

An aerial photograph of a vast sugarcane plantation. The fields are a vibrant green, divided into sections by a central pivot irrigation system. A long, straight line of metal wheels and pipes runs across the field, with a central pivot point where a small structure is visible. The background shows rolling green hills under a blue sky with scattered white clouds.

ENVIRONMENTAL IMPACT AND CLIMATE CHANGE REPORT 2015/16

ENVIRONMENTAL IMPACTS AND CLIMATE CHANGE REPORT

Summary of performance in relation to material environmental impacts and climate change indicators for the season ended 31 March 2016

CONTENTS

- OUR STEWARDSHIP
- ILLOVO'S INTEGRATED BUSINESS MODEL
- TECHNOLOGY, RESEARCH AND DEVELOPMENT
- INPUTS
 - WATER
 - MATERIALS
 - ENERGY
- OUTPUTS
 - GREEN HOUSE GASSES AND OTHER AIR EMISSIONS
 - EFFLUENT
 - WASTE
- BIODIVERSITY
- INVESTING IN ENVIRONMENTAL COMPLIANCE
- ENVIRONMENTAL COMPLIANCE
- ASSURANCE

SALIENT FEATURES

- CDP Water Score B Band (CDP progress towards stewardship is rated from D to A bands)
- CDP Carbon Score 97% (2014: 74%)
- Completed Illovo Integrated Assurance Programme and Illovo Sustainability Reporting Rollout
- Completed Small Growers Climate Change Vulnerability Assessments in Malawi, Zambia, Mozambique, Tanzania and Swaziland
- Zero environmental spills / enforcement notices / fines

OUR STEWARDSHIP

Illovo's commitment to improve environmental management processes is underpinned by continuous improvement in the management of direct environmental impacts across its supply chain. We are mindful of the role that we play in relation to the sustainable development of the regions in which we operate and our strong interdependence with the local communities and natural environments in those areas. Our management of the environment is supported by a commitment aligned to minimising any negative impacts that we may have on the environment, or which may contribute to climate change.

Guided by the United Nations Global Compact Principles ("UN Global Compact"), our environmental strategy supports a precautionary approach to environmental challenges, focuses on initiatives to promote greater environmental responsibility and encourages the use of environmentally-friendly technologies. To achieve these objectives, our operations are required to:-

- continuously improve their sustainability-linked environmental practices, to conserve raw materials, reduce greenhouse gas emissions (GHG) and energy intensity, entrench climate change mitigation and adaptation strategies, promote responsible manufacturing and implement sustainable farming practices;
- introduce environmentally-friendly initiatives such as responsible waste disposal programmes and thereby reduce our solid waste per ton of sugar produced, maximise re-use of the by-products of our manufacturing processes, optimise our water footprint per ton of cane produced and implement our water risk management and monitoring strategy;
- create wider stakeholder environmental awareness and improve responsiveness to key environmental-related performance indicators, including threats brought about by climate change;
- undertake rigorous internal and external assurance audits, to manage compliance, and to ensure the implementation of a precautionary approach in relation to the management of our environmental impact;
- leverage improved environmental performance in our supply chain, including third-party transporters, managing environmental impacts and focusing on managing, where possible, weather-related supply chain disruptions.

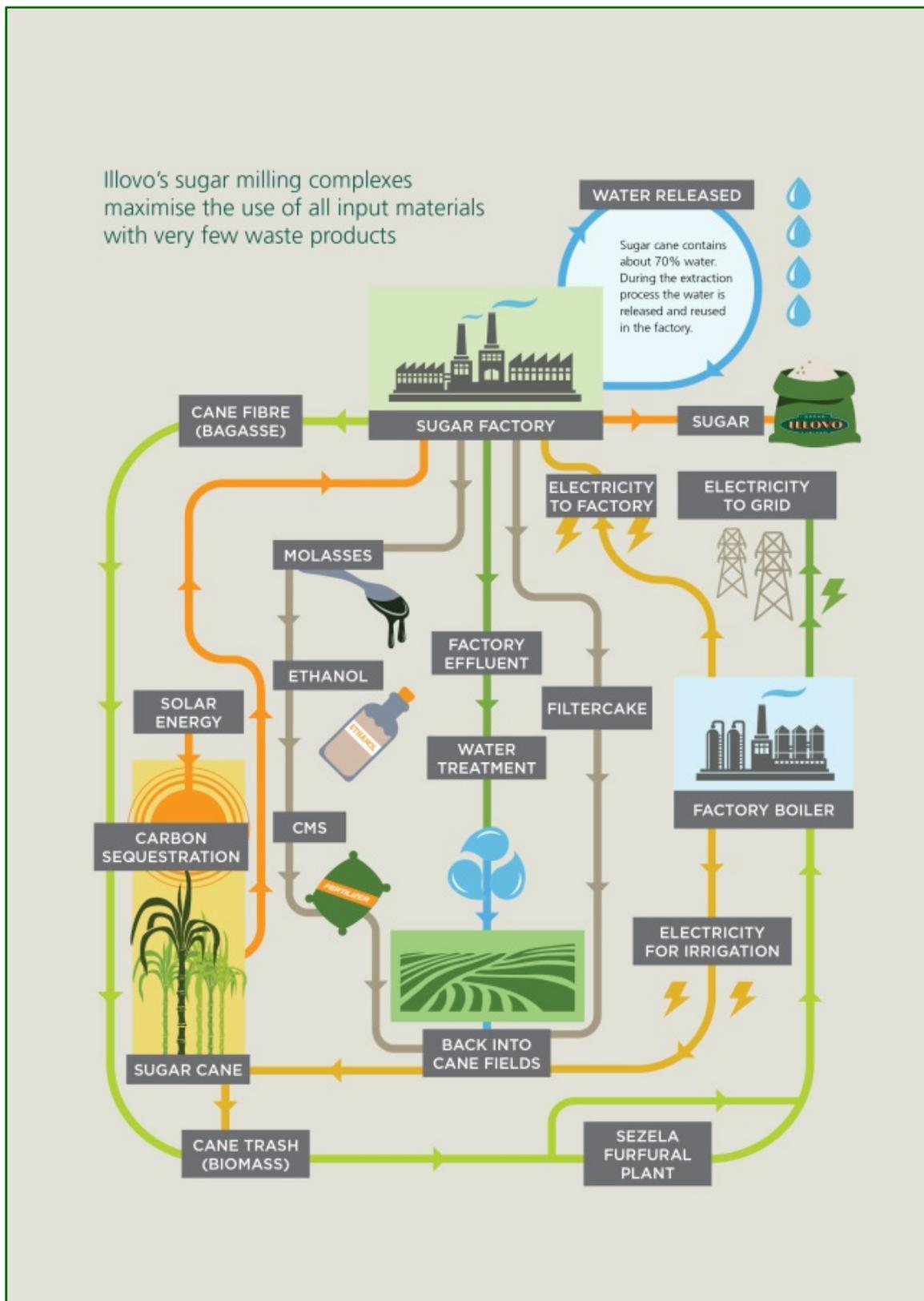
Our environmental reporting, which is guided by the Global Reporting Initiative's G4 Guidelines ("GRI"), is structured to reflect the inputs, outputs and impact the organisation has on the environment. Water, materials and energy represent three inputs used by all of our operations. These inputs result in outputs feeding into the environment, which are reported under the headings of emissions, effluent and waste. We also report on land use and biodiversity as inputs as these are viewed as natural resources.

In line with the GRI reporting requirements, environmental aspects that are material to our business have been determined. Their materiality is based on impact or potential impact, the risks they pose or opportunities they present, as well as factors that influence assessments of the organisation by stakeholders. Laws and regulations that are applicable to our operations and inputs from stakeholders are also considered to be material. Environmental risks associated with water use and climate change are identified through an Enterprise Risk Management (ERM) framework which has standardised impact and likelihood metrics for evaluating the priority of a risk or opportunity. The ERM process also allows us to respond appropriately to inherent risks and substantial changes in our business.

In order to streamline challenges linked to the monitoring and reporting of sustainability related indicators, we have implemented, in collaboration with a United Kingdom (UK) based company, CR 360 (Credit 360), a solution which will enhance the group's sustainability data reporting function. We aim to improve our data accuracy and reliability by minimising non-standardised reporting methods. The system provides a common database for reporting, approving, analysing and auditing of data and as a result, improves the way our operations collect and collate environmental and GHG emission data.

The development and implementation of the Illovo Integrated Assurance Protocol ("IIAP"), based on PAS 99 protocol and previously referred to as Project Totus, was completed on schedule during the year under review. In addition, the assurance process, which has replaced the NOSA Integrated System, was finalised in September 2015. The IIAP was further used to design the Illovo Integrated Risk Management System ("IIRMS"), from which Illovo will manage its broad Safety, Health, Environment, Risk and Quality (SHERQ) requirements. The IIAP facilitates the integration, coordination and alignment of risk management systems within the group and has been put in place in order to mitigate the level of risk, improve governance and to have control oversight over SHERQ. This includes environment and climate change risks. As reported, our operation in Swaziland and two sites in South Africa, have implemented environmental management systems in accordance with ISO 14001.

ILLOVO'S INTEGRATED BUSINESS SUSTAINABILITY MODEL



“Not only do sustainable practices make good business sense, they also reflect our responsibility for and commitment to the environment and our surrounding communities.”

Gavin Dalgleish, Group Managing Director

Illovo is committed to adding increased value by improving the extent of our control over environmental risks introduced by contractors and suppliers into our operations. We continue to improve our environmental and social risk-related specifications and continue to implement assurance processes for key suppliers, in order to ensure that they too adopt environmental and social standards similar to our own.

In respect of the UN Global Compact, and with reference to the Rio Declaration on Environment and Development, Illovo adopts a precautionary approach when considering new business ventures and expansions. This process includes the completion of comprehensive due diligence and environmental impact assessments in order to understand potential negative environmental impacts and the nature of remedial action, where required.

In a continuing example of our progress towards sustainable agricultural operations, the World Wildlife Fund (WWF), in partnership with the Noodsberg Cane Growers' Association, and supported by our own Noodsberg sugar factory and refinery in South Africa, was instrumental in the development of a Sustainable Sugar Cane Farm Management system for growers, termed SUSFARMS®. This concept is based on three fundamental environmental principles for sustainable sugar cane production, those being that natural assets are conserved, critical ecosystems' services are maintained and agricultural resources are used sustainably, all in conjunction with social and economic drivers.

The Group Agricultural Operational Support Function conducted baseline SUSFARMS audits as part of its agricultural reviews within the Totus/IIAP programme. The key findings, with appropriate remedial actions, are dealt with as part of our IIRMS, with the focus on prioritising areas for implementation.

To help us improve the management of our environmental impacts and other sustainability aspects, we have also sought the benefit of feedback from continuing independent external third party sustainability assessments conducted on behalf of our customers. For example, our Sezela and Eston sugar factories in South Africa were evaluated under the ProTerra Certification Scheme to assess potential risks in the agricultural supply chain and to monitor compliance against the requirements of the ProTerra Standard. This provided the company with full traceability regarding the sustainability of raw sugar production on behalf of the American Sugar Refining Inc. (ASR). Further operations were assessed by Partner Africa who conducted an audit on behalf of the Coca-Cola Company using the Coca-Cola Company's Supplier Guiding Principles (SGP).

In South Africa, following the launch of the South African Fairtrade Sugar Project in 2014, the first Fairtrade-certified crop of cane sugar became available for harvesting in December 2015. The Fairtrade business model entails a voluntary certification system based on internationally recognised labour and environmental standards, focusing on improving working and living conditions, together with the implementation of farming practices that are sustainable for business, people and the environment.

Over and above the environmental sustainability aspects covered in this report, further information including socio-economic effects, can be found in the 2016 Socio-Economic Impact report which is available on our website www.illovosugar.com.

TECHNOLOGY, RESEARCH AND DEVELOPMENT

Illovo's future sustainability objectives are underpinned by proven and successful technology. Our climate change mitigation indicators are directed at promoting energy efficiency initiatives and advancing the use of clean technology where appropriate.

In order to optimise the return from our existing installed capacity, we have well established in-house resources which provide technical expertise in agriculture, sugar and downstream product manufacture at all operations. A centralised core of expertise exists to ensure that technical standards are developed and implemented at all operations and that the company keeps abreast of technical innovation in sugar cane agriculture and milling, and in the manufacture of downstream products. This in-house function is also involved in investigating opportunities to expand and diversify our operations and in the planning and implementation of approved capital projects.

We continue the collaboration between our Group Manufacturing Performance function and AB Sugar with regard to the application of new technology, energy efficiency improvements and process performance optimisation. Our Continuous Improvement (CI) initiatives focus on enhancing productivity and reducing the cost of production at all our operations, with emphasis on benchmarking and optimising operational performance across the group.

We continue to benefit from research and development undertaken by the South African Sugar Milling Research Institute (SMRI), South African Sugar Research Institute (SASRI) and other local and international research organisations. The SMRI and SASRI are funded by member sugar companies including Illovo.

Illovo produces a number of products utilising bagasse, biomass and molasses generated from its operations. Bagasse and biomass are used as the primary fuels to generate electricity for our operational requirements during the milling season and we export excess electrical energy into the national grid from certain of our operations. In addition to the group's production of sugar, syrup, potable alcohol and lactulose, furfural and its derivatives are produced from bagasse at the Sezela downstream plant. During the year under review, we spent R7.8 million on research into technology and product development-related interventions.

INPUTS - WATER

Water, vital to our agricultural, milling and downstream operations, is sourced directly from rain, sustainably-secure and legally-compliant water resources such as rivers, lakes, dams and indirectly, from municipal service providers. The sustainability of our operations is also intrinsically linked to climate changes in precipitation patterns, such as the frequencies of extreme weather events, including droughts and temperature and radiation variables, which all, or own their own, have the potential to impact upon our businesses by way of lower cane yields, consequent reduced factory capacity utilisation and decreased production.

Understanding the risks associated with specific water supply dynamics at the local level across our operations is critical. Subject to the factors mentioned above, the sustainability of our operations is also impacted directly by power outages where electricity generation from hydro-electric schemes is interrupted during periods of drought, as it is by the supply of poor quality water which requires costly pre-treatment before use.

Our water consumption footprint at our sugar factories is generally neutral, with most water requirements for the sugar manufacturing process sourced from the cane itself. Some mills require additional water for cooling which, once utilised, passes through the mill in an "open-loop" system and is then channelled to the fields for irrigation. Similarly, any reduction in our contracted water supply also impacts upon our operations.



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More than 50% of the sugarcane processed by our factories is cultivated by outgrowers whose farm sizes vary considerably in extent, from less than five to many hundreds of hectares under cane. In South Africa and Tanzania, sugar cane is grown under rain-fed conditions while elsewhere across the group, it is cultivated under irrigation. In order to preserve environmental resources at the same time as serving the long-term sustainability of our business, we – as is expected from all our supplying outgrowers - operate under respective national water abstraction permits which govern the supply of water to our operations. Furthermore, we are represented within local catchment forums to ensure that all users remain abreast of available water levels, user-consumption rates and potential future changes to legislation regarding water use.

The supply of potable water to communities which surround our operations is of particular importance to Illovo. In addition to providing essential water and sanitation support where local authorities are unable to do so, we work in close co-operation with numerous public/private sector players, local authorities and traditional leaders, and non-government agencies to ensure the continued supply of water to these mostly disadvantaged communities. Further information is available in our 2016 Socio-Economic Impact Report at www.illovosugar.com.

In 2013, we engaged WSP Environmental and Energy, an international environmental and sustainability consultancy, to undertake a group-wide water foot-printing exercise. The direct outcomes produced were an understanding of the nature and extent of the group's water usage, the identification of risks and opportunities aligned to Illovo's Water Footprint Assessment Manual (2011) and, most importantly, the development of a group water management strategy to improve our understanding and monitoring of all water consumption.

Case study:

As part of our water and climate change mitigation and adaptation strategy, Illovo partnered with the Climate Resilience Infrastructure Development Facility (CRIDF+) and the UK Department for International Development (DFID) which provided the funding for a Southern African water infrastructure programme.

The project, led by the CRIDF+ team, involved the completion of vulnerability assessments of smallholder communities at Illovo's operations in Malawi, Mozambique, Swaziland, Tanzania and Zambia. The vulnerability assessments consisted of three key components:

- a sensitivity analysis - systems or structures that are susceptible or affected in a significant way by climatic factors*
- an exposure analysis - the likelihood and level to which these systems or structures are expected to be exposed to changes in climate, based on future projections, and*
- an analysis of adaptive capacity - the resilience-ability of systems or structures in the face of a changing climate.*

While some risks were location-specific and some even specific to certain smallholder organisations, there were a number of risks which were common across the group and fell predominantly into the categories of physical and socio-economic risks. These challenges, while not directly linked to climate change, would in any event, compound climate-related challenges.

The physical risks identified included the impacts associated with erratic rainfall patterns in rain-fed cane supply regions, including floods and droughts, and increased temperatures which predispose the crop to the outbreak of new pests and diseases. In countries where sugar cane is irrigated, it was also identified that drought-related water shortages impacted upon the ability of national hydro-electricity plants to produce power on a consistent basis, thereby impacting directly on electricity-powered irrigation systems to deliver water to the cane fields .

The socio-economic risks identified are many but primarily included a low level understanding of climate change and its anticipated effects, including water shortages for irrigation due to any over-subscription or unplanned/unregulated use of water sources; inefficient or inappropriate irrigation systems; upstream de-

forestation causing high siltation levels in rivers; river-level fluctuation caused by the operation of hydro-electricity plants; and growing populations and migration to cane growing areas in search of employment and income generating opportunities.

CRIDF+, Illovo and the project partners are now working with smallholders to identify opportunities and adaptation strategies to minimise the risks and challenges of climate change and to identify partner organisations to assist in providing opportunities to improve their climate resilience.

Through the ERM process, we have ranked water-related risks among the group's top five risks that are reviewed at an executive level on a regular basis. These risks have an inherently high rating (before controls) due to the negative impact that low water availability (river plus rainfall) can have on communities, agricultural and manufacturing production. The water risk is also recognised to have an inherently high rating due to the brand reputation and license to operate implications.

The current profile of this risk (after controls) is higher than normal due to the prolonged regional drought currently being experienced across Southern Africa, reducing water levels in river systems and dams, and resulting in situations of reduced access to irrigation water at some operations during the past two years. The level of this risk is also influenced by power supply shortfalls from country hydro-electric utilities, our own pumping and power generation infrastructure availability and the siltation of access canals and storage dams. There are mitigation strategies and actions in place to minimise these risks where possible.

We operate in the following water basins which present varying degrees of exposure to water risk:

- Pongola – Mzimkhulu basin in South Africa
- Zambezi water basin in Malawi and Zambia
- Rufiji water basin in Tanzania
- Incomati water basin in Mozambique
- Maputo water basin in Swaziland

Illovo manages water abstraction and return flows to and from local river basins and dams within the legal allocations and permits granted by the various water resource authorities across the countries in which we operate. This includes water allocations covering Illovo's water use for irrigation, which extends across 61 000 ha of irrigated cane farming operations.

Total Amount of Water Withdrawals in Megalitres (MI)

Source	2015/16	2014/15	2013/14
Surface (rivers)	954 593	990 839	942 695
Ground (borehole)	1 928	*2 332	980
Municipal	942	1 183	1 248
Total	955 579	994 354	944 923

**The increase in groundwater supplement used between 2013/14 and 2014/15 is a direct result of decreased water flow in the river due to reduced hydrogenation in Tanzania.*

Water withdrawal decreased by 4% compared to the previous reporting period. The decrease is primarily attributed to the availability of blue water (i.e., surface and ground water) supplied due to the drought conditions experienced in Swaziland, Zambia and to a lesser extent, Tanzania. Low dam levels, poor electricity reliability and hydro-power disruptions, which reduced the group's ability to pump water for irrigation, also contributed to the reduction in withdrawal.

Total Amount of Water Consumed in Megalitres (MI)

Total Amount of Water Consumed	2015/16	2014/15	2013/14
Water Consumed for primary/operational purposes	776 915	847 571	991 680
Rainwater Consumed in MI	337 920	358 233	390 582
Treated and supplied to local communities in MI	5 105	5 435	5 318

Total water consumption decreased by 8% compared to last year, also a result of drought experienced in a number of operations during the reporting year with less rainwater being available for crop consumption. The water footprint reporting implemented in 2013 continues to be refined. As part our water management strategy we continue to work towards improving the accuracy of water reporting and ensuring that water is not lost between abstraction and use points where it is difficult to identify losses. This is done by identifying improvement opportunities including the implementation of water meter systems where applicable. It is critically important to note that an immeasurable amount of water abstracted and conveyed for irrigation is returned to the same catchment. As such, Illovo's reflects a level of over-reporting on water consumption, as previously noted in the assurance statements.

INPUTS - MATERIALS

The input materials used in the group's production processes are relevant to the extent that they impact on the conservation of the global resource base, and are the focus of our efforts to reduce resource intensity and the management of our total operational costs. Where practical, we use input materials that promote environmental responsibility. Factory by-products, in the form of molasses, filter cake, vinasse and boiler ash are applied to cane fields as natural fertiliser while approved herbicides, pesticides and fungicides are applied responsibly. The use of our by-products as nutrient supplements decreases the group's reliance on inorganic fertilisers, thereby resulting in decreased costs, resource intensity and GHG emissions.

In the sugar production process, steam is generated using bagasse, which is the renewable fibrous residue that remains after the extraction of juice from the crushed stalks of sugar cane. This steam is used to drive processing prime movers, generate renewable electricity through co-generation and provide the process heating requirements of the sugar production process. The electricity is used within the sugar factory and is exported to provide electricity for irrigation of the agricultural estates, downstream users and in some cases, national grids.

In certain operations, the energy derived from bagasse is not sufficient to meet all energy requirements of the production processes and supplementary fuel is required. Supplementary fuels include biomass and wood/woodchips, which are renewable. Coal, which is non-renewable, is used as a supplementary fuel to a lesser extent.

Various chemicals are used in sugar and downstream processing (eg, flocculent, lime, sulphuric, hydrochloric and phosphoric acid). They are not fully consumed as part of the manufacturing process and residues are not discharged into the environment. Illovo is actively working to reduce the volume of materials it procures and considers reusable material where appropriate. This focus has led to the continued use of recyclable packaging material and the procurement of reusable and recyclable bulk polypropylene bags.

INPUTS - ENERGY

Energy efficiency remains important to Illovo, given the growing demand for and increasing cost of energy and the corresponding impact on the environment, together with the risk of power outages from national grids. Our business plays an increasingly significant role in reducing consumption of non-renewable energy and increasing generation of electricity from renewable energy sources. During the year under review, 88% of the energy used by Illovo was derived from renewable resources. Targets to reduce fossil fuel consumption have been set for sites where power-supplementation is necessary while significant investments have been made to reduce energy consumption on these sites. The largest use

of non-renewable energy across Illovo occurred at the three operating sugar mills and two ethanol distilleries in South Africa.

Coal consumption increased as a result of the reduced cane crop experienced in our South African and Swaziland operations, consequently reducing the tons of sugar denominator and limiting availability of bagasse for generating electricity. Furthermore, Noodsberg increased their requirement for processing of raw sugar to produce refined sugar for the market.



During the year under review, 88% of the energy used by Illovo was derived from renewable resources.

In South Africa, a significant investment in the Sezela Coal and Energy Savings Project - to reduce the site's reliance on coal by 10 800 tons per annum and the site's electrical demand from the national electricity grid by 21 GWh - was implemented during the reporting period and completed in time for the start of the 2016/17 crushing season. The impact of this project is expected to be realised during the 2016/17 season.

The Zambia refinery expansion, which was commissioned in 2016/17, has, similarly, been accompanied by numerous energy efficiency opportunities and the expanded factory is forecast to continue to meet its own energy requirements without the need for supplementary fuel.

Group Energy Split by Type: Percentage

%	Bagasse	Coal	Electricity	Synthesis Gas	Biomass and Wood	Other Fuels
2015/16	82.3	5.6	3.4	1.8	5.9	1.0
2014/15	84.5	4.3	2.6	1.7	5.7	1.2
2013/14	84.4	4.5	2.4	1.5	5.9	1.2

Direct Energy consumption by primary energy source in Gigajoules per ton of sugar produced (ts)

Energy Source – GJ	2015/16	GJ/ts	2014/15	GJ/ts	2013/14	GJ /ts
Non Renewable - Synthesis Gas	593 786	0.39	591 909	0.34	577 590	0.32
Non Renewable – Diesel	261 722	0.17	336 051	0.19	355 504	0.19
Non Renewable – Petrol	40 052	0.03	55 961	0.03	52 529	0.03
Non Renewable – Coal	1 925 966	1.27	1 534 803	0.87	1 708 424	0.93
Non Renewable - Heavy Fuel Oil	9 300	0.01	11 236	0.01	9 647	0.01
Non Renewable - LPG	290	0.00	38	0.00	200	0.00
Renewable - Bagasse in	26 947 644	17.81	30 227 273	17.18	32 086 838	17.53
Renewable – Biomass	369 784	0.24	388 010	0.22	404 241	0.22
Renewable – Wood/Woodchips	1 575 214	1.04	1 653 221	0.94	1 855 437	1.01

Indirect energy in the form of electricity is produced outside of Illovo's operations and is consumed for Illovo's intermittent supplementary electricity needs.

Total indirect energy consumption by primary source in gigajoules (GJ)

Energy Source - GJ	2015/16	GJ/ ts	2014/15	GJ/ts	2013/14	GJ/ts
Imported Electricity	1 106 633	0.73	*1 009 071	0.57	911 415	0.50

* Imported electricity at Nchalo Malawi has been adjusted to reflect total electricity imports for primary use by Illovo. The reason for the greater electricity requirement is due to a shorter crushing season in many of our operations, as a result of the drought, which increased the need for electricity for irrigation to be drawn from the national grids.

Investing in renewable energy

Various by-products of the sugar manufacturing process present the industry with an opportunity to generate the bulk of its own energy requirements. A world-wide trend has seen sugar mills reaching a point where they have generated surplus energy to be exported, creating significant ecological and economic benefits.

Co-generation

Dry, fibrous bagasse, remaining after the extraction of juice from the crushed stalks of sugar cane, provides us with a substantial renewable energy opportunity for co-generation, replacing fossil fuel sources such as coal and electricity generated from coal, thereby reducing GHG. In addition to bagasse, some of our operations, Ubombo in Swaziland, Nchalo in Malawi and Noodsberg in South Africa, are able to supplement their co-generation capacity by utilising additional green cane biomass and wood/woodchips as boiler feedstock. In the 2015/16 season, these operations utilised over 130 000 tons of biomass and wood/woodchips as renewable fuel sources to produce over 540 709 MWh (2014/15: 567 462 MWh) of heat and energy in their dual-fired boilers. We are continuing to assess opportunities to increase the co-generation capabilities of all our operations.

During the year under review, our Ubombo mill in Swaziland, with its integrated co-generation facility, exported 60 301 MWh to the national grid. The sale of this clean renewable energy directly enables the Swaziland Electricity Company (SEC) to reduce its Scope 1 emissions and consequently, its customers'

Scope 2 emissions. Based on the Swaziland grid emissions factor, the sale of this electricity enabled SEC to avoid 41 186 tCO₂e (2014/15: 38 025 tCO₂e, and 2013/14: 36 218 tCO₂e).

Case study:

In 2011, Ubombo became the first company in Swaziland to be issued an Independent Power Producer (IPP) licence, after signing a 15-year Power Purchase Agreement (PPA) with the Swaziland Electricity Company (SEC), the sole supplier of electricity to the country. As part of the R1.2 billion factory expansion project to expand sugar milling capacity from 400 to 500 tons cane per hour, Ubombo invested in a 25 MW co-generation plant which was commissioned during the 2010/11 season. In 2013, the company was issued with an IPP Generation Licence, which then laid the foundation for electrical co-generation to become a long-term contributor to the group’s downstream business sector.

Power exported to the SEC has been consistently above the PPA obligations since commissioning. The 55.5 GigaWatt hours (GWh) exported to SEC in 2015 was a record and exceeded the contracted PPA obligation of 52 GWh for the period. The total power export of 94.2 GWh from the co-generation plant, which includes exports to the agricultural operations and other “in-house” users, was also a record and exceeded the original budget by 4 GWh.



An aerial view of Illovo’s Ubombo integrated sugar factory in Swaziland

Ubombo has proved that it is a reliable supplier of electricity, even under adverse conditions as was demonstrated in 2014 when the PPA obligation was exceeded, despite the company experiencing a three-week labour strike. With diversification of revenue streams through downstream investments being one of the pillars of Illovo’s strategy, co-generated electricity can be expected to remain an attractive area for investment with the ability to replicate where desirable, Ubombo’s integrated sugar milling and power producing model.

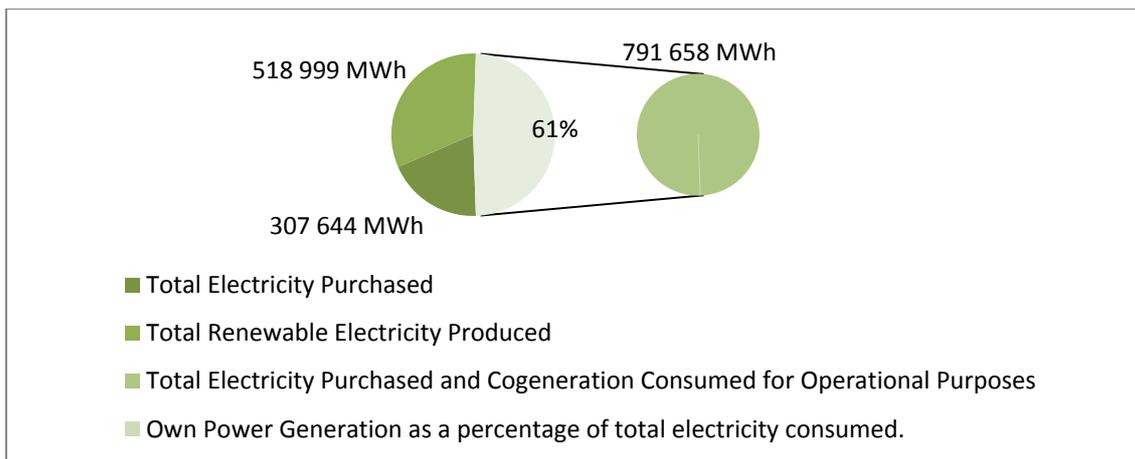
Our operation in Zambia generates electricity for partial self-sufficiency during periods of drought, while hydro-power also generated at the Ubombo factory, forms part of the total power export to the grid. In Malawi, Dwangwa exports power to an external organisation.

Other power exports to national grid/third parties

MWh	2015/16	2014/15	2013/14
South Africa	5 447	4 512	169
Mozambique	*1 131	2 115	N/A
Swaziland	60 301	51 552	47 783
Malawi	1 667	1 321	1 376
Total	68 546	59 500	49 328

* Decrease in power exports as a result of the main turbo-alternator being under repair, increasing reliance on external power.

Total Purchased and Cogeneration Electricity Produced by Category in MWh



MWh	2015/16
Total Electricity Purchased from the National Grid	307 644
Total Renewable Electricity Produced (Cogeneration)	518 999
Total Electricity Consumed	826 643
Own Power Generation as a percentage of total electricity consumed in %	62.8%
Total Electricity Consumed for Operational Purposes	791 658
Percentage of Total Electricity Consumed for Operational Purposes	95.8%

OUTPUTS - GREEN HOUSE GASSES AND OTHER AIR EMISSIONS

Our greenhouse gas inventory is compiled following the Greenhouse Gas Protocol – Corporate Accounting and Reporting Standard (Revised Edition) (“GHG Protocol”), and The Greenhouse Gas Protocol Agricultural Guidance: Interpreting the Corporate Accounting and Reporting Standard for the Agricultural Sector which provides standards and guidance for companies and other organisations preparing a GHG emissions inventory (see www.ghgprotocol.org for details).



Air quality at Illovo’s manufacturing plants is monitored for both point source emissions (stack emissions) and ambient air quality (fugitive emission) in line with respective country legislation.

Emission factors are representative values, relating the quantity of an emission with an activity associated with the release of that emission. Country-specific emission factors have been applied where available, otherwise accepted international proxy emission factors have been adopted from reputable sources such as the Intergovernmental Panel on Climate Change (IPCC) and the UK Department for Environment or US Energy Information Administration. The electricity grid emission factors applied to our areas of operation vary significantly as a result of the GHG emission intensity of the electricity generation technologies utilised by the countries within which we operate.

The GHGs which are managed by Illovo include Carbon Dioxide (CO₂), Methane (CH₄), Nitrous Oxide (NO₂) and Sulphur hexafluoride (SF₆). The activities giving rise to GHG emissions are defined in this report. Hydrofluorocarbons (HFCs), primarily used as refrigerants, are quantified but not reported as they are not materially significant quantities. Perfluorocarbons (PFCs) are not applicable to our operations. Our GHG emissions are reported in terms of Scope 1, 2 and 3, as defined in the GHG Protocol:

- Scope 1 are direct GHG emissions as a result of fuel combustion, process and fugitive emissions;
- Scope 2 are indirect GHG emissions from purchased electricity; and
- Scope 3 are indirect GHG emissions of third party service providers (eg, transporters of raw materials and other Illovo production inputs).

The group's primary source of energy is from the use of bagasse, wood/woodchips and biomass, and are preferentially used as supplementary fuels which substantially decreases the Scope 1 emissions at Illovo's operations compared with the alternative, which is to the use of fossil fuel sources. Significant progress has been made in reducing the group's scope 1 emissions from the 2010/11 baseline.

In an effort to reduce overall coal consumption and improve energy efficiencies within business units, a broad-scale Performance Optimisation Plan (POP) has been implemented at an operational level. We have set an absolute target to reduce Scope 1 and Scope 2 GHG emissions from energy consumption across the group by 10.7% relative to the 2010/11 emission levels (i.e., 478 682 tCO₂e) by 2020/21.

Further to that Illovo has a risk tolerance target to reduce Scope 1 GHG emissions from energy consumption per ton of sugar produced by 20% relative to 2010/11 levels by 2018/19. Together with the planned direct reduction of coal through energy efficiency measures and the increased substitution of coal with renewable sources of energy, such as biomass and woodchips, we anticipate that there will be further reductions in Scope 1 and 2 emissions. Illovo will be well positioned to meet its targets.

Scope 1 + Scope 2 emissions

	2015/16	tCO ₂ e/ts	2014/15	tCO ₂ e/ts	2013/14	tCO ₂ e/ts
Scope 1 * Energy)	254 882	0.17	219 300	0.12	228 169	0.12
Scope1 (Other)	94 708	0.06	102 735	0.06	119 007	0.07
Scope 2**	165 104	0.11	130 556	0.07	122 439	0.07
***Total	552 331	0.37	508 926	0.29	515 854	0.28

* A reduction was achieved in all Scope 1 sources except for stationary fuel consumption primarily due to Noodsberg's increased coal consumption compared to the previous year.

**Changes in grid electricity GHG emission factors in South Africa, Tanzania and Malawi contributed an additional 22 683 tCO₂e towards Scope 2 emissions for the group. The remainder being attributed to 6% increase in purchased electricity in South Africa and 15% increase in Malawi due to drought-related crop impacts.

*** The tons of sugar produced have reduced significantly based on a comparative sugar crop during the base period.

A number of our agricultural operations have adopted green cane harvesting where practical, which decreases agricultural emissions caused by the burning of sugar cane prior to harvesting. During "green cane harvesting", green biomass is stripped off the cane, either mechanically or by hand, as an alternative to the traditional practice of burning. The trash removed from the cane is either left infield to render back into the soil, potentially improving soil moisture retention, nutrient levels and carbon sequestration, or is used as a renewable boiler fuel. Green cane harvesting operations are currently being undertaken at Illovo's Malawi, Swaziland and South African operations.

As part of our efforts to monitor the impact from indirect sources of GHG such as agriculture outgrowers' cane burning, managed soils, third party transport for sugar cane and finished products, we now monitor the GHG emissions contribution (Scope 3) from our third party service providers and suppliers.

Indirect GHG Emissions: Scope 3

Scope 3 - tCO ₂ e	2015/16	tCO ₂ e/tc	2014/15	tCO ₂ e/tc
*Contracted 3 rd Party Transport	44 864	0.58	60 314	0.68
**Out Grower Cane Burning	47 907	0.62	54 642	0.62
***Indirect Emissions from Managed Soils	7 883	0.1	8 065	0.09

* Calculated from fuel records supplied by the service providers per ton of sugar produced.

** Modelled using Illovo's method assuming that 100% outgrower cane is burnt per ton of out grower cane produced

*** Modelled from Illovo's method assuming N₂O from Atmospheric Deposition of N volatilised from Managed Soils per ton of MCP cane produced.

We continue to support various projects as part of our climate change mitigation and adaptation strategy. A plant fleet management utilisation software and functional real time electronic delivery and dispatch system has been introduced to reduce fleet inefficiencies and improve fleet utilisation. This intervention resulted in reduced mobile fuel consumption, thus reducing scope 1 emissions from our own and third party fleet used for land preparation and cane haulage activities.

Although Illovo does not quantify the impact of emissions from business travel, we have invested in video-conferencing facilities across all our African operations which has reduced travel and associated costs significantly. Further to this a PI Historian system allows the group performance and manufacturing team at our head office in South Africa to review real time and historical trends of mill operations data. As a result we are able provide support to the mills without needing to travel to the sites for operational-related problems. As an intended result, this process has reduced business air travel and similarly, has reduced resultant GHG emissions from such travel.

Air quality

Air quality is monitored for both point source emissions (stack emissions) and ambient air quality (fugitive emission) in line with respective country legislation. The key challenges and initiatives in relation to point source emission are:

- high particulate matter (PM10) in measured stack emissions which, although in certain cases are above legal limits, are managed within permit conditions at all our operations. SO_x, NO_x, volatile organic compounds are not material because of the type of fuel eg, bagasse, biomass and wood/woodchips and the quantity of coal burnt within our operations.
- improvement in the boiler technology in order to increase the efficiency of the boilers and to reduce carbon monoxide emissions at our operations in Malawi and Tanzania,
- improvement in the current incineration technology at the on-site clinics in order to reduce the risk of exposure to dioxins at our Malawi operations; and
- improvement plans based on the adoption of preventive and mitigation measures, including appropriate maintenance procedures, to reduce fugitive bagasse and stack emissions, i.e. sulphur dioxide in South Africa and particulate matter throughout our operations.

OUTPUTS - EFFLUENT

Illovo's management of effluent and water quality is a critical part of our water management strategy. The effluent discharged by the sugar mills in Zambia, Malawi, Tanzania and Swaziland is treated to acceptable levels in terms of chemical oxygen demand (COD), biochemical oxygen demand (BOD), total suspended solids, total dissolved solids and pH. The effluent discharged after treatment is used for irrigation and where overflow occurs into natural streams, safe handling is managed under local effluent discharge permit conditions.

After various treatment processes at our different sites, the effluent is discharged under permit into waterways. At our Sezela operation, 930MI (2014/15: 984MI) of treated effluent was discharged into the sea while 482MI (2014/15: 490MI) from our Merebank factory was treated by the municipality wastewater facility, also under permit and strict local authority oversight. No event occurred where Illovo's operations affected any water receiving body either through discharge of wastewater or runoffs.

Industrial Effluent Discharged: MI

	Malawi	Mozambique	South Africa	Swaziland	Tanzania	Zambia
2015/16	5 681	5 308	*914	Zero Effluent	2 294	3 417
2014/15	*7 056	5 508	1 608	Zero Effluent	1 268	5 150
2013/14	11 987	5 124	1 689	Zero Effluent	1 747	4 522

Swaziland, Dwangwa in Malawi and Glendale in South Africa are zero-effluent discharge sites.

* *Nchalo and Noodsberg sites divert treated effluent discharge to irrigation.*

In continuing efforts to improve water efficiency and reuse within the facility, Sezela sugar mill in South Africa continues to research trials on a novel concept, which will reduce both the amount of make-up water the site requires and allow the reuse of 120 kl/hour waste water it currently discharges to sea under outfall permit. The outcome of these trials will be used for any future plant installations of a similar nature. Our strategy is to improve our ability to divert treated discharged effluent to irrigation, or increase water repurposing for irrigation and reuse at all our facilities.

OUTPUTS - WASTE

Illovo's overall approach to waste management embraces the "duty of care" principle through the entire operational life cycle. Robust operational guidelines are aligned to legal requirements and focus on facilitating comprehensive waste inventories in order to reflect the classification of waste generated by operations. Onsite waste management programmes ensure that waste which is reusable, recyclable, or which is to be disposed of, is stored in designated waste bins and/or storage facilities. All waste is quantified using weighbridge or safe disposal certificates to reconcile quantities generated.

Waste management is approached in terms of better on-site segregation, with particular attention to avoid the mixing of hazardous and non-hazardous waste, recycling and waste disposal tracking. Our goal is to reduce hazardous and non-hazardous waste material produced per ton of sugar and the amount of waste sent to landfill by 10% year on year. From a base line of 2012/13, the group's operations continued to implement progressive waste segregation, reduction and reuse systems, matching year-on-year reduction targets.

During the year under review, the group generated 10 283 (2014/15: 11 676) tons of non-hazardous waste, largely as a result of the increased packaging used for storage of sugar, which is repacked and resold. In addition, 1 707 (2014/15:1 552) tons of hazardous waste was generated emanating from continuing efforts to replace asbestos sheeting in Tanzania. Other matrixes are tabulated below:

Comparative Table of Waste Produced in Tons per Ton of sugar produced

	15/16	t/100ts	14/15	t/100ts	13/14	t/100ts
Tons Non-hazardous waste	9 638	0.6373	11 676	0.663	10 283	0.562
Tons Hazardous waste	1 156	0.0764	1 552	0.088	1 707	0.093
Recycled/Reuse/Recovered waste	4 356	0.2880	5 938	0.337	4 272	0.233
Sent to Landfill/Onsite Storage	5 163	0.3414	7 286	0.414	5 612	0.307
Percentage Recyclable	40.4	↑	35.3	↑	16.6	↑
Basel Permit approved trans boundary movements	15		*170		11	

* Our operation in Zambia, in collaboration with the Zambia Environmental Management Agency and the South African Department of Environmental Affairs, coordinated the transit of hazardous materials legally stored onsite under a ZEMA issues permit since 2010, to South Africa using Enviroserv under a Basel Permit.

The figures reported in the table above can include scrap metal, organic waste from agriculture and by-products from process which are sent for beneficial use eg, crop fertiliser, road spreading or reused by other organisations. In Swaziland and Zambia, waste such as fluorescent tubes, leaded filter paper from the laboratory, asbestos-containing waste, contaminated soil, used chemicals (non-medicine) and used transformer oil are transported through an accredited waste management company to South Africa for final disposal. Basel Permits are obtained from the South Africa Environmental Department in collaboration with respective country environmental agencies. All our operations retain appropriate waste registers including relevant records from waste services and contractors. All operations hold relevant waste management permits as prescribed by country legislation. The records detail the quantity, frequency and types of waste sent to landfill or recycled.

BIODIVERSITY

We operate over vast tracts of land, some of which are situated in close proximity to areas of potential ecosystem sensitivity. In our efforts to protect biodiversity and prevent environmental damage, existing cane lands and farming activities are managed according to the field conservation guidelines advocated by SASRI and the SUSFARMS® initiatives, while all new agricultural and factory projects undergo environmental impact assessment prior to commencement. Our objectives are to ensure sustainable agricultural production with the least number of negative impacts on the environment. During the year under review, the increased area developed for the cultivation of sugar cane did not impact on the biodiversity within the footprint of our existing operations.

Illovo continues its endeavours to preserve and manage the areas surrounding its operations particularly those which have high biodiversity conservation status. We are mindful of our potential impacts on these areas and support a number of initiatives to preserve ecosystem integrity and protect biodiversity. These include:

- The 1 825 ha of the Mhlosinga Nature Reserve at Ubombo in Swaziland;
- The 400 ha of Nyala Park and any potential impact on outfall areas of high conservation importance such as Lake Malawi and the Elephant Marsh in Malawi;
- The continued support of conservation projects to protect for example, 1 597 ha of the Magomberero Forest adjacent to the Kilombero estate in Tanzania;
- The on-going support of the Malawian Government Re-forestation Initiative in the Shire Valley; and
- Continuing surveys for invader plant species and the implementation of eradication plans to protect riverine vegetation adjacent to steep natural forested areas not under cane, such as those within the Sezela cane supply region in South Africa.

Case study: Protecting rhino and preserving natural vegetation – Source: Illovo Internal Magazine

The plight of the Rhino in South Africa has been well-documented, and we are all too aware of how many of these majestic creatures we have lost to poaching. With a problem this big, it is important for everyone to get involved and help in the fight against poaching. When the rhino at Tala Private Game Reserve, situated in the heart of our Eston community, came under attack in 2014 we knew Illovo had to get involved to help protect them.



In September 2014 Illovo Sugar (SA) sponsored the darting and tagging of the 5 remaining rhino at Tala. Each rhino was fitted with a hi-tech tracking device in the form of an ankle cuff. Each rhino could then be constantly monitored, which allowed for their protection. These devices have proved effective, and with assistance from the dedicated rangers and team from Rave Rhino Protection these rhinos have all been kept safe to date.

However animal protection is not just about safeguarding the animals but also about conserving and protecting their natural vegetation to allow them to thrive in their natural habitat. Tala was once again under threat with the uncontrollable growth of alien plants and overgrowth of indigenous plants, leading to a loss of grazing areas for their rhinos and other animals. This time, Illovo partnered with teams from Husqvarna and Tala, to pioneer a veld management and rehabilitation project.



Husqvarna have sponsored a comprehensive range of equipment that allows a work team to eliminate exotic and alien vegetation. They have also provided skilled members of their team to provide training on their machinery. Illovo was able to provide funds for the project which allowed local members of the community to be employed for this project, and at the same time provide them with invaluable skills training which will allow them to be employable in the future with this new set of skills.

This three-way partnership saw a combination of skills, assets and shared determination by all involved and has been successful in achieving its objectives of protecting the rhino and their environment, while at the same time creating much-needed employment and skills development. Illovo is proud to be involved in this project, as we continue to support and add value to our communities.

Our operations located near or adjacent to resources of conservation importance such as the Selous National Park in Tanzania, the Incomati Estuary in Mozambique and the Kafue River in Zambia, are also cognisant of the responsibility to ensure that we have effective risk management processes and systems in place in order to mitigate against negative environmental impacts on the natural environments and communities.

Our continuing biodiversity management plans will in future include other aspects of control such as the revision of previous studies, new biodiversity monitoring studies for species of special concern (as identified in the International Union for Conservation of Nature ((IUCN)) Red and national conservation species lists), and seeking wilderness value qualification for our nature reserves and other protected areas adjacent to our operations.

INVESTING IN ENVIRONMENTAL COMPLIANCE

In line with its precautionary approach to environmental management, Illovo continues to invest in environmental improvements, with the aim of introducing cost-effective measures to prevent environmental degradation and improve environmental management systems. These include the following:

- Investing in improving water monitoring, potable water and wastewater treatment infrastructure at our Noodsberg, Dwangwa, Nchalo, Nakambala and Ubombo operations;
- Implementing world class systems to facilitate improved accuracy of data reporting by implementing a sustainability reporting system; and
- Implementing limited assurance processes on specific environmental KPIs by external assurance providers, KPMG, IRAS and Environmental Resource Management (ERM).

On environmental protection, Illovo invested R24.1 million (2014/15 - R7.14 million) in water management, management remediation and outsourced environmental specialists costs.

ENVIRONMENTAL COMPLIANCE

Illovo manages its operations in line with environmental permits issued by government agencies in the countries in which we have operations. We continuously monitor our operations for any non-compliance to permit parameters specified by the relevant government agencies. We also encourage and plan engagements with local authorities to discuss changing environmental legal requirements and solicit clarity where these may impact on our operations. During the year under review, there were twenty-two active engagements with the environmental authorities associated with our operations. No significant spills were reported throughout our operation during the period under review. No enforcement notices, environmental prosecutions or environmental citations were issued to any of the group's operations and no fines or penalties were imposed by any government agency as a result of permit breaches.

In the event that any environmental concerns or complaints are raised by interested and affected parties, these are treated with utmost importance. All entities have a complaints register where complaints received are recorded, investigated and acted upon. Feedback is also provided to the complainant. During the year under review, one environment-related submission regarding cane burning was received through our formal complaints mechanisms in Mozambique. This was resolved with the country's Ministry of Environmental Affairs (MICOA) and the Ministry of Health (MISAU). Our operation in Tanzania responded to an improvement notice issued by the local environmental agency to improve waste handling practices.

Our Zambia operation received various awards for its environmental performance and advocacy:

- Best exhibitor of environmental awareness at the Agricultural and Commercial Society of Zambia.
- Contribution to sound environmental management practices in industry, an award issued by the Zambia Environmental Management Agency;
- Business Leader in Corporate Environmental Stewardship award by Zambia Chamber of Commerce and Industry (ZACCI)
- Excellence in the Corporate Governance Green Award, awarded by Lusaka Stock Exchange.

ASSURANCE

The contents of this report have been externally assured by an independent external assurer, Integrated Reporting and Assurance Services (IRAS), whose assurance statement appears on our website at <https://www.illovosugar.co.za/UserContent/documents/2016-Assurance-Statement.pdf>.