

Telenor Group's response to CDP 2017

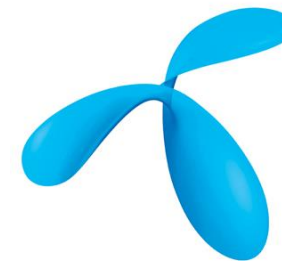
Climate Change (Investor CDP) for the reporting year
1 January-31 December 2016

Sector: Telecommunications

Industry Group: Diversified Telecommunication Services

Sub Industry: Integrated Telecommunication Services

<https://www.cdp.net/>



telenor
group



Module: Introduction

Page: Introduction

CC0.1

Introduction

Please give a general description and introduction to your organization.

Telenor Group is one of the world's major mobile operators, with reported revenues of NOK 131 billion (USD 15.6 billion) in 2016. We keep 214 million mobile subscribers connected in 13 markets across Scandinavia, Central Eastern Europe, and Asia. Our 37,000 employees are committed to responsible business conduct and being our customers' favourite partner in digital life. Connecting the world has been Telenor's domain for more than 160 years, and we are driven by a singular vision: to empower societies.

This climate related report submitted to CDP contains statements regarding the future in connection with the Telenor Group's outlook, strategies and objectives. All statements regarding the future are subject to inherent risks and uncertainties.

For more information about Telenor Group, please visit www.telenor.com

CC0.2

Reporting Year

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been

offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year. Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed
Fri 01 Jan 2016 - Sat 31 Dec 2016

CC0.3

Country list configuration

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country
Norway
Denmark
Sweden
Hungary
Serbia
Montenegro
Bulgaria
Thailand
Malaysia
Bangladesh
Pakistan
India
Myanmar

CC0.4**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

NOK

CC0.6**Modules**

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.

If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

In 2016, the individual with the highest level of direct responsibility for climate change at Telenor was Mr Dag Opedal as Chairperson of the Sustainability and Compliance Committee (from May 2016).

As of May 2017, Dag Opedal, has been relieved from the Board of Directors. The Sustainability and Compliance Committee has per June 2017 elected Ms Sally Davis as new chair of this committee.

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Corporate executive team	Monetary reward	Other: Responsible Business Conduct to drive sustainable business operations across all markets.	The Telenor Group Executive Management (GEM) has a short-term incentive plan which reflects the key priorities of Telenor Group, and thus contains both financial, customer satisfaction, operational and responsible business conduct related performance measures for all plan participants. All measures are defined to drive development and delivery of results within the respective areas including to drive sustainable business operations across all markets – with a focus on complying with local laws, regulations, Telenor Group policies or standards of business conduct. See pages 128-135 in the Telenor Group's Annual Report for 2016.
Business unit managers	Monetary reward	Energy reduction project Energy reduction target Environmental criteria included in purchases	Responsible business conduct continues to be a key priority in all business units. All measures are defined to drive sustainable business operations – with a focus on complying with local laws, regulations, Telenor Group policies or standards of business conduct. All business units have a high focus on energy efficiency.

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Environment/Sustainability managers	Monetary reward	Emissions reduction project Energy reduction project Environmental criteria included in purchases	Sustainability & operation managers in the business units have individual bonus scorecard with defined key performance indicators - also related to projects and targets in connections with energy consumption and CO2 emissions.

Further Information

Page: **CC2. Strategy**

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Annually	Board or individual/sub-set of the Board or committee appointed by the Board	Telenor assesses climate change risks and opportunities in all countries it operates. These are Norway, Sweden, Denmark, Hungary, Serbia, Montenegro, Bulgaria, Malaysia, Thailand, Bangladesh, Pakistan, India,	> 6 years	

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
		Myanmar.		

CC2.1b

Please describe how your risk and opportunity identification processes are applied at both company and asset level

Since 2008, Telenor Group has established documented processes which consider climate change risks and opportunities as part of our total business risk management process.

At company level:

- The Board of Director assesses risk thoroughly in connection with new investments, and on an ongoing basis in relation to existing investments. The Group Executive Management has implemented a systematic Group-wide enterprise risk management process.
- A dedicated climate organisation – as a part of our Sustainability organisation - focuses on the climate change risks and opportunities, both at Group level and Business Unit level. The identification process is performed at regular intervals assessing potential new climate change risks and opportunities. The assessment includes regulatory, physical and reputation risks and opportunities arising from climate change. In the same process, known and existing risks and opportunities are reassessed and updates.

At asset level:

- Telenor assesses climate risks at each individual country of operation. The negative impacts to the company's physical assets, i.e. the physical telecommunication infrastructure of each country are rated against the climate risks identified. Besides the physical telecommunication infrastructure, negative impacts on service delivery to customers, negative impacts to operation and management of our company and negative impacts to company finances are assessed. Each production site has to predict how the climate risks will evolve in the future, rate the likelihood that the damage/risk event will happen given their climate change projections and the vulnerability of their assets.
- Climate change related risks and opportunities are integrated part of this business management framework and is part of all the annual business strategy update.

CC2.1c

How do you prioritize the risks and opportunities identified?

The climate change risks and opportunity prioritization process is integrated within the Group's annual strategy planning process, and key risks/opportunities highlighted therein by business units are tracked through various Group review processes.

Each business unit is responsible for updating their company related level risks/opportunities on a regular basis – and align this closely with existing business and management processes. Group Strategy aggregates risks/opportunities from the business unit strategy plans, analyses other significant risks/opportunities across the group and presents Telenor's strategic risks/opportunities to the Group Executive Management and ultimately to the Board of Directors.

Telenor's key climate measure since 2010 has been to stabilise the energy consumption in its networks while increasing market footprint, since network operations represent around 90 per cent of Telenor's total CO2 emissions. All business units are mandated to choose cost-efficient energy efficiency initiatives: network swaps, the sourcing of energy-efficient technologies, infrastructure-sharing and more energy-efficient data centres and buildings. In the way forward, Telenor will plan for scale-up of renewable energy combined with continued focus on energy efficiency initiatives in all of its network operations – resulting in both savings in operating expenses and reduced CO2 emissions.

CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
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CC2.2

Is climate change integrated into your business strategy?

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

How the business strategy has been influenced:

Telenor is committed to minimising its environmental impact. Telenor's business units operate with the policy of making all reasonable efforts to minimise use of natural resources including energy, water and raw materials.

Since 2008, Telenor Group has established documented processes which consider climate change related risks and opportunities as part of our total business environment.

All Telenor Group's business units shall adhere to local and internationally recognized environmental and energy efficiency standards, as adhered to by Telenor Group. The business units shall have an updated risk assessment for its operations focusing on extreme weather events related to climate change. All business units shall investigate potential business initiatives and partnerships for offering such eco-efficient solutions.

At the end of 2016, Bloomberg reported that a transformation is happening in global energy markets: Solar power, for the first time, is becoming the cheapest form of new electricity. In 2016, Telenor together with Ericsson have pioneered a base station concept in Myanmar that is cheaper to run on solar than diesel.

Aspects of climate change that have influenced the strategy:

- 1) Climate change is one of the most complex challenges facing people, businesses and governments. Climate related risks include potential damages to vital infrastructure and utilities through the impact of more extreme weather events.
- 2) At the same time our technology and smart services have the potential to cut global carbon emissions, reduce resource intensity, stimulate economic growth and deliver substantial social benefits. Telenor engages with the industry and partners to embrace these opportunities

Short term (1-3 years) strategy:

The mobile industry will risk continued growth in its total energy consumption and carbon footprint as mobile operators continue to increase their coverage, acquire more customers and develop more mobile broadband services due to market needs. The mobile industry requires significant amounts of electricity in Telenor Groups's network operations – and most power is supplied on-grid by national power generation companies. In Telenor Group's Asian operations, the company also relies heavily on diesel used in its on-site generators – to power infrastructure off-grid in remote locations or areas of unreliable on-grid power.

Telenor Groups's key climate measure has since 2010 been to stabilise the energy consumption in its networks while increasing market footprint, since network operations represent around 90 per cent of Telenor's total CO2 emissions. All business units are mandated to choose cost-efficient energy efficiency initiatives: network swaps, the sourcing of energy-efficient technologies, infrastructure-sharing and more energy efficient data centres and buildings.

Long term (3 years+) strategy:

Changing regulations, dramatic reductions in renewable energy costs and concerns about energy security will impact global energy markets. Telenor Group's Asian markets are very different from its European markets – both in the company's carbon footprint and the type of energy that Telenor uses for its network operations.

In general, developing countries will have the opportunity to leapfrog into the renewable age, and Telenor Group has already in several of its Asian operations started to convert traditional diesel-based on-site generators into renewable energy with cost-efficient solar/battery technology.

In the way forward, Telenor will plan for scale-up of renewable energy combined with continued focus on energy efficiency initiatives in all of its network operations

– resulting in both savings in operating expenses and reduced CO2 emissions. Telenor will formulate new strategic climate ambitions for Telenor Group with localised climate roadmaps towards 2030 that are aligned with the overall Paris Climate Agreement.

How this is gaining a strategic advantage over your competitors:

Telenor Group's long term strategic ambition is to deliver business growth and value creation by becoming our customers' favorite partner in their digital life. As part of this strategy we will be delivering a broad range of relevant digital services – including connectivity and internet based services. Telenor is well positioned within our industry to embrace business opportunities related to ICT sector's role in a low-carbon transition – both alone and in partnerships - with ambition to design and operate connected business (IoT) solutions for the global market.

Most substantial business decisions made during the reporting year that have been influenced by the climate change driven aspects of the strategy.

Most significant business decision last year was probably to continue developing our digital business vertical within IoT – where Telenor Group by year-end 2016 passed 10 million SIM connected devices globally on its IoT platforms (50 % growth from 2015). Telenor Connexion, Telenor's dedicated IoT company, designs and operates global IoT solutions for the global market.

How the Paris Agreement has influenced the business strategy:

During 2017, Telenor will formulate new strategic climate ambitions for Telenor Group with localised climate roadmaps towards 2030 that are aligned with the overall Paris Climate Agreement.

Do you use forward-looking scenario analyses, including a 2°C scenario, to inform your organization's businesses, strategy, and/or financial planning?

Not currently, but we will investigate to use forward-looking scenario analyses when we will formulate new strategic climate ambitions for Telenor Group with localised climate roadmaps towards 2030 that are aligned with the overall Paris Climate Agreement

CC2.2b

Please explain why climate change is not integrated into your business strategy

CC2.2c

Does your company use an internal price on carbon?

No, and we currently don't anticipate doing so in the next 2 years

CC2.2d

Please provide details and examples of how your company uses an internal price on carbon

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

Direct engagement with policy makers

Trade associations

Funding research organizations

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Carbon tax	Support	Engaged with policymakers on various levels to communicate that a clear and transparent price on carbon emissions is at the core of a cost-effective and pro-business policy framework for climate change.	Our proposed solution is that policy-makers should make carbon pricing a central part of national policy responses by working towards the long term objective of a carbon price throughout the global economy and setting sufficient ambition through internationally agreed targets to drive change at a pace commensurate with the 2°C goal as agreed upon in Paris in December 2015.

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
GSMA	Consistent	<p>The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with almost 300 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA has developed whitepapers that demonstrates how the mobile industry plans to lower its greenhouse gas emissions per connection, and the key role that mobile communications can play in lowering emissions in other sectors and industries. It also makes specific policy recommendations for governments and the United Nations Climate Change Conferences. The GSMA states that ICT can play a major role in helping governments address complex challenges such as achieving sustainable economic growth, combating climate change, improving the delivery of healthcare and providing widespread access to broadband. Realising the full potential of mobile communications to help meet societal and economic challenges requires governments and many different industries to work together, engaging in a constructive and continuous dialogue.</p>	<p>Mr. Sigve Brekke is board member of the GSMA. He has been President and CEO of Telenor Group since August 2015. Telenor representatives are participating in different committees and working Groups in GSMA. Through these individuals, Telenor actively engages in the climate change positioning process of the GSMA.</p>
GeSI	Consistent	<p>The Global e-Sustainability Initiative (GeSI) is a leading source of impartial information, resources and best practices for achieving integrated social and environmental sustainability through ICT. The GeSI fosters collaborative and innovative approaches to sustainability and supports member initiatives in both developed and developing nations to quickly and effectively respond to issues such as climate change, energy efficiency, e-waste management and resource efficiency, responsible supply chain practices and human rights. GeSi encourages governments to include ICTs and related technologies as</p>	<p>Telenor Group is an active members of GeSI and Telenor representatives both participate in specific climate change related working groups as well as influence the long term strategic processes in GeSI's including long term vision and which climate change related issues should be prioritized.</p>

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		key elements of their national climate change policies, across all industry sectors. By bolstering collaboration on these main objectives, GeSI seeks to synergize the messages being expressed by actors in the ICT field; the message that ICTs can enable low-carbon economies, and that 21st century governments, regulators and businesses cannot afford to exclude ICTs from policy or business initiatives to green our global economy.	

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

Yes

CC2.3e

Please provide details of the other engagement activities that you undertake

CC2.3f

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?

- Direct and indirect activities across Telenor Group that influence policy on climate change are centrally coordinated and managed by Group Sustainability.
- The Group's Climate Change director is responsible for coordinating engagement activities around climate change across business units and geographies to ensure that we have a common approach that is consistent with Telenor Group's strategy on climate change.

CC2.3g

Please explain why you do not engage with policy makers

Further Information

Page: CC3. Targets and Initiatives

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Absolute target
Intensity target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
Abs1	Scope 1	100%	0%	2013	296017	2016	No, but we anticipate	Telenor will risk continued growth in our absolute energy consumption and carbon footprint as we continue to increase

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
							setting one in the next 2 years	our coverage, acquire more customers and develop more mobile broadband services due to market needs. Our key climate initiatives have therefore been to stabilise our energy consumption by improving the energy efficiency of our network operations, as these represent around 80 per cent of our total energy consumption. For the period 2012-2015, we have successfully been able to stabilize our absolute energy consumption around 3400 GWh per year – despite increased geographical scope and increased customer base with more mobile broadband services. In 2016, Telenor’s total energy consumption was approximately 4000 GWh - an increase of around 20 per cent from 2015 mostly driven by the dramatic increase in data traffic. Telenor Group had a target for 2016 to cap the Scope 1 emissions at the same level as for year 2013 by reducing the diesel consumption in the off-grid areas and in electricity unstable regions of our Asian operations. The total result for Scope 1 emissions in 2016 of 378 231 tonnes CO2 – but this includes 90,416 tonnes CO2 in scope 1 emissions from our Myanmar operations which started up in Q4 2014. Without Myanmar, our total Scope 1 emissions for 2015 would have ended at 287,815 tonnes CO2 – which is 3 % lower than for base year 2013. The reduced Scope 1 emissions is mainly a result of successful energy efficiency measures in Asian operations - this applies in particular for our operations in Pakistan and Bangladesh where they are scaling up their transformation to solar energy.

CC3.1b

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1+2 (location-based)	100%	40%	Other: Metric tonne CO2 e per "value added"	2008	749000	2017	No, but we anticipate setting one in the next 2 years	Telenor will risk continued growth in our absolute energy consumption and carbon footprint as we continue to increase our coverage, acquire more customers and develop more mobile broadband services due to market needs. Our key climate initiatives have therefore been to stabilise our energy consumption by improving the energy efficiency of our network operations, as these represent around 80 per cent of our total energy consumption. For the period 2012-2015, we have successfully been able to stabilize our total energy consumption around 3400 GWh per year – despite increased geographical scope and increased customer base with more mobile broadband services. In 2016, Telenor's total energy consumption was approximately 4000 GWh - an increase of around 20 per cent from 2015 due to the dramatic increase in data traffic. In 2008 Telenor announced our strategic climate ambitions on reducing the carbon intensity of our global operations with 40 per cent by 2017, compared to the 2008 level. The carbon intensity is measured by the amount of CO2 emissions per "value added" (expressed as EBITDA + employee costs). The Carbon intensity target includes all business units in Telenor Group except for the 2009-acquisition of Uninor in India, the 2013-acquisition in Bulgaria and the 2014-start-up in Myanmar. We intend to achieve this target mainly through energy efficiency measures and extended use of sustainable energy sources and combined business growth.

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Decrease	4.6	No change	0	Telenor will risk continued growth in our total energy consumption and carbon footprint as we continue to increase our coverage, acquire more customers and develop more mobile broadband services due to market needs. Our key climate initiatives have therefore been to stabilise our energy consumption by improving the energy efficiency of our network operations, as these represent around 80 per cent of our total energy consumption. For the period 2012-2015, we have successfully been able to stabilize our total energy consumption around 3400 GWh per year – despite increased geographical scope and increased customer base with more mobile broadband services. In 2016, Telenor’s total energy consumption was approximately 4000 GWh - an increase of around 20 per cent from 2015 due to the dramatic increase in data traffic. In 2008 Telenor announced our strategic climate ambitions on reducing the carbon intensity of our global operations with 40 per cent by 2017, compared to the 2008 level. The carbon intensity is measured by the amount of CO2 emissions per "value added" (expressed as EBITDA + employee costs). The Carbon intensity target includes all business units in Telenor Group except for the 2009-acquisition of Uninor in India, the 2013-acquisition in Bulgaria and the 2014-start-up in Myanmar.

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
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CC3.1e

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Abs1	100%	100%	Telenor Group had a target for 2016 to cap the Scope 1 emissions at the same level as for year 2013 by reducing the diesel consumption in the off-grid areas and in electricity unstable regions of our Asian operations. The total result for Scope 1 emissions in 2016 of 378 231 tonnes CO2 – but this includes 90,416 tonnes CO2 in scope 1 emissions from our Myanmar operations which started up in Q4 2014. Without Myanmar, our total Scope 1 emissions for 2016 would have ended at 287,815 tonnes CO2 – which is 3 % lower than for base year 2013. The reduced Scope 1 emissions is mainly a result of successful energy efficiency measures in Asian operations - this applies in particular for our operations in Pakistan and Bangladesh where they have also started scaling up their transformation to solar energy.
Int1	89%	0%	In 2008 Telenor announced our strategic climate ambitions on reducing the carbon intensity of our global operations with 40 per cent by 2017, compared to the 2008 level. The carbon intensity is measured by the amount of CO2 emissions per "value added" (expressed as EBITDA + employee costs). The Carbon intensity target includes all business units in Telenor Group except for the 2009-acquisition in India, the 2013-acquisition in Bulgaria and the 2014-start-up in Myanmar. Telenor will risk continued growth in our total energy consumption and carbon footprint as we continue to increase our coverage, acquire more customers and develop more mobile broadband services due to market needs. Our key climate initiatives have therefore been to stabilise our energy consumption by improving the energy efficiency of our network operations, as these represent around 80 per cent of our total energy consumption. For the period 2012-2015, we have successfully been able to stabilize our total energy consumption around 3400 GWh per year – despite increased geographical scope and increased customer base with more mobile broadband services. In 2016, Telenor's total energy consumption was approximately 4000 GWh - an increase of around 20 per cent from 2015 due to the dramatic increase in data traffic.

CC3.1f

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

CC3.2

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

CC3.2a

Please 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	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Group of products	Internet of Things (IoT): Technology and smart services have the potential to impact global carbon emissions. Our industry is well positioned to make the world more sustainable by connecting	Avoided emissions	Evaluating the carbon reducing impacts of ICT	1%	Less than or equal to 10%	Telenor Connexion, the dedicated Internet of Things company within Telenor, designs and operates connected business (IoT) solutions for the global market. The company has a

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
	sensor-based data with analytical capacity to improve people's lives and increase resource efficiency in diverse areas such as smart homes, smart cities, smart energy or smart mobility.					strong position internationally within IoT (Telenor is number 8 in the world) and a unique position in Sweden with eight out of ten subscriptions in the market. In 2016, Telenor Group passed 10 million SIM connected devices globally on its IoT platforms (50 % growth from 2015).
Product	Smart Street lights in Oslo: Traditional city streetlights use a lot of energy. The streetlights of the future are much smarter than the streetlights of the past – which have traditionally been running on full power all the time. Today's smart technology can control each streetlight individually depending on the need. Telenor is technology partner for connectivity. The many control points that run the Oslo's 80,000 streetlights will get new and high-tech insides. With a modem and SIM card from Telenor, the streetlights can now be run from a webpage. The SIM card enables communication between the control unit and the management portal. When there is an error in a light or a circuit, a message will be sent over the mobile network.	Avoided emissions	Evaluating the carbon reducing impacts of ICT	1%	Less than or equal to 10%	Oslo, Norway's capital city, have been using more than 60 million kroner (7 million USD) on street lighting each year and in 2012 the city started up their first stages of smart technology upgrade to new street lighting. Through smart mobile technology, the city's operating expenses when it comes to lighting the streets can be reduced by 30 to 50 percent and energy expenses by 40 to 60 percent. Today, 15 % of the city street lights have already been upgraded and planned deadline for total upgrade of all 80 000 street lights is year 2025.

CC3.3

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

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	
To be implemented*	1	2600
Implementation commenced*	0	
Implemented*	2	5355
Not to be implemented	0	

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Low carbon energy installation	In Bangladesh; during 2016 we have completed renewable energy project involving installation of 150 new solar powered base stations.	1975	Scope 1	Voluntary	5400000	4400000	<1 year	6-10 years	Achieved results in 2016: Reduction of approx 760,000 liters of diesel consumption with an estimated reduction in carbon emissions of 1975 tonnes CO2. Annual monetary savings of 5.4 mill NOK include diesel costs only.
Low carbon energy installation	In Pakistan, during 2016 we have completed renewable energy project involving the installation of 250 new solar powered base stations	3380	Scope 1	Voluntary	6400000	62600000	4-10 years	16-20 years	Achieved results in 2016: Reduction of approx 1.3 million liters of diesel consumption with an estimated reduction in carbon emissions of 3380 tonnes CO2. Annual monetary savings of 6.4 mill NOK include diesel costs only.

CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for energy efficiency	All business units are mandated to choose cost-efficient energy-efficiency initiatives: network swaps, the sourcing of energy-efficient technologies, infrastructure-sharing and more energy-efficient data centres and buildings.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

Further Information

Page: CC4. Communication

CC4.1

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	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	Pages 58-60	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC4.1/Telenor Annual-Report-2016.pdf	Telenor Group Annual Report 2016
In voluntary communications	Complete	Company web pages	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC4.1/Telenor web pages.pdf	Company web pages - Sustainability Reporting Section
In other regulatory filings	Complete	Pages 7-11	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC4.1/Telenor 2016-GRI Standard Report.pdf	Telenor Group 2016 GRI Standard Report - as required by Norwegian Government.

Further Information

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation

Risks driven by changes in physical climate parameters

Risks driven by changes in other climate-related developments

CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
International agreements	Telenor faces an indirect risk of tightening climate change regulations in the energy sector: International agreements try to limit Greenhouse Gases from the energy sector including	Increased operational cost	3 to 6 years	Direct	More likely than not	Low	Regulatory risks can imply increased: compliance costs related to company operations, payment of fines/ tariffs and for example involvement in carbon trading	Three methods help us managing the risk of tightening international agreements on climate change: 1) Risk avoidance: Telenor's key method for reducing our exposure to climate	We estimate total management costs (including monitoring and active engagement) associated with following up climate change related risks to be annually less

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>electricity generation. Increased regulation in the energy sector translates into higher operational costs for companies in this sector which in the end results in higher prices for the consumer of the energy. As an ICT company, Telenor is heavily dependent on electricity; higher electricity prices as a result of increased climate change regulations in the energy sector therefore present an indirect risk to Telenor. How the risk affects Telenor specifically: Increased electricity costs due to climate change regulations will have a direct</p>						<p>schemes. We have evaluated possible carbon costs exposure in relation to increased climate change regulations from 2016 onwards under different carbon price scenarios. We have estimated these potential financial implications to be less than 1 billion NOK.</p>	<p>related regulatory risks by improving the energy efficiency in all our business units - such as network modernisation and integration of energy requirements in procurement processes. 2) Risk monitoring: Telenor is closely monitoring the policy debate concerning regulatory frameworks. One example: Telenor is monitoring the policy debate concerning the wider EU 2030 commitment to reduce CO2 emissions by 40% as part of EU's commitment to the Paris Agreement - and where each EU member state will have to follow an emissions reduction pathway. 3) Risk reduction: To</p>	<p>than 1 million NOK in the years towards 2020.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>impact on Telenor's operational costs. However, more than 90 % of Telenor's CO2 emissions come from our Asian operations; as the energy sectors in Asian countries have not been subject to increased climate change regulations through international agreements, the impact on Telenor will be relatively low.</p>							<p>mitigate additional risks arising from increasing emission regulations, Telenor is actively engaged in dialogue with policymakers in EU as well as in other parts of the world. One example; Telenor has actively been involved in several industry studies - such as the SMARTer 2030 report that demonstrates how the ICT industry towards year 2030 could abate almost 20% of the global carbon emissions and with a factor close to ten times our industry's own direct emissions. The report was used as an active dialogue tool with world-wide policymakers before and during the Paris COP21 meeting in December 2015.</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Carbon taxes	The mobile industry may face future tax on direct and indirect emissions. In terms of climate-related regulatory risks, the mobile industry may face higher operational cost due to increasing carbon taxes and energy/fuel taxes as well as higher capital cost due to a required shift towards more energy efficient technology and renewable energy solutions. However, the risk for Telenor in short to medium term is moderate due to low direct carbon emissions per customer from our operations.	Increased operational cost	1 to 3 years	Direct	More likely than not	Low	Regulatory risks can imply increased: compliance costs related to company operations, payment of fines/tariffs and for example involvement in carbon trading schemes. We have calculated our possible carbon costs exposure in relation to increased climate change regulations from 2016 onwards under different carbon price scenarios. We have estimated these potential financial implications to be less than 1 billion NOK.	Three methods help us managing the risk of tightening international agreements on climate change: 1) Risk avoidance: Telenor's key method for reducing our exposure to climate related regulatory risks by improving the energy efficiency in all our business units - such as network modernisation and integration of energy requirements in procurement processes. 2) Risk monitoring: Telenor is closely monitoring the policy debate concerning regulatory frameworks. One example: Telenor is monitoring the policy debate concerning the wider EU 2030	We estimate total management costs (including monitoring and active engagement) associated with following up climate change related risks to be annually less than 1 million NOK in the years towards 2020.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								<p>commitment to reduce CO2 emissions by 40% as part of EU's commitment to the Paris Agreement - and where each EU member state will have to follow an emissions reduction pathway. 3) Risk reduction: To mitigate additional risks arising from increasing emission regulations, Telenor is actively engaged in dialogue with policymakers in EU as well as in other parts of the world. One example; Telenor has actively been involved in several industry studies - such as the SMARTer 2030 report that demonstrates how the ICT industry towards year 2030 could abate almost 20% of the global carbon emissions and with a factor</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								close to ten times our industry's own direct emissions. The report was used as an active dialogue tool with world-wide policymakers before and during the Paris COP21 meeting in December 2015.	

CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Sea level rise	Description of risk: Telenor's operations and infrastructure in Asia are exposed to flooding risks caused rising sea levels. Climate research predicts	Increased capital cost	>6 years	Direct	Unlikely	Medium	In Bangladesh, there is a risk of high damage of electrical equipment in switches, base stations and other site buildings caused by flooding	At Telenor, we have conducted a Climate Impact Risk Analysis for countries of Telenor's operations. The aim of this analysis was to identify the risks of climate induced damage such	We estimate total management costs (including monitoring and active engagement) associated with following up

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>the sea level to rise because of melting ice and the expansion of water. The rising sea level poses a risk to all countries at very low altitudes, in particular to Bangladesh which is highly threatened by the rising sea level. Flooding is a significant risk as it has the potential to damage buildings, infrastructure and to threaten energy security. How the risk is affecting Telenor: Flooding has the potential to damage our buildings and network infrastructure; at the same time it could also interrupt our business operations indirectly if energy supply is not guaranteed any longer. In Bangladesh, there is a risk of high damage of our electrical equipment</p>						<p>- calculated that more than 50% of our infrastructure will need early renewal with a likelihood of more than once every 10 years. This could result in financial impacts estimated to be in the order of 100 million NOK.</p>	<p>as flooding to Telenor's networks over the years up to 2018 in 11 countries where we have large operations. The results from this analysis are used proactively in planning of network expansion as well as reactively with regard to protecting existing infrastructure. The risk analysis conducted showed increased exposure to flooding as a consequence to rising sea levels in countries close to sea level such as Bangladesh. Telenor therefore reactively made its existing assets in these countries more flooding resilient wherever possible. For example in Bangladesh, Telenor (Grameenphone) operates 6600 base stations (BS) in the country and where 45 % of these BS being located between 1m and 5m above sea level. Most of the equipment rooms in</p>	<p>climate change related risks to be annually less than 1 million NOK in the years towards 2020.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	in switches, base stations and other site buildings caused by flooding. If critical network infrastructure is damaged by the flooding we will face the risk of interruption of business operations. Likewise, the flooding could also demolish the infrastructure for electricity in Bangladesh. As Telenor is dependent of electricity supply, this could also lead to business interruptions. The financial risk is estimated to be more than 50% of our assets in Bangladesh.							the Base Stations (BS) have been built above the local highest flood level. All the BS sites have batteries with 10 hours capacity as backup, and an additional 37 % have generators with 125 hours of operation with on site fuel stock. All the antenna towers are designed to withstand wind speeds above 118 km/h at maximum loading. With the measures taken we reduced the risk significantly. The residual risk of interruptions to our business activities due to flooding risk over the next 10 years is fairly small.	
Other physical climate drivers	Description of risk: Telenor Nordic operations face risk to infrastructure due to increased frequency of storms and more extreme	Increased capital cost	>6 years	Direct	Unlikely	Low	In Denmark, there is likelihood of more than once every 10 years with damage to transmission towers and	The management method consists in risk identification whereby using the so gained knowledge for improvements in climate resilience and	We estimate total management costs (including monitoring and active engagement)

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>winter weather conditions. Due to climate change, the intensity and frequency of storms and extreme weather conditions is supposed to increase. This directly translates into a higher risk for our network infrastructure and building in the Nordic countries. How the risk is affecting Telenor: In Denmark, there is likelihood of more than once every 10 years with damage to transmission towers and antennas caused by heavy wind and storms due to climate change to 5-30% of Telenor's assets in the country and long-term disruptions of the service delivery. This adds up to increased costs due to damage of infrastructure triggering early</p>						<p>antennas caused by heavy wind and storms due to climate change to 1-5% of Telenor's assets in Denmark and long-term disruptions of the service delivery. This could result in financial impacts estimated to be in the order of 10 million NOK.</p>	<p>for investment decisions. We have conducted a Climate Impact Risk Analysis for countries of Telenor's operations. The aim of this analysis was to identify the risks of climate induced damage such as from severe winter and related winter storms to Telenor's networks over the years up to 2018 in 11 countries where we have large operations. The results from this analysis are used reactively with regard to protecting existing infrastructure. When planning new investments in areas which are exposed to severe winters, the selection process for material applied in the network infrastructure and buildings takes into account a high degree of resilience against severe winters and winter storms. 99% of the base stations (BSs) have battery backup of 4</p>	<p>associated with following up climate change related risks to be annually less than 1 million NOK in the years towards 2020.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	renewal of infrastructure.							hours, while 1% also have generators with 96 hours of operation with on site fuel stock. Further, 99% of the antenna towers can withstand wind speeds up to 100 km/h, while the remaining cannot take more than 75 km/h. All the BSs have alarms connected to the Operational Management Centre. With the measures taken we believe we could reduce the risk by lowering the negative impacts of severe winters in exposed countries significantly. The residual risk of interruptions to our business activities due to severe winter seasons over the next 10 years is very small.	

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	Description of the risk: Telenor faces the risk that our consumers are increasingly aware of the climate change problematic and its negative consequences. Consumers are increasingly expecting companies to actively engage with regards to climate change. This is more of a risk for Telenor's Nordic operations compared to our operations in Central Eastern Europe and especially in Asia. In our Nordic region but also to some degree for the rest of our European operations, customers expect us to be proactive in our work and that we have solutions that can we offer to help them reduce their own carbon footprint. If we as company fails to demonstrate our engagement to fight the negative	Reduced demand for goods/services	>6 years	Direct	About as likely as not	Low	Telenor expects the climate change related consumer awareness will grow in the following years, and there is a risk of reduced demand for services that are not particularly climate friendly. We have estimated these potential financial implications to be less than 1 billion NOK.	To minimise our environmental impact, Telenor business units have undertaken energy-efficiency initiatives, such as network swaps, sourcing of energy efficient technologies, infrastructure sharing, more energy-efficient data centres, energy measures related to buildings and substitution to renewable energy. Furthermore, we are monitoring climate change related consumer trends. Identified trends in consumer changes due to climate change such as smart communication have resulted in the development of new services that enable energy and CO2 savings for their customers, for instance telephone/video conferencing,	We estimate the costs associated with active management of climate change related consumer trends to be annually less than 1 million NOK in the years towards 2020.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>consequences of climate change, consumer could punish our business units by not buying our product any longer and switching to products which are more climate friendly or which are produced by a company that demonstrates a high engagement towards fighting climate change. This could result directly in lower revenues. How this risk is affecting Telenor: The demands of our customers are clearly changing. They expect Telenor not only to provide highly energy efficient services and products but also to help our customers to reduce their own energy consumption and related GHG emissions. If Telenor cannot satisfy these new needs of our customers such as videoconferencing, it</p>							<p>Unified Communications, server virtualization, and more. Finally, we are focusing on external communications and consumer engagement: We are committing ourselves to responsible corporate engagement on climate policy and to aligning our public affairs and sustainability strategies. We are collaborating with industry peers on low carbon commodity sourcing standards to and we are publicly advocating the importance of carbon pricing through policy mechanisms that take into account country-specific conditions. We are also engaging consumers and provide them with products and</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>will result in customers turning to competitors of ours. If Telenor does not have a strategy for energy efficiency, energy savings and if consumer's perception of our ability to reduce energy consumption and related GHG emissions in other sectors of society, this can lead to a negative image of the company; a negative image of Telenor could result in customers to switch to one of our competitors which of course affects our revenues. Additional impacts of failing the needs of our consumers demand for energy efficient products could also lead to government and NGO's questioning our policies and strategies on energy efficiency and carbon emissions. From the government side this</p>							<p>services that continue to push the boundaries of energy efficiency as well as other sustainability advantages.</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	could trigger an increase in both climate change regulations and reporting needs. Increased exposure to NGOs results in higher administrative costs and could eventually result in a reputational risk if one of the NGOs is not satisfied.								

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Page: CC6. Climate Change Opportunities

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other regulatory drivers	The EU has set itself ambitious energy and climate change	New products/business services	3 to 6 years	Direct	Very likely	Low-medium	Telenor has significant competence and	Following methods help us manage these	The cost of management in this case are our

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>objectives for 2020. Smart meters are one of the measures to contribute to achieving these objectives by providing real-time information on energy consumption to end-consumers. It was agreed that EU member countries are required to have smart meters across 80 per cent of their metering infrastructures by 2020. How this opportunity affects Telenor: A fundamental enabler for the Smart Grid is a widely available, secure two-way communications platforms often based on mobile based machine to machine (M2M) connectivity . A range of assets</p>						<p>experience within M2M and Internet-of-Things (IoT), primarily through our global vehicle Telenor Connexion. Our ambition is to strengthen our IoT business, both sustaining a world-leading position within connectivity, and also taking on new exciting vertical industry positions. Telenor Connexion, the dedicated Internet of Things company within Telenor, designs and operates connected</p>	<p>opportunities: Business innovation: Telenor has a global unit that manages Telenor's investments in the digital business space. The unit will seek to build strong positions within a selection of verticals towards 2020, combining these new verticals with the Telenor Group's already existing core services, culture and footprint. We seek opportunities in a selection of digital verticals including Internet-of-Things (IoT). Infrastructure</p>	<p>spendings for innovation and management cost related to developing of industrial partnerships In 2016 Telenor spent NOK 2.8 billion on innovation in new infrastructure, services and processes, of which NOK 0.6 billion were costs related to research and development. Annual management cost for Telenor Group related to relevant industrial partnerships is estimated to around 5 million NOK.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>in the possession of the mobile industry are uniquely suited to providing such platform for the Smart Utilities, including coverage, end-to-end security, experience in managing millions of distributed objects and volumes of data, as well as financial strength and stability of the mobile ecosystem. Telenor is well positioned to take a fair share of these climate change related business opportunities both in EU member countries where we have direct mobile operations, but</p>						<p>business (IoT) solutions or the global market. The company has a strong position internationally within IoT (Telenor is number 8 in the world) and a unique position in Sweden with eight out of ten subscriptions in the market. In 2016, Telenor Group had total revenues more than 1 billion NOK related to network connectivity services (including smart meter services). In 2016, Telenor Group passed 10 million connected</p>	<p>innovation: Telenor also continued to explore and verify solutions for improved customer experience and better efficiency, through joint innovation and strategic collaborations. These included: emerging mobile technologies such as spectrum efficient mechanisms, advanced antenna/coverage, small cell utilisation, flexible high-capacity backhaul, cloud/virtualisation, Internet of Things, and 5G</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	also in non-European countries through industry partnerships. According to reports published by Berg Insight, smart metering has reached a stage of early maturity with mass-rollouts underway in significant parts of Western Europe. Almost one third of the 283 million electricity customers in EU28+2 had a smart meter at the end of 2016, a share that is set to double over the next five years.						devices globally on its IoT platforms.	preparedness.	

CC6.1b

Please describe your inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other physical climate opportunities	Extreme weather patterns as a result from climate change signify a major risk to human lives. Flooding, frequent storms or extreme precipitation patterns can cause major damages to infrastructure and hinder people to live and work as they usually do. The opportunity is to provide services for these situations which allow people to continue with their daily lives even though they cannot use demolished infrastructure such as flooded streets	Increased demand for existing products/services	3 to 6 years	Direct	More likely than not	Low	To deliver on Telenor Group's ambitions of growth and value creation, we will take the position as our customers' favorite partner in digital life. We will be delivering a broad range of relevant, personalized and engaging digital services. These include connectivity and communications services, selected internet services within for example storage and communication, and selected stand-alone digital verticals such as current digital verticals (such as IoT based services and financial Services), and in other new digital verticals. Telenor's	Industry partnerships: Using ICT-based solutions for teleworking, video conferencing and cloud computing could minimize the impact of many types of natural disasters triggered by climate change. For example, Telenor is actively innovating on this front, exploring business opportunities for resilient out of office working environments where business customers' employees can access important documents from any location through cloud-based solutions. Whether the customer's office building is damaged, shut down for the day or for many weeks, employees can still access documents	The cost of management in this case are our spendings for innovation and management cost related to developing of industrial partnerships. In 2016 Telenor spent NOK 2.8 billion on innovation in new infrastructure, services and processes, of which NOK 0.6 billion were costs related to research and development. Annual management cost for Telenor Group related to relevant industrial partnerships is estimated to around 5 million NOK.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>or destroyed production sites. With the increased likelihood of interruptions of business operations due to more frequent and more extreme weather patterns, an increasing number of companies is looking for services that allow their employees to work independently. This leads to an increase in the demand for alternative ICT solutions to support efficient travel and commuting traffic. Telenor is well positioned to offer ICT services that allow people to work from</p>						<p>ambition is to take a clear market position in exploring how new technology trends can impact our industry and to develop business opportunities related to smart working and smart living. Telenor revenues from these business opportunities are currently around 1 billion NOK, but it is expected that these revenues will increase in the coming years.</p>	<p>to keep serving their own clients. Research and innovation collaboration: We create new business opportunities such as mobile financial services and the Internet of Things. Telenor is also exploring new technology trends to predict the impact they can have on the industry, business and the way customers consume the services. Further, Telenor is also exploring how new ecosystems are being established in the telecommunication industry. Telenor's research assesses how technology may drive changes within these ecosystems.</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	anywhere which makes them less dependent from climate catastrophes.								

CC6.1c

Please describe your inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Changing consumer behavior	Description of Opportunity: Both consumers and business customers have increased expectations to companies to operate in a sustainable way. This is more of a business opportunity for Telenor's Nordic operations compared to our operations in	New products/business services	3 to 6 years	Direct	Likely	Low	Telenor has significant competence and experience within M2M and Internet-of-Things (IoT), primarily through our global vehicle Telenor Connexion. Our ambition is to strengthen our IoT business, both sustaining a	Following methods help us manage these opportunities: Business innovation: Telenor has a global unit that manages Telenor's investments in the digital business space. The unit will seek to build strong positions within a	The cost of management in this case are our spendings for innovation and management cost related to developing of industrial partnerships In 2016 Telenor spent NOK 2.8 billion on innovation in new infrastructure,

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Central Eastern Europe and especially in Asia. In our Nordic region but also to some degree for the rest of our European operations, customers expect us to be proactive in our work and that we have solutions that can we offer to help them to reduce their own energy consumption and related GHG emissions How this opportunity affects Telenor: Telenor offers products and services that meet the needs of the changing consumer behavior due to climate change. Telenor offers both, energy-efficient services and services that allow our customers to reduce their</p>						<p>world-leading position within connectivity, and also taking on new exciting vertical industry positions. Telenor Connexion, the dedicated Internet of Things company within Telenor, designs and operates connected business (IoT) solutions or the global market. The company has a strong position internationally within IoT (Telenor is number 8 in the world) and a unique position in Sweden with eight out of ten subscriptions in the market. In 2016, Telenor Group had total revenues more than 1 billion</p>	<p>selection of verticals towards 2020, combining these new verticals with the Telenor Group's already existing core services, culture and footprint. We seek opportunities in a selection of digital verticals including Internet-of-Things (IoT). Infrastructure innovation: Telenor also continued to explore and verify solutions for improved customer experience and better efficiency, through joint innovation and strategic collaborations. These included: emerging mobile technologies such as spectrum efficient</p>	<p>services and processes, of which NOK 0.6 billion were costs related to research and development. Annual management cost for Telenor Group related to relevant industrial partnerships is estimated to around 5 million NOK.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>energy consumption and related GHG emissions such as smart meeting, smart working and smart computing. By offering these services we can satisfy the need of consumers that are aware of climate change. Therefore, we can possibly win new clients and make sure the existing client base is satisfied. The SMARTer 2030 report (the study supported by Telenor) has recently been launched with a key message that the ICT industry towards year 2030 could abate almost 20% of the global carbon emissions and with a factor close to ten times our industry's own direct emissions.</p>						<p>NOK related to network connectivity services (including smart meter services). In 2016, Telenor Group passed 10 million connected devices globally on its IoT platforms.</p>	<p>mechanisms, advanced antenna/ coverage, small cell utilisation, flexible high-capacity backhaul, cloud/virtualisation, Internet of Things, and 5G preparedness.</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>In SMARTer 2030 report we argue that the scene is set for ICT to be deployed to fully decouple economic growth from carbon intensity and resource use by 2030 and to deliver genuinely sustainable development in a range of sectors and countries across the world. The SMARTer 2030 report has shown that ICT can decouple economic growth from carbon intensity, but the evidence of the past underlines the need for a strong global target regime to keep emissions in check, to incentivize the decarbonization of economic growth and to provide certainty to investors.</p>								

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Tue 01 Jan 2008 - Wed 31 Dec 2008	160000
Scope 2 (location-based)	Tue 01 Jan 2008 - Wed 31 Dec 2008	572000
Scope 2 (market-based)	Tue 01 Jan 2008 - Wed 31 Dec 2008	572000

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use

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

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Fifth Assessment Report (AR5 - 100 year)

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Electricity	582	kg CO2 per MWh	Bangladesh national grid - location based - IEA 2016
Electricity	519	kg CO2 per MWh	Bulgaria national grid - location based - IEA 2016
Electricity	511	kg CO2 per MWh	Bulgaria national grid - market based - IEA 2016
Electricity	271	kg CO2 per MWh	Denmark national grid - location based - IEA 2016
Electricity	538	kg CO2 per MWh	Denmark national grid - market based -
Electricity	297	kg CO2 per MWh	Hungary national grid - location based - IEA

Fuel/Material/Energy	Emission Factor	Unit	Reference
			2016
Electricity	371	kg CO2 per MWh	Hungary national grid - market based -
Electricity	805	kg CO2 per MWh	India national grid - location based - IEA 2016
Electricity	472	kg CO2 per MWh	Montenegro national grid - location based - IEA 2016
Electricity	237	kg CO2 per MWh	Myanmar national grid - location based - IEA 2016
Electricity	680	kg CO2 per MWh	Malaysia national grid - location based - IEA 2016
Electricity	8	kg CO2 per MWh	Norway national grid - location based - IEA 2016
Electricity	497	kg CO2 per MWh	Norway national grid - market based -
Electricity	421	kg CO2 per MWh	Pakistan national grid - location based - IEA 2016
Electricity	742	kg CO2 per MWh	Serbia national grid - location based - IEA 2016
Electricity	12	kg CO2 per MWh	Sweden national grid - location based - IEA 2016
Electricity	39	kg CO2 per MWh	Sweden national grid - market based -
Electricity	522	kg CO2 per MWh	Thailand national grid - location based - IEA 2016
Liquefied petroleum gas (LPG)	1.5909	kg CO2 per liter	Defra
Natural gas	0.00203	kg CO2e per liter	Defra
Diesel/Gas oil	2.5839	kg CO2 per liter	Defra
Motor gasoline	2.1944	kg CO2 per liter	Defra
Biodiesels	1.43	kg CO2 per liter	Malaysia
Biogasoline	2.15		Thailand

Further Information

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Financial control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO₂e

378231

CC8.3

Please describe your approach to reporting Scope 2 emissions

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure	We are reporting a Scope 2, market-based figure	

CC8.3a

Please provide your gross global Scope 2 emissions figures in metric tonnes CO₂e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
952338	1161833	

CC8.4

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?

No

CC8.4a

Please 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	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 5% but less than or equal to 10%	Assumptions Metering/ Measurement Constraints Data Management	Use of data sources / data quality / calculation methods for basic input data (diesel consumption / fuel consumption etc) are the main sources of uncertainties.
Scope 2 (location-based)	More than 5% but less than or equal to 10%	Assumptions Metering/ Measurement Constraints Data Management	High number of data sources with variable data quality (electricity consumption) is the main source of uncertainty. Also uncertainties related to some country based emission factors.
Scope 2 (market-based)	More than 5% but less than or equal to 10%	Assumptions Metering/ Measurement Constraints Data Management	High number of data sources with variable data quality (electricity consumption) is the main source of uncertainty. Also uncertainties related to some country based emission factors.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC8.6a/CDP-Telenor_verification statement_20170620_DNVGL_signed.pdf		ISO14064-3	100

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC8.7a/CDP-Telenor_verification statement_20170620_DNVGL_signed.pdf		ISO14064-3	100
Market-based	Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC8.7a/CDP-Telenor_verification statement_20170620_DNVGL_signed.pdf		ISO14064-3	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year change in emissions (Scope 3)	The scope 3 emissions include "Upstream transportation and distribution", "Business travel" and "End of life treatment of sold products".

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

Page: CC9. Scope 1 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)

CC9.1

Do you have Scope 1 emissions sources in more than one country?

Yes

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e
Norway	8340
Denmark	810
Sweden	357
Hungary	1542
Serbia	1912

Country/Region	Scope 1 metric tonnes CO2e
Montenegro	289
Bulgaria	1966
Thailand	10482
Malaysia	25604
Bangladesh	28639
Pakistan	62779
India	145095
Myanmar	90416

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By activity

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude
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CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
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CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
Networks	326042
Buildings	13738
Transport	38451

Further Information

CC10.1

Do you have Scope 2 emissions sources in more than one country?

Yes

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes 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)
Norway	5035	193997	408200	290
Denmark	15325	30117	58080	0
Sweden	627	1548	146110	109100
Hungary	21178	26441	71410	0
Serbia	37587	37587	50850	0
Montenegro	4611	4611	9770	0
Bulgaria	28885	28442	56150	30
Thailand	254061	254061	479485	60
Malaysia	113614	113614	167600	520
Bangladesh	143091	143091	251980	6110
Pakistan	112618	112618	280360	12860
India	201862	201862	253610	0
Myanmar	13844	13844	58410	0

CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By activity

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

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

CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)

CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)		Scope 2, market-based (metric tonnes CO2e)
Networks	921912		1109922
Buildings	30426		51911

Further Information

Page: CC11. Energy

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

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

CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Heat	14570
Steam	0
Cooling	4850

CC11.3

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

1715370

CC11.3a

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Diesel/Gas oil	1451273
Natural gas	76127
Motor gasoline	92652
Aviation gasoline	87820
Biogasoline	3424
Biodiesels	4073

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
Energy attribute certificates, Guarantees of Origin	109100	0	Certified electricity purchased from Affärsverken in Sweden

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company	30	0	Company-owned solar-based electricity production in Bulgaria
Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company	60	0	Company-owned solar-based electricity production in Thailand
Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company	520	0	Company-owned solar-based electricity production in Malaysia
Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company	6110	0	Company-owned solar-based electricity production in Bangladesh
Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company	12860	0	Company-owned solar-based electricity production in Pakistan
Off-grid energy consumption from an on-site installation or through a direct line to an off-site generator owned by another company	290	0	Company-owned solar-based electricity production in Norway

CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
3638498	2163025	1366303	19800	19800	

Further Information

Page: **CC12. Emissions Performance**

CC12.1

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

Increased

CC12.1a

Please 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

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities	1	Decrease	A reduction of 13,000 tonnes of CO2 is the result of main emission reduction activities that includes purchase of 109.1 GWh low carbon electricity in Sweden, 6.1 GWh of solar-based onsite energy production in Bangladesh and similar 12.9 GWh in Pakistan and as well as 0.5 GWh in Malaysia. By year-end 2016, Telenor Pakistan had installed solar energy solutions for more than 550 of its base stations and is planning for an additional 200 sites in 2017. Grameenphone has more than 1,100 solar powered base stations in place, and similarly Digi has more than 70 base stations powered by solar solutions.

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Divestment			
Acquisitions	6	Increase	Telenor Myanmar had its second full year of operations in 2016 and still is heavily rolling out new infrastructure across the country (adding 3,000 new base stations to a total of 7,200 base stations at year-end). The resulted in an increase in its carbon footprint of 61,000 tonnes of CO ₂ (139% increase from 2015).
Mergers			
Change in output	12	Increase	In 2016, the total data traffic volume in Telenor's mobile network was 1389 petabyte - an increase of 72 per cent from 2015. In 2016, Telenor's total energy consumption was approximately 4000 GWh - an increase in energy consumption of around 20 per cent from 2015 mainly due to this dramatic increase in data traffic. Main contributing countries to the increased datatraffic; Thailand (up 72%), Malaysia (up 102%), Bangladesh (up 168%) and Pakistan (up 116%) resulting in a total increase of associated emissions of greenhouse gases in 2016 of approximately 135,000 tonnes CO ₂ .
Change in methodology			
Change in boundary			
Change in physical operating conditions			
Unidentified			
Other			

CC12.1b

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.00001	metric tonnes CO2e	131400000000	Location-based	17.3	Increase	The intensity figure for emissions per total revenue increased with 17.3 % from 2015 to 2016 due to the combined fact that total revenues increased by 2.5 % (from 128.2 billion NOK in 2015 to 131.4 billion NOK in 2016) as well as the Scope 1 and 2 emissions increased by 20.2 % from 1.107 million tonnes CO2 in 2015 to 1.331 million tonnes CO2 in 2016 due to the combined reasons given in the table in Question 12.1.a.

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
36.0	metric tonnes CO2e	full time equivalent (FTE)	37000	Location-based	23.4	Increase	The intensity figure for emissions per full time equivalent employee increased by 23.4 % from 2015 to 2016 due to the combined fact that the number of

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
		employee					FTEs decreased by 2.6% (from 38,000 FTE in 2015 to 37,000 FTE in 2016) as well as the Scope 1 and 2 emissions increased by 20.2% % from 1.107 million tonnes CO2 in 2014 to 1.331 million tonnes CO2 in 2015 due to the combined reasons given in the table in Question 12.1.a.
6.220	metric tonnes CO2e	Other: Customer	214000000	Location-based	14.0	Increase	The intensity figure for emissions per customer increased with 14.0% from 2015 to 2016 due to the combined fact that the number of customers increased by 5.4% from 203 million in 2015 to 214 million in 2016 as well as the Scope 1 and 2 emissions increased by 20.2 % from 1.107 million tonnes CO2 in 2015 to 1.331 million tonnes CO2 in 2016 due to the combined reasons given in the table in Question 12.1.a. Our CO2 emissions per end customer have over the last four years dropped by approximately 27 %.

Further Information

Page: CC13. Emissions Trading

CC13.1

Do you participate in any emissions trading schemes?

No, and we do not currently anticipate doing so in the next 2 years

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

No

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance

Further Information

CC14.1

Please account for your organization’s Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, not yet calculated				
Capital goods	Relevant, not yet calculated				
Fuel-and-energy-related activities (not included in Scope 1 or 2)	Relevant, not yet calculated				
Upstream transportation and distribution	Relevant, calculated	15210	Road transportation; mainly involving vehicles used for maintenance and support services. Fuel-based method; which involves fuels consumed by these vehicles owned or long-term leased by Telenor and applying the appropriate fuel emission factors for the different kinds of fuel used; motor gasoline, diesel, LPG etc.		
Waste generated in operations	Relevant, not yet calculated				
Business travel	Relevant, calculated	15131	Scope: Only business flights were accounted for. Methodology: Distance-based-method, using the following conversion factors for CO2 emissions: 0.12 kg CO2e per passenger kilometer.		

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Employee commuting	Relevant, not yet calculated				
Upstream leased assets	Not relevant, explanation provided				Any upstream leased assets are already included in our scope 1 or scope 2 inventory.
Downstream transportation and distribution	Not relevant, explanation provided				It does not contribute significantly to Telenor's anticipated scope 3 emissions, since Telenor in general has limited transportation of sold products to retailers and end consumers.
Processing of sold products	Not relevant, explanation provided				It does not contribute significantly to Telenor's anticipated scope 3 emissions, since Telenor in general has limited processing of sold intermediate products by manufacturers subsequent to sale.
Use of sold products	Relevant, not yet calculated				
End of life treatment of sold products	Relevant, calculated	300	The figure does not represent the entire scope of all our sold products yet. In 2016, 300,000 customer mobile phones and batteries were collected by Telenor for recycling or reuse. Calculation methodology: Using conversion factor of 1 kg CO2e per mobile phone/battery for scope 3 emissions related to "End of life treatment".		
Downstream leased assets	Not relevant, explanation provided				It does not contribute significantly to Telenor's anticipated scope 3 emissions, since Telenor in general has limited operation of assets that

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					are leased to other business entities
Franchises	Not relevant, explanation provided				Any franchise is included in a our scope 1 or scope 2 Inventory.
Investments	Not relevant, explanation provided				It does not contribute significantly to Telenor's anticipated scope 3 emissions since equity investments in subsidiaries (more than 50 percent ownership) are included in Telenor's scope 1 or scope 2 inventory.
Other (upstream)					
Other (downstream)					

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance process in place

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Complete	Limited assurance	https://www.cdp.net/sites/2017/35/18435/Climate Change 2017/Shared Documents/Attachments/CC14.2a/CDP-Telenor_verification statement_20170620_DNVGL_signed.pdf		ISO14064-3	100

CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Upstream transportation & distribution	Change in boundary	55	Increase	Increase mainly due to more complete reporting from our operations in Thailand.
Business travel	Emissions reduction	8	Decrease	In 2016, more than 176,000 meetings were carried out in Telenor's global organisation using video conferencing and virtual meeting solutions instead of actual business travel.

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
	activities			
End-of-life treatment of sold products	Change in output	73	Decrease	The calculated emissions only include GHG emissions in relation to the mobile phones recollected via our initiative. The figure does not represent the entire scope of all our sold products yet. Telenor has ongoing mobile recycling initiatives running in nine of 12 mobile operations; Telenor Hungary, Telenor Serbia, Telenor Montenegro, Globul in Bulgaria, DiGi in Malaysia, dtac in Thailand, Telenor Sweden, Telenor Denmark and Telenor Norway. In 2016, Telenor recycled close to 300,000 mobile handsets/batteries compared to 1,108,000 mobile handsets/batteries in 2015.

CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

Yes, our suppliers

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
Collaboration/innovation	100	60%	Our sourcing processes uses sustainability criteria to reduce our supply chain carbon footprint through selection of suppliers with more energy efficient products. During 2016, in 214 of 282 signed contracts with contract value larger than 1.5 million NOK (250,000 USD) a specified set of sustainability criteria have been used during the sourcing process. This scale of engagement involves roughly 100 of our suppliers and reflects about 60 % of our total spend. Our sustainability criteria checklist (with a main focus on energy efficiency) requests the sourcing team to consider involving local environment experts in the procurement process as well as to check out possible suppliers for issues relating to their sustainability, such as their environmental management system, energy efficiency, waste management and hazardous substances.

CC14.4c

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Sigve Brekke	President and Chief Executive Officer (CEO)	Chief Executive Officer (CEO)

Further Information

Module: ICT

Page: ICT1. Data center activities

ICT0.1a

Please identify whether "data centers" comprise a significant component of your business within your reporting boundary

ICT1.1

Please provide a description of the parts of your business that fall under "data centers"

ICT1.2

Please provide your absolute Scope 1 and 2 emissions and electricity consumption for the data centers component of your business

Business activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)	Annual electricity consumption (MWh)	Electricity data collection method	Comment
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ICT1.3

What percentage of your ICT population sits in data centers where Power Usage Effectiveness (PUE) is measured on a regular basis?

Percentage	Comment
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ICT1.4

Please provide a Power Usage Effectiveness (PUE) value for your data center(s). You can provide this information as (a) an average, (b) a range or (c) by individual data center - please tick the data you wish to provide (tick all that apply)

ICT1.4a

Please provide your average PUE across your data centers

Number of data centers	Average PUE	% change from previous year	Direction of change	Comment
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ICT1.4b

Please provide the range of PUE values across your data centers

Number of data centers	PUE Minimum Value	% change of PUE Minimum Value from previous year	PUE Maximum Value	% change of PUE Maximum Value from previous year	Direction of change	Comment
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ICT1.4c

Please provide your PUE values of all your data centers

Data center reference	PUE value	% change from previous year	Direction of change	Comment
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ICT1.5

Please provide details of how you have calculated your PUE value

ICT1.6

Do you use any alternative intensity metrics to assess the energy or emissions performance of your data center(s)?

ICT1.6a

Please provide details on the alternative intensity metrics you use to assess the energy or the emissions performance of your data center(s)

ICT1.7

Please identify the measures you are planning or have undertaken in the reporting year to increase the energy efficiency of your data center(s)

Status in reporting year	Energy efficiency measure	Comment
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ICT1.8

Do you participate in any other data center efficiency schemes or have buildings that are sustainably certified or rated?

ICT1.8a

Please provide details on the data center efficiency schemes you participate in or the buildings that are sustainably certified or rated

Scheme name	Level/certification (or equivalent) achieved in the reporting year	Percentage of your overall facilities to which the scheme applies
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ICT1.9

Do you measure the utilization rate of your data center(s)?

ICT1.9a

What methodology do you use to calculate the utilization rate of your data center(s)?

ICT1.10

Do you provide carbon emissions data to your clients regarding the data center services they procure?

ICT1.10a

How do you provide carbon emissions data to your clients regarding the data center services they procure?

ICT1.11

Please describe any efforts you have made to incorporate renewable energy into the electricity supply to your data center(s) or to re-use waste heat

Further Information

Page: ICT2. Provision of network/connectivity services

ICT0.1b

Please identify whether "provision of network/connectivity services" comprises a significant component of your business within your reporting boundary

ICT2.1

Please provide a description of the parts of your business that fall under "provision of network/connectivity services"

ICT2.2

Please provide your absolute Scope 1 and 2 emissions and electricity consumption for the provision of network/connectivity services component of your business

Business activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)	Annual electricity consumption (MWh)	Electricity data collection method	Comment
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ICT2.3

Please describe your gross combined Scope 1 and 2 emissions or electricity use for the provision of network/connectivity services component of your business as an intensity metric

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change	Comment
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ICT2.4

Please explain how you calculated the intensity figures given in response to Question ICT2.3

ICT2.5

Do you provide carbon emissions data to your clients regarding the network/connectivity services they procure?

ICT2.5a

How do you provide carbon emissions data to your clients regarding the network/connectivity services they procure?

Further Information

Page: ICT3. Manufacture or assembly of hardware/components

ICT0.1c

Please identify whether "manufacture or assembly of hardware/components" comprises a significant part of your business within your reporting boundary

ICT3.1

Please provide a description of the parts of your business that fall under "manufacture or assembly of hardware/components"

ICT3.2

Please provide your absolute Scope 1 and 2 emissions and electricity consumption for the manufacture or assembly of hardware/components part of your business

Business activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)	Annual electricity consumption (MWh)	Electricity data collection method	Comment
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ICT3.3

Please identify the percentage of your products meeting recognized energy efficiency standards/specifications by sales weighted volume (full product range)

Product type	Standard (sleep mode)	Percentage of products meeting the standard by sales volume (sleep mode)	Standard (standby mode)	Percentage of products meeting the standard by sales volume (standby mode)	Standard (in use mode)	Percentage of products meeting the standard by sales volume (in use mode)	Comment
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ICT3.4

Of the new products released in the reporting year, please identify the percentage (as a percentage of all new products in that product type category) that meet recognized energy efficiency standards/specifications

Product type	Standard (sleep mode)	Percentage of new products meeting the standard (sleep mode)	Standard (standby mode)	Percentage of new products meeting the standard (standby mode)	Standard (in use mode)	Percentage of new products meeting the standard (in use mode)	Comment
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ICT3.5

Please describe the efforts your organization has made to improve the energy efficiency of your products

ICT3.6

Please describe the GHG emissions abatement measures you have employed specifically in your ICT manufacturing operations

ICT3.7

Do you provide carbon emissions data to your clients regarding the hardware/component products they procure?

ICT3.7a

How do you provide carbon emissions data to your clients regarding the hardware/component products they procure?

Further Information

Page: ICT4. Manufacture of software

ICT0.1d

Please identify whether "manufacture of software" comprises a significant component of your business within your reporting boundary

ICT4.1

Please provide a description of the parts of your business that fall under "manufacture of software"

ICT4.2

Please provide your absolute Scope 1 and 2 emissions and electricity consumption for the software manufacture component of your business

Business activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)	Annual electricity consumption (MWh)	Electricity data collection method	Comment
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ICT4.3

Please describe your gross combined Scope 1 and 2 emissions for the software manufacture component of your business in metric tonnes CO2e per unit of production

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change	Comment
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ICT4.4

What percentage of your software sales (by volume) is in an electronic format?

ICT4.5

Do you provide carbon emissions data to your clients regarding the software products they procure?

ICT4.5a

How do you provide carbon emissions data to your clients regarding the software products they procure?

Further Information

Page: ICT5. Business services (office based activities)

ICT0.1e

Please identify whether "business services (office based activities)" comprise a significant component of your business within your reporting boundary

ICT5.1

Please provide a description of the parts of your business that fall under "business services (office based activities)"

ICT5.2

Please provide your absolute Scope 1 and 2 emissions and electricity consumption for the business services (office based activities) component of your business

Business activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)	Annual electricity consumption (MWh)	Electricity data collection method	Comment
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ICT5.3

Please describe your gross combined Scope 1 and 2 emissions for the business services (office based activities) component of your business in metric tonnes per square meter

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change	Comment
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ICT5.4

Please describe your electricity use for the provision of business services (office based activities) component of your business in MWh per square meter

Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change	Comment
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Further Information

Page: ICT6. Other activities

ICT0.1f

Please identify whether "other activities" comprise a significant component of your business within your reporting boundary

ICT6.1

Please provide a description of the parts of your business that fall under "other"

ICT6.2

Please provide your absolute Scope 1 and 2 emissions and electricity consumption for the identified other activity component of your business

Activity	Scope 1 emissions (metric tonnes CO2e)	Scope 2 emissions (metric tonnes CO2e)	Annual electricity consumption (MWh)	Electricity data collection method	Comment
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ICT6.3

Please describe your gross combined Scope 1 and 2 emissions for your defined additional activity using an appropriate activity based intensity metric

Activity	Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change	Comment
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ICT6.4

If appropriate, please describe your electricity use for your defined additional activity using an appropriate activity based intensity metric

Activity	Intensity figure	Metric numerator	Metric denominator	% change from previous year	Direction of change from previous year	Reason for change	Comment
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Further Information

CDP 2017 Climate Change 2017 Information Request