

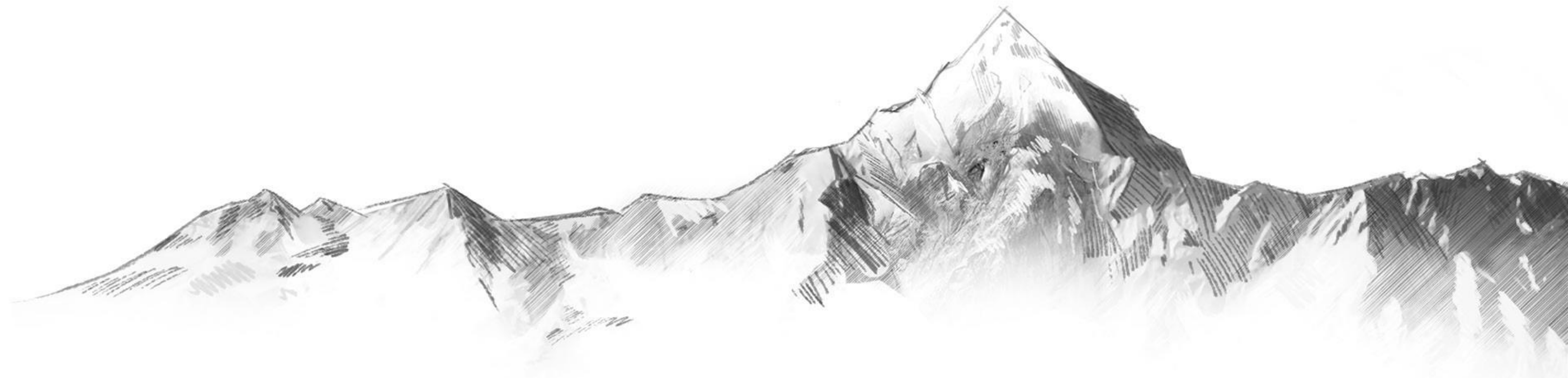


**Degree
Compatibility**

right.open

Agenda

1. right. based on science
2. XDC Model
3. right.open
4. Q&A



Mentimeter



1.

right. based on science



right. based on science

Climate metrics and software provider founded 2016 in Frankfurt am Main

Developer of the X-Degree Compatibility (XDC) Model

Diverse team with 25+ experts from science, economics, mathematics, law etc.

Mission: increase transparency on climate-related risks and opportunities

Winner of the Next Economy Award 2020



Clients



Partners



right. open



Press



The Problem



In November 2018,
Blackrock's CEO Larry Fink
said:

"Within the next 5 years all investors will measure a company's impact on [...] the environment to determine its worth."

Photograph by Damon Winter / NYT / Redux

The Solution



In November 2018,
Blackrock's CEO Larry Fink
said:

*“Within the next 5 years all investors will measure a
company's impact on [...] the environment
to determine its worth.”*



Photograph by Damon Winter / NYT / Redux

2.

XDC Model



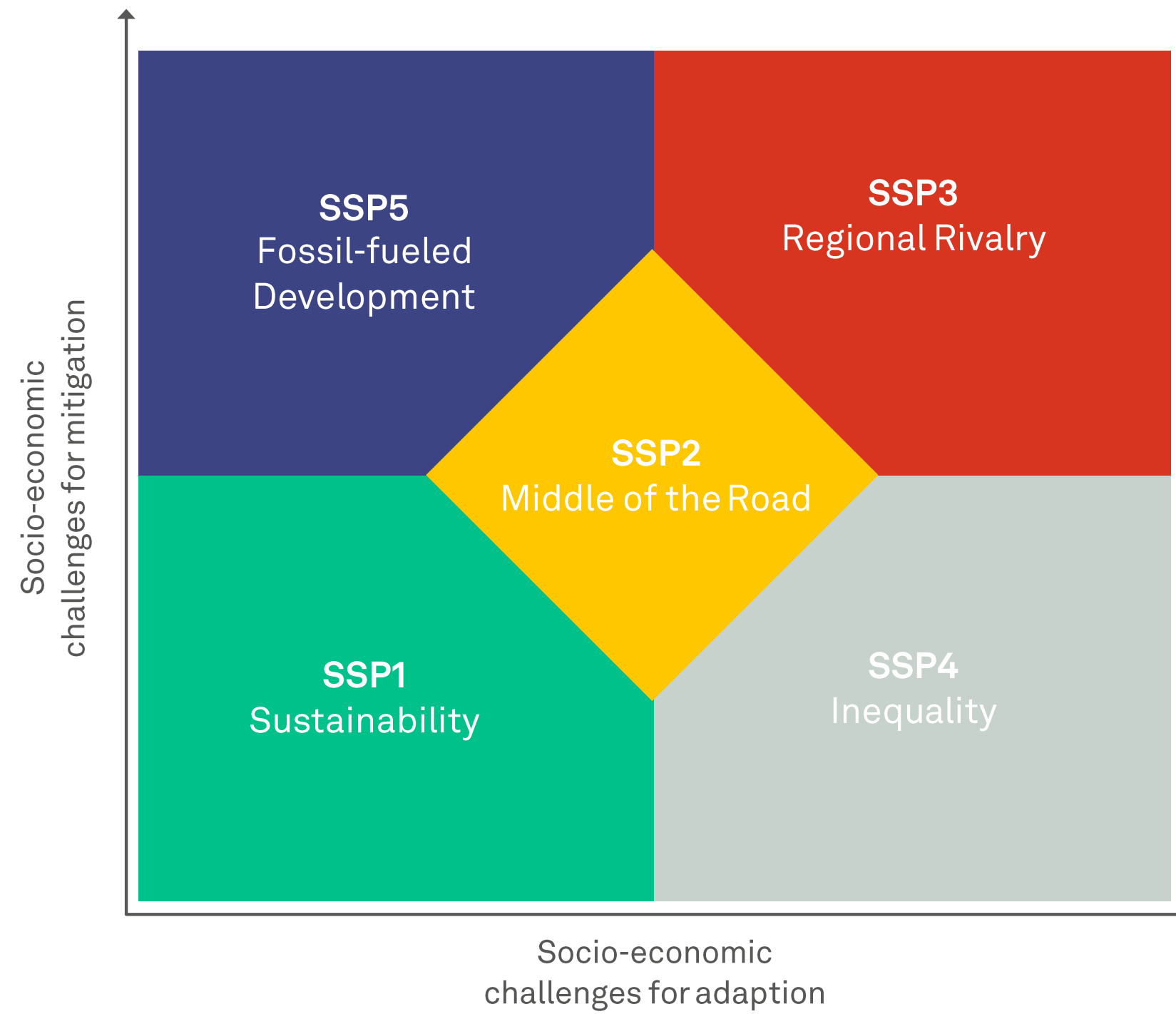
XDC Model

The basics

The **XDC Model** is an **economic climate impact model**, that measures the contribution of an **economic entity** to climate change by 2050 under **various scenarios**.

Scenarios

Socioeconomic assumptions (SSP)

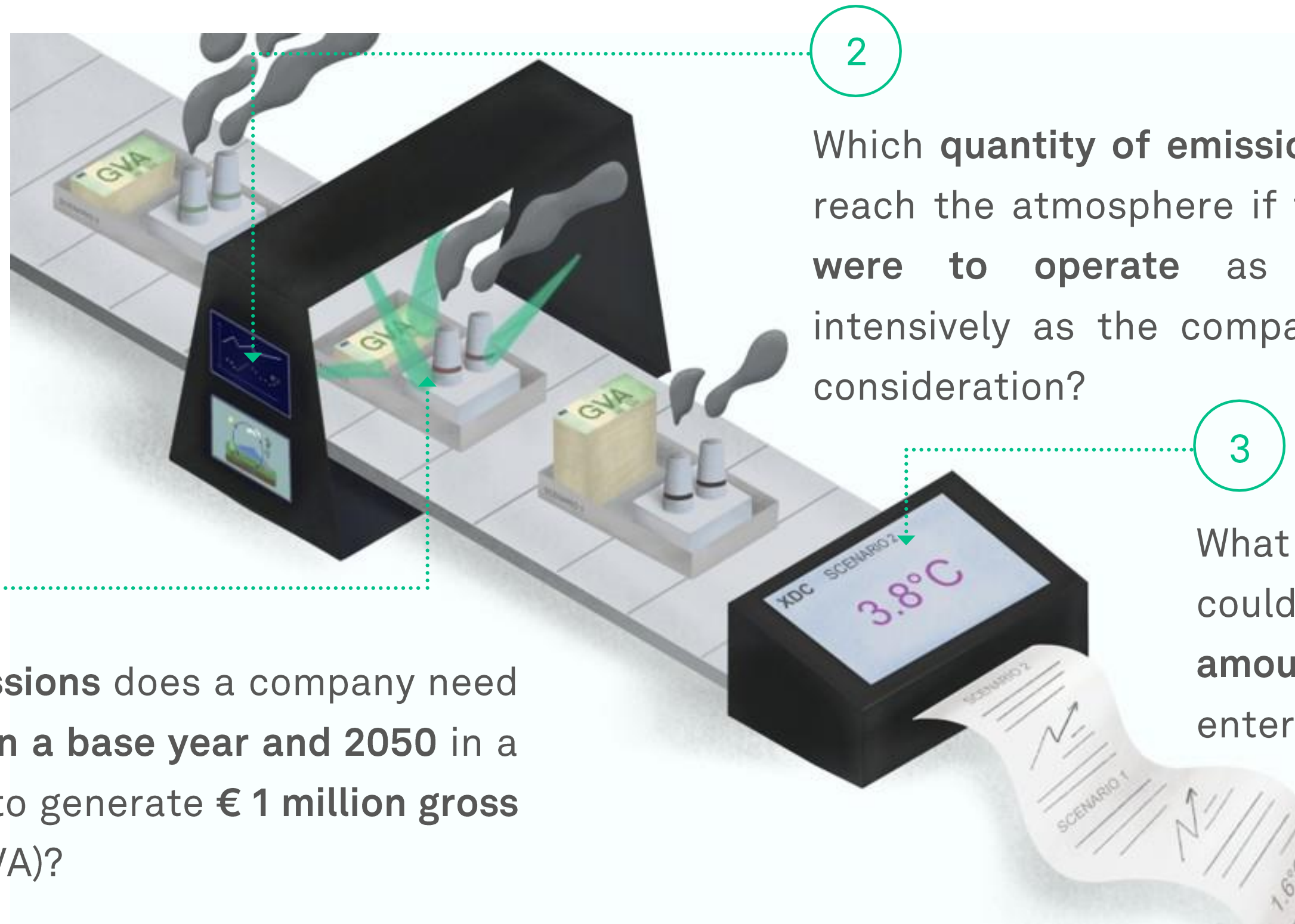


Quelle: O'Neill, B.C., et al., *The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century*. *Global Environ. Change*, 2015.

XDC Model

The process

1 How many **emissions** does a company need to emit **between a base year and 2050** in a given scenario to generate **€ 1 million gross value added (GVA)**?



XDC Model

Input

Financial data (GVA)

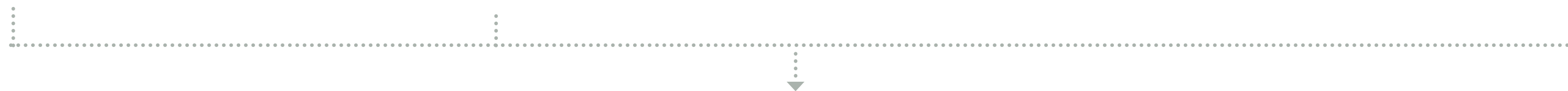
EBITDA Personnel costs

FactSet Research Systems
or self-reported data

Emission data (CO₂e)

Scope 1 Scope 2 Scope 3

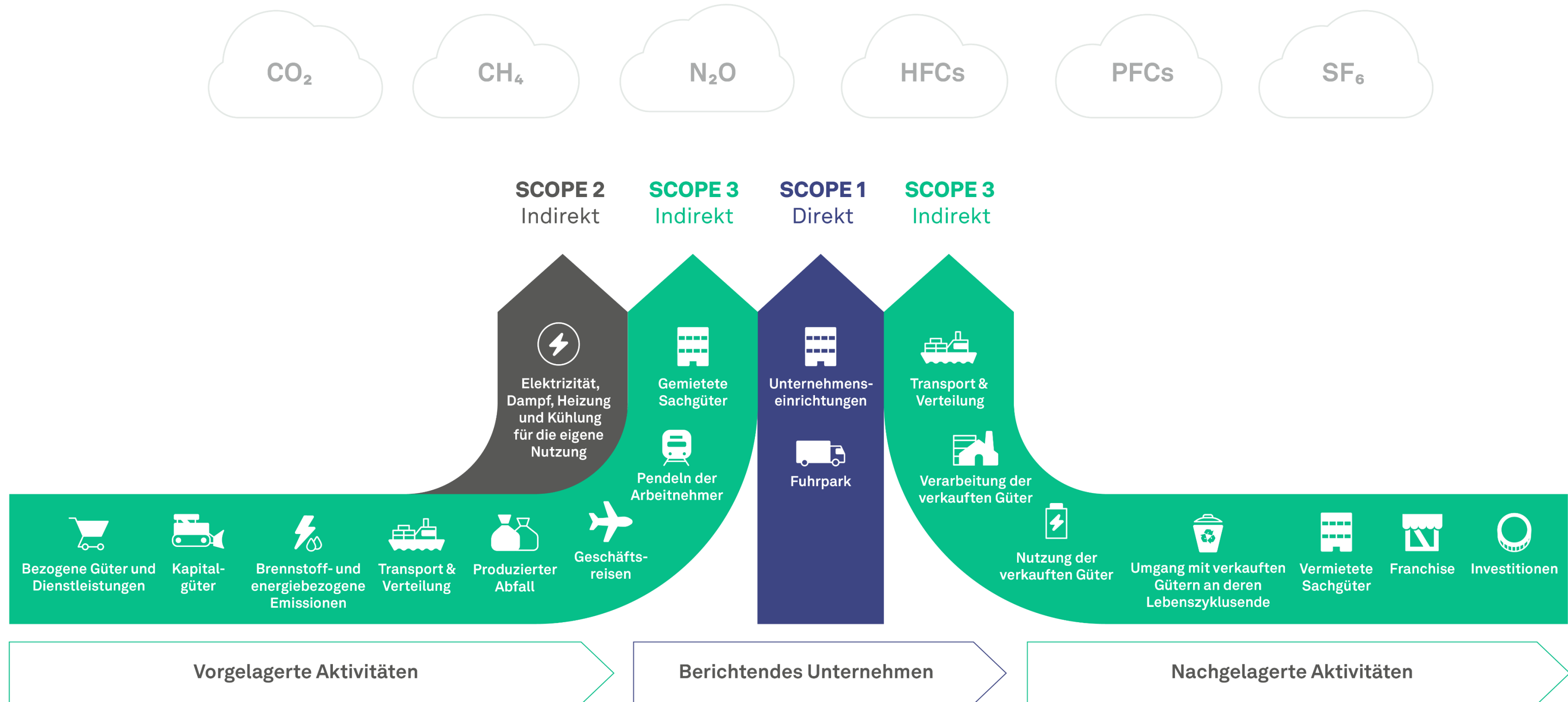
Urgentem or self-reported
data



⋮

XDC Model

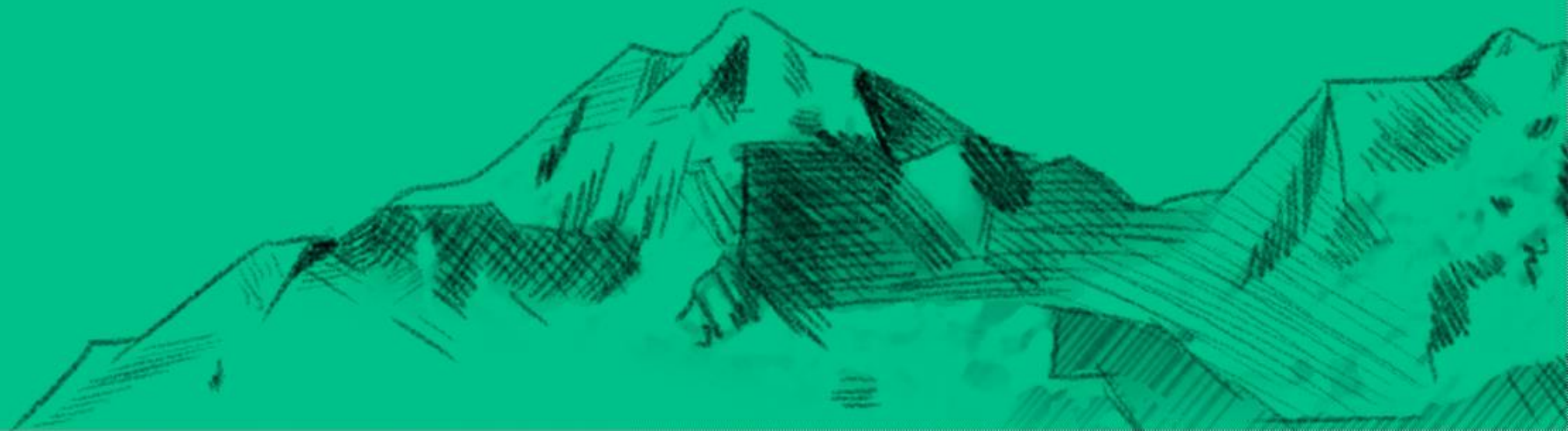
Emissions



Quelle: GHG Protocol Standard.

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XDC Model

Input

Financial data

EBITDA Personnel costs
FactSet Research Systems
or self-reported data

Emission data (CO₂e)

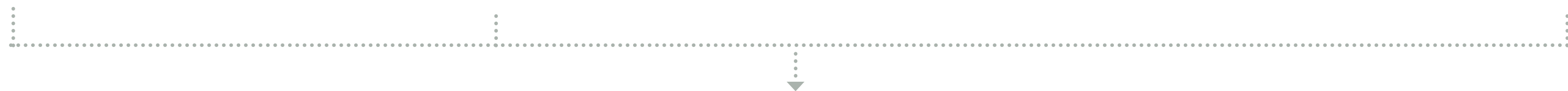
Scope 1 Scope 2 Scope 3
Urgentem or self-reported
data

Climate Model

FaIR Model
Oxford University,
Melbourne University

Scenarios

Climate Change
Scenarios
SSPs, IIASA, IEA,
OECD, NOA, IPCC



XDC Model

Output

Financial data

EBITDA Personnel costs

FactSet Research Systems
or self-reported data

Emission data (CO₂e)

Scope 1 Scope 2 Scope 3

Urgentem or self-reported
data

Climate Model

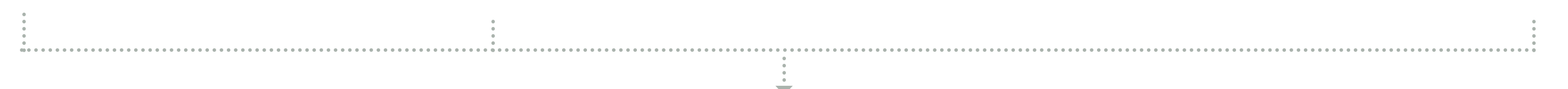
FaIR Model

Oxford University,
Melbourne University

Scenarios

Climate Change
Scenarios

SSPs, IIASA, IEA,
OECD, NOAA, IPCC



Baseline XDC

Degree of global warming,
with which the analyzed
company is compatible.

Scenario XDC

Degree of global warming with which
the company would be compatible, if
it adhered to a certain scenario,
such as its own **climate strategy**.

Sector XDC

Degree of global warming
with which the entire
sector is compatible.

Target XDC

**Sector-specific target
temperature** required
to meet a global
climate target of <2°C

Baseline XDC

Volkswagen AG

Degree of global warming with which the analyzed company is compatible
(historical decoupling rate of GVA and emissions)

Baseline XDC

3,4°C

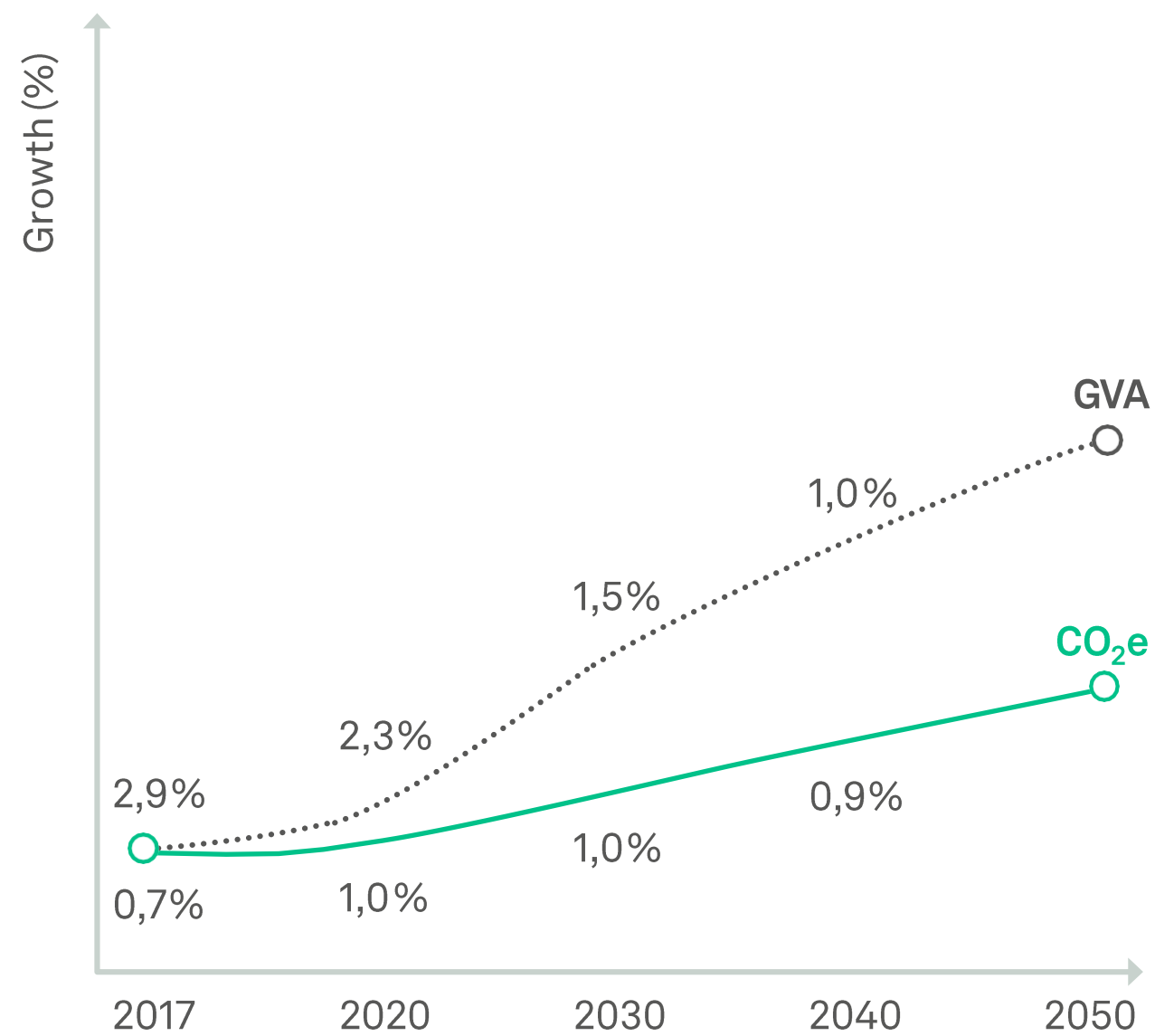


Quelle: right. based on science, *What if the 30 German stock market's largest and most liquid companies would reach their current climate targets?*, November 2019.

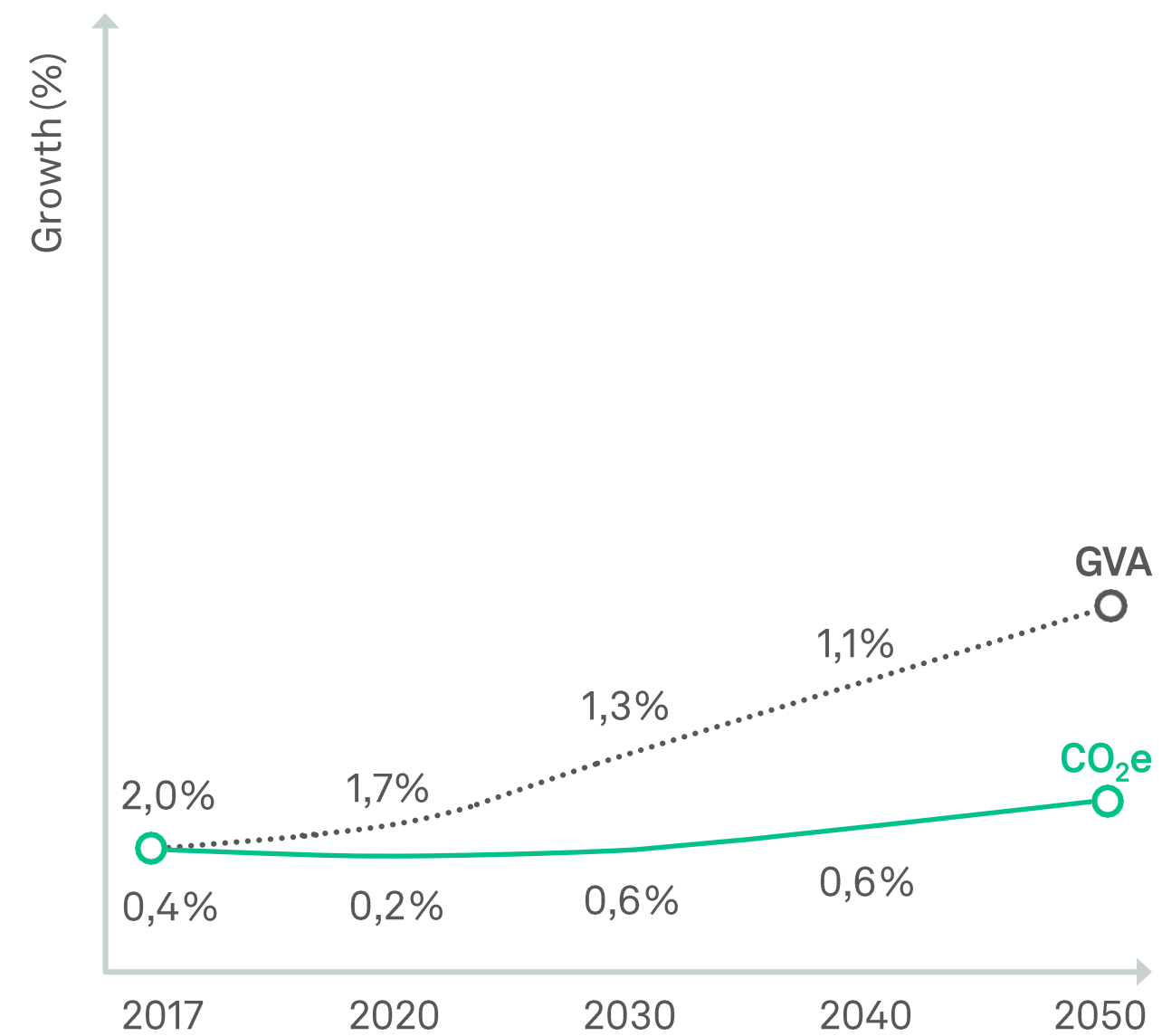
Baseline XDC

Historical decoupling rate of GVA and Emissions (CO₂e)

Welt



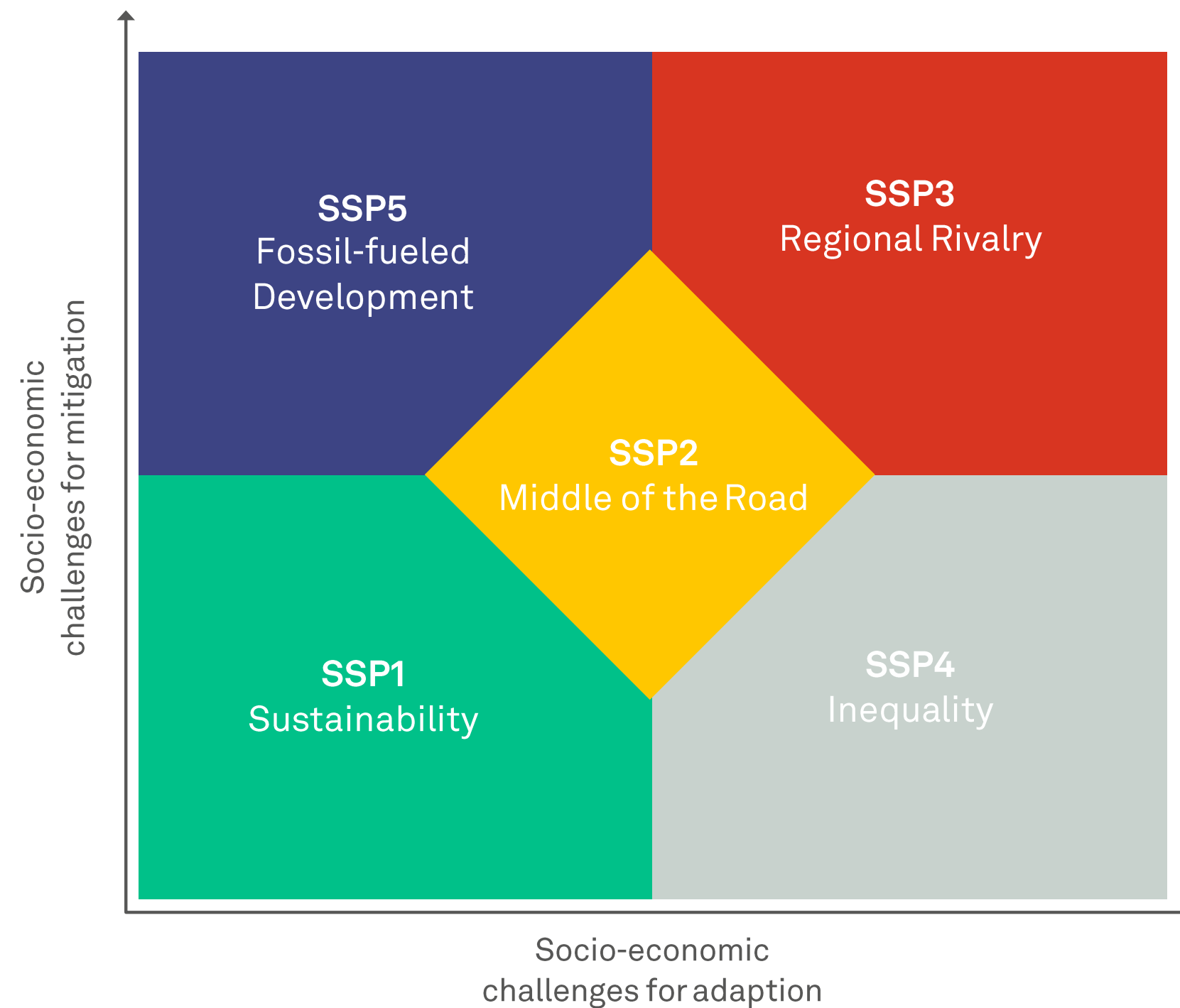
OECD



Quelle: Riahi et al., *The marker quantification of the Shared Socioeconomic Pathway 2: A middle-of-the-road scenario for the 21st century*, 2017.

Baseline XDC

Socioeconomic assumptions (SSP)



SSP2 Middle of the Road

The world continues to follow a path in which social, economic and technological developments do not deviate significantly from historical patterns.

Development and income growth vary; some countries are making relatively good progress, while others cannot meet the expectations.

Global and national institutions are working together on sustainable development, albeit in small steps. Environmental systems are deteriorating, although there have been some improvements and overall raw material and energy consumption is being reduced. Global population growth is moderate and will decrease in the second half of the century. Income inequality remains or improves only slowly and the challenge of reducing vulnerability to social and environmental change.

Quelle: O'Neill, B.C., et al., *The roads ahead: Narratives for shared socioeconomic pathways describing world futures in the 21st century*. *Global Environ. Change*, 2015.

Scenario XDC

Volkswagen AG

Degree of global warming with which the company would be compatible if it adhered to its own climate strategy.

Baseline XDC

3,4 °C

Szenario XDC

3,3 °C

Quelle: right. based on science, *What if the 30 German stock market's largest and most liquid companies would reach their current climate targets?*, November 2019.

Scenario XDC

Possible developments

Fiktiv

Baseline XDC

3,4°C

Scenario XDC

2,8°C

Sustainable Mobility



3,3°C

Klimastrategie



4,2°C

Covid-19



Sector XDC

Volkswagen AG

Degree of global warming with which the entire sector is compatible
(historical decoupling rate of GVA and emissions)



Quelle: right. based on science, *What if the 30 German stock market's largest and most liquid companies would reach their current climate targets?*, November 2019.

Sector XDC

Determination of the XDC of a relevant comparison group - such as a sector or a defined group of companies



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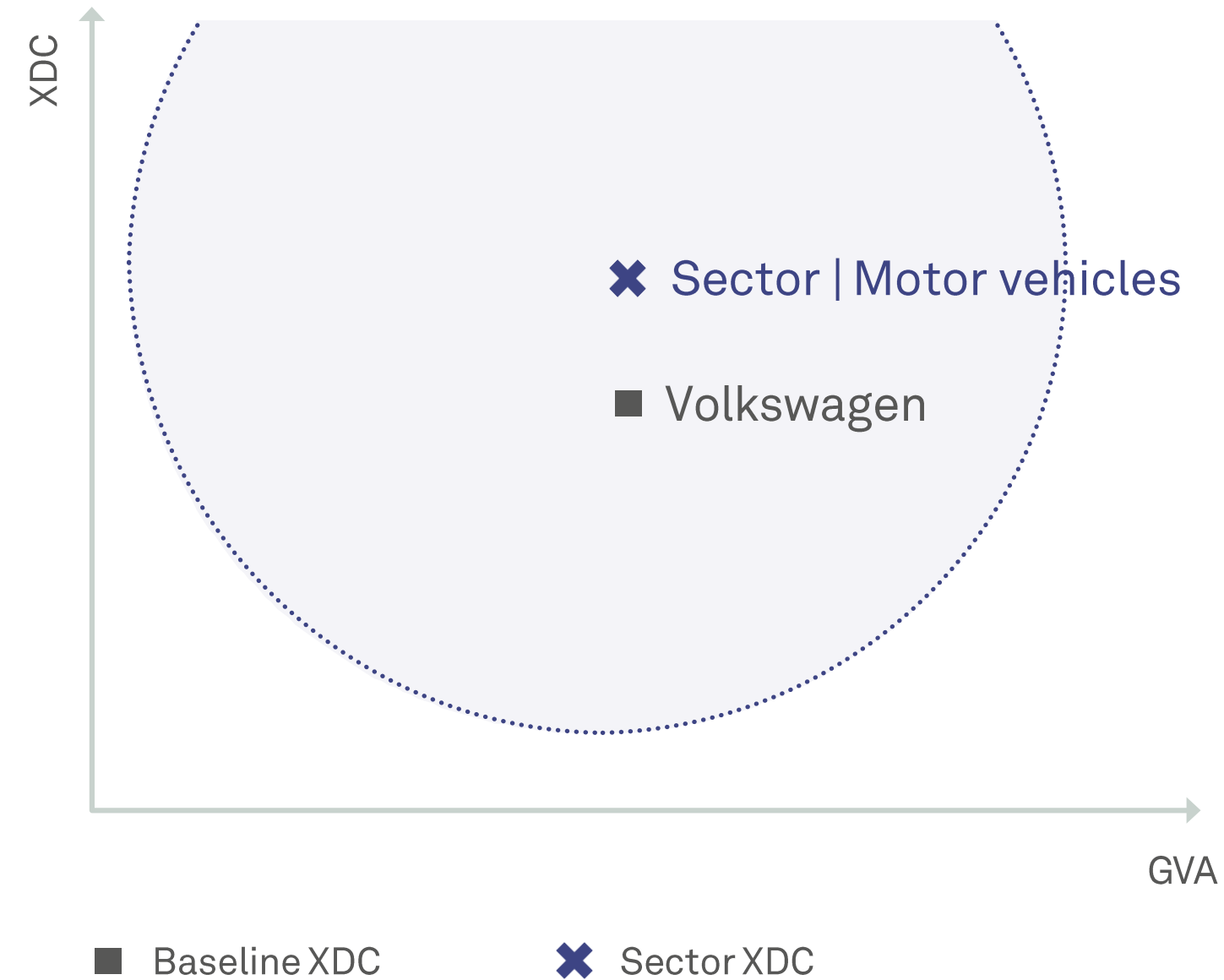
© Volkswagen

Sector XDC

Determination of the XDC of a relevant comparison group - such as a sector or a defined group of companies

Comparison with own sector

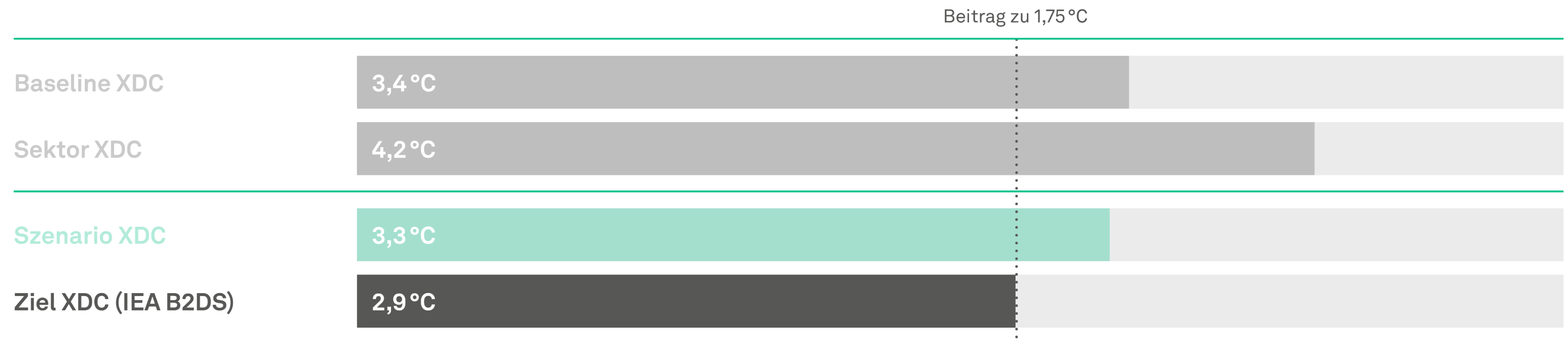
NACE 29 | Production of motor vehicles and parts



Target XDC

What is it?

Sector-specific target temperature to meet the global climate target of <2 °C

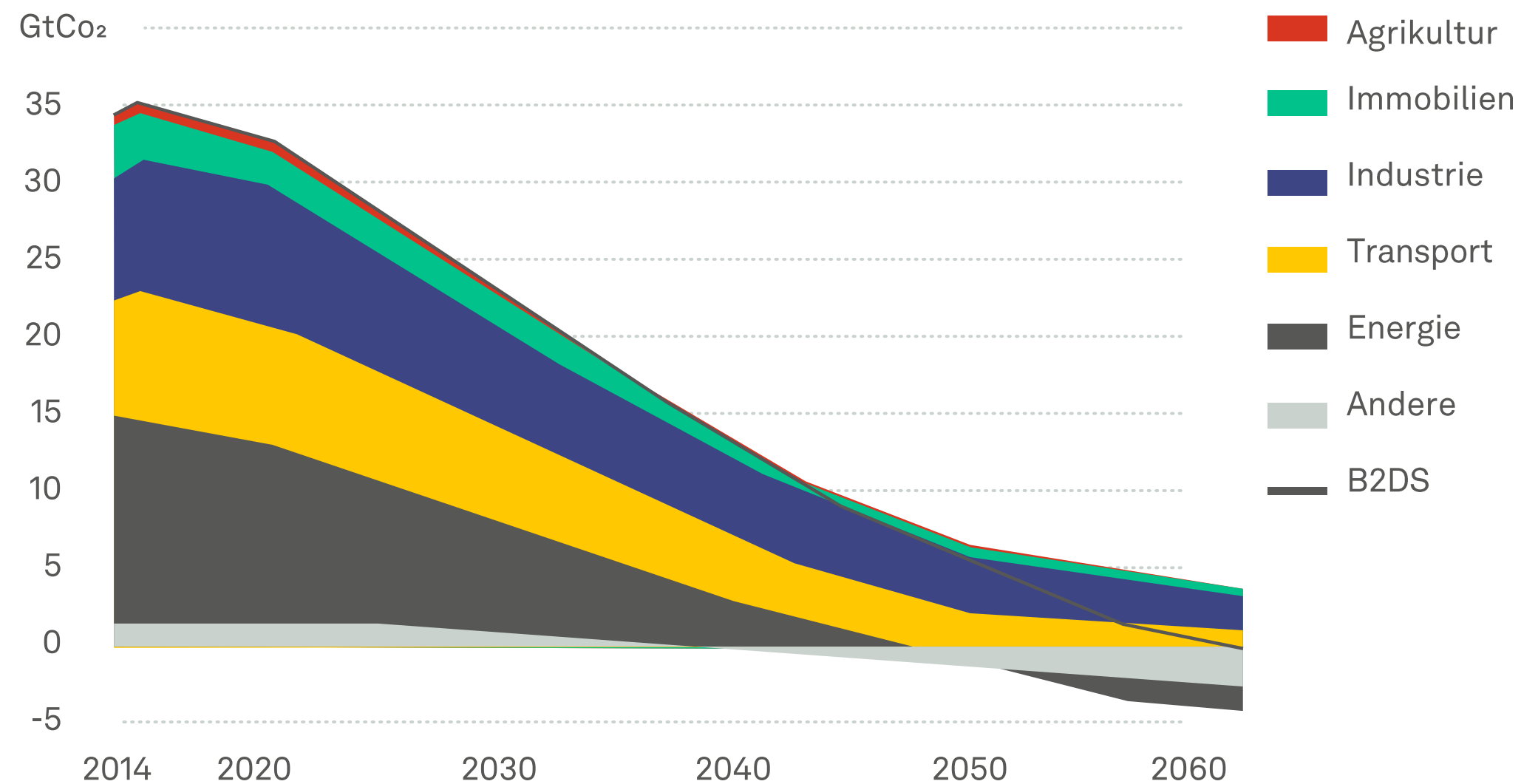


Quelle: right. based on science, *What if the 30 German stock market's largest and most liquid companies would reach their current climate targets?*, November 2019.

Target XDC

Determination of the target XDC under a 1.75°C scenario (B2DS of the IEA).

Remaining emissions budget in IEA B2DS



IEA B2DS | Scenario Profile

The B2DS (Beyond 2 Degrees Scenario) divides the remaining emissions budget between sectors. This results in different target requirements for the individual sectors.

The probability of limiting global warming to 1.75°C by 2100 is 50% according to the B2DS.

To achieve the 1.75 °C target, this scenario assumes the use of CCS/CCU technologies.

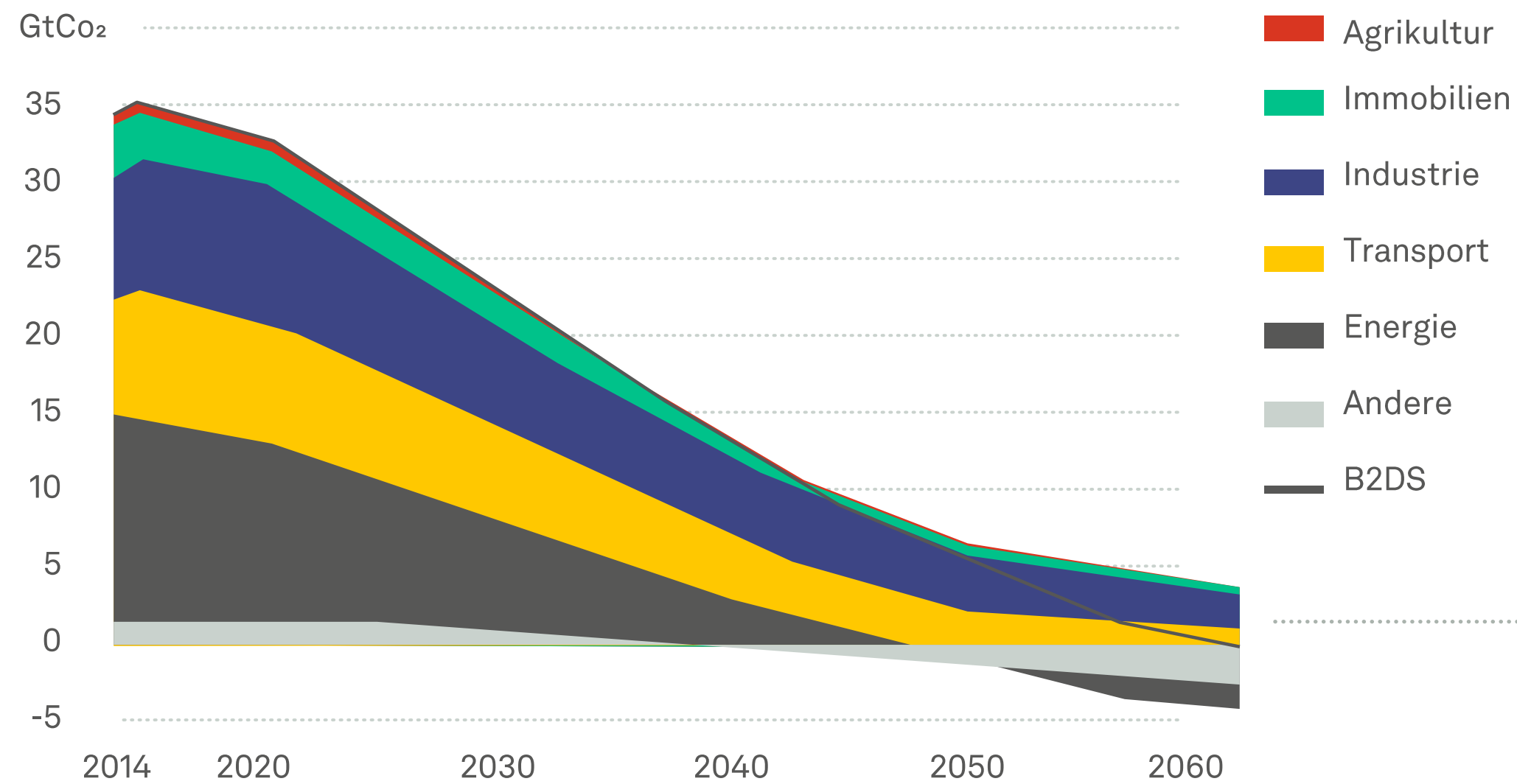
Quelle: IEA (2017a), *Energy Technology Perspectives*, 2017.

Emissions to 2060 by sector below 2°C scenarios. Other transformation includes refineries, as well as biofuel or hydrogen production. For negative emissions, it could include biofuels linked to CCS or biogas used to produce hydrogen with CCS.

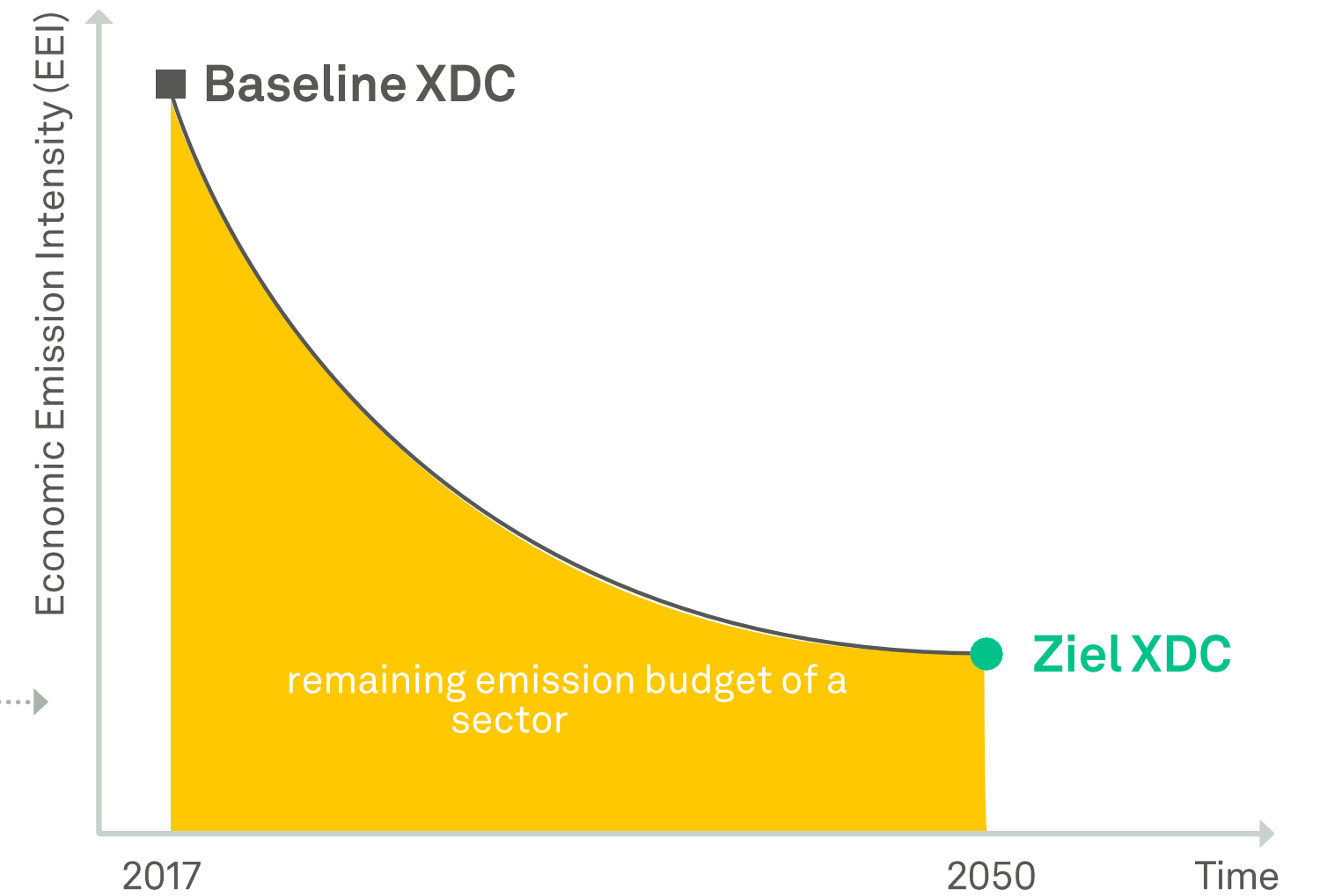
Target XDC

Determination of the target XDC under a 1.75°C scenario (B2DS of the IEA).

Remaining emissions budget in IEA B2DS



Target XDC calculation

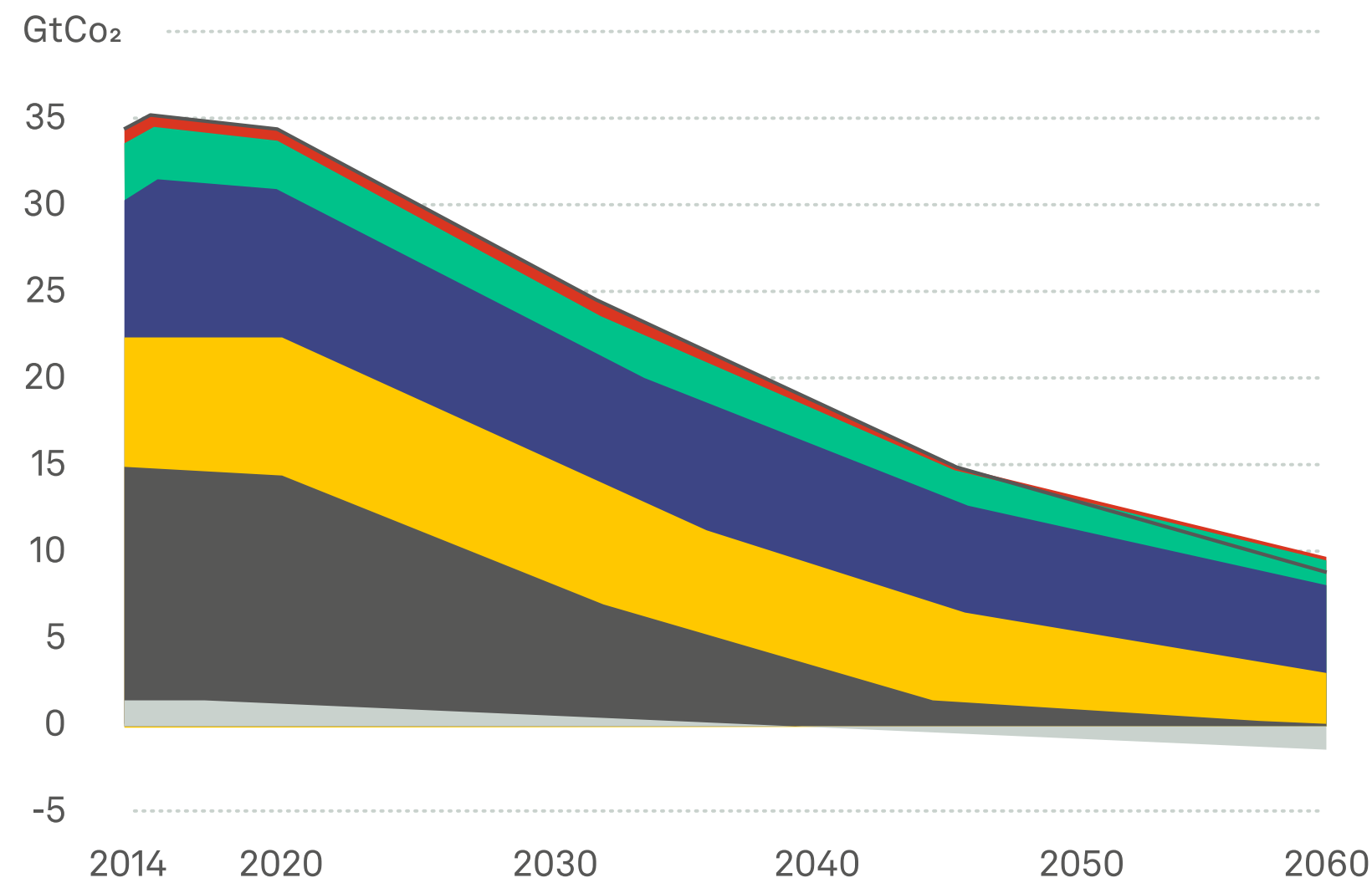


Quelle: IEA (2017a), *Energy Technology Perspectives*, 2017.
Emissions to 2060 by sector below 2C scenarios. Other transformation includes refineries, as well as biofuel or hydrogen production. For negative emissions, it could include biofuels linked to CCS or biogas used to produce hydrogen with CCS.

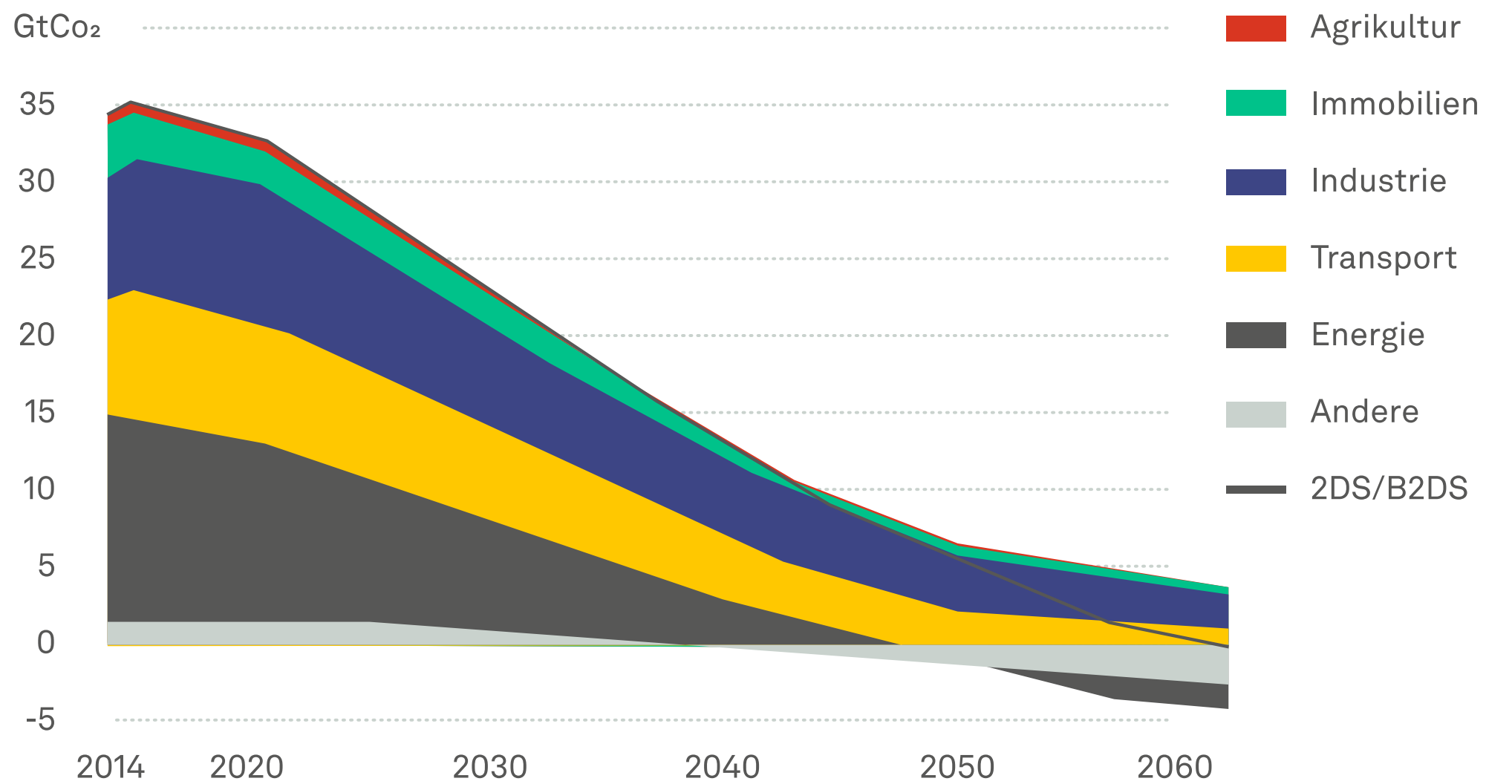
Target XDC

Determination of the target XDC under a 2°C scenario (2DS of the IEA) and a 1.75°C scenario (B2DS of the IEA)

2DS



B2DS



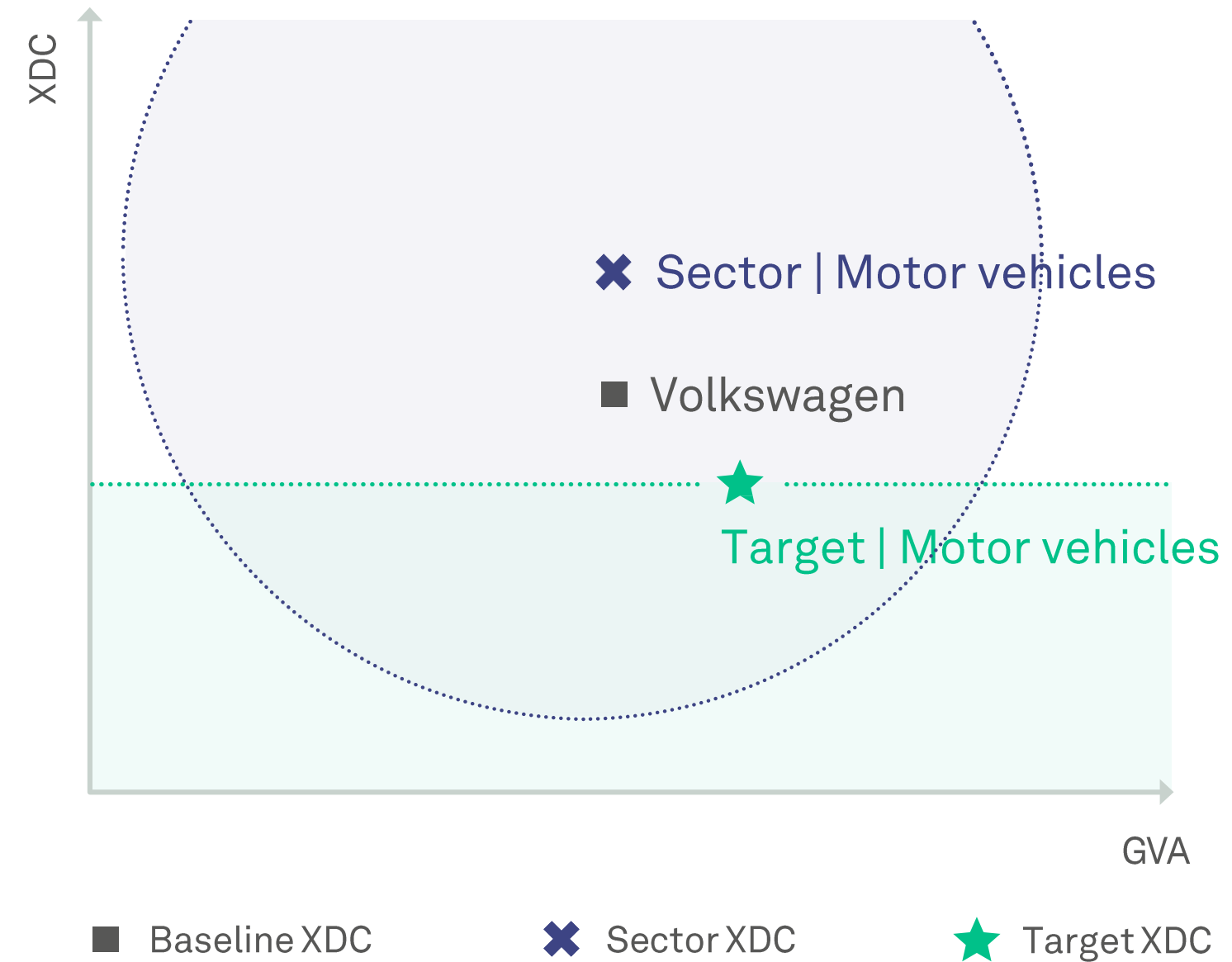
Quelle: IEA (2017a), *Energy Technology Perspectives*, 2017.
Emissions to 2060 by sector below 2C scenarios. Other transformation includes refineries, as well as biofuel or hydrogen production. For negative emissions, it could include biofuels linked to CCS or biogas used to produce hydrogen with CCS.

Target XDC

Determination of the target XDC under a 1.75°C scenario (B2DS of the IEA).

Comparison with own sector

NACE 29 | Production of motor vehicles and parts



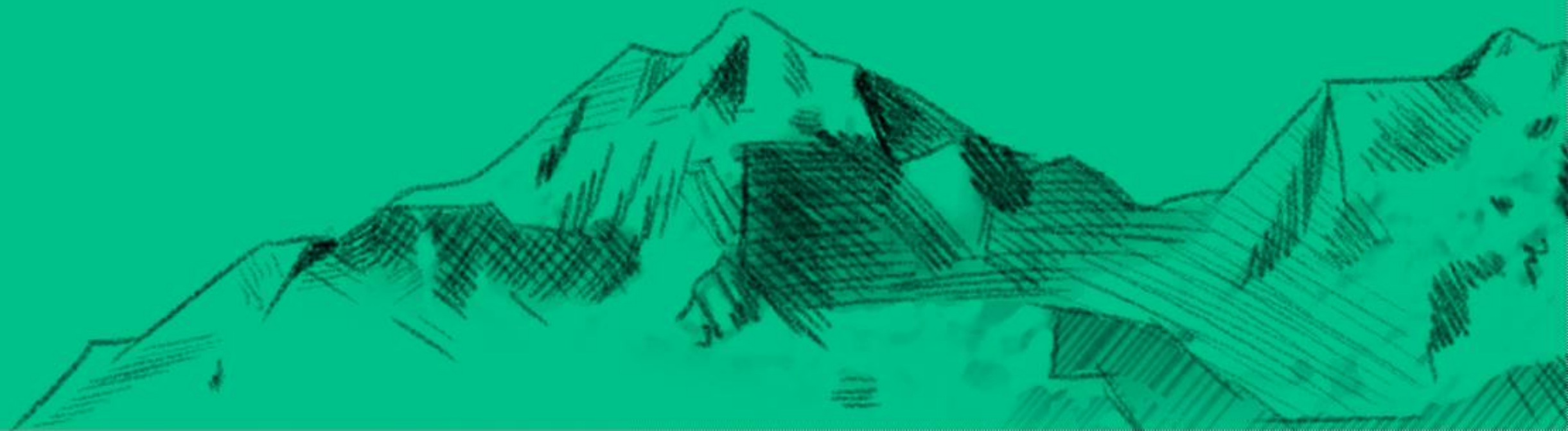
Results

Volkswagen AG



Quelle: right. based on science, *What if the 30 German stock market's largest and most liquid companies would reach their current climate targets?*, November 2019.

Mentimeter



By how many °C does Volkswagen AG deviate from the target temperature of its sector?

+0,5 °C*

XDC Gap

3,4 °C

Baseline XDC
(Current)

2,9 °C

Target XDC
(Goal)

* The XDC gap represents the delta between baseline XDC and target XDC.
Values $\leq 0^\circ\text{C}$ indicate a compatibility with the recognised global target temperature.

Why XDC?

-0,2 °C

XDC Gap

Konkurrent der Volkswagen AG

+0,5 °C

XDC Gap

Volkswagen AG

- Who is the **better partner** for customers in the future?
- Who has better access to **talent**?
- Who has better access to **capital**?
- Who will have **more capital** for adaptation?

Why XDC?

Fiktiv



Investment

Credit approval

+ 0,5 °C*

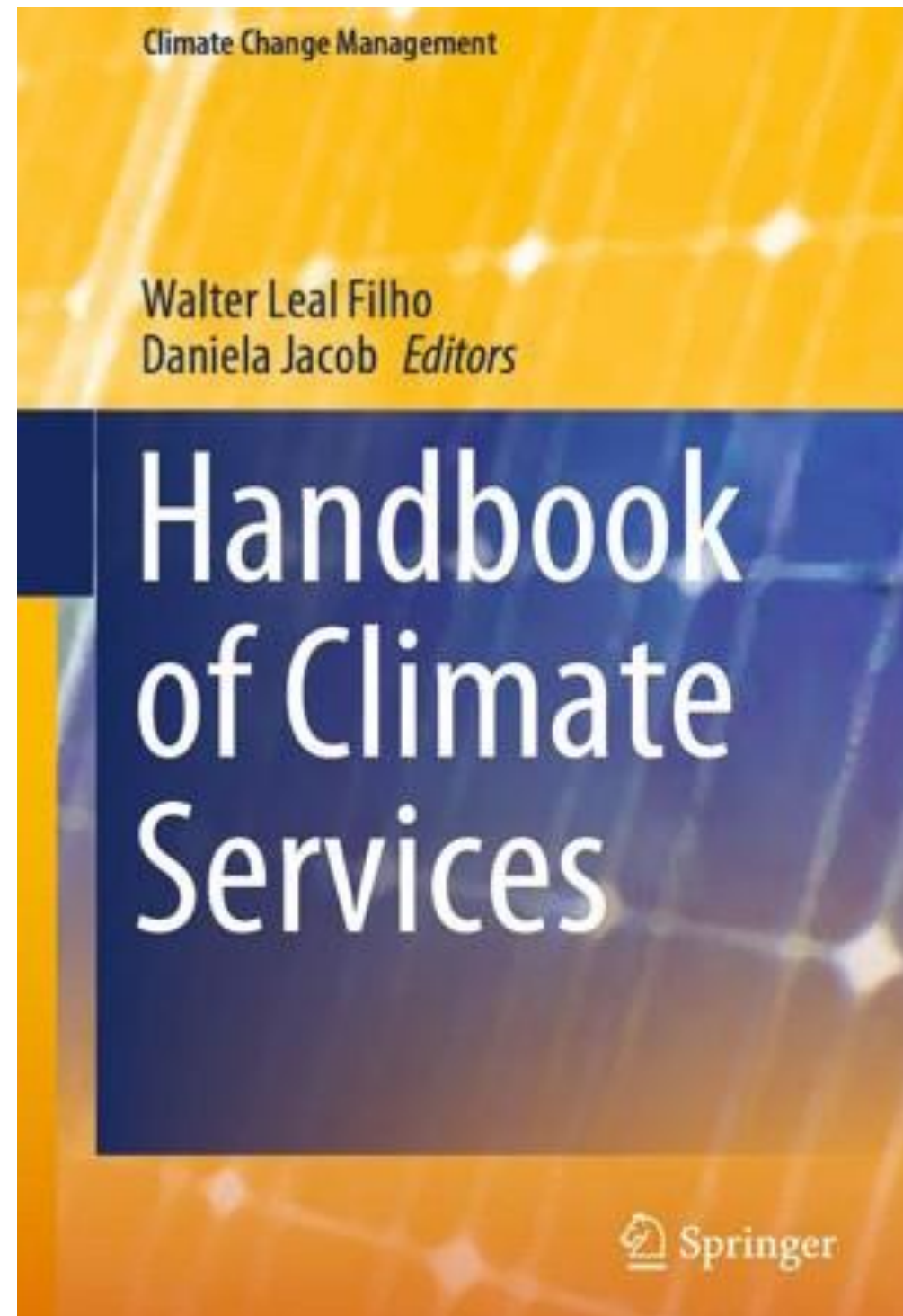
Volkswagen AG

Risk management
Climate strategy
Reporting

* The XDC gap represents the delta between baseline XDC and target XDC.
Values ≤ 0 °C indicate compatibility with the defined global temperature target.

XDC Model

Peer-reviewed



 Springer

Provision of Climate Services – The XDC Model

Hannah Helmke, Hans-Peter Hafner, Fabian Gebert, Ari Pankiewicz

Erschienen: 18. Januar 2020

https://link.springer.com/chapter/10.1007/978-3-030-36875-3_12

3.

Use Cases



Nachhaltigkeitsmanagement

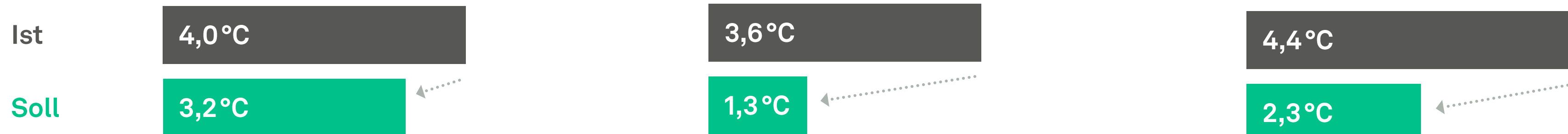
Umweltstrategie

Umweltstrategie
Steuerung der Klimawirkung auf Unternehmensebene

Division 1
Fokus | Rohstoffe

Division 2
Fokus | Energie

Division 3
Fokus | Innovation



Maßnahmenbeispiele

- Biobasierte Rohstoffe
- Lokalere Lieferketten und Hersteller

Maßnahmenbeispiele

- Grünstrom
- Energieeffizienztechnologien

Maßnahmenbeispiele

- Leichtere Produkte
- Emissionsreduzierende Systemsteuerungen

Versicherungswirtschaft

Investitions- und Versicherungsentscheidungen

Wie werden Rücklagen angelegt?

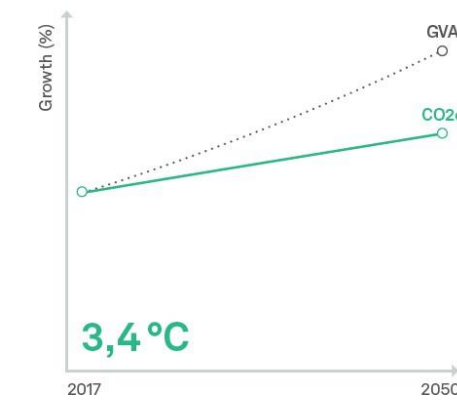
Wer wird versichert?

Wie werden grüne
Versicherungsprodukte entwickelt?

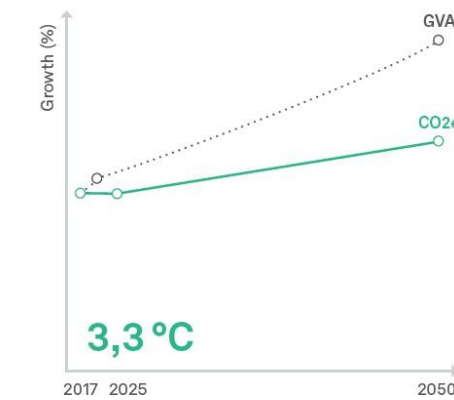
right. based on science **X Degree Compatibility**

#	Asset class	NACE Code	NACE Sector	Name	Weight	Baseline XDC 2017			
						Baseline XDC Total	Baseline XDC Scope 1	Baseline XDC Scope 2	Baseline XDC Scope 3
Portfolio Baseline						3,51	1,74	1,36	3,32
1	Equity	65	Insurance	Allianz	10%	3,23	1,26	1,27	3,23
2	Equity	20	Manufacture of chemicals and chemical products	BASF	10%	4,26	2,22	1,39	3,59
3	Equity	21	Manufacture of basic pharmaceutical products	Bayer	10%	2,02	1,40	1,32	1,85
4	Equity	20	Manufacture of chemicals and chemical products	Beiersdorf	10%	2,61	1,29	1,27	2,58
5	Equity	29	Manufacture of motor vehicles	BMW	10%	2,57	1,29	1,28	2,54
6	Equity	22	Manufacture of rubber and plastic products	Continental	10%	4,13	1,33	1,35	4,05
7	Equity	20	Manufacture of chemicals and chemical products	Covestro	10%	5,12	1,55	1,84	4,74
8	Equity	29	Manufacture of motor vehicles	Daimler	10%	2,98	1,31	1,29	2,94
9	Equity	64	Financial service activities	Deutsche Bank	10%	2,77	1,27	1,27	2,77
10	Equity	53	Postal and courier activities	Deutsche Post	10%	2,10	1,50	1,27	1,88

Baseline XDC
Historische Entkopplung von GVA und Emissionen



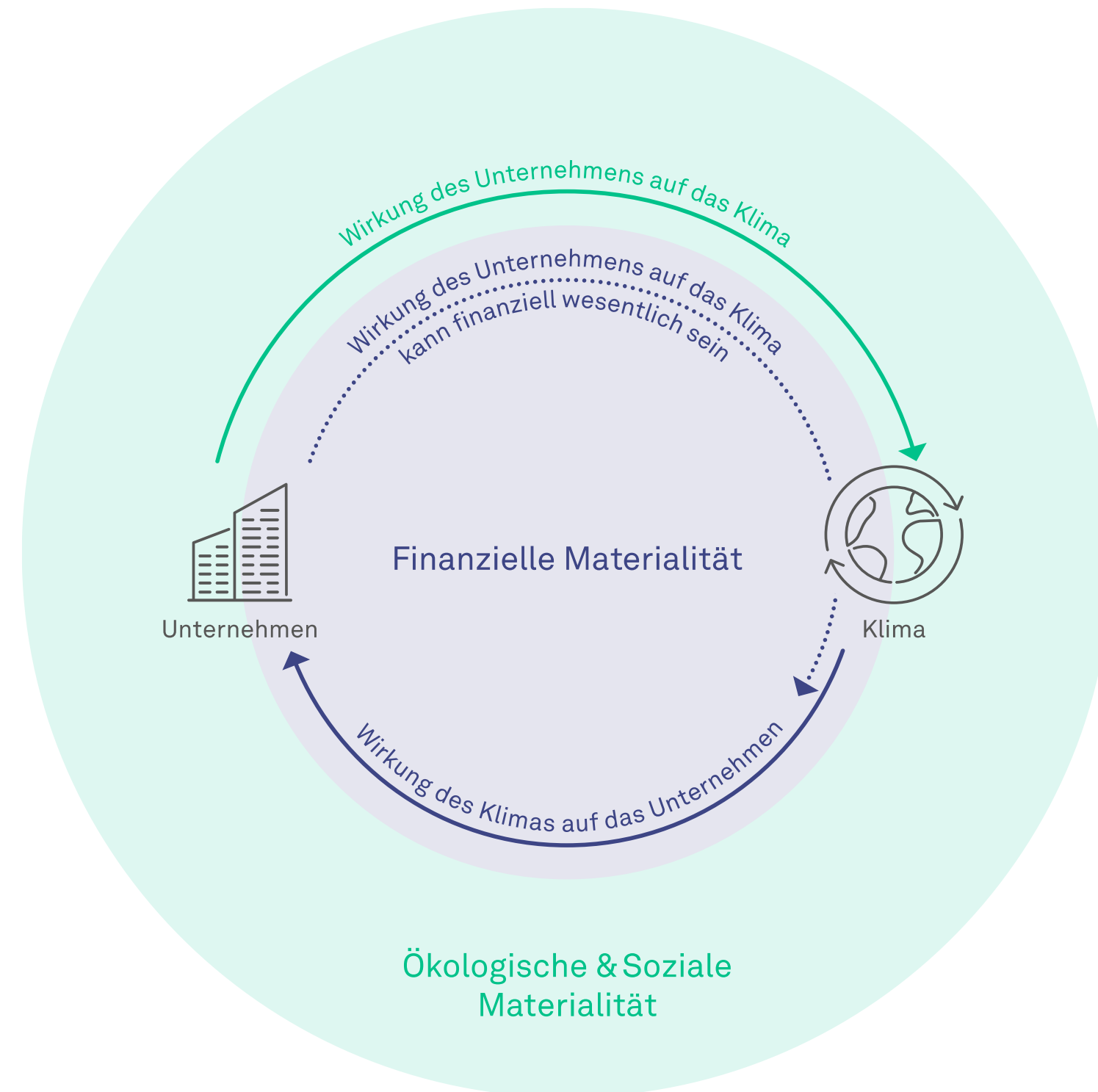
Szenario XDC
Klimastrategie Volkswagen AG.



right. open
for making climate risks tangible

Risikomanagement

Doppelte Materialität



Unter welchen plausiblen Szenarien steigt die XDC eines Unternehmens und sorgt damit für zusätzliche Risiken mit finanzieller Materialität, wie z. Bsp. Reputationsrisiken?

Welche Warnsignale für das Eintreten der Szenarien gibt es?

Wie sieht eine Klimastrategie aus, die Risiken kontrolliert und damit einer Rückkopplung entgegenwirken kann?

Quelle: *Summary of the EC guidelines on reporting climate related information, 2019.*

4.

right. open



Why right.open?



right.open was launched by right. based on science in May 2019, driven by the vision of **a future in which science, business and policy work together to address the challenges of global warming**. For this purpose, right.open provides researchers and decision makers with the tools, the training and the network of support needed to create collaborative and science-based responses to global warming.

Since the launch, right.open has mobilized 17 research collaborations together with 14 university partners and 3 organizations from the real and financial economy.



What is right.open?



Open source

Through right.open, researchers gain free access to the science-based economic climate impact model – the XDC Model – as an innovative methodology for increasing transparency on climate related risks and opportunities.



Supervision & training

right.open equips present and future decision makers in understanding, developing and applying the XDC Model as a scientifically sound basis for integrating climate considerations in decision making.



Transdisciplinary research

right.open bridges the gap between science, business, finance, and policy by mobilizing their collaboration through transdisciplinary research projects where the XDC Model provides the unifying ‘language’. Researchers gain unique insights into the practical reality of global warming while meeting the needs expressed by decision-makers who are keen to act but lack the competence and tools to do so.



A thriving community

Facilitated by an upcoming digital community platform, the right.open community invites researchers and decision-makers to collaborate on leveraging the potential in the XDC Model to reach a common objective: the transition to a <math><2\text{ }^\circ\text{C}</math> economy.

How does it work?



Use case: Life Cycle Engineering Experts (LCEE) & TU Darmstadt

The climate impact of residential and commercial buildings - developing an assessment methodology based on the XDC model



Researcher: Mareike Schöffner (M.Sc.)

Supervisor at TU Darmstadt: Professor Anette von Ahsen

Supervisor at LCEE: Sebastian Pohl

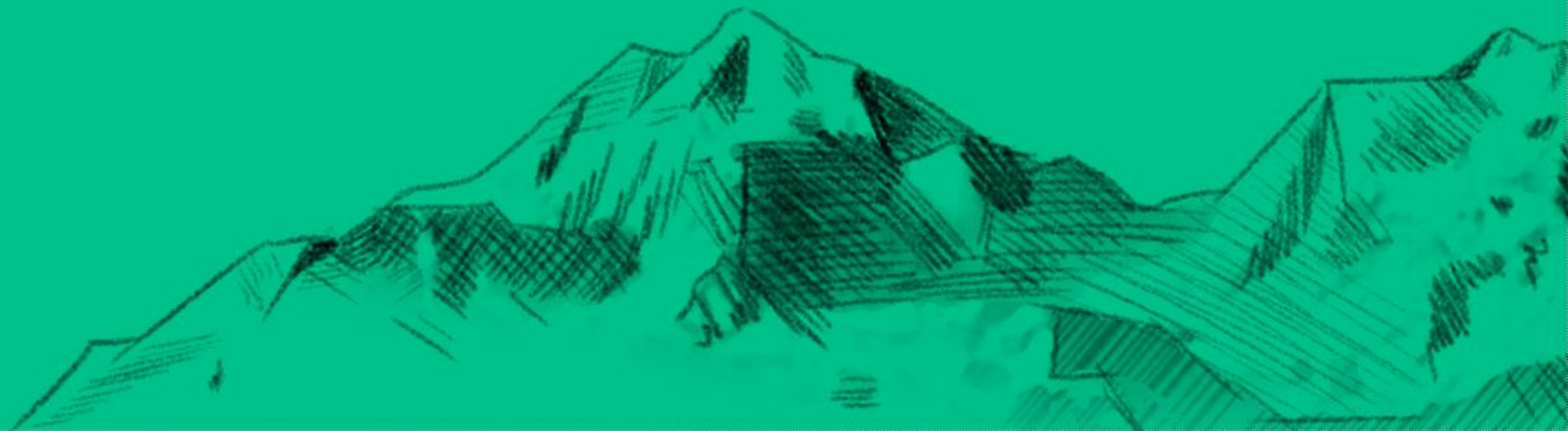
Challenge: How can the climate impact of individual buildings be assessed and managed, thus meeting the demand from credit providers, real estate companies and consultancies conducting due diligence and reporting on buildings?

Approach: The identification of an input variable for the XDC Model, which is equivalent to GVA on building level, and for which current and future estimated global values are available.

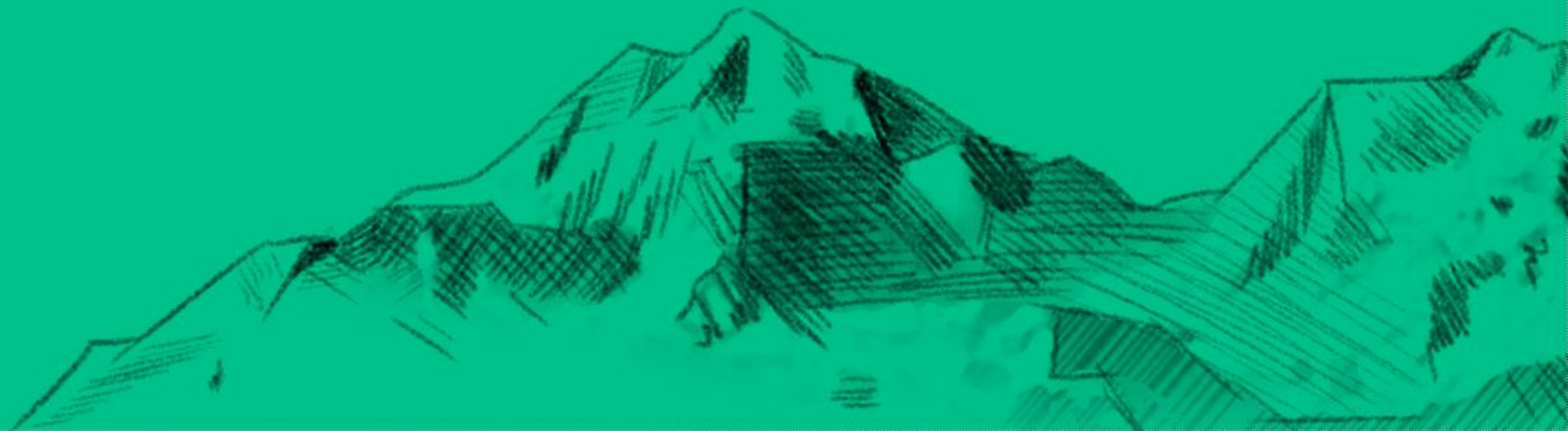
Solution: The exchange of GVA to square meters (sqm).

Outlook: Ongoing discussions with a European consultancy firm on the potential development of an MVP.

Mentimeter



Questions?





Contact us!

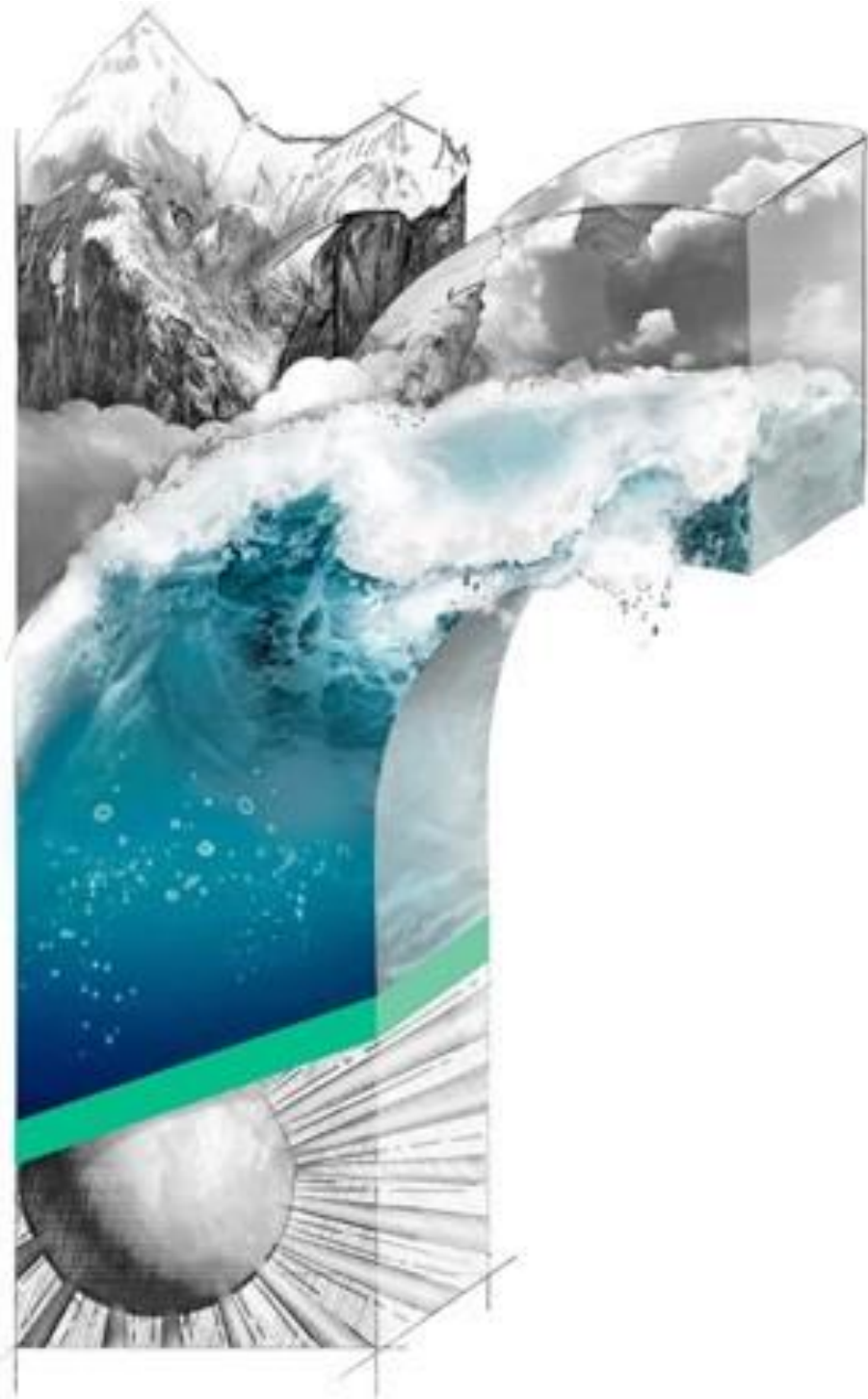
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Disclaimer



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