Welcome to your CDP Climate Change Questionnaire 2019

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Vodacom Group Limited (herein after referred to as Vodacom) is an African unified communications provider servicing 110 million customers using its wide range of products and services. Core consumer products and services include voice, messaging and data across mobile and fixed networks, while continuing to transform and expand into new verticals, including financial services, self-service sales care and entertainment offerings. It also provides various communication solutions to Enterprise customers in the public sector, and amongst large, medium and small enterprises. These include connectivity and unified communication services, Cloud and Hosting, managed mobility, data security and the Internet of Things (IoT).

From its roots in South Africa, Vodacom has grown its operations to include networks in Tanzania, the Democratic Republic of Congo ('DRC'), Mozambique, Lesotho and Kenya, and its mobile networks cover a total population of approximately 291 million people. Through Vodacom Business Africa (VBA), Vodacom offers business-managed services to enterprises in 50 countries across the continent.
In August 2017 Vodacom concluded the acquisition of a 34.94% indirect stake in Safaricom, the number one mobile operator in Kenya.

Vodacom is majority owned by Vodafone (60.5% holding) and was listed on the South African Stock Exchange (JSE) on 18 May 2009. Its head office is in Johannesburg, South Africa.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years
Row 1	April 1, 2018	March 31, 2019	No

C0.3

(C0.3) Select the countries/regions for which you will be supplying data.

Democratic Republic of the Congo
Lesotho
Mozambique
South Africa

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

ZAR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your consolidation approach to your Scope 1 and Scope 2 greenhouse gas inventory.

Equity share

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Director on board	The chairman of the Board appointed Social and Ethics Committee, an independent non-executive director, has the responsibility for good corporate citizenship which includes corporate social responsibility, ethical behaviour and managing the environmental impacts of the group, including climate-related issues.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Setting performance objectives Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	Oversight of climate related risks and opportunities at Board level occurs quarterly at the: - Social and Ethics Committee - Risk Management Committee Bi-annually at the: Environmental Management Review Annually at the: Vodafone Sustainable Business Conference Position papers in respect of climate change risks and opportunities to Vodacom have been presented to the above committees and strategic decisions affecting the

		sustainability of the business have been taken as a result of these threats and opportunities.

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Environment/ Sustainability manager	Both assessing and managing climate-related risks and opportunities	Quarterly
Other C-Suite Officer, please specify Chief Technology Officer	Both assessing and managing climate-related risks and opportunities	Quarterly
Other C-Suite Officer, please specify Chief Officer: Corporate Affairs	Managing climate-related risks and opportunities	Quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Sustainability efforts across the group continue to be coordinated through a quarterly meeting, facilitated by the Head: Vodacom Group Sustainability. Each focus area champion reports back and feedback is channelled to the Social and Ethics Committee.

The Risk Management Committee overseas the comprehensive Operational Resilience Programme and provides feedback to the Executive Committee via the Chief Technology Officer.
A Governance board is mandated to manage specific projects, policy requirements and good practice to improve service resilience, thus safeguarding the network and services against potential interruptions caused by natural disasters, technology failure or human error.

Independent periodic audits are undertaken to assess network resilience, reviewing the operational readiness and status of fire detection and prevention systems, evaluating the standards of power installations, and auditing building management systems across facilities.

The Chief Officer: Corporate Affairs is responsible for advocacy of climate change risks and opportunities and influencing key stakeholders including Government, Business and Employees.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

Yes

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Who is entitled to benefit from these incentives?

Corporate executive team

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

The key performance indicators for responsibility towards natural resources include greenhouse gas reduction targets, which are included in executive performance scorecards. The achievement of the targets positively impacts bonuses or discretionary pay; hence there exists a strong incentive to reach the emission reduction targets.

Who is entitled to benefit from these incentives?

Business unit manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

The key performance indicators for responsibility towards natural resources include greenhouse gas reduction targets, which are included in employee's performance scorecards. The achievement of the targets positively impacts employee's bonuses or discretionary pay; hence there exists a strong incentive to reach the emission reduction targets.

Who is entitled to benefit from these incentives?

Environment/Sustainability manager

Types of incentives

Monetary reward

Activity incentivized

Emissions reduction target

Comment

The key performance indicators for responsibility towards natural resources include greenhouse gas reduction targets, which are included in employee's performance scorecards. The achievement of the targets positively impacts employee's bonuses or discretionary pay; hence there exists a strong incentive to reach the emission reduction targets.

Who is entitled to benefit from these incentives?

All employees

Types of incentives

Monetary reward

Activity incentivized

Efficiency target

Comment

All employees whose direct or indirect line function responsibilities have environmental impacts are empowered to manage environmental issues as integral part of their job and to establish systems that allow for employee training to ensure that they are up to date with the latest information regarding impacts and greenhouse gas reduction targets. The responsibility and accountability for environmental performance affects their performance scorecards, which in turn affect bonuses or discretionary pay.

C2. Risks and opportunities

C2.1

(C2.1) Describe what your organization considers to be short-, medium- and long-term horizons.

	From (years)	To (years)	Comment
Short-term	0	1	Given recent advances in technology, the 'clock speed' in the telco sector has shown a propensity to speed up quite dramatically, not just in terms of network technology, but also at the IT layer, which is increasingly important in underpinning the services offered to customers. Further, this is aligned with the financial year budgets, annual reduction targets and capital budgets required for the implementation of projects, which focus on short-term changes in actions.

Medium-term	1	3	Vodacom's Vision 2020 developed in 2017 highlights 5 strategic objectives with goals to be achieved by 31 March 2020. Product or service planning has a medium term horizon.
Long-term	3	10	This aligns with more strategic view of climate-related risks and opportunities that affect traditional network planning which is typically between three and five years.

C2.2

(C2.2) Select the option that best describes how your organization's processes for identifying, assessing, and managing climate-related issues are integrated into your overall risk management.

Integrated into multi-disciplinary company-wide risk identification, assessment, and management processes

C2.2a

(C2.2a) Select the options that best describe your organization's frequency and time horizon for identifying and assessing climate-related risks.

	Frequency of monitoring	How far into the future are risks considered?	Comment
Row 1	Six-monthly or more frequently	3 to 6 years	Risk and control procedures are implemented in each operation of Vodacom, i.e. South Africa, Mozambique, Lesotho, Tanzania the DRC.

C2.2b

(C2.2b) Provide further details on your organization's process(es) for identifying and assessing climate-related risks.

At company level the Board Directors consider risks and opportunities, including climate-related issues, when they formulate strategy, approve budgets and monitor progress against business plans. The process is overseen by the Risk Management Committees (RMC) in each operation, which is chaired by the respective Managing Directors and include the Executive Committee members in each country.

An Enterprise Risk Management Framework was developed to provide context and guide the identification, analysis, evaluation, treatment, communication and ongoing monitoring of risks in all business units. The risk management framework is in alignment with the ISO 31000 International

Risk Management Standard and other risk management best practices and is being rolled out across the Group.

The Group Risk division reporting to the Chief Risk Officer assists in identifying, assessing and recording the risks and opportunities facing the Group and, where appropriate, monitors mitigating actions.

At asset level risks and opportunities are identified and managed at four different levels within the organisation, namely at project, process, operational and tactical levels. These risks and opportunities are periodically reviewed and updated. A filtering and reporting process ensures that the relevant risk items are reported to the Audit, Risk and Compliance Committee (ARC Committee).

The day-to-day responsibility for the management of enterprise risk lies with the head of the business unit or support function, which conducts the activity which gives rise to the risk. Line management is guided and assisted by the Risk Group division, which reports to the Chief Risk Officer.

Risks and opportunities are prioritized through the following process:
• Define the risks - Various levels of management in each operating company define risks and opportunities at project, process, operational, tactical and strategic levels.
• Risks are assessed based on their potential impact on the operation (customers, business systems and employees) and reputation (stakeholders and brand). At level 1 the risk impact is seen as insignificant and at level 5 as catastrophic.
• Assess their likelihood - Risks are assessed based on the likelihood of them happening after taking into account the controls that are already in place to mitigate them. A scale from 1 to 5 is used to assess the likelihood of the risk, where 1 is “never” and 5 is “almost certain”. When a risk is rated with a likelihood as “5”, it means the controls in place will not prevent the risk from happening due to factors outside our control or the control effectiveness is poor.
• Classify the risk - Risks are classified as critical, high, medium and low based on the impact and likelihood score.
• Treat the risk - Management reviews all critical and high risks to determine which of these need additional treatment to reduce the risk to a medium or low. One such type treatment is the implementation of additional controls.

In order to enhance the process of identifying, assessing and reporting on risks and opportunities, the concept of ‘principal risks’ was introduced during FY2017.
Substantive financial or strategic impact is defined in the Principal Risks Framework which provides the Executive Committee and Board with a robust assessment of the principal risks facing the Company.

A heat map depicts the top 10 residual risks, after taking into account mitigating risk factors, that have the most significant impact on Vodacom's ability to achieve its strategic objectives in the long-term ('macro risks'), and in the short- to medium-term ('tactical sub-risks'), together with risk appetite statements for each. Risks are also analyzed for its speed of impact, reflecting the rate at which the Company will experience adverse financial impacts if the risk materialised.

C2.2c

(C2.2c) Which of the following risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Current regulatory risks such as increases in fuel levies, water and energy tariffs are considered by Vodacom. For example, the increased water tariffs in the Cape Town region as a regulatory measure aims to affect behavior change in encouraging business and industry to reduce their water consumption. The Century City and Techno Centre offices are situated in Cape Town, therefore the national facilities team assess and manage these risks. Vodacom has also established a Water Crisis Steering Committee in South Africa to provide a response and action plan which aims to assist affected employees and their families, communities and customers across the country, to reduce levels of water usage.
Emerging regulation	Relevant, always included	South Africa's emerging climate-related regulation such as carbon taxes, national greenhouse gas reporting regulations and draft bills on climate change to enable a transition to a low carbon economy will have an impact on Vodacom's business operations. Vodacom has therefor assessed all its facilities to determine if it needs to register with the DEA, using a specific template of the National Atmospheric Emissions Inventory system (NAEIS).
Technology	Relevant, always included	Vodacom believes that its technologies can play a significant role in enabling a low-carbon future e.g. creation of digital platforms - video-conferencing, smart working and virtual education. Technology leads to smarter ways of doing business whilst minimising the impact on the environment. The transition to the 'Fourth Industrial Revolution' – characterised by recent rapid developments in AI, Big Data analytics and blockchain technology, as well as the growth in the Internet of Things, connected homes and autonomous vehicles – is

		challenging many traditional business models and significantly reshaping consumer behaviour. Big Data and the Internet of Things (IoT) changes how products, businesses, homes and services operate - increased automation significantly optimising resources and efficiencies whilst providing valuable insights to improve decision-making, e.g. smart metering. Vodacom therefore in 2016 started building its NarrowBand Internet of Things (NB-IoT), a low-power wide-area network technology that will reduce IoT users' carbon emissions through the use of various applications. During FY2018 the first commercial NB-IoT network in Africa was launched and good progress was made in further enhancing the IoT platform to enable IoT connectivity for a range of devices over large areas, including devices that are underground.
Legal	Relevant, always included	Climate-related litigation claims could stem from non-compliance with the proposed carbon tax, national greenhouse gas reporting regulations and the draft bill on climate change and could include monetary fines and/or prison sentences for those responsible of such oversight at Vodacom. Compliance risks are identified and assessed as part of the compliance management processes. Feedback on issues is reported as per Vodacom's risk management framework.
Market	Relevant, always included	Digital technology is disrupting traditional business models and significantly reshaping consumer behaviour. New technologies such as the Internet of Things (IoT) continue to spread through every aspect of daily life – bringing network intelligence and optimised energy use to a wide variety of machines, devices and processes. Vodacom therefore needs to continuously deploy new network technologies, while rolling out a national IoT network and developing new IoT applications and solutions to help customers reduce their emissions. During FY2019 Vodacom's Smart Utilities Management Service installed 42 972 electricity and water smart meters in municipalities in five provinces in South Africa, enhancing revenue collection, improving customer satisfaction and improving energy and water usage across these regions. Vodacom's Smart Asset Management Solution, developed in partnership with Mezzanine and EMS Advisory, provides a cost effective way for enterprises to monitor and track critical assets remotely. The IoT solution addresses three main challenges in the fleet management industry: safety and productivity, fuel price volatility, and cost reduction. LiveTrack enhances responsible driving through real-time information on speed, preventing accidents while also increasing efficiency and reducing carbon emissions. In FY2019 revenue from digital services, IoT, infotainment and advertising contributed 3.9% of total revenue and is fast growing which can be seen from the 24.1% increase in IoT connections.

Reputation	Relevant, always included	Vodacom considers reputational risk and views sustainability is an integral part of business strategy. As part of its commitment to accelerating socio-economic transformation, Vodacom has identified and prioritised eight of the seventeen United Nations Sustainable Development Goals (SDGs), where it believes it can have the most meaningful impact by providing enabling technologies and innovative digital products and services to customers and stakeholders. Vodacom is supporting communities through digital inclusion in support of SDG11: Sustainable cities and communities. It strives to assist in making cities and human settlements more inclusive, safe, resilient and sustainable by offering innovative digital solutions. To stimulate agricultural productivity through digital solutions Vodacom, through Mezzanine, partnered with Agritechnovation to develop MyFarmWeb, a mobile and web-based solution aimed at leveraging geo-spatial mapping and 'IoT' sensor features to assist farmers in data-driven planning and decision-making. 3 600 farmers use the platform to drive efficient decision making for profitable and sustainable farming. Through MyFarmWeb, 950 000 hectares of commercial farming has been mapped in South Africa. The cloud-based Connected Farmer platform, developed in partnership with GIZ, services over a million small-scale farmers and makes sourcing from smallholder farmers more realistic and executable for food manufacturers and retail businesses; increasing the number of smallholders and subsistence farmers in commercial agricultural value chains. Further, enterprises will have real time visibility of their supply chains, as well as the ability to engage and communicate with smallholders directly. These initiatives make an important contribution in improving agricultural productivity and food security, creating jobs and increasing incomes in the agriculture sector which could enhance Vodacom's reputation as a leader in environmental issues in the ITC industry.
Acute physical	Relevant, always included	Vodacom considers acute physical risks as weather-related disruptions such as storms or floods could damage base stations or the road infrastructure. Currently unreliable grid power exists in Mozambique, Lesotho, DRC and Tanzania. The mobile network base stations therefore rely extensively on diesel generators for electricity. The huge distances between the sites and the challenging terrain makes the logistics of refuelling and maintenance costly with today's infrastructure. With storms or floods the infrastructure could be negatively impacted making access to refuel and maintain the base station generators difficult. This could result in a disruption of operations and the non-availability of the network. In March 2019, the tropical cyclone Idai caused catastrophic damage in Mozambique, Zimbabwe, and Malawi, affecting

		more than 3 million people and leaving more than 1 000 people dead and thousands missing. Beira in Northern part of Mozambique, was especially affected; approximately 90% of the city's infrastructure was destroyed by the storm, affecting health and education facilities and thousands of acres of crops, which will significantly affect food security in the country. In response Vodacom restored communication services as quickly as possible and free-rated calls during the height of the crisis, both of which assisted with aid relief efforts. Vodacom with Vodafone donated US$1 million to aid in restoring roofs on schools to ensure education is least disturbed, this reflects Vodacom's commitment to addressing societal challenges through its core business activities and corporate social investments.
Chronic physical	Relevant, always included	The network is the backbone of Vodacom's business and the quality of its network allows Vodacom to distinguish it from the competitors. It attracts new customers and ensures retention of the existing customer base. Vodacom considers chronic physical risks relating to changes in average precipitation that could influence the network quality and the demand for Vodacom's solutions and services. Vodacom is therefore strengthening its resilience as an organisation by renewing the radio access network (RAN) to incorporate newer technologies that could withstand weather influences. The RAN renewal programme improves energy efficiency, drives down operational cost, helps to expand data coverage and improve the customer experience.
Upstream	Relevant, always included	Vodacom acknowledges that water scarcity is one of the greatest risks to the global economy. This is particularly relevant in South Africa, which is facing an ongoing drought situation, compounded by a rainfall climate of great variability. In particular, the Western Cape experienced the worst drought recorded in history with dam levels at their lowest ever. Without drastic measures to further drive down consumption, Cape Town was set to experience critical water shortages and the possibility of taps being turned off – a scenario known as Day Zero. This would have had a devastating impact on Vodacom operations in Cape Town. Proactive measures to reduce the water footprint included changes to the water reticulation system at the Century City and Techno Centre offices in Cape Town to accommodate waterless urinal waste systems as well as regulating the flow of water in kitchens, showers and sluices while aesthetic water features have been switched off. Vodacom also established a Water Crisis Steering Committee in South Africa to provide a response and action plan with the aim to assist affected employees and their families, communities and customers across the country, to reduce levels of water usage.

Downstream	Relevant, always included	Vodacom considers transitional risks and opportunities as anticipated increases in energy taxes or fuel levies can be costly as its South African network consumes approximately 88% of total electricity consumption. To reduce consumption and cost diesel and electricity usage at base stations are monitored and initiatives aimed at operating more efficiently are implemented while adopting renewable and alternate sources of energy where feasible. Hybrid Generator Power-Cubes – a combination of diesel generators and batteries that cut diesel use by up to 70% per site – were introduced to convert 24x7 generators to hybrid generator units, resulting in significant diesel fuel savings. In 2019 lithium ion (Li-Ion) batteries with longer life-expectancy replaced lead-acid batteries at radio sites. Inefficient air-conditioning chiller plants at the Midrand Campus in South Africa were replaced and HVAC systems were upgraded to increase energy efficiency. The new air conditioning system was implemented in five of the campus buildings and is centrally controlled as part of the overarching building management system. This enables each building to customise its cooling requirements, which has significantly reduced energy consumption by 5% per building irrespective of increased occupancy levels.

C2.2d

(C2.2d) Describe your process(es) for managing climate-related risks and opportunities.

All risks and opportunities, including climate-related issues, are captured on the risk management system, continually monitored and reviewed every six months. Quarterly risk reports are provided to the Audit, Risk and Compliance Committee (ARC Committee) and the Board.

Vodacom considers chronic physical risks relating to changes in precipitation patterns and extreme variability in weather patterns as South Africa's rainfall over the past few years has been significantly below the long-term average.

In particular, the Western Cape experienced the worst drought recorded in history with dam levels at their lowest ever. Without drastic measures to further drive down consumption, Cape Town was set to experience critical water shortages and the possibility of taps being turned off – a scenario known as Day Zero. This would have had a devastating impact on Vodacom operations in Cape Town.

Proactive measures taken to reduce the water footprint included changes to the water reticulation system at the Century City and Techno Centre offices in Cape Town to accommodate waterless urinal waste systems as well as regulating the flow of water in kitchens, showers and sluices while aesthetic water features have been switched off.

To provide alternative water supply to offices a ground water harvesting project at Century City was implemented and a borehole sunk at Techno Centre. The water collected is extensively filtered to drinking water standard.

The Century City ground water harvesting project and the Techno Centre borehole project reduced average daily municipal consumption from 17kl to 2kl per day and from 30kl to 2kl per day respectively.

Transitional risks and opportunities for Vodacom relate to anticipated increases in energy taxes or fuel levies as its South African network consumes approximately 88% of total electricity consumption.
Diesel and electricity consumption at base stations are monitored and initiatives aimed at operating more efficiently are implemented while adopting renewable and alternate sources of energy where feasible.

Hybrid Generator Power-Cubes – a combination of diesel generators and batteries that cut diesel use by up to 70% per site – were introduced to convert 24x7 generators to hybrid generator units, resulting in significant diesel fuel savings. In 2019 lithium ion (Li-Ion) batteries with longer life-expectancy replaced lead-acid batteries at radio sites.

Inefficient air-conditioning chiller plants at the Midrand Campus in South Africa were replaced and HVAC systems were upgraded to increase energy efficiency. The new air conditioning system was implemented in five of the campus buildings and is centrally controlled as part of the overarching building management system. This enables each building to customise its cooling requirements, which has significantly reduced energy consumption by 5% per building irrespective of increased occupancy levels.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Policy and legal: Enhanced emissions-reporting obligations

Type of financial impact

Increased operating costs (e.g., higher compliance costs, increased insurance premiums)

Company- specific description

The Department of Environmental Affairs (DEA) on 3 April 2017 gazetted regulations for mandatory reporting of greenhouse gas emissions under the National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004). The purpose of the regulations is to introduce a single national reporting system for greenhouse gas emissions. The South African Revenue Service (SARS) will be the main implementing administrative authority on the tax liability assessment while the DEA will lead the monitoring, reporting and verifying emissions process, which will form the tax base. DEA will directly collect the process emissions information while the Department of Energy (DOE) will supply the energy combustion data. All information will feed into the National Atmospheric Emissions Inventory System (NAEIS). Companies will self assess and submit their emissions to SARS and if found to be incorrect, could be penalized.

Both the Carbon Tax Act and the Customs and Excise Amendment Act came into effect on 1 June 2019. SARS has published draft rules, schedules and forms for the implementation of carbon tax, to provide details on the envisaged carbon tax administration, including the

registration of clients, licensing of emissions facilities, carbon tax environmental levy accounting and application of allowances as rebates.

In order to report to the DEA an organization has to assess its company wide energy generation capacity. The threshold for registration is 10MW thermal. So, for example, if a company has fifteen small boilers with a capacity of 700 kW each, the cumulative capacity is 10,5MW, which will require the company to register and report on these activities.

It is important to keep in mind that those businesses which have identified themselves as not liable for carbon tax during the first phase will still be required to submit environmental levy accounts to the DEA regardless of whether any carbon tax payment is due.

In order to assess the carbon tax accurately, reporting of GHG emissions will be required together with verification of the reported South African emissions. This will place a financial compliance burden on Vodacom, while non-compliance could be met with penalties. Further, emission reporting could lead to more stringent licence to operate criteria, e.g. for inclusion in the FTSE/JSE Responsible Investment Index.

Time horizon

Current

Likelihood

Very likely

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

0

Potential financial impact figure – maximum (currency)

5,000,000

Explanation of financial impact figure

Additional cost relate to penalties for non-compliance to submit GHG inventories and data which is estimated to be capped at R5 million for a first offence.
However, there is no potential financial impact for Vodacom as current resources would be able to cope with the emissions reporting obligation.

Management method

In order to comply with regulatory requirements Vodacom has assessed all its facilities to determine whether its associated emission activities qualify for or exceed the 10MW thermal threshold to see if it needs to register with the DEA, using a specific template of the National Atmospheric Emissions Inventory system (NAEIS).

Further, Vodacom annually appoints external consultants costing approximately R550 000 per annum to determine its organizational carbon footprint as well as the verification thereof to ensure it is free of material misstatements.

The processes for obtaining the required data are continually refined to ensure accurate and consistent data capturing.

Cost of management

550,000

Comment

Identifier

Risk 2

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Transition risk

Primary climate-related risk driver

Technology: Unsuccessful investment in new technologies

Type of financial impact

Costs to adopt/deploy new practices and processes

Company- specific description

Vodacom, an information, communications and technology company, contribute to greenhouse gas (GHG) emissions predominantly through the use of energy to power its base station sites, data centres, switches and remote hubs. The electricity sourced from the grid is supplemented by electricity generated from diesel, solar panels, fuel cells, batteries and generators mostly owned and/or managed by Vodacom. Electricity consumption in the Group remains the main source of emissions at 90% with fuel consumption at 5% and emissions associated with supply chain activities at 5%.

To reduce energy consumption, Vodacom installed free cooling technology at 90% of its base stations in Mozambique, Lesotho, Tanzania, DRC and South Africa. Free cooling is when electronic air-conditioning is supplemented with fresh air to reduce the temperatures of equipment resulting in reduced energy requirements of between 2 000–3 500 kWh per year per site. Further, since 2016 the majority of new sites are single A/C outdoor cabinets.

Higher temperatures will result in lesser usage of free cooling with the resultant increase in electrical energy consumed. This could make the free cooling equipment obsolete as well as increase the maintenance and replacement intervals on cooling equipment resulting in higher operational cost.

Time horizon

Medium-term

Likelihood

About as likely as not

Magnitude of impact

Low

Are you able to provide a potential financial impact figure?

Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)

7,500,000

Potential financial impact figure – maximum (currency)

10,000,000

Explanation of financial impact figure

To date the equipment was installed at a capital cost of approximately R100 million. With higher average temperatures the energy use and cost could increase and the equipment may become obsolete. Should the energy use increase by 1%, then the operational expenses could increase by approximately R7.5 million per annum while a 10% redundancy rate of the equipment could result in a R10 million loss of capital invested.

Management method

Free cooling technology reduces the need for powered air-conditioning at base-stations by monitoring the external air temperature and when possible shuts down air-conditioning units to use ambient air to do the cooling whenever the outside temperature falls below 20°C. To manage an increase in temperatures Vodacom is upgrading its network with components that can withstand higher temperatures and is installing individual battery coolers rather than cooling the whole facility. Technicians are working on free cooling systems that will work even when the outside temperature is 30°C.

To date 3 500 free-cooling units were installed at base stations to help reduce air-conditioning use together with 840 smart meters installed at a capital cost of approx. R1.5 million. The technology reduced air-conditioning run-time and energy consumption by up to 45% as well as extended maintenance and replacement intervals on cooling equipment. With the free cooling installation smart meters and a range of new smart power management technologies are installed that have remote performance monitoring capability.

For additional cost and carbon emission savings at base stations Vodacom installed highly efficient single radio access network (SRAN)

equipment, which allows multiple technologies to be run from a single piece of radio hardware within the base station. Less equipment in a base station means the influences of weather on equipment could be less severe.

Cost of management

1,500,000

Comment

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Direct operations

Risk type

Physical risk

Primary climate-related risk driver

Chronic: Changes in precipitation patterns and extreme variability in weather patterns

Type of financial impact

Reduced revenue from decreased production capacity (e.g., transport difficulties, supply chain interruptions)

Company- specific description

Vodacom's international mobile operations make up 35% of total base stations and consist of 7 580 2G sites, 5 629 3G sites, 1 593 4G sites and 1 5G site, with high-speed transmission extended to 91.5% of sites. In FY2019 5G was introduced in Lesotho – a first in Africa.

There are various challenges in providing connectivity to these areas, including the high costs in deploying base stations, lack of access to and unreliable grid power in Mozambique, Lesotho, DRC and Tanzania.

The mobile network base stations therefore rely extensively on diesel generators for electricity. The huge distances between the sites and the challenging terrain makes the logistics of refuelling and maintenance costly with today's infrastructure.

With more frequent rainfall the infrastructure could be negatively impacted making access to refuel and maintain the base station generators difficult. This could result in a disruption of operations and the non-availability of the network.

Higher temperatures will require more cooling at the mobile base stations resulting in more frequent refuelling of generators. Not only will the logistics of refuelling and maintenance increase operational costs, but it could impact on the network quality.

Unplanned disruptions in network performance, and any resulting shortfalls in network quality and availability, negatively impact consumer sentiment, which can be rapidly shared on social media. Maintaining network quality and performance is both a significant source of competitive differentiation and revenue.

Time horizon

Current

Likelihood

Likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

54,800,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

A shortage of diesel at the base stations could lead to the non-availability of the network and negatively impact customer usage resulting in a loss of revenue.
A cumulative one day shutdown of operations could result in loss of revenue of approx. R54.8 million based on current revenue levels in Lesotho, Mozambique, DRC and Tanzania.

Management method

In order to reduce the reliance on diesel for electricity generation Vodacom is actively looking at deploying small scale renewable and alternate energy technologies.

There are 955 (FY2018: 871) solar-operated sites across the Group in the DRC, Mozambique and Lesotho that required capital investment of R485 million.

Vodacom Lesotho has embraced the renewable technology in the largely rural country and about 30% of the total 334 sites are now powered through a combination of energy saving solar power technologies and are powered independently of diesel generators or the national grid.

Other environmentally conscious technologies include power system optimisation that ensures that in the event of power failure, a traditional site continues to operate for up to three hours on stored battery power before a diesel generator is activated.
Smart meters are used to monitor power consumption and remote control systems are used to operate base station sites, reducing the need for physical site visits.
Hybrid Generator Power-Cubes – a combination of diesel generators and batteries that cut diesel use by up to 70% per site – were introduced to convert 24x7 generators to hybrid generator units. In 2019 lithium ion (Li-Ion) batteries with longer life-expectancy replaced lead-acid batteries at radio sites.

The green base stations require less refuelling, maintenance and monitoring which greatly reduces ongoing operational costs and these cost savings will ultimately benefit customers.

Cost of management

485,000,000

Comment

Identifier

Risk 4

Where in the value chain does the risk driver occur?

Customer

Risk type

Transition risk

Primary climate-related risk driver

Reputation: Shifts in consumer preferences

Type of financial impact

Reduced revenue from decreased demand for goods/services

Company- specific description

Vodacom has helped to positively transform the lives of millions of people across markets by connecting them to voice and digital products and services. With access to the internet and data services now an essential part of people's lives, and key to facilitating economic development, Vodacom is committed to promoting digital inclusion and democratising data.

All activities involve partnerships of some sort – with business peers, government agencies, technology providers, civil society organisations, academia and/or community representatives – aimed at identifying and implementing innovative ways of using mobile and data to make a significant social contribution.

Vodacom's approach to sustainability focuses on creating and protecting value, driving growth and innovation, and providing societal value through core business activities and to make a meaningful contribution to the countries in which it operates.

The significant social benefits delivered through products and services are supported by CSI activities, which seek to leverage product and service innovations to address societal challenges.

As such it sponsored the publication of a scientific journal on Geographic Information System (GIS) remote sensing modelling and geoscience in partnership with a University Centre of Climate Change Research in DRC, which aims to promote climate change mitigation and adaptation measures.

Vodacom's material environmental impacts are mainly from the consumption of energy resources for operating the business. Vodacom's carbon footprint emanates from energy and fuel used in operations and fuel used in transport. Other environmental consequences relate to resource consumption and waste.

The reputation and profitable growth of Vodacom is closely linked to the economic prosperity and social sustainability of the communities it operates.
Vodacom therefore has a responsibility to minimise the associated environmental impacts and through proactive actions can be seen as a champion of and environmental "thought" leader in South Africa and Africa.

Time horizon

Current

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

90,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The potential financial impact from reputational risk will emanate from a loss of customer confidence and loyalty leading to reduced demand for Vodacom's products and services.

An estimated 0.1% decrease in sales could result in a decrease in Group service revenue of approx. R90 million based on current revenue levels.

Management method

To manage reputational risk and to reduce the likelihood and magnitude thereof, Vodacom in 2019 adopted the Vodafone Redlovesgreen programme to involve employees in sustainability initiatives. The main objective is to develop a culture in the organisation of reducing the consumption of natural resources in the office environment and at home. Through the Redlovesgreen programme, sustainability champions hold peer-to-peer discussions with employees across the organisation on sustainability-related issues while the "lunch and chat sustainability" forum encourages employees to actively reduce their carbon footprint.

In the DRC employee involvement and general awareness were created through workshops, internal communication and training on sustainable farming.

Vodacom Foundation's contribution of R300 000 assisted the Department of Environmental Affairs' ThumaMina Good Green Deeds programme with employees in the Eastern Cape involved in a cleaning campaign during the launch and the placement of waste separation bins at four schools and one early childhood development centre in Limpopo.

In Mozambique Vodacom provided learning material on environmental management in the schools and also trained the teachers on environmental protection.

In the DRC environmental education for learners in schools was promoted by organising visits to Texaf Bilembo, a space museum in Kinshasa that offers educational workshops on sustainable development and the environment.

Cost of management

300,000

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Move to more efficient buildings

Type of financial impact

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description

South Africa's largest emitter, Eskom, is exempt form paying carbon taxes during the first phase that came into force on 1 June 2019. Had it been included its tax liability would have been R11.5-billion per annum and most likely it would have passed on the costs through increased tariffs, which will increase operational costs (electricity bills) for Vodacom as 88% of emissions are derived from grid electricity consumed in South Africa.

However, energy savings will result in large operational costs savings while benefits from potential tax allowances and incentives or subsidies for energy-efficient equipment and renewable energy technologies will add to an organization’s bottom line.

Further, reduced energy consumption could reduce load shedding by Eskom resulting in less frequent disruptions in operations and improve the network quality in South Africa. These cost savings could add to Vodacom’s cost competitiveness in South Africa.

Vodacom’s property portfolio therefor has consistently decreased its energy consumption since 2012, saving over 34 GWh. These savings have been achieved by implementing building automation and process optimisation; installation of energy efficient technologies; introduction of renewable energies and property rationalisation.

Further, the replacement of fluorescent lighting with individually controlled LED panels within offices has resulted in a 25% reduction on lighting load, saving 88 MWh per annum.

Time horizon

Current

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

20,500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Upgrades to the building management system have resulted in the automation of processes, resulting in better control of energy demands, accurate energy measurements and enhanced energy decision making.

By installing the new system to optimise heat ventilation and air-conditioning at the Midrand Campus has resulted in an estimated 5% saving on energy consumed by the HVAC system per building irrespective of increased occupancy levels.

Total electricity saved in FY2019, excluding growth in bases stations, was calculated as 13 259 MWh with cost savings of approximately R20.5 million, together with tax allowances that can be claimed on the equipment.

Strategy to realize opportunity

Vodacom's energy management approach focuses on realising efficiencies, reducing energy consumption, while switching to alternative energy sources where possible, for both infrastructure and offices. It is continuously renewing its network, data centres and offices to support future technologies and services.

To benefit from tax and regulatory opportunities while at the same time combat the increases experienced in energy tariffs, Vodacom during FY2019 replaced inefficient air-conditioning chiller plants at the Midrand Campus in South Africa and upgraded HVAC systems to increase energy efficiency. The new air conditioning system, which required capital of R55 million, was implemented in five of the campus buildings and

is centrally controlled as part of the overarching building management system. This enables each building to customise its cooling requirements, which has significantly reduced energy consumption for cooling purposes.

The initiative is aimed at reducing energy consumption and costs, carbon emissions and where possible, take advantage of the promulgated S12l tax allowances for energy efficiency.

Cost to realize opportunity

55,000,000

Comment

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Energy source

Primary climate-related opportunity driver

Use of lower-emission sources of energy

Type of financial impact

Reduced operational costs (e.g., through use of lowest cost abatement)

Company-specific description

The first phase of the South African Carbon Tax that came into force on 1 June 2019 is seen as “weak” and industry is cautioned to prepare for a significant strengthening of the carbon tax during the second phase of implementation, which will begin in January 2023.

South Africa's largest emitter, Eskom, is exempt form paying carbon taxes during the first phase, but could be included in the second phase. Its first phase tax liability is estimated to be R11.5-billion per year and most likely it will pass on the costs through increased tariffs, which will increase operational costs (electricity bills) for Vodacom as 88% of emissions are derived from grid electricity consumed in South Africa.

However, by agreeing a tariff for renewable energy with IPPs today with known annual escalations, the energy costs can be contained which will add to the organization’s bottom line and aide cost competitiveness.

Vodacom believes that business performance should not come at a cost to the environment. As its most material environmental impact is from the use of energy to power network sites it consistently explores alternative energy sources through an energy mix that includes own generation and independent power producers (IPPs) through power purchase agreements (PPAs). Currently the proportion of renewables in Vodacom’s energy mix is 13% including 955 (2018: 871) solar-operated sites, as well as a smaller number of wind and other ‘greenpowered’ sites.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium-low

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

27,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

The PPA has the potential to reduce GHG emissions by 15% on an annual basis in the Nelson Mandela Bay region.
By installing the PowerCube at base stations the energy cost savings was estimated to be R27 million by reducing the running time of a diesel generator by up to 80%, saving up to 90% on servicing costs and cutting fuel consumption and emissions by more than 50%.

Strategy to realize opportunity

With customer demand for voice and data services growing at a rapid rate, Vodacom is striving to optimise power-intensive infrastructure by investing in climate-smart networks and solutions.

To reduce energy costs and carbon emissions, Vodacom, during FY2019, signed a Purchase Power Agreement (PPA) with an Independent Power Producer (IPP) to facilitate the supply of renewable energy to power Vodacom infrastructure and facilities in Nelson Mandela Bay (South Africa). The PPA covers 36 base station sites and has the potential to reduce GHG emissions by 15% on an annual basis in the region. The sources used to generate energy through this PPA include a variation of wind and solar energy.

Vodacom also has a Site Solution Innovation Centre (SSIC) focussing on energy and site infrastructure efficiency. An example of a SSIC innovation include the standardisation of hybrid energy technologies and high security and low cost site infrastructure. The hybrid technology 'PowerCube' was deployed during FY2019 in South Africa requiring an investment of R20 million. This integrates energy supplies from grid electricity, solar PV and diesel together with on-site battery storage, reducing the running time of a diesel generator by up to 80%, saving up to 90% on servicing costs and cutting fuel consumption and emissions by more than 50%.

Cost to realize opportunity

20,000,000

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of recycling

Type of financial impact

Reduced operating costs (e.g., through efficiency gains and cost reductions)

Company-specific description

Changes in the availability of natural resources and a continued increase in the cost of resources may affect Vodacom's cost of operation and competiveness.

The ICT sector is a significant source, both directly and indirectly of electronic-waste (e-waste) including mobile handsets and electrical accessories, network equipment (such as air-conditioning units, batteries, generators, and other 'mixed-waste') and end-of-life ICT equipment. Vodacom has embedded the principles of reduce, reuse and recycle across operations and engage across the value chain to identify opportunities to improve efficiencies and reduce e-waste and general waste.

Vodacom's Group policy on waste management prioritises the reuse or recycling of e-waste in a safe and responsible manner. All local markets are required to keep records of their e-waste equipment and to use strictly selected and audited recycling suppliers.

With the promotion of digital inclusion and move into the fourth industrial revolution, the volume of e-waste is expected to increase. Responsible e-waste collection and management provides a valuable opportunity for income generation associated with the collection, recycling and re-use of materials.

By identifying waste streams that can be reused and recycled, less waste is directed to landfill and behavior of customers, suppliers and the broader business community can be influenced.

Time horizon

Current

Likelihood

Very likely

Magnitude of impact

Medium-high

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

148,089,100

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Recycling or reusing equipment will reduce operational costs while reducing the number of third party waste deliveries to landfill sites and related carbon emissions.
The re-use of recovered network equipment resulted in a cost saving of R147 million while R534 600 was saved through battery rejuvenation.
The sale of E-waste generated revenue of R554 500.

Strategy to realize opportunity

Through ongoing e-waste management Vodacom partnered with 3 SMME e-waste handlers in South Africa.
During FY2019 364 tonnes (97% network equipment; 3% scrap mobile phones) of e-waste was collected, extracted for valuable components and disposed of in a safe and responsible manner at no cost.

To bridge the digital divide 203 tonnes of e-waste materials were recycled and re-sold at a low cost while 596 tonnes of batteries were disposed of in a safe and responsible manner.

38 tonnes of general waste were not sent to landfill by implementing a polystyrene baling operation at Vodacom's head office in South Africa. This involves compressing used polystyrene containers to reduce volumes. This material is then repurposed for various applications such as photo frames. 34 tonnes of food waste from the canteens was composted and used to fertilise the gardens.

Plastic is becoming one of our planet's greatest environmental challenges, causing escalating harm to oceans, livestock and food chain. Vodacom therefore removed single use plastic in offices (at no additional costs) through the following initiatives:
• implemented a no straw policy by removing all straws in sitting and eating areas;
• replaced plastic stirrers with biodegradable alternative wooden stirrers; and
• agreed with suppliers to change the take away polystyrene containers to boxes.

In the retail space, Vodacom became the first Telco in South Africa to ban plastic bags in stores and replaced them with brown paper bags.

Cost to realize opportunity

0

Comment

Identifier

Opp4

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Type of financial impact

Increased revenue through demand for lower emissions products and services

Company-specific description

Mobile data traffic has grown exponentially over the past five years and will continue to rise at a rapid rate.
By 2025 it is predicted that:
• the number of mobile internet users will increase to 5 billion, up 38.9% from the 3.6 billion users in 2018;
• the peneration rate (% of population) will increase from 47% to 61%; and
• the number of total IoT connections will increase to 25.2 billion, up 177% from the 9.1 billion connections in 2018 (2017: 7.5 billion).
As new technologies such as the Internet of Things (IoT) continue to spread through every aspect of daily life – bringing network intelligence and optimised energy use to a wide variety of machines, devices and processes – the beneficial climatic effects of the global ICT industry will increase.

One recent estimate is that the industry could account for a 20% reduction in total global GHG emissions by 2030, in effect maintaining emissions at 2015 levels despite a further 15 years of global population growth and increasing urbanisation and industrialisation in emerging markets.

The transition to the 'Fourth Industrial Revolution' – characterised by recent rapid developments in AI, Big Data analytics and blockchain technology, as well as the growth in the Internet of Things, connected homes and autonomous vehicles – is challenging many traditional business models and significantly reshaping consumer behaviour.

As an ICT company with operations and activities across emerging markets in Africa, Vodacom faces a particularly dynamic operating context that presents some challenging risks as well as exciting opportunities.

Vodacom's ambition is to transform the business from a conventional telco into a digital company that plays a leading role in the fourth industrial revolution. As such it is using technology to transform its business model and enable a customer-centric and digitally-connected world. Through connectivity, the Internet of Things (IoT), robotics and mobile financial services, it developed innovative, smart technologies to make the lives of

customers easier, healthier and smarter.

Through Vodacom's subsidiary Mezzanine, the uptake of IoT gained traction in areas such as smart buildings, smart utilities, logistics, fleet and citizen engagement, as well as successfully deploying solutions in education, healthcare and agriculture.

Time horizon

Medium-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

121,500,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

According to the report, The Mobile Economy 2018 from GSMA Intelligence, the mobile industry contribution to global GDP will grow from the current $3.6 trillion or 4.5% of GDP in 2017 to $4.6 trillion or 5.0% of GDP in 2022.
Should this 0.5% growth result in a corresponding increase in demand for Vodacom South Africa's services, then revenue could increase by approx. R121.5 million per annum based on current data revenue levels.
This is conservatively calculated as Vodacom's IoT connections increased 24.1% to 4.7 million during FY2019.

Strategy to realize opportunity

Vodacom identified opportunities to use Internet of Things (IoT) to promote resource efficiency through smart metering.
Smart metering systems support various aspects of electricity and water distribution management, consumption monitoring and billing. Government recently started considering such systems to improve grid reliability and revenue management, reduce electricity and water losses and promote water and energy efficiency.

Vodacom's Smart Utilities Management Service has installed 42 972 electricity and water smart meters in municipalities in five provinces in South Africa, enhancing revenue collection, improving customer satisfaction and improving energy and water usage across these regions.

Vodacom's Smart Asset Management Solution, developed in partnership with Mezzanine and EMS Advisory, provides a cost effective way for enterprises to monitor and track critical assets remotely. The IoT solution addresses three main challenges in the fleet management industry: safety and productivity, fuel price volatility, and cost reduction. LiveTrack enhances responsible driving through real-time information on speed, preventing accidents while also increasing efficiency and reducing carbon emissions.

Vodacom received the Frost & Sullivan 2018 Africa Technology Innovation Award for its narrowband IoT (NB-IoT) technology deployment that cost about R82 million to develop enabline IoT connectivity for a range of devices over large areas, including devices that are underground.

Cost to realize opportunity

82,000,000

Comment

Identifier

Opp5

Where in the value chain does the opportunity occur?

Customer

Opportunity type

Resilience

Primary climate-related opportunity driver

Resource substitutes/diversification

Type of financial impact

Increased revenue through new products and services related to ensuring resiliency

Company-specific description

For Vodacom sustainability is an integral part of business strategy. As part of its commitment to accelerating socio-economic transformation, Vodacom has identified and prioritised seven of the seventeen United Nations Sustainable Development Goals (SDGs), where it believes it can have the most meaningful impact by providing enabling technologies and innovative digital products and services to customers and stakeholders.

Agriculture is a critical sector for the African economy, with a significant potential to mitigate poverty. The sector accounts for 65% of the continent's employment and 75% of domestic trade.

Vodacom has operations and activities across emerging markets in Africa where the digitisation of the agricultural value chain offer significant opportunities to boost productivity and to empower particularly small-scale farmers. Vodacom's solutions for the agriculture sector aggregate various data streams from various sources, and assist commercial and subsistence farmers to perform business transactions on their mobile devices.

Vodacom is supporting communities through digital inclusion in support of SDG11: Sustainable cities and communities. It strives to assist in making cities and human settlements more inclusive, safe, resilient and sustainable by offering innovative digital solutions.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

135,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

With sustainable agriculture and improved productivity there will be jobs created in future coupled with disposable income.
This could lead to an increased demand for Vodacom's solutions and services. An estimated 0.15% increase in sales could result in increased revenue of approx. R135 million per annum based on current revenue levels.

Strategy to realize opportunity

Vodacom is assisting in building sustainability and enhancing resilience in communities by providing them with alternative ways of conducting business.

To stimulate agricultural productivity through digital solutions Vodacom, through Mezzanine, partnered with Agritechnovation to develop MyFarmWeb, a mobile and web-based solution aimed at leveraging geo-spatial mapping and 'IoT' sensor features to assist farmers in data-driven planning and decision-making. 3 600 farmers use the platform to drive efficient decision making for profitable and sustainable farming. Through MyFarmWeb, 950 000 hectares of commercial farming has been mapped in South Africa.

The cloud-based Connected Farmer platform, developed in partnership with GIZ with a budget of R21 million over three years, services over a million small-scale farmers and makes sourcing from smallholder farmers more realistic and executable for food manufacturers and retail

businesses; increasing the number of smallholders and subsistence farmers in commercial agricultural value chains. Further, enterprises will have real time visibility of their supply chains, as well as the ability to engage and communicate with smallholders directly.

This initiative leverages off similar projects that have been implementing across Kenya, Tanzania and Mozambique through Vodafone, which is making an important contribution in improving agricultural productivity and food security, creating jobs and increasing incomes in the agriculture sector.

Cost to realize opportunity

21,000,000

Comment

C2.5

(C2.5) Describe where and how the identified risks and opportunities have impacted your business.

	Impact	Description
Products and services	Impacted for some suppliers, facilities, or product lines	Vodacom is presented with exciting new opportunities beyond connectivity. The transition to the 'Fourth Industrial Revolution' – characterised by recent rapid developments in AI, Big Data analytics and blockchain technology, as well as the growth in the Internet of Things, connected homes and autonomous vehicles – is challenging many traditional business models and significantly reshaping consumer behaviour. Big Data and the Internet of Things (IoT) changes how products, businesses, homes and services operate - increased automation significantly optimising resources and efficiencies whilst providing valuable insights to improve decision-making, e.g. smart metering. Technology leads to smarter ways of doing business whilst minimising the impact on the environment. Vodacom therefore in 2016 started building its NarrowBand Internet of Things (NB-IoT), a low-power wide-area network technology that will reduce IoT users' carbon emissions through the use of various applications. During FY2018 the first commercial NB-IoT network in Africa was launched and good progress was made in further enhancing the IoT platform to enable IoT connectivity for a range of devices over large areas, including devices

		that are underground. Vodacom's Smart Asset Management Solution, developed in partnership with Mezzanine and EMS Advisory, provides a cost effective way for enterprises to monitor and track critical assets remotely. The IoT solution addresses three main challenges in the fleet management industry: safety and productivity, fuel price volatility, and cost reduction. LiveTrack enhances responsible driving through real-time information on speed, preventing accidents while also increasing efficiency and reducing carbon emissions. The IoT applications have a medium-high impact on Vodacom as it has the potential to form a large part of products and services offered. During FY2019 IoT connections increased by 24.1%.
Supply chain and/or value chain	Impacted	Vodacom does not have a large water footprint in the normal course of its business, but recognises the importance of ensuring efficient usage of water as a critical natural resource. Water scarcity is one of the greatest risks to the global economy. This is particularly relevant in South Africa, which is facing an ongoing drought situation, compounded by a rainfall climate of great variability. In particular, the Western Cape experienced the worst drought recorded in history with dam levels at their lowest ever. Without drastic measures to further drive down consumption, Cape Town was set to experience critical water shortages and the possibility of taps being turned off – a scenario known as Day Zero. In South Africa, the national facilities team has proactively taken measures to reduce the water footprint in all regions, but in particular made changes to the water reticulation system at the Century City and Techno Centre offices in Cape Town and changes to air-conditioning systems at the Vodacom Century City offices where an air-side economy cycle was introduced to complement the ice plant which will significantly reduce the need for evaporative cooling. Day Zero would have had a devastating high impact on Vodacom operations in Cape Town as temporary office closures due to water shortages will impact on continued operations, employees and customers resulting in loss of income. To this end, Vodacom has established a Water Crisis Steering Committee in South Africa to provide a response and action plan which aims to assist affected employees and their families, communities and customers across the country, to reduce levels of water usage.
Adaptation and mitigation activities	Impacted for some suppliers, facilities, or product lines	Vodacom believes that its technologies can play a significant role in enabling a low-carbon future e.g. creation of digital platforms - video-conferencing, smart working and virtual education. New technologies such as the Internet of Things (IoT) continue to spread through every aspect of daily life – bringing network intelligence and optimised energy use to a wide variety of machines, devices and processes.

		Using its IoT and Big Data capabilities Vodacom has partnered with government departments to digitise and automate services to the public. Vodacom's Smart Utilities Management Service installed 42 972 electricity and water smart meters in municipalities in five provinces in South Africa, enhancing revenue collection, improving customer satisfaction and improving energy and water usage across these regions. A smart metering solution for the Department of Public Works sends alerts for maintenance schedules and enables early detection of leaks in the water supply chain. These technologies have a medium impact on Vodacom as it leads to smarter ways of doing business whilst minimising the impact on the environment.
Investment in R&D	Impacted	Vodacom Site Solution Innovation Centre in Midrand is one of the first four projects to be certified as 'net zero' under the Green Building Council South Africa's (GBCSA) pilot certification programme in South Africa. The GBCSA is one of 14 green building councils participating in the World Green Building Council's Advancing Net Zero project, which aims to promote and support the acceleration of net zero carbon buildings to 100% by 2050. Net zero carbon buildings are defined as highly energy efficient buildings, with remaining energy demand supplied by on-site and/or off-site renewable sources, or through offsets. R&D at Vodacom's Innovation Centre has a high impact on business as it produces innovative solutions to Vodacom's energy needs for its network and operations such as the hybrid generator power-cube – a combination of diesel generators and batteries that cut diesel use by up to 70% per site. Vodacom has a Big Data and Analytics team that works with the Water Research Council to use mobile technology to create awareness of the water scarcity reality in South Africa and disseminate messaging to customers alerting them to water shortages in the country, high risk areas and water saving hints and tips.
Operations	Impacted	Energy consumption and the availability or disruptions in energy supply, have a very high impact on Vodacom's operations. Network quality and performance is essential for business sustainability and unplanned disruptions in network performance negatively impact consumer sentiment, which can be rapidly shared on social media. In South Africa, approximately 88% of Vodacom's CO2 emissions are generated from purchased electricity consumed. The network consumes approximately 82% of electricity whereas the data centres and offices consume about 10 & 8% respectively. In Mozambique, Lesotho, DRC and Tanzania the mobile network base stations rely extensively on diesel generators for electricity as grid power is currently very unreliable.

Other, please specify		

C2.6

(C2.6) Describe where and how the identified risks and opportunities have been factored into your financial planning process.

	Relevance	Description
Revenues	Impacted for some suppliers, facilities, or product lines	Most of Vodacom's revenue comes from selling mobile data, voice, financial services and messaging services to individual consumers, with the balance coming from the sale of these mobile services, coupled with connectivity and network provision services to Enterprise customers. Its competitive differentiation lies in the quality of its network, the nature of products and services, the extent of its regional footprint, the quality of the relationships with key stakeholders, and a proven ability to manage the cost base. The decline in mobile voice revenue has been more than offset by significant growth in data revenue, fuelled by the increased uptake of smart devices and improved network coverage. Vodacom is meeting the growing demand for data, by expanding data networks to new areas and constantly improving the network experience in high-demand areas such as major towns and cities. To this end Vodacom has extended its international footprint with 259 sites producing revenue with energy costs and carbon emissions. During FY2019 the data revenue of international operations grew strongly by 25.8%, supported by the rollout of 4G services, which are now available in all Vodacom's operations. Impact – medium.
Operating costs	Impacted	Vodacom's network, data centres, offices and base stations consume vast amounts of electricity and diesel to operate and maintain network quality and performance. Increases in electricity and diesel prices are factored into financial planning as well as savings from energy efficiency projects such as retrofitting radio sites with free cooling solutions at approximately 1 500 towers, reducing energy costs by approximately R72 million per annum. Impact - medium

Capital expenditures / capital allocation	Impacted	Capital allocation is focused on improving customer experience on networks by extending voice and data coverage, improving data network speeds and investing in Business Intelligence tools to drive growth. As part of digital transformation, Vodacom continues to invest in enhancing its IT systems. High-speed transmission are now extended to 94% of South African sites and 91.5% of international sites while 5G was introduced in Lesotho in FY2019 – a first in Africa. During FY2019 it invested capital of R13 billion across the group in strengthening networks and IT infrastructure. Impact - high
Acquisitions and divestments	Impacted	To operate Vodacom needs network infrastructure, data centres, distribution infrastructure and software applications, collectively viewed as manufactured capital, that requires significant financial capital to build and maintain. It also requires natural capital such as land and energy to deploy and operate the manufactured capital. Vodacom therefore has a strategy to focus on energy efficiency within the network, to invest in green buildings and to adopt renewable energy where feasible and is conscious of creating workplaces which encourages agility, collaboration and innovation. To this end Vodacom Lesotho launched its new headquarters, which was built with a capital investment of R80 million. The roof of the building is covered with solar panels that generate the primary source of power for the building reducing the cost of electricity while mitigating environmental impacts. Vodacom Tanzania moved from Mlimani city office park to a new Vodacom Tower resulting in a 50% decrease in water and energy consumption as a result of implementing advanced technology such as usage of movement sensors for lights and water taps. Impact – medium-low
Access to capital	Not impacted	Vodacom's infrastructure and energy needs require significant financial capital to build and maintain. However, Vodacom currently has a strong balance sheet so can invest its own capital in most instances.
Assets	Impacted	The network is the backbone of Vodacom's business and the quality of its network allows Vodacom to distinguish it from the competitors. It is a large user of energy in operations and to reduce energy consumption, Vodacom has installed free cooling technology at its base stations in South Africa, Mozambique, Lesotho, Tanzania and the DRC. Free cooling is when electronic air-conditioning is supplemented with fresh

		air to reduce the temperatures of equipment resulting in about 45% reduction in energy consumption. Higher temperatures will result in lesser usage of free cooling with the resultant increase in electrical energy consumed. This could make the free cooling equipment obsolete as well as increase the maintenance and replacement intervals on cooling equipment resulting in higher operational cost. To date free cooling equipment was installed at a capital cost of approximately R100 million. A 10% redundancy rate of the equipment could result in a R10 million loss of capital invested. Impact - low
Liabilities	Not impacted	No direct impact on liabilities identified.
Other		

C3. Business Strategy

C3.1

(C3.1) Are climate-related issues integrated into your business strategy?

Yes

C3.1a

(C3.1a) Does your organization use climate-related scenario analysis to inform your business strategy?

No, but we anticipate doing so in the next two years

C3.1c

(C3.1c) Explain how climate-related issues are integrated into your business objectives and strategy.

i) Vodacom as an information, communications and technology company is a significant energy user with resultant greenhouse gas emissions associated with climate change. Vodacom's business strategy is influenced by the need to reduce greenhouse gas emissions through determining its carbon footprint, be energy efficient, develop and use alternative energy sources and sustainable resource utilization including water consumption.

Vodacom therefore implemented a Carbon Management Strategy during FY2016 to guide business regarding managing internal energy and carbon performance. It contains a set of 9 guiding principles on how to work efficiently with dedicated resources to effectively track, manage and report performance.

Vodacom has strengthened its commitment to the sustainable use of resources, by establishing a Carbon Management Implementation Plan containing all projects that relate to energy and carbon emissions. As a living document, it is designed to evolve as the business and its context changes, staying true to the business strategy and strategic sustainability priorities.

During FY2018 Vodacom conducted an in-depth examination of its energy and climate change impacts. The review provided clarity on the areas of the business with the greatest energy demands and informed the development of action plans to drive further energy efficiencies and the adoption of renewable energy where feasible.

To assist with tracking progress Vodacom now participates in the Group reporting process where electricity, diesel, fuel cells and water consumption are tracked systematically and reported to its majority shareholder, Vodafone, at six monthly intervals.

ii) Short term strategy influenced by climate-related issues relates to improving energy efficiency and reducing emissions across the network and activities as well as the setting of targets to reduce Vodacom's carbon emissions by 5% per base station site per year. This will be achieved by investing in new technologies, free cooling, and using alternative energy sources such as generator-battery power hybrid units, and solar generation for remote base station sites.

Vodacom is in the process of assessing the feasibility of these targets in the market, and continues to address the energy challenges and seeks opportunities to contribute to a low carbon future. Vodacom follows developments in the energy sector closely and aims to commit to a revised carbon reduction target in the near future.

iii) In order to reduce carbon emissions Vodacom, during FY2019, signed a Purchase Power Agreement (PPA) with an Independent Power Producer (IPP) to facilitate the supply of renewable energy to power Vodacom infrastructure and facilities in Nelson Mandela Bay (South Africa). The PPA covers 36 base station sites and has the potential to reduce GHG emissions by 15% on an annual basis in the region. The sources used to generate energy through this PPA include a variation of wind and solar energy.

To reduce its impact on the environment Vodacom also installed the PowerCube at base stations to integrate energy supplies from grid electricity, solar PV and diesel together with on-site battery storage, reducing the running time of a diesel generator by up to 80%, saving up to 90% on servicing costs and cutting fuel consumption and emissions by more than 50%.

vi) Long term strategy changes relate to the transition to the 'Fourth Industrial Revolution' – characterised by recent rapid developments in AI, Big Data analytics and blockchain technology, as well as the growth in the Internet of Things, connected homes and autonomous vehicles – is challenging many traditional business models and significantly reshaping consumer behaviour.

Big Data and the Internet of Things (IoT) changes how products, businesses, homes and services operate - increased automation significantly optimising resources and efficiencies whilst providing valuable insights to improve decision-making, e.g. smart metering. Technology leads to smarter ways of doing business whilst minimising the impact on the environment.

Vodacom therefore in 2016 started building its NarrowBand Internet of Things (NB-IoT), a low-power wide-area network technology that will reduce IoT users' carbon emissions through the use of various applications. During FY2018 the first commercial NB-IoT network in Africa was launched and good progress was made in further enhancing the IoT platform to enable IoT connectivity for a range of devices over large areas, including devices that are underground.

vii) Vodacom believes that strategic advantage can be obtained through providing technological innovative solutions that can reduce operating costs from fuel and electricity consumption, thereby reducing carbon emissions and Vodacom's impact on the environment while providing products and services that help customers to live and work more efficiently and flexibly. Its technological solutions have the potential to replace traditional, carbon-intensive methods of doing business and include cloud computing, video conferencing and Internet of Things (IoT) solutions.

Vodacom's Smart Asset Management Solution, developed in partnership with Mezzanine and EMS Advisory, provides a cost effective way for enterprises to monitor and track critical assets remotely. The IoT solution addresses three main challenges in the fleet management industry: safety and productivity, fuel price volatility, and cost reduction. LiveTrack enhances responsible driving through real-time information on speed, preventing accidents while also increasing efficiency and reducing carbon emissions.

C3.1g

(C3.1g) Why does your organization not use climate-related scenario analysis to inform your business strategy?

Although Vodacom has not yet formally used climate-related scenario analysis to inform its business strategy, its holding company, Vodafone, has used climate-related scenario analysis in the setting of Science-based targets.

The energy mix in the Vodacom Group of companies varies from country to country and as such as in-depth review needs to be done on the energy plans in each of these countries in the near future.
Vodacom's current and future energy demands would need to take heed of these plans to inform the sustainability of our business.

The Department of Science and Technology in 2018 published the second edition of the South African Risk and Vulnerability Atlas (SARVA). This on-line portal is open to all stakeholders, aims to equip decision-makers at national, provincial and local government as well as NGOs and the private sector with information on impact and risk associated with global change. The data is essential in planning for current and projected global and climate change impacts and assists decision makers in implementing adaption strategies.

This SARVA tool is used by Vodacom's technology and infrastructure planning and maintenance teams to take cognisance of climate-change risks in the roll out of new property and network infrastructure and maintenance of existing property and infrastructure.

Vodacom is aware of the task force for climate-related financial disclosure initiative and its voluntary set of recommended disclosures. It will contract with a service provider in the next year to adopt such climate-related scenario analyses for TCFD reporting in annual integrated reporting procedures. The aim is to complete a feasibility study by June 2020.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Scope

Scope 1+2 (location-based)

% emissions in Scope

100

Targeted % reduction from base year

5

Metric

Other, please specify

Metric tonnes CO2e per base station site

Base year

2018

Start year

2019

Normalized base year emissions covered by target (metric tons CO2e)

26.59

Target year

2019

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

% of target achieved

85.5

Target status

New

Please explain

This target relates to fuel and electricity consumption per base station site taking growth into account.
Vodacom's emissions decreased by 4.27% year-on-year, thereby falling short of the target of a 5% reduction per base station site per year.
In the context of rapid change and advances in technology in the ICT sector, longer term targets are not feasible.

% change anticipated in absolute Scope 1+2 emissions

1.1

% change anticipated in absolute Scope 3 emissions

0

C4.2

(C4.2) Provide details of other key climate-related targets not already reported in question C4.1/a/b.

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	3	
To be implemented*	1	3,250
Implementation commenced*	0	0
Implemented*	1	12,596
Not to be implemented	1	

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative type

Energy efficiency: Processes

Description of initiative

Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)

12,596

Scope

Scope 1

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

19,880,000

Investment required (unit currency – as specified in C0.4)

20,000,000

Payback period

1-3 years

Estimated lifetime of the initiative

6-10 years

Comment

Installed PowerCubes at base stations to integrate energy supplies from grid electricity, solar PV and diesel together with on-site battery storage, reducing the running time of a diesel generator by up to 80%, saving up to 90% on servicing costs and cutting fuel consumption and emissions by more than 50%.

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Financial optimization calculations	Financial optimization taking energy consumption into account. A key consideration in the RAN (Radio Access Network) equipment renewal programme is that every item of the existing radio network and core network is re-evaluated in terms of energy consumption and included in all decisions for roll-out and replacement. Upgrading the RAN will be according to available budgets, depreciation rates, asset write-offs and other business drivers including the energy consumption analysis.
Employee engagement	Employees are empowered to manage environmental issues as an integral part of their job and to investigate more efficient technology interventions to lower operational costs through energy efficiency.

Partnering with governments on technology development	Vodacom makes use of the Eskom Demand Side Management (DSM) subsidies and rebates where available to help defray the capital costs of equipment and the NBI's Private Sector Energy Efficiency Project (PSEE) to leverage off the knowledge and skills of experts.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

SMART METERING / SMART WORKING

Vodacom offers products that contribute to saving energy and reducing CO2 emissions for clients by giving end users detailed, real-time information that could lead to behaviour changes and enabling them to work differently from the traditional, carbon-intensive methods of doing business.

Vodacom launched cloud solutions and tremendous growth lead to the development of a Cloud Monitor for Virtual Environments to allow the user's in-house administrators to monitor the complete virtual environment of server loads and generate customised reports. It also gives customers a view on performance, resource utilization and Scope 2 emissions of their workloads in each geographical location.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

1.6

Comment

Vodacom will grow its Cloud business, with emphasis on the application level versus infrastructure products.
It will continue to attract large global brands through co-location, with a strong pipeline of new opportunities. In addition, it will look to partner with hyperscale Cloud providers – such as Microsoft Azure, Amazon Web Services, Alibaba and Google – whose platforms are used by many existing customers.
Vodacom will also expand its professional capability to assist customers in migrating their existing workloads, as well as building new capabilities on the new platforms.

Level of aggregation

Group of products

Description of product/Group of products

INTERNET OF THINGS (IoT)
Significant levels of digitalisation and highly connected consumers can minimise their own energy needs, particularly through Internet of Things (IoT) intelligent networked devices and processes. IoT solutions can help customers reduce their GHG emissions by two tonnes for every tonne of GHG generated from operations.
Vodacom in 2016 started building its NarrowBand Internet of Things (NB-IoT), a low-power wide-area network technology that will reduce IoT users' carbon emissions through the use of various applications. During FY2018 the first commercial NB-IoT network in Africa was launched and good progress was made in further enhancing the IoT platform to enable IoT connectivity for a range of devices over large areas, including devices that are underground.

Are these low-carbon product(s) or do they enable avoided emissions?

Avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

1.2

Comment

As IoT become more mainstream, the % contribution to revenue will increase.

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

April 1, 2008

Base year end

March 31, 2009

Base year emissions (metric tons CO2e)

26,907.12

Comment

Scope 2 (location-based)

Base year start

April 1, 2008

Base year end

March 31, 2009

Base year emissions (metric tons CO2e)

339,462.16

Comment

Scope 2 (market-based)

Base year start

April 1, 2008

Base year end

March 31, 2009

Base year emissions (metric tons CO2e)

339,462.16

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions.

The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

33,619.4

Start date

April 1, 2018

End date

March 31, 2019

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We are reporting a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

511,968.46

Scope 2, market-based (if applicable)

511,968.46

Start date

April 1, 2018

End date

March 31, 2019

Comment

No contractual instruments purchased.

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source

Geographies - Vodacom Kenya's mobile network

Relevance of Scope 1 emissions from this source

Emissions are not relevant

Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

Explain why this source is excluded

In August 2017 Vodacom concluded the acquisition of a 34.94% indirect stake in Safaricom, the number one mobile operator in Kenya. Information regarding carbon emissions is not available, hence Vodacom Kenya's mobile network is excluded from the carbon footprint. Emissions are not material as Safaricom's contribution to Vodacom's revenue accounts for less than 10% for the financial year ending March 2019.

C6.5

(C6.5) Account for your organization's Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

215.02

Emissions calculation methodology

Consumption of office paper

Emission factors: Mondi Rotatrim Paper Profile and Sappi Typek Paper Profile – released August 2018 and March 2018 respectively, indicating electricity usage and CO2 emissions per tonne of paper.

Tonnes of paper purchased provided by the service providers were used to calculated emissions according to the GHG Protocol using the provided emission factors.

Assumptions: Data was provided for all operations and extrapolated according to the equity ratios.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

Capital goods

Evaluation status

Relevant, not yet calculated

Explanation

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Relevant, calculated

Metric tonnes CO2e

46,959.63

Emissions calculation methodology

Transmission and Distribution losses from purchased electricity
KWhs consumed were used to calculate emissions according to the GHG Protocol using Eskom's 2018 emission factors for transmission & distribution losses, South Africa and the IEA 2017 emission factors for African countries.
Assumptions: This figure relates to transmission and distribution losses from electricity purchased in South Africa, Mozambique, Lesotho, Tanzania and DRC.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

Upstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

6,316.66

Emissions calculation methodology

Third-party transport
Kilometres travelled in third party vehicles were used to calculate emissions according to the GHG Protocol using Defra's 2018 emission factors for passenger vehicles.
Litres of diesel and petrol consumed by third party vehicles were used to calculate emissions according to the GHG Protocol using Defra's 2018 emission factors for fuel.
Assumptions: Distances travelled in third party vehicles were calculated using the available records for 2017 for operations in Tanzania only.

Third-party courier data applies to Vodacom SA only.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

656.31

Emissions calculation methodology

Waste to landfill and recycled

Tonnes of waste to landfill and recycled were used to calculate emissions according to the GHG Protocol using Defra's 2018 emission factors for waste disposal and Friedrich and Trois (2013), GHG emission factors developed for the collection, transport and landfilling of municipal waste in South African municipalities.

Assumptions: Waste from operations was calculated using the available records.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

6,072.85

Emissions calculation methodology

Business travel in rental cars, commercial airlines, hotel accommodation
Car rental - kilometres travelled, engine size and type of fuel used provided by service provider. Defra's 2018 emission factors for business travel - land used.
Air travel - flight information provided by service provider, including class of travel, departure dates and destination of each leg. Carbon Calculated determined the distance travelled. Defra's 2018 emission factors for business travel - air used.
Hotel accommodation - bednights provided by service provider. Defra's 2018 emission factors for hotel stay used.
Emissions were calculated according to the GHG Protocol.
Assumptions: Hotel accommodation was based on estimated number of nights away on business travel and calculations were based on 1 person occupying a room per night.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

11,818.45

Emissions calculation methodology

Employee commuting

A commuting survey was completed for Vodacom South Africa in 2012. A total of 707 surveys were received with 696 useable surveys. Due to the low percentage of response, this figure was combined with the 2009 Vodacom South Africa employee commuting survey and an average of the two was used to extrapolate the emissions per FTE for the Vodacom group according to the GHG Protocol using Defra's 2018 emission factors for business travel - land.

Percentage of emissions calculated using data obtained from suppliers or value chain partners

100

Explanation

Upstream leased assets

Evaluation status

Relevant, not yet calculated

Explanation

Downstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Explanation

Emissions from the transportation and distribution of products or services sold by the reporting company, such as Tanzania'a third party vehicle fleet and courier services in South Africa are included in Upstream transportation and distribution.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Explanation

Vodacom's services are not intermediate products that require further processing. It is not responsible for directly generating greenhouse gas emissions.

Use of sold products

Evaluation status

Relevant, not yet calculated

Explanation

Emissions from the use of goods and services sold by Vodacom, principally from the energy used by network equipment – such as routers – and the energy required to charge mobile devices.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Explanation

Vodacom sells mobile communication solutions and services. There is then no end of life treatment for sold products other than for handsets which make a up a small % of Scope 3 emissions.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Explanation

Vodacom does not have any equipment or assets that are owned and leased to third parties

Franchises

Evaluation status

Not relevant, explanation provided

Explanation

Emissions reported under Scope 1 & 2.

Investments

Evaluation status

Not relevant, explanation provided

Explanation

Vodacom accounts for emissions on the equity share approach.

Other (upstream)

Evaluation status

Explanation

Other (downstream)

Evaluation status

Explanation

C6.7

(C6.7) Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

0.0000060576

Metric numerator (Gross global combined Scope 1 and 2 emissions)

545,587.86

Metric denominator

unit total revenue

Metric denominator: Unit total

90,066,000,000

Scope 2 figure used

Location-based

% change from previous year

2.31

Direction of change

Decreased

Reason for change

Although Scope 1 & 2 emissions increased by 1.87%, mainly as a result of a 6.42% increase in base stations, the installation of PowerCubes at base stations to integrate energy supplies from grid electricity, solar PV and diesel together with on-site battery storage, reduced diesel

generator run time, fuel consumption and emissions by 2.35%.
The intensity figure for revenue decreased as the Scope 1 & 2 increase of 1.87% was offset by an increase of 4.28% in revenue earned.

Intensity figure

1.68

Metric numerator (Gross global combined Scope 1 and 2 emissions)

420,329.83

Metric denominator

Other, please specify

Terabyte of network traffic

Metric denominator: Unit total

250,169

Scope 2 figure used

Location-based

% change from previous year

23.9

Direction of change

Decreased

Reason for change

Although Scope 1 & 2 emissions for the network increased by 3.21%, mainly as a result of a 6.42% increase in base stations, the installation of PowerCubes at base stations to integrate energy supplies from grid electricity, solar PV and diesel together with on-site battery storage, reduced diesel generator run time, fuel consumption and emissions by 2.35%.
The 3.21 % increase in Scope1 & 2 emissions, off-set by a 35.61% increase in network traffic, resulted in a decrease in the intensity figure for network traffic.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

No

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
South Africa	10,995.29
Mozambique	6,554.71
Lesotho	1,039.19
Other, please specify Tanzania	2,084.17
Democratic Republic of the Congo	12,946.04

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By activity

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)

Stationary fuel	29,413.6
Fugitive emissions	259.84
Mobile fuel	3,945.96

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
South Africa	499,212.87	499,212.87	525,487.23	0
Mozambique	2,671.34	2,671.34	41,288.07	0
Lesotho	5,703.86	5,703.86	9,198.29	0
United Republic of Tanzania	4,369.58	4,369.58	9,937.65	0
Democratic Republic of the Congo	10.81	10.81	8,317.4	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By business division

C7.6a

(C7.6a) Break down your total gross global Scope 2 emissions by business division.

Business division	Scope 2, location-based emissions (metric tons CO2e)	Scope 2, market-based emissions (metric tons CO2e)

Access Network	355,789.16	355,789.16
Core Network	64,873.07	64,873.07
Data Centres	50,178.85	50,178.85
Offices	40,822.94	40,822.94
Retail	304.44	304.44

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	976	Decreased	0.18	Vodacom Tanzania reported self-generated renewable energy for the first time in 2019. During FY2019 a total of 2 104.05 MWh renewable electricity was generated from solar PV. Total Scope 1 & 2 emissions for 2018 were 535 567 tCO2e. We therefore arrived at 0.18% through (976/ 535 567) * 100 = 0.18%.
Other emissions reduction activities	12,596	Decreased	2.35	The installation of PowerCubes at base stations to integrate energy supplies from grid electricity, solar PV and diesel together with on-site battery storage,

				reduced diesel generator run time, fuel consumption and emissions by more than 50% per base station. Total Scope 1 & 2 emissions for 2018 were 535 567 tCO2e. We therefore arrived at 2.35% through (12 596/ 535 567) * 100 = 2.35%.
Divestment				
Acquisitions				
Mergers				
Change in output	32,916	Increased	6.14	The number of base stations increased by 1293 or 6.42% while network traffic increased by 35.61% resulting in increased Scope 2 emissions. Total Scope 1 & 2 emissions for 2018 were 535 567 tCO2e. We therefore arrived at 6.14% through (32 916/ 535 567) * 100 = 6.14%.
Change in methodology	9,323	Decreased	1.74	The emissions factor for purchased electricity from Eskom in South Africa (Scope 2) decreased from 0.98 in 2017 to 0.95 kg CO2e per kWh in 2018. Total Scope 1 & 2 emissions for 2018 were 535 567 tCO2e. We therefore arrived at 1.74% through (9 323/ 535 567) * 100 = 1.74%.
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertakes this energy-related activity
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	132,094.32	132,094.32
Consumption of purchased or acquired electricity		0	594,228.64	594,228.64

Consumption of self-generated non-fuel renewable energy		2,104.05		2,104.05
Total energy consumption		2,104.05	726,322.96	728,427.01

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	No
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

127,562.22

MWh fuel consumed for self-generation of electricity

116,277.67

MWh fuel consumed for self-generation of heat

11,284.55

Comment

Diesel consumed in generators & equipment and fleet vehicles.

Fuels (excluding feedstocks)

Petrol

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

4,532.1

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

4,532.1

Comment

Petrol consumed in fleet vehicles.

C8.2d

(C8.2d) List the average emission factors of the fuels reported in C8.2c.

Diesel

Emission factor

2.68779

Unit

kg CO2e per liter

Emission factor source

Defra 2018 - Guidelines to Defra's GHG Conversion Factors for Company Reporting, Fuels, updated July 2018. Available: www.ukconversionfactorscarbonsmart.co.uk

Comment

Petrol

Emission factor

2.30531

Unit

kg CO2e per liter

Emission factor source

Defra 2018 - Guidelines to Defra's GHG Conversion Factors for Company Reporting, Fuels, updated July 2018. Available: www.ukconversionfactorscarbonsmart.co.uk

Comment

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	118,381.72	118,381.72	2,104.05	2,104.05
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2f

(C8.2f) Provide details on the electricity, heat, steam and/or cooling amounts that were accounted for at a low-carbon emission factor in the market-based Scope 2 figure reported in C6.3.

Basis for applying a low-carbon emission factor

No purchases or generation of low-carbon electricity, heat, steam or cooling accounted with a low-carbon emission factor

Low-carbon technology type

Region of consumption of low-carbon electricity, heat, steam or cooling

MWh consumed associated with low-carbon electricity, heat, steam or cooling

Emission factor (in units of metric tons CO2e per MWh)

Comment

No instruments were purchased.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	No third-party verification or assurance

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 and/or Scope 2 emissions and attach the relevant statements.

Scope

Scope 1

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Vodacom Assurance Report 2019.pdf

Page/ section reference

Assurance Report: Pages 70-72

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

33

Scope

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Limited assurance

Attach the statement

Vodacom Assurance Report 2019.pdf

Page/ section reference

Assurance Report: Pages 70-72

Relevant standard

ISAE 3410

Proportion of reported emissions verified (%)

98

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

No, but we are actively considering verifying within the next two years

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

No, but we anticipate being regulated in the next three years

C11.1d

(C11.1d) What is your strategy for complying with the systems in which you participate or anticipate participating?

As part of South Africa's ongoing efforts to move towards a low carbon economy and to meet South Africa's INDC targets, the Carbon Tax Act and the Customs and Excise Amendment Act were both officially gazetted on 23 May 2019 and came into effect on 1 June 2019.

The tax rate is set at R120 per tonne of CO2e (carbon dioxide equivalent) produced. During the first stage, a percentage-based threshold of 60% will apply, below which tax is not payable.

The intention is to provide for a tax-free liability threshold of 10 megawatts (MW) thermal capacity. The threshold is high enough to exclude non-industrial activities from the carbon tax, but low enough to make the tax applicable to most high-emitting industries in the country.

The South African Greenhouse Gas (GHG) Reporting Regulations came into law in April 2017. This mandatory regulation requires all South African companies that are in control of certain listed activities exceeding a specified threshold to report their GHG emissions to the Department of Environmental Affairs (DEA). The DEA will use the GHG emissions reported by companies as basis for carbon tax liability calculations.

An entity liable for mandatory reporting was obliged to register each facility on the internet-based National Atmospheric Emission Inventory System (NAEIS) by 3 May 2017. Once registered, liable entities are required to report their aggregated South African facilities' GHG emissions at company level for the preceding calendar year to the DEA by 31 March each year via NAEIS.

It is important to keep in mind that those businesses that have identified themselves as not liable for carbon tax during the first phase, will still be required to submit environmental levy accounts regardless of whether any carbon tax payment is due.

Vodacom is therefore complying with the carbon tax legislation by compiling its annual carbon footprint. It has also assessed all its facilities to determine whether its associated emission activities qualify for or exceed the 10MW thermal threshold to see if it needs to register with the DEA, using a specific template of the National Atmospheric Emissions Inventory system (NAEIS).

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

1

% total procurement spend (direct and indirect)

2

% Scope 3 emissions as reported in C6.5

9

Rationale for the coverage of your engagement

Courier services makes up a large part of the distribution channel. Vodacom measures the footprint of the services provided by the third party courier company.

Vodacom plans to engage with more suppliers, e.g. the travel agency to explore opportunities for smarter, more efficient ways of operating to reduce carbon emissions and cost.

Impact of engagement, including measures of success

The courier company makes use of route and load optimisation where feasible and has a vehicle tracking system to monitor fuel usage and driver behaviour to reduce emissions. Emissions increased by 0.83% although SA revenue increased by 1.9%.

Comment

Type of engagement

Information collection (understanding supplier behavior)

Details of engagement

Collect climate change and carbon information at least annually from suppliers

% of suppliers by number

2

% total procurement spend (direct and indirect)

70

% Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement

Network infrastructure and related services accounted for most of procurement spend. Vodacom therefore works closely with infrastructure suppliers that supply, install and maintain its networks. Engagement include suppliers involved in installation of fibre and suppliers involved in field marketing services.

Impact of engagement, including measures of success

In FY2019 Vodacom made energy efficiency a key consideration in purchasing equipment from vendors and reviewed suppliers' product and service development plans to ensure they take Vodacom's energy efficiency requirements into account. An internal information booklet was drafted containing the most energy-efficient products and services.

Comment

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Trade associations

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

No

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Vodacom has specialist regulatory and government relations teams who engage with Government, Regulators, and Business Partners such as Business Unity South Africa (BUSA) and the National Business Initiative (NBI) on policy issues impacting the business including climate change. They participate actively through written submissions and formal hearings on legislative and regulatory changes. Feedback on issues is reported as per Vodacom's risk management framework.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In mainstream reports

Status

Complete

Attach the document

Vodacom Integrated Report 2019.pdf

Page/Section reference

Integrated Report - p1 - 49

Content elements

Governance

Strategy
Risks & opportunities
Emissions figures

Comment

Publication

In voluntary sustainability report

Status

Complete

Attach the document

Vodacom Sustainabilty Report 2019.pdf

Page/Section reference

Sustainability Report - p 1- 72

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C14. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C14.1

(C14.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Executive Head: Vodacom Group Sustainability	Environment/Sustainability manager

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	Public or Non-Public Submission	I am submitting to
I am submitting my response	Public	Investors

Please confirm below

I have read and accept the applicable Terms