



SCIENCE  
BASED  
TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

# Science-based target setting for the ICT sector

Consultation webinar

16 January 2020



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## Before we start

- **Thank you for joining**
  - Please make sure you are **connected to audio** by using Zoom controls or the dial-in numbers.
  - Please **mute your microphones** during the presentation.
  - **There will be a Q&A session.** Throughout the webinar participants are invited to send **questions via the chat window.**
  - Presenters will try and address most questions during **Q&A time slot.** A summary of all questions and responses will be shared after the webinar.
  - **A recording of this webinar and materials will be shared** with all participants.

# Science-based target setting for the ICT sector

This is a collaborative development by:



**International  
Telecommunication Union**

ITU is the United Nations specialized agency for information and communication technologies



**GSMA**

The GSMA represents the interests of mobile operators worldwide, representing more than 750 operators



**Global Enabling Sustainability  
Initiative**

GeSI provides information and resources for social and environmental sustainability through digital technologies

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# Agenda

1. Introduction
2. Development of GHG emissions trajectories
3. Applying trajectory to set a company SBT
4. Consultation process

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## 1. Introduction

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# The Science Based Targets initiative | Who we are

The Science Based Targets initiative (SBTi) mobilizes companies to set science-based targets and boost their competitive advantage in the transition to the low-carbon economy.



DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

[www.sciencebasedtargets.org](http://www.sciencebasedtargets.org)

PARTNER ORGANIZATIONS



WORLD  
RESOURCES  
INSTITUTE

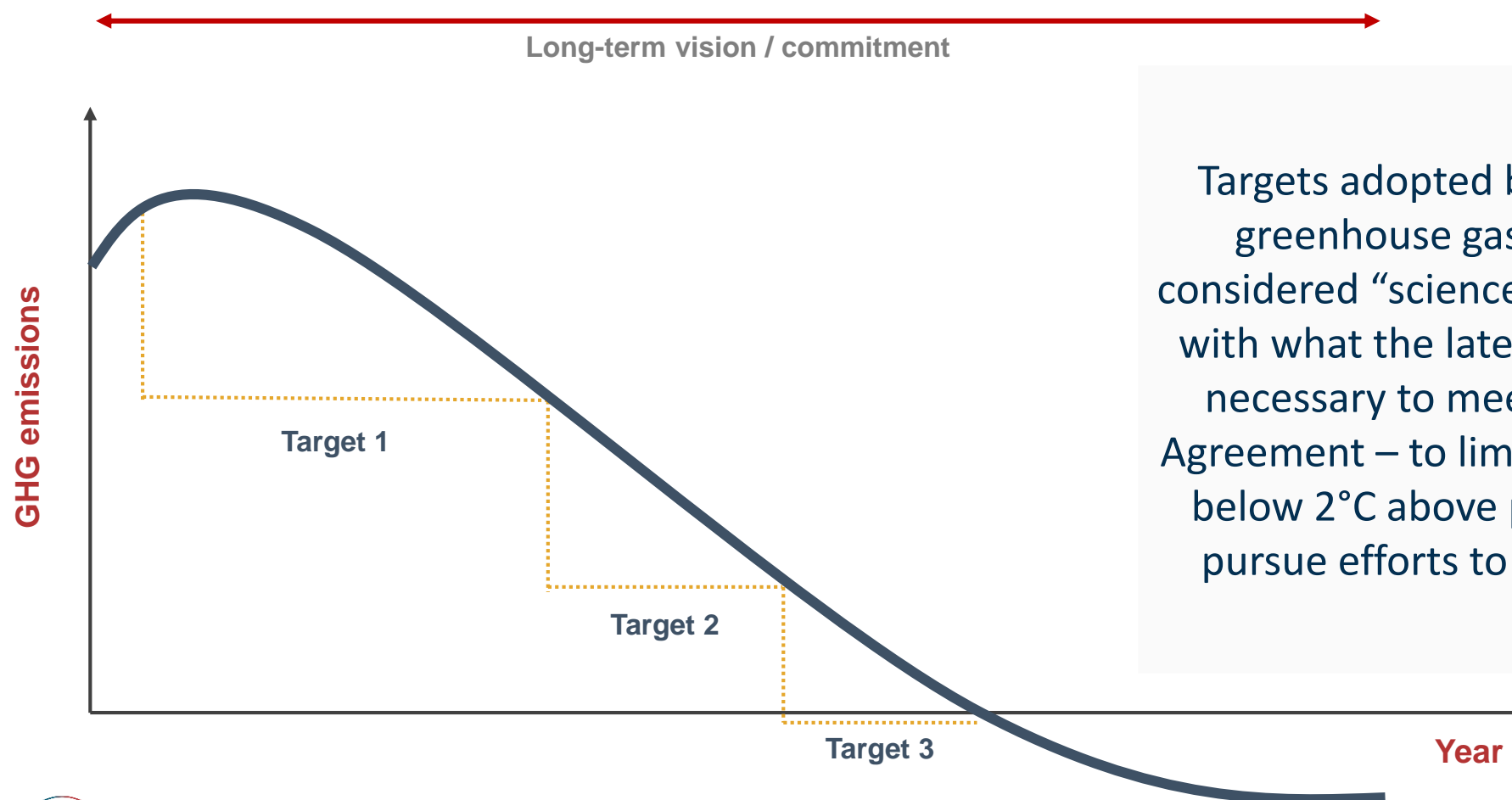


IN COLLABORATION WITH

**WE MEAN  
BUSINESS**



# What is a science based target?



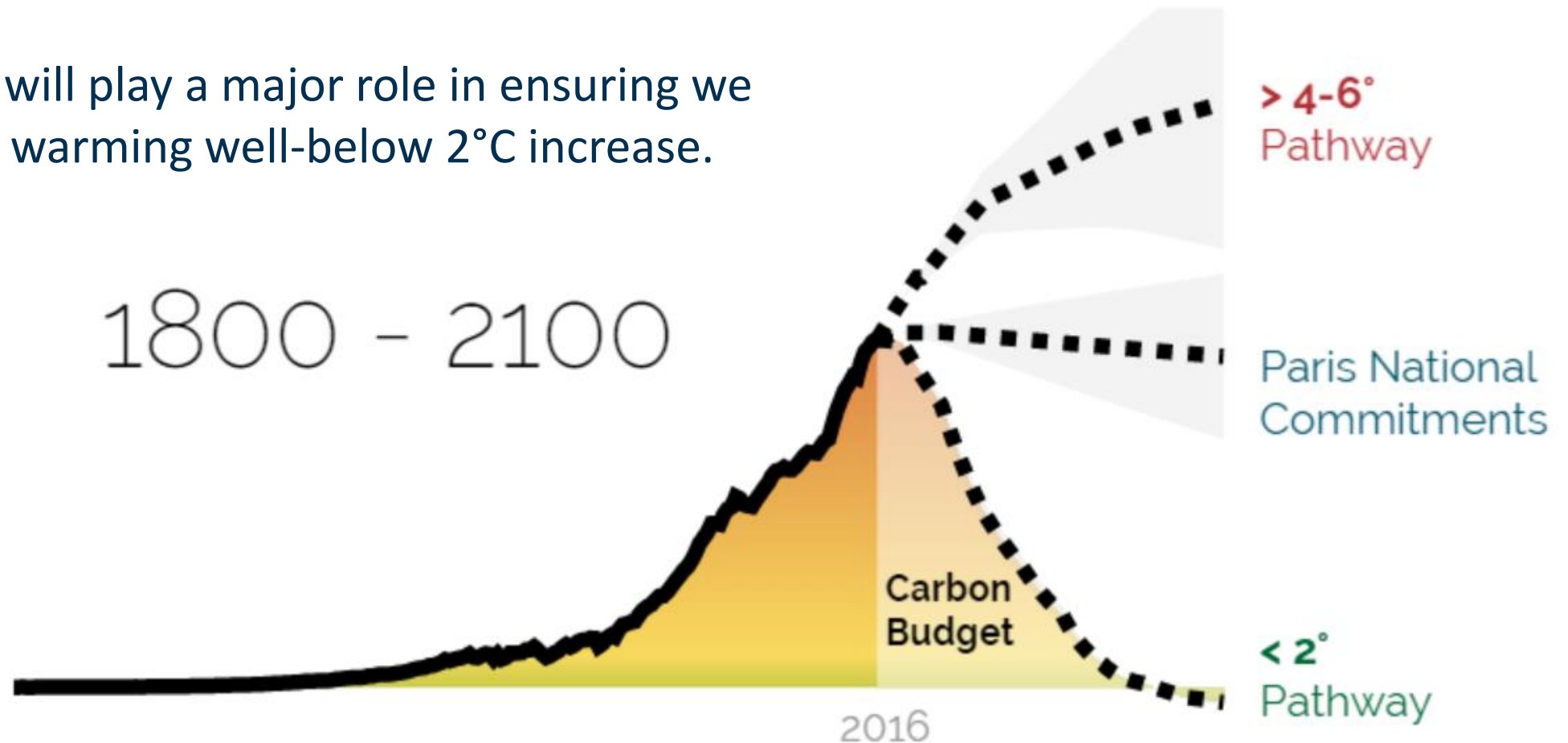
Targets adopted by companies to reduce greenhouse gas (GHG) emissions are considered “science-based” if they are in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement – to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.



## The Science Based Targets initiative | Vision and mission

Science-based GHG emission reduction target setting  
will become standard business practice.

Corporations will play a major role in ensuring we  
keep global warming well-below 2°C increase.



# The rise of science based targets

Since officially launching in June, 2015, up to January 9, 2020

762

**Companies have  
formally committed to set  
science-based targets**

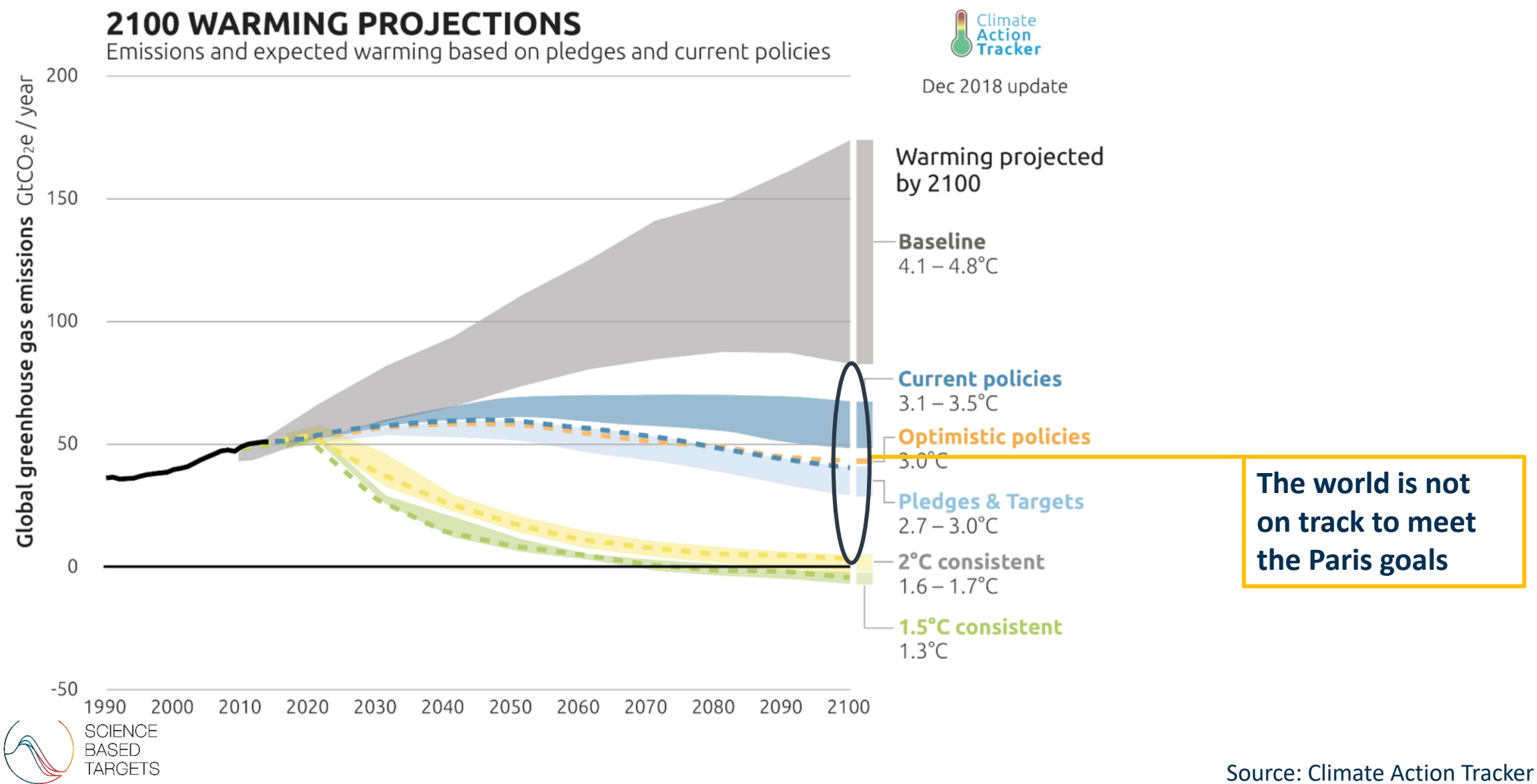
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**Companies with  
approved targets**

~4

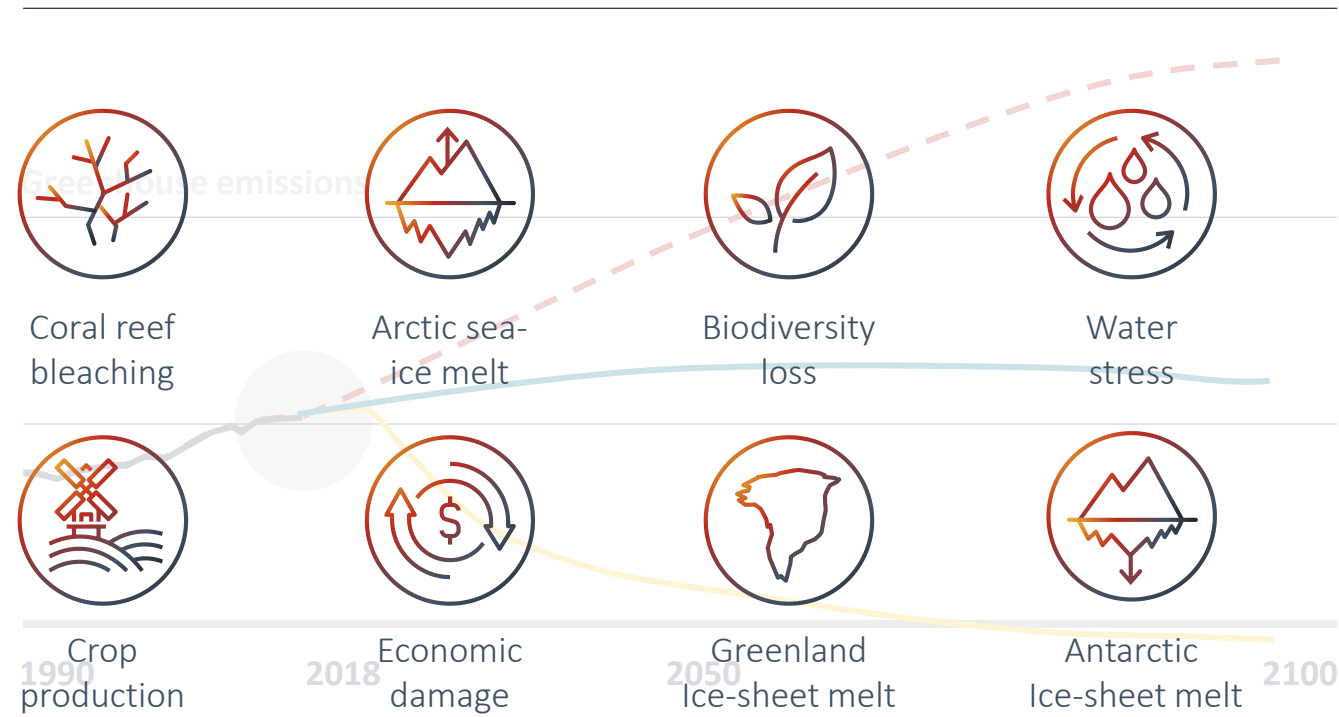
**Companies joining  
the Call to Action  
every week**

# The need for science-based targets

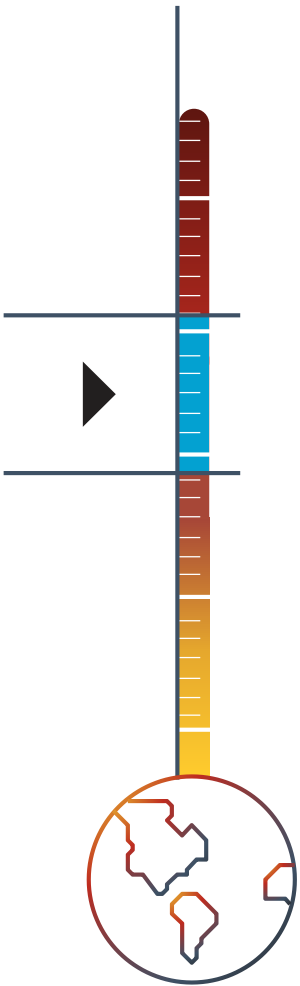


# Half a degree of warming makes a big difference

Every half a degree matters:



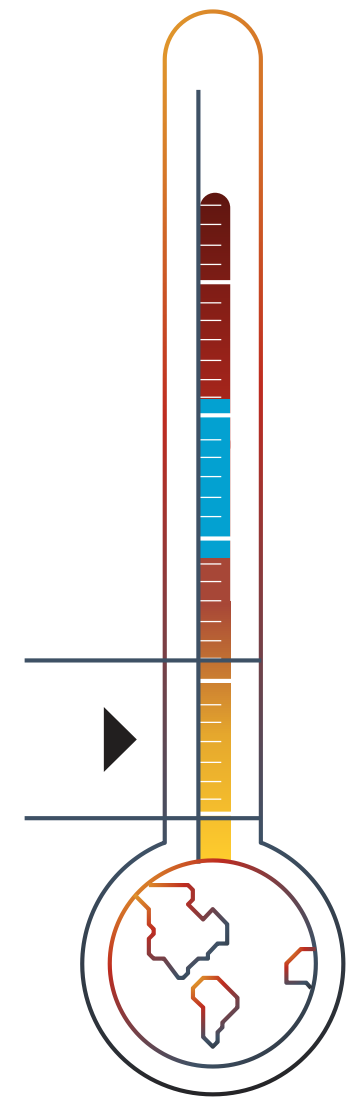
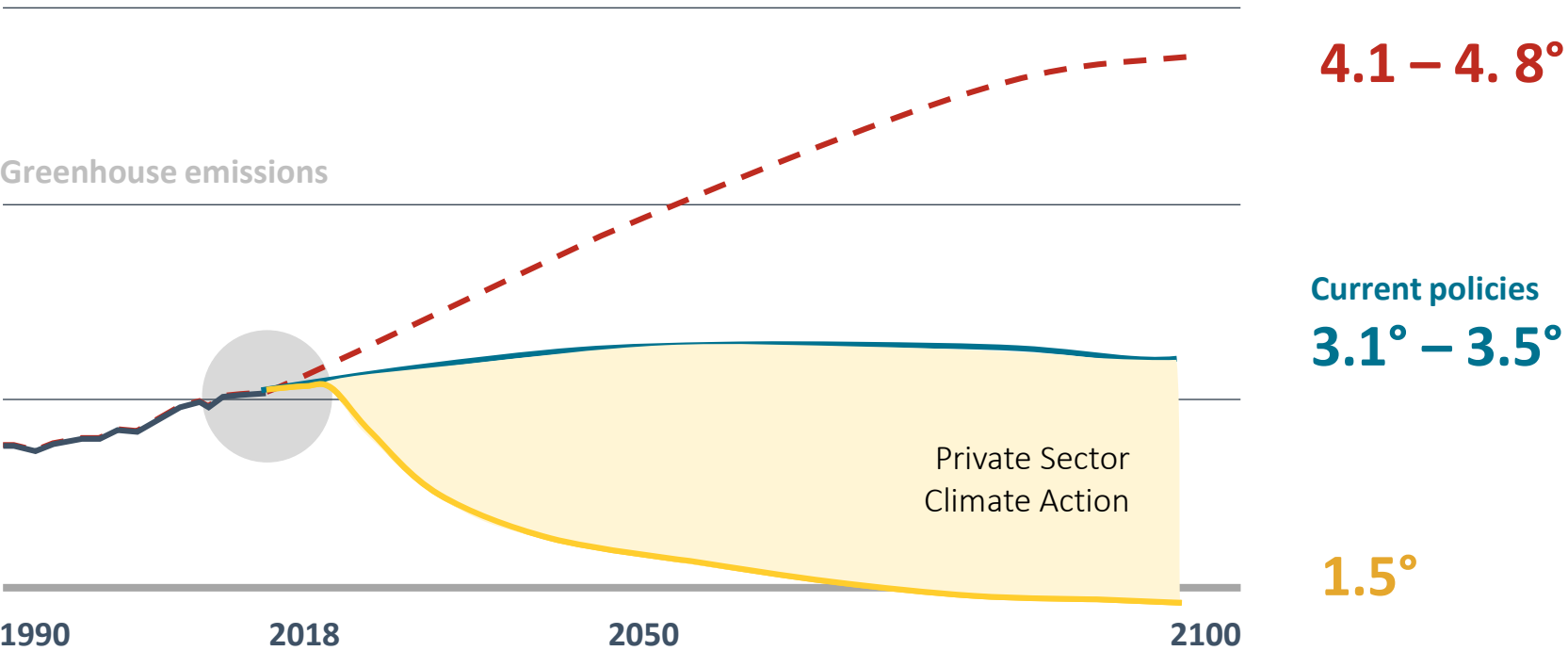
Current policies  
**3.1° – 3.5°**





# Half a degree of warming makes a big difference

## Warming predictions

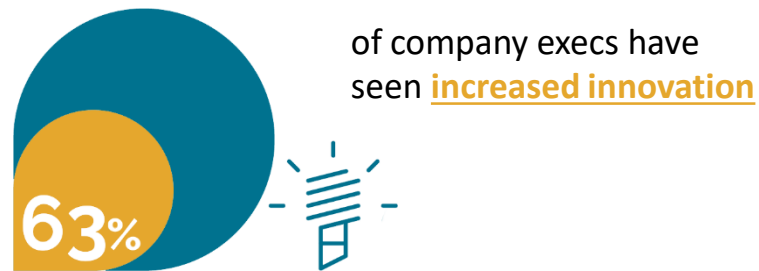


# Companies are seizing the opportunity to take ambitious climate action



“This is about how we want to be seen as a company, about what it means to be a responsible corporate citizen; it is also what our customers expect from us. By setting science-based targets we are ensuring our own sustainability, as well as supporting the needs of businesses in the future. Our customers need to know we have their back and can help them reduce energy use in the long term.”

- John Pflueger, Dell’s Principal Environmental Strategist



## Getting started with SBTs – Our Call to Action process

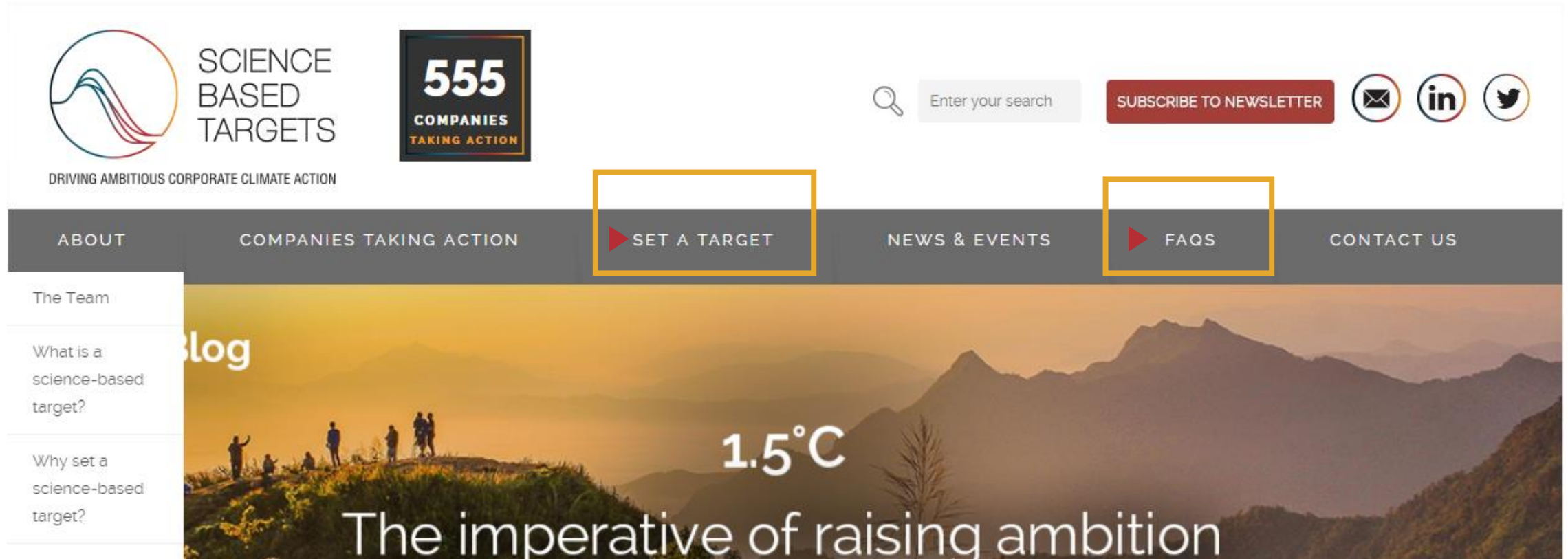


**SBTi Call to Action Guidelines**

<https://sciencebasedtargets.org/resources/>

## Explore our website to learn more

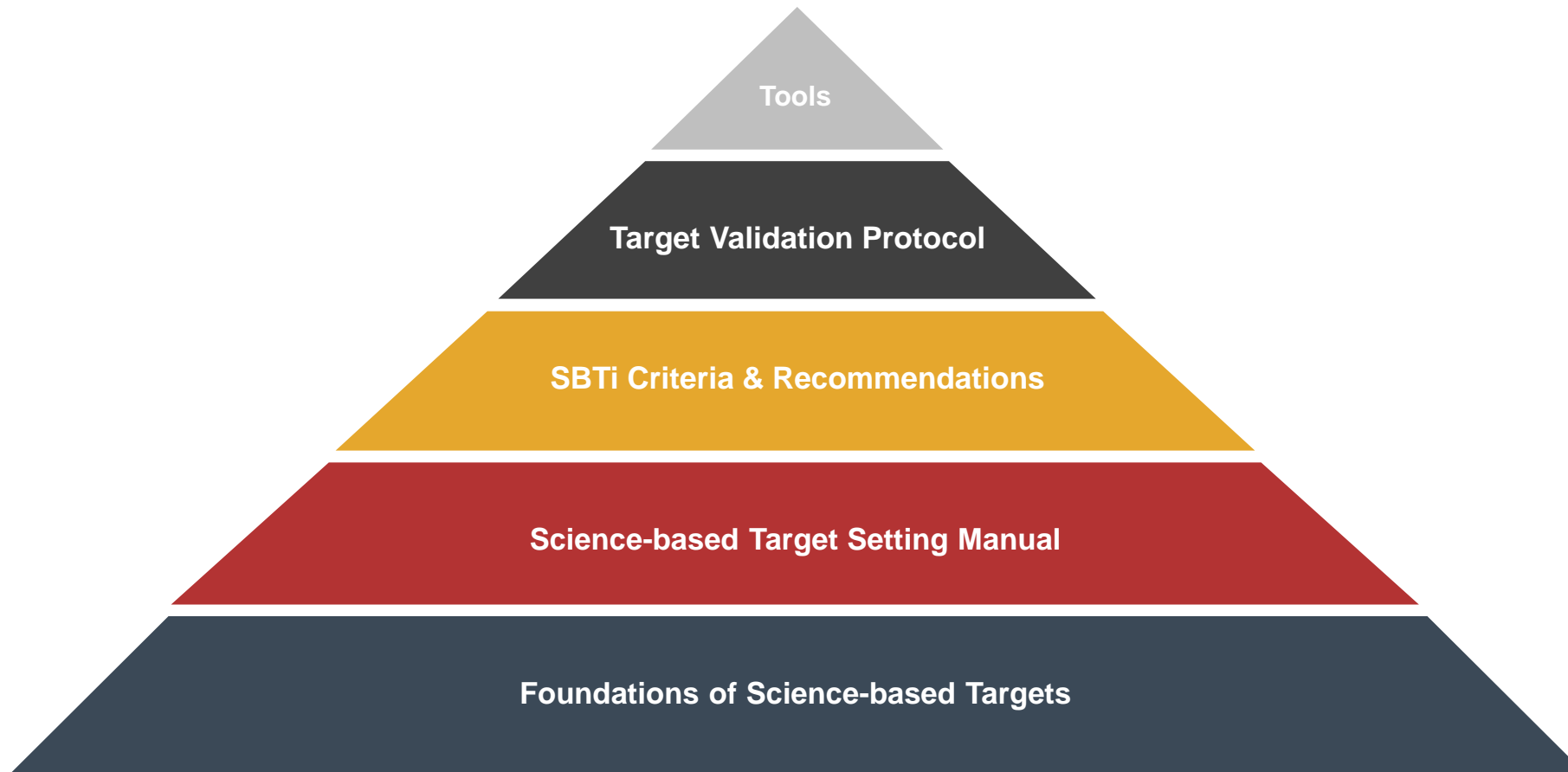
The SBTi offers resources to help companies set targets with the most ambitious goal of the Paris Agreement to limit temperature increase to 1.5°C.



All resources: <https://sciencebasedtargets.org/resources/>  
FAQS: <https://sciencebasedtargets.org/faq/>



# Technical resources and criteria for setting science-based targets



Available now at [sciencebasedtargets.org/resources/](https://sciencebasedtargets.org/resources/).

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# Science based targets for the Information and Communication Technology (ICT) sector

## Scope:

- Based on sector and sub-sector pathways for the ICT sector
  - addressing the following sub-sectors:
    - Mobile telecoms network operators
    - Fixed telecoms network operators
    - Data center operators
    - Equipment manufacturers (\*)

**\* Pathway for ICT equipment manufacturers is not included in this release of the **Company Guidance**. It will be added by July 2020.**

# Definitions & applicability

- **ICT organization:** an organization, the core activity of which is directly related to the design, production, promotion, sales or maintenance of ICT goods, networks or services.  
=> The guidance is applicable to ICT organisations:
- **Operator:** an organization operating networks or data centers.  
=> Initial guidance is specifically for: Mobile telecoms network operators; Fixed telecoms network operators; and Data center operators.
- **ICT manufacturer:** Organization which has the financial and organizational control of the design and production of ICT goods.  
=> In the next revision the guidance will be extended to include ICT equipment manufacturers.

## Related definitions:

- Telecommunication network
  - connects computers and related devices to each other and to the internet
- ICT supplier
  - Organization that provides ICT products or services to an ICT organization
- ICT end-user
  - a company or consumer which is the user of an ICT good
- ICT goods
  - Tangible goods deriving from or making use of technologies devoted to or concerned with:
    - the acquisition, storage, manipulation (including transformation), management, movement, control, display, switching, interchange, transmission or reception of a diversity of data;
    - the development and use of the hardware, software, and procedures associated with this delivery; and
    - the representation, transfer, interpretation, and processing of data among persons, places, and machines.

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# Agenda

1. Introduction

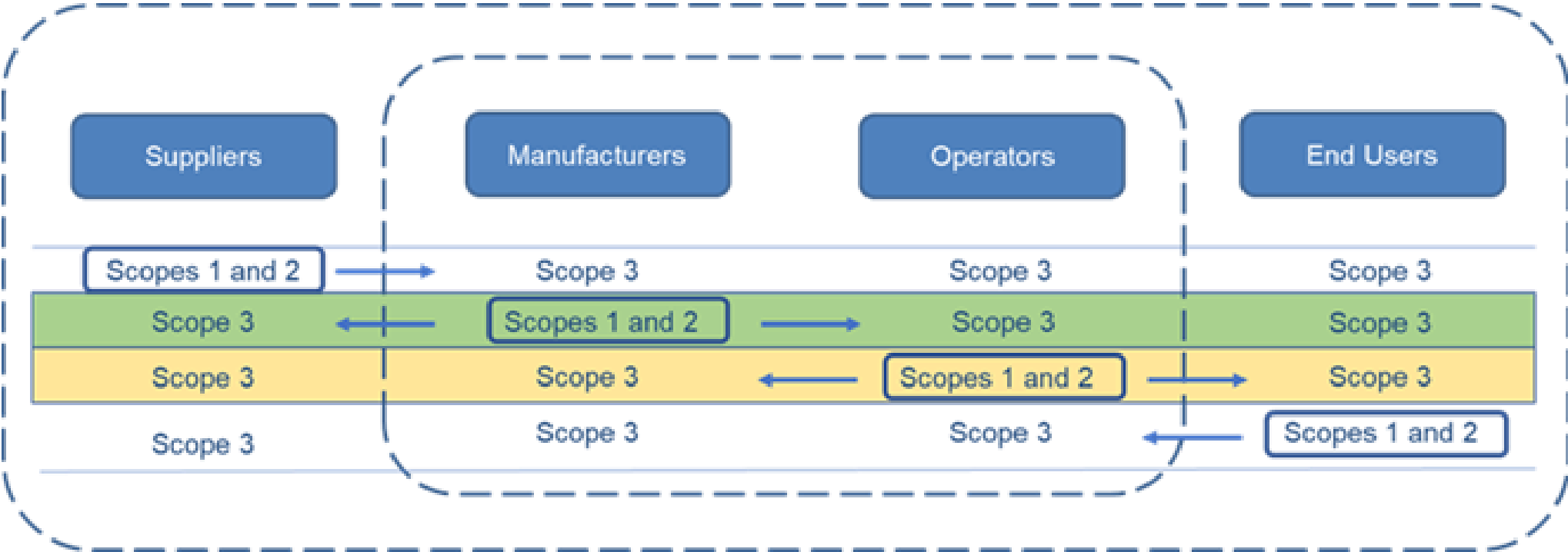
2. Development of GHG emissions trajectories

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# Relationship between ICT sub-sectors and GHG scopes



# GHG trajectories for the ICT sector

- A 1.5°C compatible trajectory developed for the ICT sector covering **full life-cycle emissions** is forming the basis for science-based targets for ICT companies
- Trajectory is a normative trajectory
  - i.e. the GHG pathway required to be compatible with keeping global temperature rise to below 1.5°C
- Baseline year of 2015 – global GHG emissions based on detailed bottom-up research data
- ICT Energy projections to 2030 – based on historic trends, assumptions in growth, and assumptions of technology changes
- Electricity grid carbon intensity projections supplied by SBTi
- ITU Recommendation “GHG emissions trajectories for the ICT sector compatible with the UNFCCC Paris Agreement”, (ref L.1470) gives full details of the trajectory development

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## The normative approach

- The ICT trajectories are consistent with three normative scenarios:
  - IPCC 1.5°C P2 scenario requiring a halving of emissions between 2015 and 2030 (**IPCC special report on 1.5°C, 2018**)
  - SBTi 1.5°C trajectory demanding 42% reduction over 10 years
  - A 1.5°C scenario, carbon budget approach based on the ICT sector maintaining a fixed share of overall electricity usage (based on IEA ETP)

## Data and assumptions for 2015 base-year

- Telecoms networks – 2015 data sources
  - Energy and carbon data publically reported by 26 telecoms companies, which represents 67% of the global subscriptions [1,2]
  - More detailed energy and carbon data collected from 10 anonymous ETNO and/or GeSI members [1,2]
  - Embodied\* emissions due to network deployment and construction, and also ICT equipment [3]

1. J. Malmodin and D. Lundén. 2018. The energy and carbon footprint of the global ICT and E&M sectors 2010-2015. Sustainability.
  2. J. Malmodin, D. Lundén. 2018. The electricity consumption and operational carbon emissions of ICT network operators 2010-2015. Report from the KTH Centre for Sustainable Communications.
  3. J. Malmodin, D. Lundén, Å. Moberg, G. Andersson, and M. Nilsson. 2014. Life Cycle Assessment of ICT- Carbon Footprint and Operational Electricity Use from the Operator, National, and Subscriber Perspective in Sweden. Journal of Industrial Ecology.
- \* Embodied emissions are non-use stage emissions such as production and raw materials, including ICT manufacture and suppliers.

## Data and assumptions for 2015 base-year

- Data Centers – 2015 data sources
  - Bottom-up calculation based on number of servers and energy consumption per server [1,2,3,4]
  - Data cross-checked against other studies [1,2,3,4]
  - Embodied\* emissions based on detailed reporting by Google and Facebook, scaled to all data centers based on their share of TWh [5,6]

1. J. Malmodin and D. Lundén. 2018. The energy and carbon footprint of the global ICT and E&M sectors 2010-2015. Sustainability.
2. IEA Report. Digitalization & Energy. International Energy Agency, 2017.
3. Shehabi et al., United States Data Center Energy Usage Report. 2016.
4. Fuchs et al., Characteristics and Energy Use of Volume Servers in the United States. Lawrence Berkeley National Laboratory, 2017.
5. Google. 2016. Google Environmental Report: 2016. Alphabet's 2016 CDP Climate Change Response.
6. Facebook. Facebook Sustainability. Our Footprint. 2016.

\* Embodied emissions are non-use stage emissions such as production and raw materials, including ICT manufacture and suppliers.

# Projections 2015 - 2030

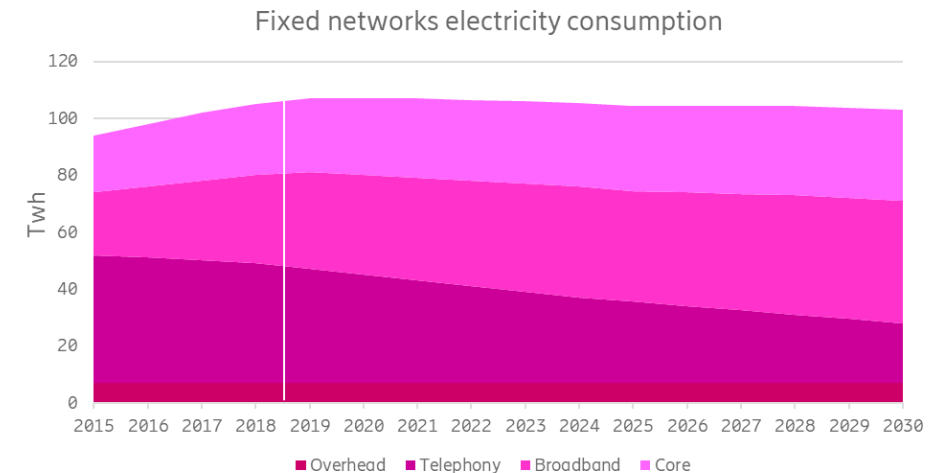
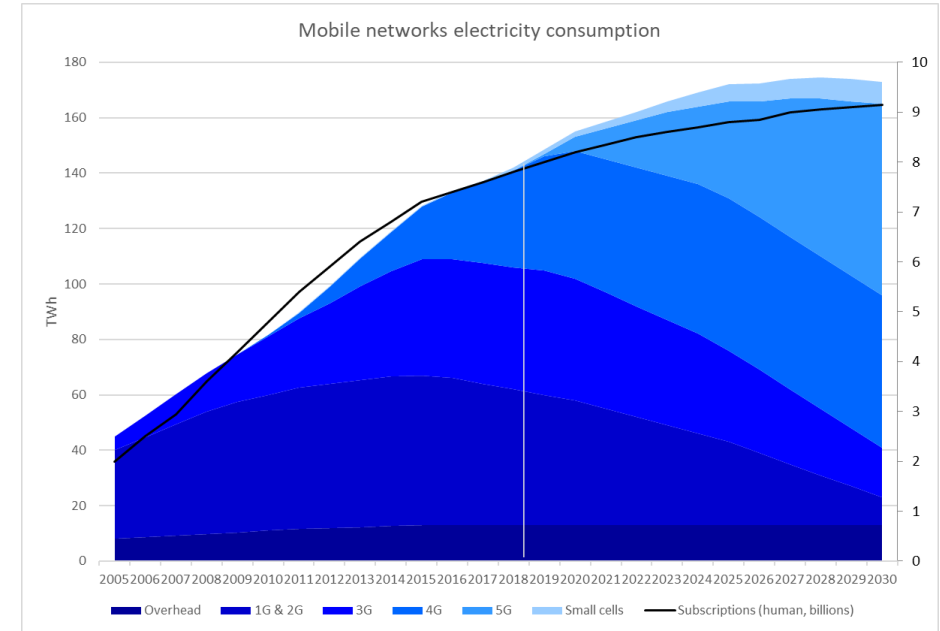
## • Telecoms networks – projections assumptions

### Mobile networks

- Energy modelling based on historical energy consumption of 2G, 3G, 4G, and extrapolations based on predicted technology changes and change in subscriptions for 2G, 3G, 4G, 5G.
- Includes diesel consumption for base stations – assumes gradual switch from diesel to renewable electricity

### Fixed networks

- Assumption that energy per subscription does not change. And number of subscribers changes are based on combination of ITU and Point topic data.

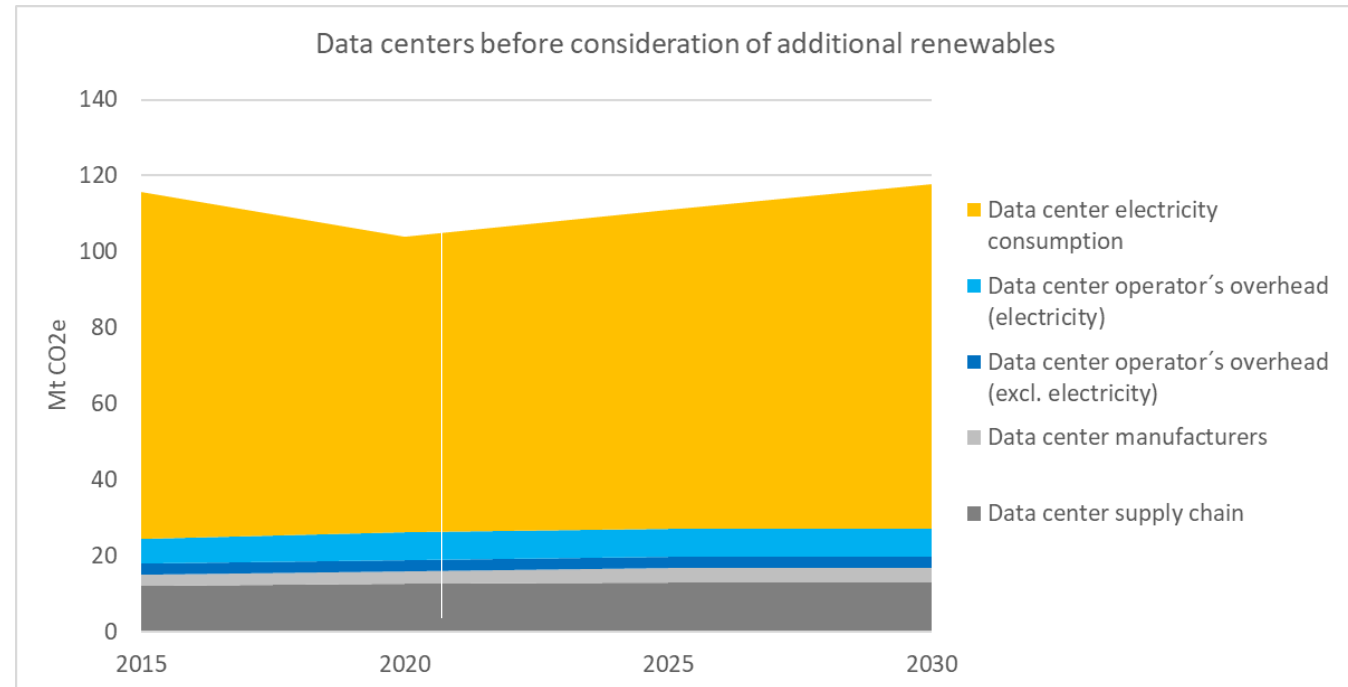




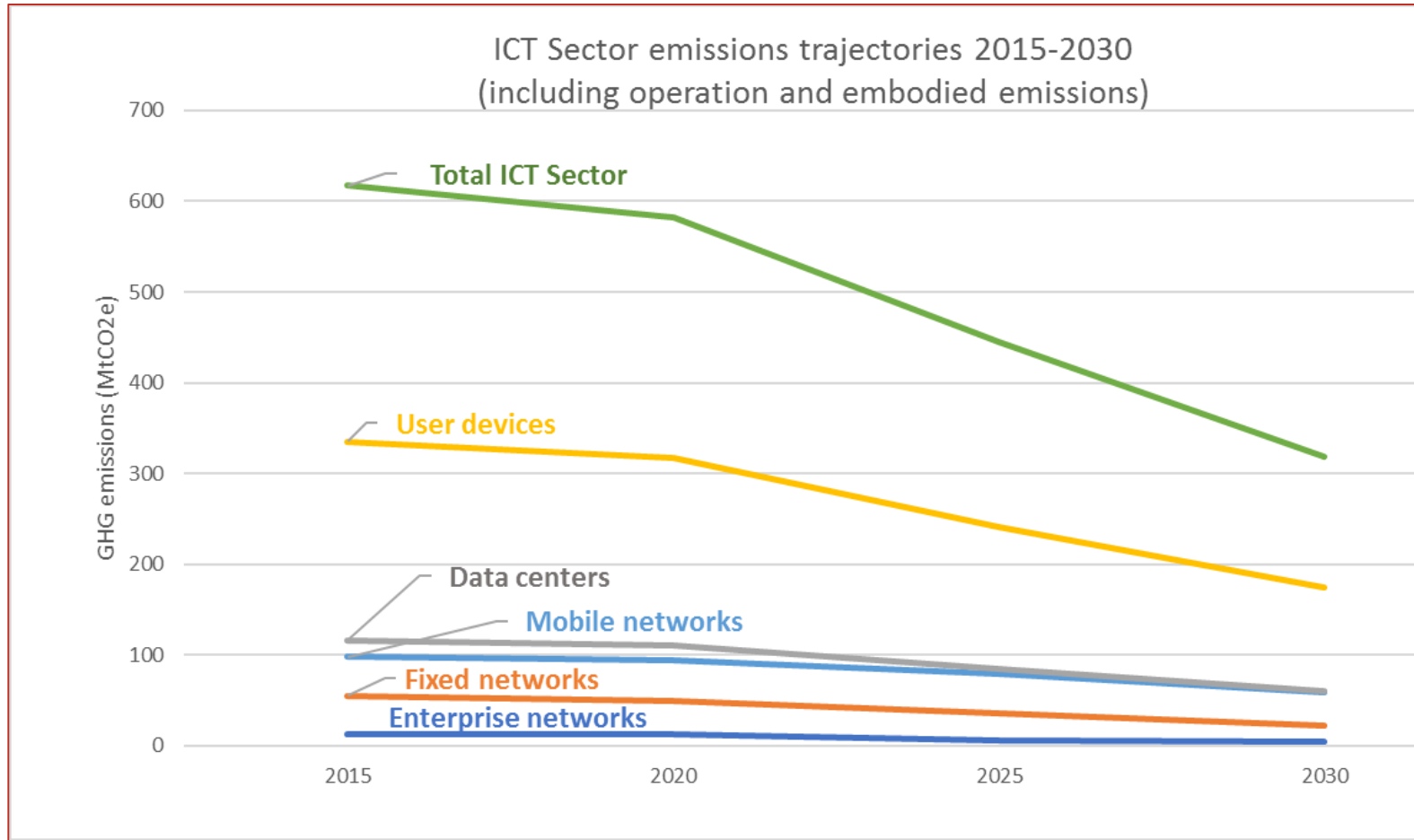
# Projections 2015 - 2030

## • Data Centers – projections assumptions

- 3% annual energy growth, based on IEA projection of 3% for 2014-2021.
- PUE is assumed to decrease. Average PUE of 1.8 used for 2015 (ref. IEA). Assume 1.6 for 2020 and 1.4 for 2030. (ref. Intel estimate of 1.7 for 2019).
- Increasing number of servers based on IDC forecast extrapolated to 2030.
- Assume shipping of high performance servers to increase but volume servers to decline.



# Overall sector trajectory (including embodied emissions)

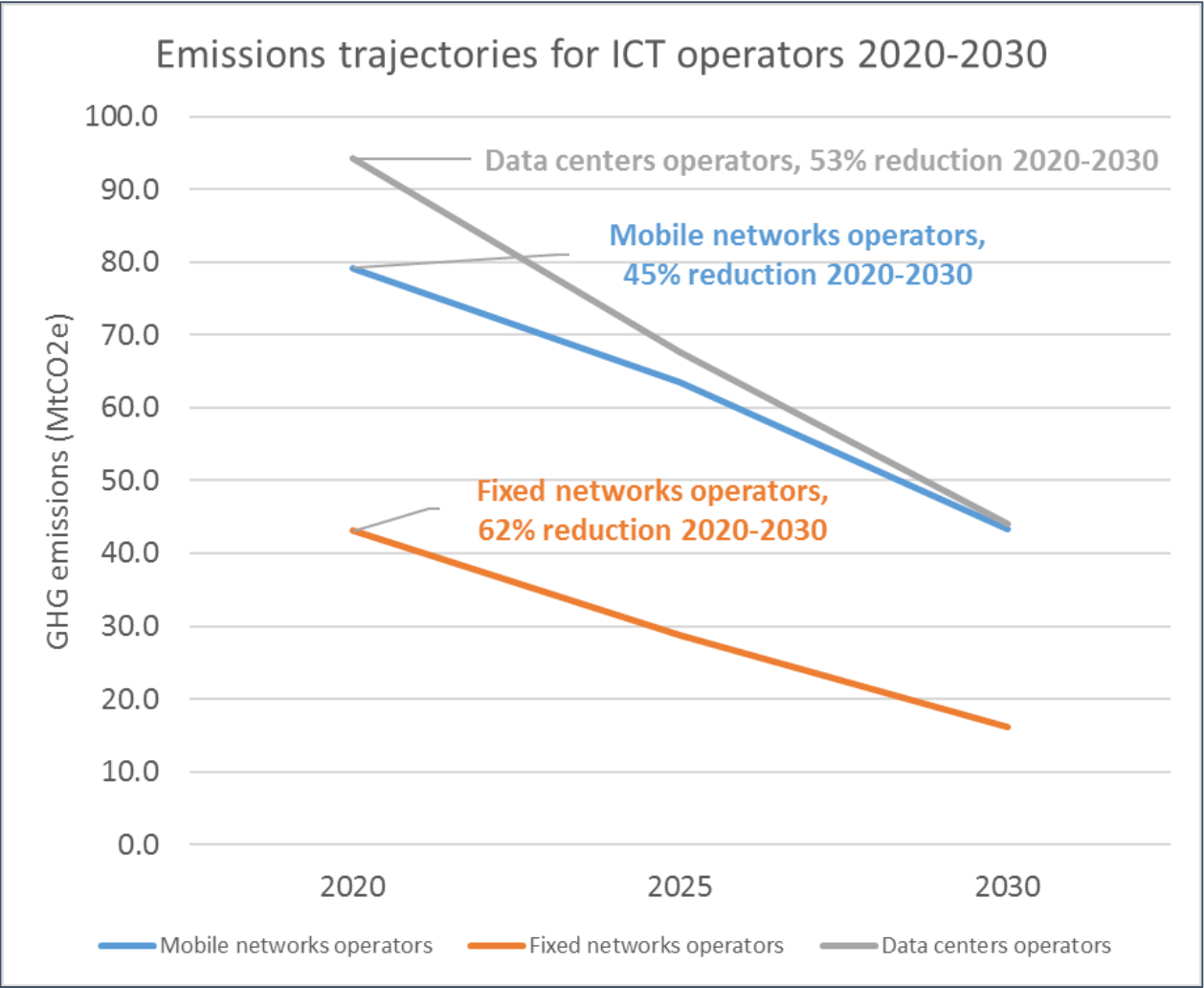


- Electricity grid emission factors applied to the energy projections
  - Using 1.5°C compatible power sector factors derived by SBTi from the IPCC SR15 data
- Resulting overall trajectories as described in ITU Recommendation document on ICT GHG trajectories.

**Note 1:** 2015 is the base year for historical emissions.

**Note 2:** Graph shows ICT sector emissions from a company accounting perspective. Hence it does not include emissions related to electricity grid losses and electricity supply chain. Values including those are about 20% higher.

# Trajectory for application to SBT for ICT operators (excluding embodied emissions)



Sub-sector trajectories for operator emissions only, used to apply to company Scope 1&2 science-based targets

Sub-Sector	Percent GHG reduction 2020-2030
Mobile network operators	45%
Fixed network operators	62%
Data center operators	53%

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# Agenda

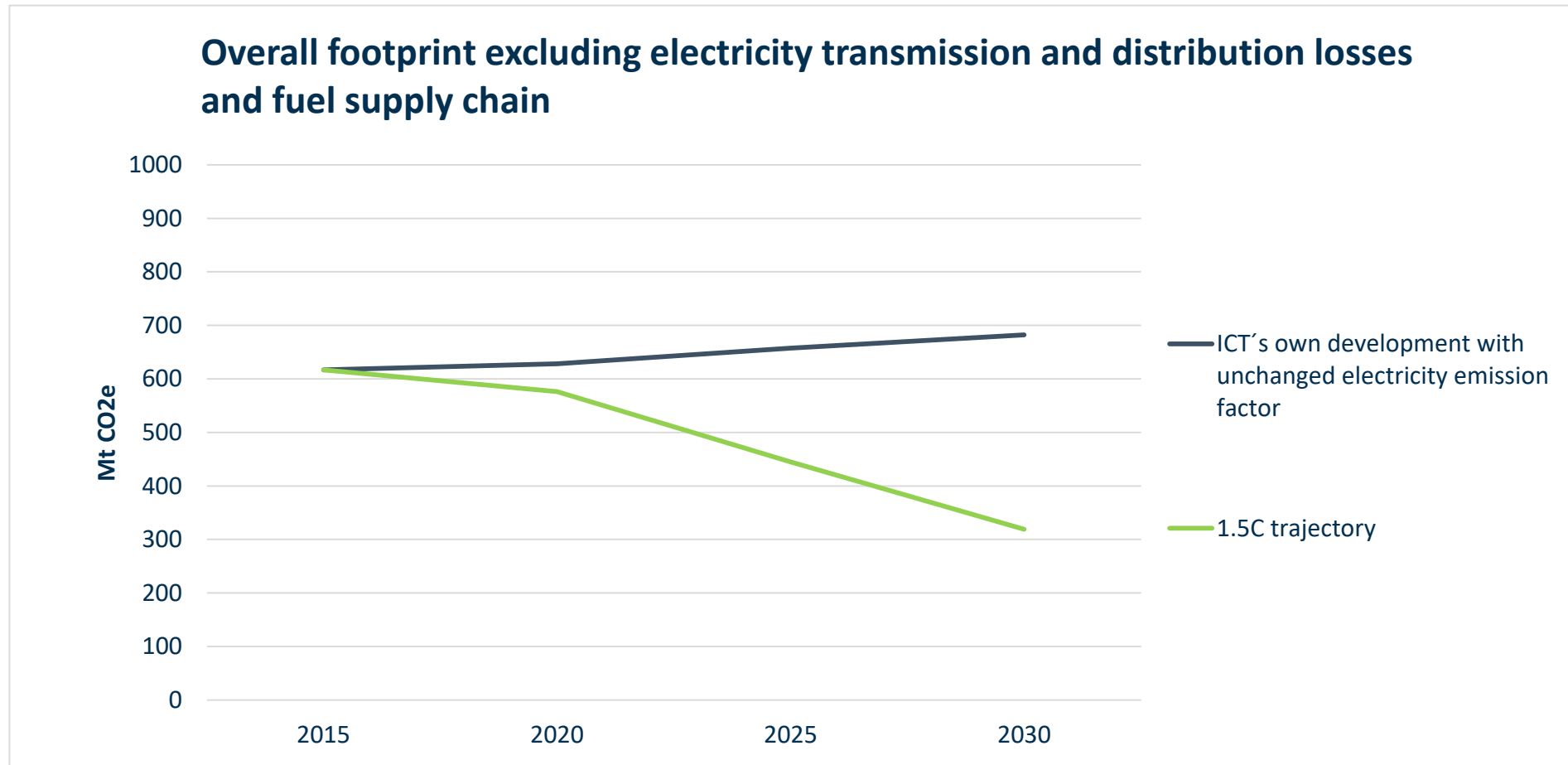
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## A challenging target for a dynamic sector

- The 1.5°C trajectory is a challenging one which will not happen without commitment and ambitious action regarding:
  - Continued implementation of energy efficiency plans
  - Switch to renewable / low carbon electricity supply
  - Encouragement of carbon consciousness among end-users
- Due to the fast-changing nature of digital technologies, under this guidance ICT company targets should be set no further ahead than 2030.

# The importance of renewable electricity sources



## Applying ICT sectoral approach to an ICT company

1. Select base year and target year
2. Measure Scope 1 & 2 emissions
3. Allocate Scope 1 & 2 emissions to relevant sub-sectors
  - (applicable to companies that have operations in multiple sub-sectors, e.g. fixed and mobile network operators)
4. Calculate target emissions by applying sub-sector reduction percentages to company Scope 1 & 2 emissions
  - Emission reduction factors between different years are provided in the Company Guidance Document - Annex C
5. Calculate overall SBT by summing results
6. Derive Scope 3 targets as per existing SBTi guidance



## Allocation of “non-ICT” emissions

- Most ICT companies will have “non-ICT” activities such as transport fleets, and office buildings. Typically, the emissions of these overhead activities will be small compared to the emissions of the ICT operations
- Companies may choose to combine all their scope 1 and 2 emissions and derive a single SBT, which is consistent with the overall 1.5°C trajectory.
- This is by far the simplest approach and is the recommended alternative as it keeps the company consistent with a 1.5°C trajectory for its overall operation.
- However, a company may choose to allocate the “non-ICT” Scope 1 & 2 emissions separately and use existing SDA (from other relevant sectors) or absolute contraction methods to calculate targets for these components. At this point SDA pathways do not align with a 1.5°C scenario.

## Worked example

- Consider a company with both mobile and fixed line operations.
- The company selects 2019 as its baseline year and 2025 as its target year.
- For both sub-sectors, the company decides to combine electricity related scope 1 and 2 emissions with those associated with support activities such as office buildings and / or a transport fleet.
- The combined scope 1 and 2 emissions from running the mobile operations were 250 ktonnes CO<sub>2</sub>e in the baseline year.
- The combined scope 1 and 2 emissions from running the fixed operations were 150 ktonnes CO<sub>2</sub>e in the baseline year.
- Referencing the 2019 baseline and 2025 target years in published tables, the Emission Reduction Factor for the mobile operations is found to be 0.794, and for the fixed operations 0.652.
- The company's resulting science-based target (SBT) for 2025 is then given by:
- $SBT(2025) = 0.794 \times 250 + 0.652 \times 150 = 296.3 \text{ ktonnes CO}_2\text{e}$

# Intensity metrics

- The ICT SDA takes an absolute approach\*.
- This contrasts with the SDA for most other sectors which use an intensity approach.
- Companies may still present their targets as intensities, so long as the absolute reduction is in line with the trajectories defined in this SDA.

*Note! Companies need to monitor at regular intervals that their intensity metric does not deviate from the absolute trajectory*

- **Example:**
  - A fixed line telecommunications operator has Scope 1 & 2 emissions in the base year of 2019 of 150 ktCO<sub>2</sub>e, and has 5 million subscribers. This is equivalent to an intensity metric of 30 kgCO<sub>2</sub>e per subscriber.
  - For the target year of 2025 the absolute emissions target is  $0.652 \times 150 = 97.8$  ktCO<sub>2</sub>e. The forecast number of subscribers for 2025 is 6 million, then the intensity target for 2025 is  $97.8/6 = 16$  kgCO<sub>2</sub>e per subscriber.

**\* Note:**

The absolute approach is a consequence of following the SBTi standard SDA methodology with a zero convergence in 2050.

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## Geographical considerations

- In line with other SDA pathways no consideration is given for different geographical operations
- It is recognised that there are significant differences geographically for ICT operators – specifically different electricity grid factors, and different availability of renewable electricity markets with robust certificates.
- It may be possible to address this issue in a future revision of the ICT SDA, although that would need to follow any generic development of methodology by the SBTi

## Setting a scope 3 target

- The criteria for setting scope 3 targets are as described in the most recent SBTi criteria document.
- This ICT sector guidance does not set any additional criteria for scope 3 beyond the standard SBTi criteria but gives some additional guidance.
- SBTi criteria require that a company sets a scope 3 target when its scope 3 emissions are 40% or more of its total scope 1, 2, and 3 emissions. The scope 3 target must cover at least 2/3 of total scope 3 emissions. For most ICT companies it is likely that the 40% criterion will be met and the company will need to set a scope 3 target.
- Companies can set either a scope 3 emissions reduction target, or a supplier or customer engagement target, or a combination of the two.

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## Setting a scope 3 target – ICT specific guidance

- Handling of ICT operators' scope 3 emissions
  - The most significant scope 3 categories for an ICT operator are likely to be:
    - Category 1 – Purchased Goods and Services; and
    - Category 11 – Use of Sold Products.
  - For these categories, companies are encouraged to consider the ICT trajectories as references to define a scope 3 ambition level in line with the 1.5°C trajectories of the ICT sector and its sub-sectors.

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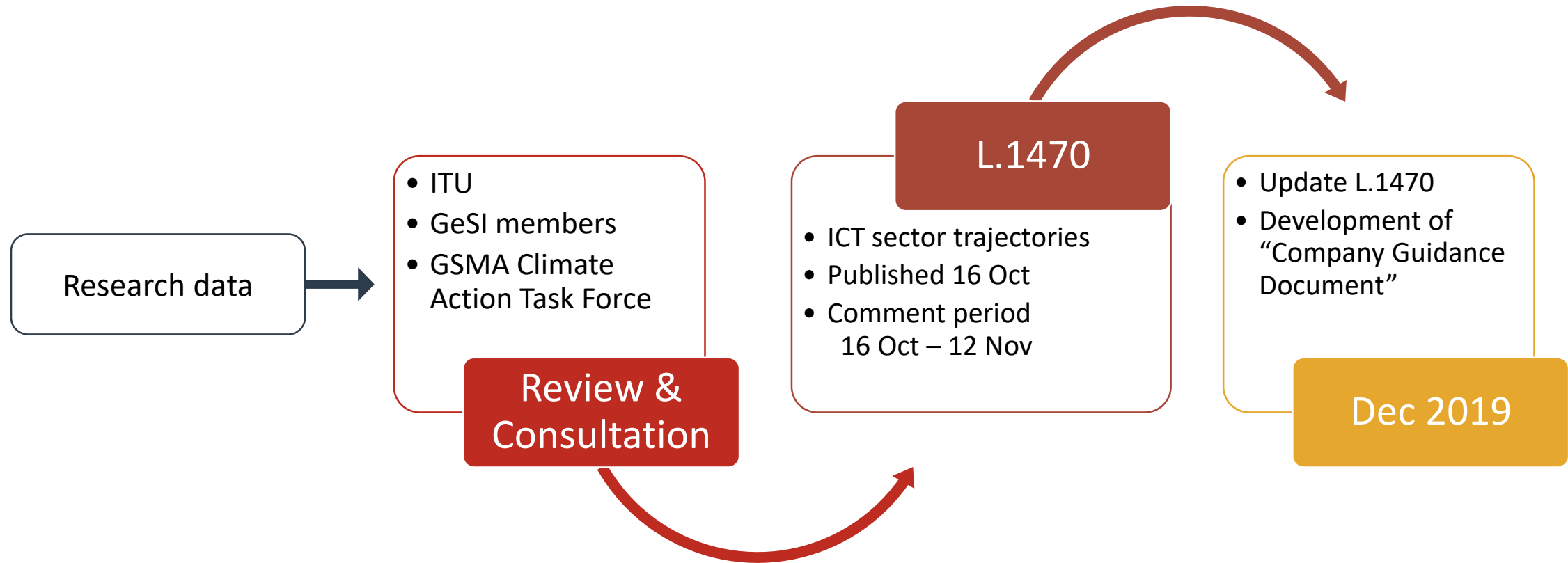


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## Key documents and previous review process

- **ITU Recommendation on trajectories (L.1470)** – Energy and carbon trajectories for the ICT sector and sub-sectors
  - Published by ITU 16 Oct 2019 for comment (16 Oct – 12 Nov)
  - Updated and republished 16 Dec for additional review (16 Dec – 11 Jan)
  - Additional input from GeSI member companies and GSMA member companies (via Climate committees) into process (July – November)\*
- **Company Guidance Document**
  - Summarises L.1470 trajectories, and provides guidance on how to apply these to setting a company science-based target for an ICT company
  - Developed by the ITU/GeSI/GSMA committee, with partial review by GeSI and GSMA member companies. Also shared within ITU.

## Process to date



## Timings

- **Consultation process:** feedback by 26 January using on-line survey
- **Approval process by SBTi:** 27 January to 9 February
- **Publicly announce at Mobile World Congress:** 24 February
- **March – August:** ICT operators encouraged to adopt ICT Sector approach for setting a SBT
- **July 2020:** Approach for ICT equipment manufacturers to be added to the methodology
- **From September 2020:** the ICT Sector approach is the recommended approach for ICT operators.

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## Consultation process

- Welcome feedback on the Company Guidance document
- Draft Company Guidance document will be shared with registered participants along with a link to an online survey
- Please complete [on-line survey](#) by 26<sup>th</sup> January

**Note:** *Consultation on the L.1470 background document has concluded, this document is undergoing editorial check. It is available upon request to interested participants*

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## Discussion points

- The standard SDA approach is based on the IEA ETP, which does not have a separate pathway for the ICT sector, hence it was necessary to develop a specific pathway and SBT approach
- The ICT approach is an absolute approach for two reasons:
  - No intensity metrics could be defined that adequately capture the production output of the ICT sector
  - The standard SDA approach tends to an absolute approach where the convergence point in 2050 is zero
- The sub-sectors exist as each has different opportunities to decarbonise based on the energy use and technologies
- 2030 been chosen as the maximum allowable target date recognising the fast changing nature of the ICT sector
- The average annual reduction percentages for the ICT operator sub-sectors are greater than the SBTi 1.5°C threshold (4.2%). This is needed to keep the overall sector aligned with 1.5°C, recognising that ICT manufacturing is more challenging to decarbonize.

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# Agenda

## Q&A session

**Duration: 30 min.**

Please type your question on the chat window or use the 'raise hand' feature in the participants box

# Thank you!



A recording and webinar materials will be sent to all registered participants.

Online survey will be open through January 26, 2020

<https://forms.gle/tZFdTswCN1Ruk5Em9>