY2018 baseline)

Carbon footprint intensity (kgCO₂e)



FY2018 progress

- 12% increase in carbon emission intensity from the previous year.
- 3% reduction in carbon emission intensity resulting from more efficient utilisation of direct fuel, electricity and steam used in production activities.
- 15% increase in carbon emission intensity mainly resulting from transportation of goods to our customers.

Track and monitor our performance on wastewater discharge, water consumption, and water recycling

Wastewater discharge intensity (m³)



Water consumption intensity (m³)



Water recycled and reused (%)



FY2018 progress

- Anyang Jiutian had a wastewater discharge intensity of 1.74 m³ per tonne of production, representing a 23% decrease from the previous year. A larger amount of wastewater was discharged in the prior year due to runoffs from major maintenance and cleaning of DMF and methylamine production towers.
- Anyang Jiutian had a water consumption intensity of 0.57 m³ per tonne of production, representing a 34% decrease from the previous year. In addition, up to 50% of municipal water consumption is being recycled and reused, up from 27% in the previous year. Increase in water recycled and reused is in line with the increase in volume of DMF and methylamine production in the current year.

3.4 Employee well-being

Overview

To increase productivity, we have a comprehensive performance appraisal programme and rewards system based on the result of the appraisal. The performance appraisal programme is essential for us to understand the skills level of the employees and appropriate training programmes can be designed to fill up the skill gaps.

We emphasise on the career path and progression of our employees. To achieve this, the management builds several two-way communication channels to ensure the career development needs of the employee are taken into consideration whenever possible. Trainings opportunities are equal to all employees based on needs identified.

Though these efforts, Anyang Jiutian is well-positioned to provide a constructive working experience to our employees and contribute to the economic development and skilled labour resources of the local community.

Skills competency and employee training

To ensure that our employees excel, we emphasise on continuous learning in the workplace. Every employee has equal opportunities to upgrade and sharpen his or her skill set through formal and on-the-job internal training programs and inter-departmental competitions.

In FY2018, Anyang Jiutian invested an average of 92 hours of training on each employee, representing a 10% increase from the previous year. The increase is due to increased efforts by the Company to ensure employee's skill competency.

As part of our strategy, Anyang Jiutian has committed to achieving a minimum of 80 hours of training per employee on an ongoing basis.

Performance appraisal

To ensure that we achieve our goals, we have various performance appraisal methods in place to determine the performance of the Company as well as each individual employee.

The employee performance appraisal comprises mainly quantifiable evaluation criteria. In addition, we actively collect performance information for each employee each month through inputs from direct supervisors and feedbacks, as well as periodical employee communication sessions.

These collected information allow us to understand the performance and skills development needs of each team and individual employee from multiple aspects. This is crucial for the Company to develop annual training programs that are designed to enhance the skills of the employee and aims to improve the overall productivity.

In FY2018, all of our employees are at least subject to an annual performance appraisal by their superiors. We seek to continue this practice in the coming year.

Equal opportunity

Anyang Jiutian has always been an equal opportunity employer to provide a fair workplace for employees, following the principles of equality and non-discrimination. Recruitment, remuneration, promotion, and benefits are required to be handled based on objective assessment, equal opportunity and non-discrimination regardless of gender, race, marital status, pregnancy, disability, age or family status.

FY2018 Progress

92

Training hours per staff

100%

Employees subject to regular performance appraisal

41%

Female representation in workforce

37%

Female representation in management

We attract talent through fair, and flexible recruitment strategy that includes recruitment application, job description, job applications, interview, selection, approval, and job offer. Promotion is based on performance and suitability.

We offer competitive remuneration to attract and retain talented staff members. Remuneration packages (which includes the necessary social benefits) are reviewed periodically to ensure consistency with current employment market benchmarks. Dismissal also complies with employment laws and regulations relating to non-discrimination.

In FY2018, female employees comprise 41% of our entire workforce, with female representation in management at 37%. We will continue to track and monitor female representation in our workforce and report these statistics every year.

Encouraging work-life balance

We organised a variety of employee activities to help them relax their mind and body, develop teamwork, explore their talent, so as to develop a positive attitude in both work and life.

To enhance employee teamwork and cohesion, improve employee health and improve employee work-life balance, Anyang Jiutian has been organising periodic employee gatherings during major festivals and sports competitions. In addition, Anyang Jiutian organises free annual health checks for its employees and gives out monetary supports to its needy workers.

In FY2018, close to RMB 0.3 million has been spent on employee welfare expenses. We will continue to track and monitor spendings on employee welfare and report these statistics every year.

Commitments: Empowering lives

Achieve minimum of 80 hours of training per employee

Training hours per employee (Hours)



FY2018 progress

- Anyang Jiutian invested an average of 92 hours of training on each employee, representing a 10% increase from the previous year.
- The increase is due to increased efforts by the Company to ensure employee's skill competency.

All employees are at least subject to an annual performance appraisal by their superiors

Achievements

- All employees are at least subject to an annual performance appraisal by their superiors.

FY2018 progress

- All employees are at least subject to an annual performance appraisal by their superiors.

Track and monitor female representation in workforce

Female representation in workforce (%)



FY2018 progress

- Female employees comprise 41% of our entire workforce, with female representation in management at 37%.
- Anyang Jiutian has always been an equal opportunity employer to provide a fair workplace for employees, following the principles of equality and non-discrimination. We will continue this practice in future years.

Female representation in management (%)



Track and monitor spending on employee welfare

Spending on employee welfare (¥'m)



FY2018 progress

- Close to ¥0.3 million was spent on employee welfare expenses, including gatherings during major festivals and sports competitions, free annual health checks and monetary support to needy workers.

Appendix A: Sustainability scorecard

Quality management

Performance indicators	Units	FY2017	FY2018
Plant capacity utilisation rate (DMF)	Percentage	65	75
Plant capacity utilisation rate (Methylamine)	Percentage	100	100
Investment on maintenance and repairs	¥'000	31,033	14,926
Investment on process improvements	¥'000	3,926	7,933
Products that meet the quality requirements of our customers	Percentage	100	100

Production safety

Performance indicators	Units	FY2017	FY2018
Production stoppage due to safety incidences	Number	0	0
Serious incidents	Number	0	0
Workplace injuries	Number	0	0

Environmental protection

Performance indicators	Units	FY2017	FY2018
Environmental incidents	Number	0	0
Fines on contravention of environmental regulations	¥'000	0	0
Total carbon footprint	tCO ₂ e	1,018.59	1,223.77
Carbon emission intensity	kgCO ₂ e/tonne	4.03	4.50
Gaseous emissions that meets local emission standards	Percentage	100	100
Wastewater discharge that meets local emission standards	Percentage	100	100
Wastewater discharge intensity	m ³ /tonne	2.27	1.74
Water consumption intensity	m ³ /tonne	0.86	0.57
Water recycled and reused	Percentage	27	50

Employee well-being

Performance indicators	Units	FY2017	FY2018
Training hours per employee	Hours	84	92
Employee turnover	Percentage	2	3
Employees subject to regular performance appraisal	Percentage	100	100
Female representation in workforce	Percentage	40	41
Female representation in management	Percentage	28	37
Spending on employee welfare	¥'000	Not tracked	300

Appendix B: GRI content index

GRI Standards Content Index

The GRI Content Index references the Jiutian Chemical Group Limited Sustainability Report 2018 (SR), and the Annual Report 2018 (AR).

Disclosure number	Disclosure title	Page reference and remarks	
GRI 102: General disclosures			
Organisational profile	102-1	Name of organisation	• AR: Corporate Profile (Pages 2-3)
	102-2	Activities, brands, products, and services	• AR: Corporate Profile (Pages 2-3)
	102-3	Location of headquarters	• AR: Corporate Profile (Pages 2-3)
	102-4	Location of operations	• AR: Corporate Profile (Pages 2-3) • AR: Investment in Subsidiary Companies – Note 16 to the Financial Statements (Pages 92-94) • AR: Investment in Associated Companies – Note 17 to the Financial Statements (Pages 95-97)
	102-5	Ownership and legal form	• AR: General – Note 1 to the Financial Statements (Page 65)
	102-6	Markets served	• AR: Review of Operations (Pages 14-16) • AR: Segment Information – Note 27 to the Financial Statements (Page 111)
	102-7	Scale of organisation	• AR: Corporate Profile (Pages 2-3) • AR: Segment Information – Note 27 to the Financial Statements (Page 111)
	102-8	Information on employees and other workers	• SR: Employee Well-being (Pages 18-19)
	102-9	Supply chain	• SR: Quality Management (Pages 9-11)
	102-10	Significant changes to the organisation and its supply chain	• AR: Corporate Profile (Pages 2-3) • AR: Our Products (Pages 4-7)
	102-11	Precautionary Principle or approach	• AR: Corporate Governance Report (Pages 22-48)
	102-12	External initiatives	• Not applicable
	102-13	Membership of associations	• Not applicable
Strategy	102-14	Statement from senior decision-maker	• AR: Chairman's Statement (Pages 9-11) • SR: Message to Stakeholders (Page 2)
	102-15	Key impacts, risks, and opportunities	• AR: Review of Operations (Pages 14-16) • AR: Independent Auditor's Report (Pages 53-57)
Ethics and integrity	102-16	Values, principles, standards, and norms of behavior	• SR: Sustainability Strategy (Page 5)
	102-17	Mechanisms for advice and concerns about ethics	• AR: Corporate Governance Report (Pages 22-48)
Governance	102-18	Governance structure	• AR: Corporate Governance Report (Pages 22-48)
	102-19	Delegating authority	• AR: Corporate Governance Report (Pages 22-48)
	102-20	Executive-level responsibility for economic, environmental, and social topics	• SR: Sustainability Organisational Structure (Page 4)
	102-21	Consulting stakeholders on economic, environmental, and social topics	• SR: Consulting Our Stakeholders (Page 6)

Disclosure number	Disclosure title	Page reference and remarks	
102-22	Composition of the highest governance body and its committees	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-23	Chair of the highest governance body	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-24	Nominating and selecting the highest governance body	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-25	Conflicts of interest	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) AR: Directors' Statement (Pages 49-52) SR: Sustainability Strategy (Page 5) 	
102-26	Role of highest governance body in setting purpose, values, and strategy	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-27	Collective knowledge of highest governance body	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-28	Evaluating the highest governance body's performance	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-29	Identifying and managing economic, environmental, and social impacts	<ul style="list-style-type: none"> SR: Sustainability Materiality (Page 7) 	
102-30	Effectiveness of risk management processes	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-31	Review of economic, environmental, and social topics	<ul style="list-style-type: none"> SR: Sustainability Report (Pages 1-24) 	
102-32	Highest governance body's role in sustainability reporting	<ul style="list-style-type: none"> SR: Sustainability Organisational Structure (Page 4) 	
102-33	Communicating critical concerns	<ul style="list-style-type: none"> SR: Sustainability Materiality (Page 7) 	
102-34	Nature and total number of critical concerns	<ul style="list-style-type: none"> SR: Sustainability Materiality (Page 7) 	
102-35	Remuneration policies	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-36	Process for determining remuneration	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-37	Stakeholders' involvement in remuneration	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-38	Annual total compensation ratio	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
102-39	Percentage increase in annual total compensation ratio	<ul style="list-style-type: none"> AR: Corporate Governance Report (Pages 22-48) 	
Stakeholder engagement	102-40	List of stakeholder groups	<ul style="list-style-type: none"> SR: Consulting Our Stakeholders (Page 6)
	102-41	Collective bargaining agreements	<ul style="list-style-type: none"> Not applicable
	102-42	Identifying and selecting stakeholders	<ul style="list-style-type: none"> SR: Consulting Our Stakeholders (Page 6)
	102-43	Approach to stakeholder engagement	<ul style="list-style-type: none"> SR: Sustainability Strategy (Page 5)
	102-44	Key topics and concerns raised	<ul style="list-style-type: none"> SR: Consulting Our Stakeholders (Page 6)

Disclosure number	Disclosure title	Page reference and remarks
Reporting practice	102-45	Entities included in the consolidated financial statements <ul style="list-style-type: none"> • AR: Investment in Subsidiary Companies – Note 16 to the Financial Statements (Pages 92-94) • AR: Investment in Associated Companies – Note 17 to the Financial Statements (Pages 95-97)
	102-46	Defining report content and topic Boundaries <ul style="list-style-type: none"> • SR: Sustainability Materiality (Page 7)
	102-47	List of material topics <ul style="list-style-type: none"> • SR: Sustainability Materiality (Page 7)
	102-48	Restatements of information <ul style="list-style-type: none"> • SR: Restatements (Page 3)
	102-49	Changes in reporting <ul style="list-style-type: none"> • Not applicable
	102-50	Reporting period <ul style="list-style-type: none"> • SR: Scope of Sustainability Report (Page 3)
	102-51	Date of most recent report <ul style="list-style-type: none"> • SR: Scope of Sustainability Report (Page 3)
	102-52	Reporting cycle <ul style="list-style-type: none"> • Annual
	102-53	Contact point for questions regarding the report <ul style="list-style-type: none"> • SR: Sustainability Contact (Page 3)
	102-54	Claims of reporting in accordance with the GRI Standards <ul style="list-style-type: none"> • SR: Scope of Sustainability Report (Page 3)
	102-55	GRI content index <ul style="list-style-type: none"> • SR: GRI Content Index (Pages 21-24)
	102-56	External assurance <ul style="list-style-type: none"> • No external assurance
GRI 200: Economic disclosures (applicable sections only)		
Economic performance	201-1	Direct economic value generated and distributed <ul style="list-style-type: none"> • AR: Financial Highlights (Page 13)
Procurement practices	204-1	Proportion of spending on local suppliers <ul style="list-style-type: none"> • SR: Quality Management (Pages 9-11)
Anti-corruption	205-3	Confirmed incidents of corruption and actions taken <ul style="list-style-type: none"> • There is no incidences of corruption.
Anti-competitive behavior	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices <ul style="list-style-type: none"> • There is no legal actions for anti-competition.
GRI 300: Environment disclosures (applicable sections only)		
Energy	302-1	Energy consumption within the organisation <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17)
Water	303-1	Water withdrawal by source <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17)
	303-3	Water recycled and reused <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17)
Emissions	305-1	Direct (Scope 1) GHG emissions <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17) • SR: Sustainability Scorecard (Page 20)
	305-2	Energy indirect (Scope 2) GHG emissions <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17) • SR: Sustainability Scorecard (Page 20)
	305-3	Other indirect (Scope 3) GHG emissions <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17) • SR: Sustainability Scorecard (Page 20)
	305-4	GHG emissions intensity <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17) • SR: Sustainability Scorecard (Page 20)
	305-7	Nitrogen oxides (NO _x), sulfur oxides (SO _x), and other significant air emissions <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17)
Effluents and waste	306-1	Water discharge by quality and destination <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17)
	306-2	Waste by type and disposal method <ul style="list-style-type: none"> • SR: Environmental Protection (Pages 14-17)
	306-3	Significant spills <ul style="list-style-type: none"> • There is no incidences of significant spills.

Disclosure number	Disclosure title	Page reference and remarks
	306-4	Transport of hazardous waste <ul style="list-style-type: none"> SR: Environmental Protection (Pages 14-17)
Laws and regulations	307-1	Non-compliance with environmental laws and regulations <ul style="list-style-type: none"> There is no non-compliance with environmental laws and regulations.
GRI 400: Social disclosures (applicable sections only)		
Employment	401-1	New employee hires and employee turnover <ul style="list-style-type: none"> SR: Employee Well-being (Pages 18-19) SR: Sustainability Scorecard (Page 20)
	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees <ul style="list-style-type: none"> SR: Employee Well-being (Pages 18-19)
Occupational health and safety	403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities <ul style="list-style-type: none"> SR: Production Safety (Pages 12-13) SR: Sustainability Scorecard (Page 20)
Training and education	404-1	Average hours of training per year per employee <ul style="list-style-type: none"> SR: Employee Well-being (Pages 18-19) SR: Sustainability Scorecard (Page 20)
	404-2	Programs for upgrading employee skills and transition assistance programs <ul style="list-style-type: none"> SR: Quality Management (Pages 9-11) SR: Production Safety (Pages 12-13) SR: Employee Well-being (Pages 18-19)
	404-3	Percentage of employees receiving regular performance and career development reviews <ul style="list-style-type: none"> SR: Employee Well-being (Pages 18-19)
Diversity and equal opportunity	405-1	Diversity of governance bodies and employees <ul style="list-style-type: none"> SR: Employee Well-being (Pages 18-19)
Non-discrimination	406-1	Incidents of discrimination and corrective actions taken <ul style="list-style-type: none"> There is no incidents of discrimination.
Child labor	408-1	Operations and suppliers at significant risk for incidents of child labor <ul style="list-style-type: none"> Child labour is strictly prohibited.
Forced or compulsory labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor <ul style="list-style-type: none"> Forced and compulsory labour is strictly prohibited.
Local communities	413-1	Operations with local community engagement, impact assessments, and development programs <ul style="list-style-type: none"> SR: Production Safety (Pages 12-13) SR: Employee Well-being (Pages 18-19)
Socioeconomic compliance	419-1	Non-compliance with laws and regulations in the social and economic area <ul style="list-style-type: none"> There is no non-compliance with socioeconomic laws and regulations.