



**the international
water association**

Planetary Boundaries and Absolute Sustainability in the Water sector

12 MARCH 2026

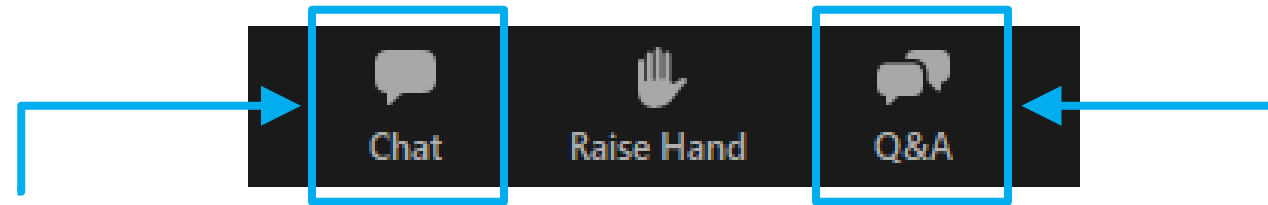
inspiring change

WEBINAR INFORMATION – HOUSEKEEPING RULES



- This webinar will be **recorded and made available “On-demand”** on the [IWA Connect Plus](#) platform for the members, with relevant information.
- The **speakers** are responsible for **securing copyright permissions** for any work that they will present of which they are not the legal copyright holder.
- The opinions, hypothesis, conclusions or recommendations contained in the presentations and other materials are the **sole responsibility of the speaker(s)** and do not necessarily reflect IWA opinion.

WEBINAR INFORMATION – HOUSEKEEPING RULES



- **‘Chat’ box:** please use this for general requests and for interactive activities.
- **‘Q&A’ box:** please use this to send questions to the panelists. (We will answer these during the discussions)

Please Note: Attendees’ microphones are muted. We cannot respond to ‘Raise Hand’.

AGENDA

- **Introduction to webinar and Housekeeping**

Miriam Feilberg, Chair of SG on Sustainability and Amanda Lake Co-lead of Climate Smart Utilities

- **Planetary Boundaries: Introduction and Relevance for the Water sector + Q&A**

Sarah Brudler Friis, Technical University of Denmark / Envidan

- **Planetary Boundaries in a Utility perspective + Q&A**

Berit Godskesen, Frederiksberg Utility

- **The SBTI framework and sustainability in the water sector + Q&A**

Andy Williams, Jacobs

- **Panel Discussion**

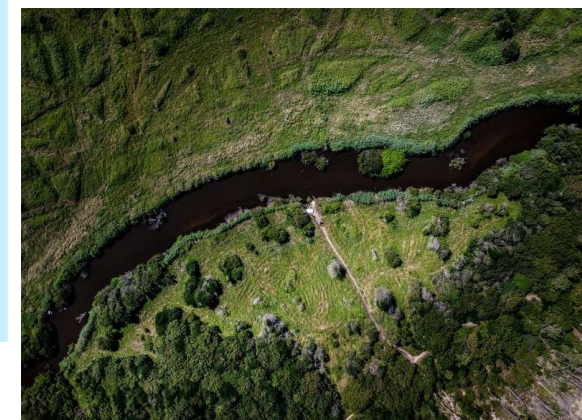
Moderators and Speakers

- **Wrap Up and Close**

Miriam Feilberg, Chair of SG on Sustainability and Amanda Lake Co-lead of Climate Smart Utilities

Absolute Sustainability and Planetary Boundaries

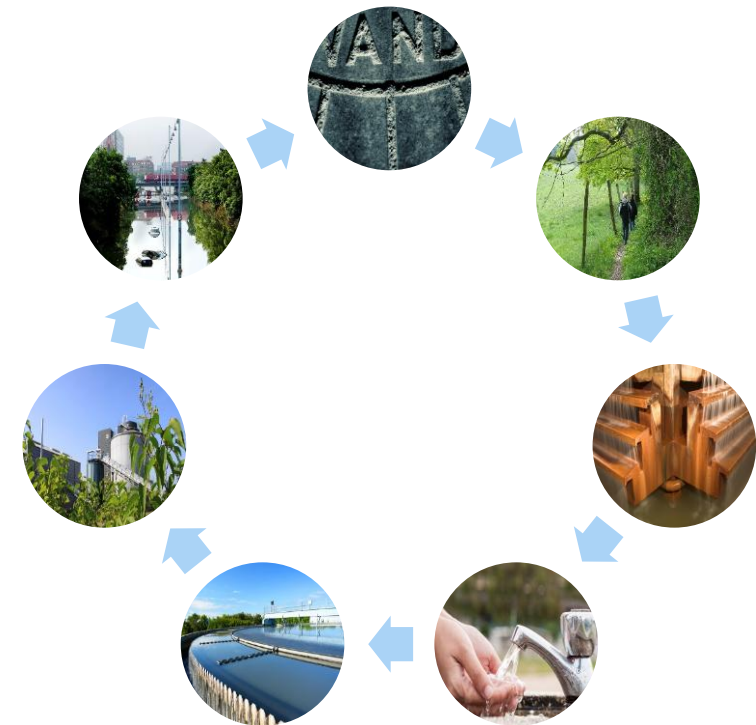
SUSTAINABILITY SPECIALIST GROUP X IWA CLIMATE SMART UTILITIES PROGRAMME



IWA SPECIALIST GROUP ON SUSTAINABILITY IN THE WATER SECTOR

Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

Meet us on IWA Connect or write to Miriam Feilberg: mfe@danva.dk



CLIMATE SMART UTILITIES PROGRAMME

- IWA Programme and GHG Mitigation Working Group
- <https://www.iwaconnectplus.org/group/feeds?CommunityKey=a0M4K000004Pd5YUAS>



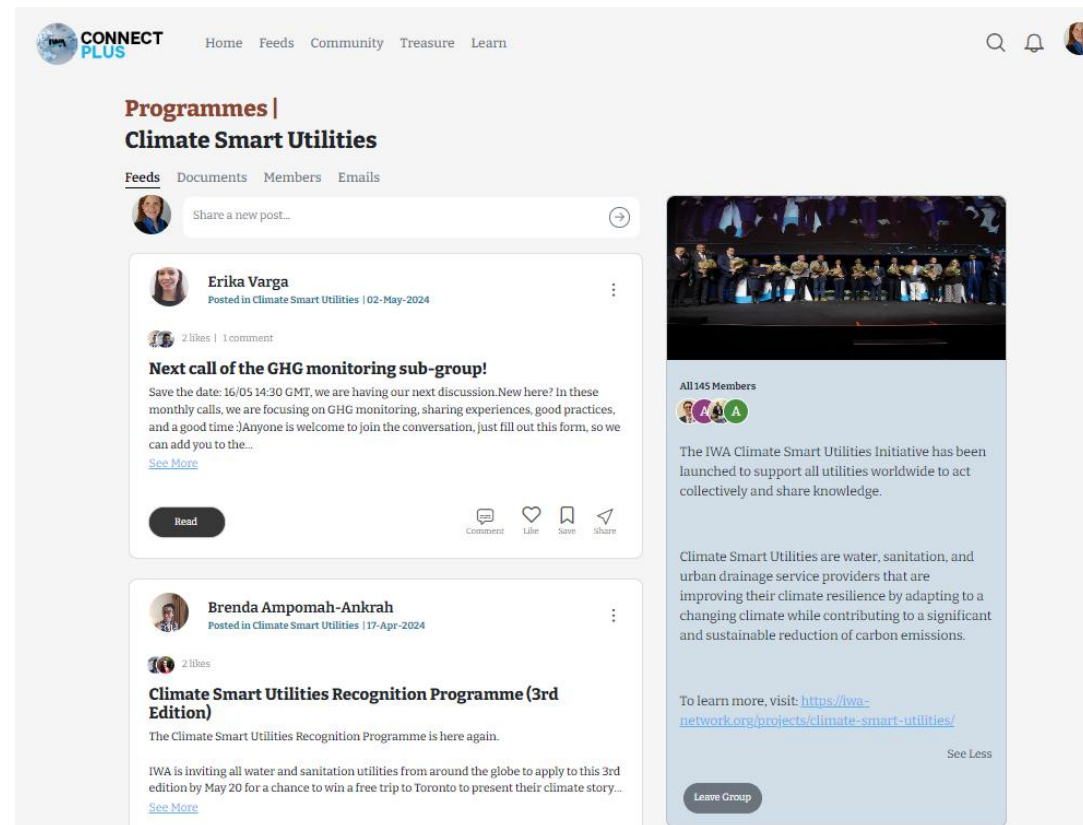
Erika Varga



Amanda Lake



Jürgen Schmidtke



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Share a new post...

Erika Varga
Posted in Climate Smart Utilities | 02-May-2024

2 likes | 1 comment

Next call of the GHG monitoring sub-group!

Save the date: 16/05 14:30 GMT, we are having our next discussion. New here? In these monthly calls, we are focusing on GHG monitoring, sharing experiences, good practices, and a good time :) Anyone is welcome to join the conversation, just fill out this form, so we can add you to the...

[See More](#)

Read Comment Like Save Share

Brenda Ampomah-Ankrah
Posted in Climate Smart Utilities | 17-Apr-2024

2 likes

Climate Smart Utilities Recognition Programme (3rd Edition)

The Climate Smart Utilities Recognition Programme is here again.

IWA is inviting all water and sanitation utilities from around the globe to apply to this 3rd edition by May 20 for a chance to win a free trip to Toronto to present their climate story...

[See More](#)

All 145 Members

The IWA Climate Smart Utilities Initiative has been launched to support all utilities worldwide to act collectively and share knowledge.

Climate Smart Utilities are water, sanitation, and urban drainage service providers that are improving their climate resilience by adapting to a changing climate while contributing to a significant and sustainable reduction of carbon emissions.

To learn more, visit: <https://www.iwa-network.org/projects/climate-smart-utilities/>

See Less

Leave Group



Samuela Guida
IWA



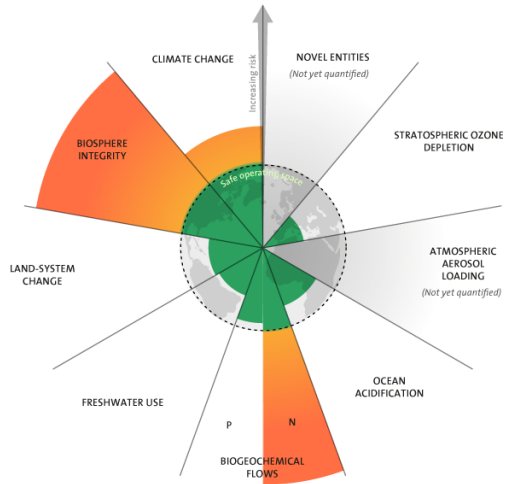
Brenda Ampomah-Ankrah
IWA

IWA webinar: Planetary boundaries and absolute sustainability
in the water sector

Introduction to the planetary boundaries

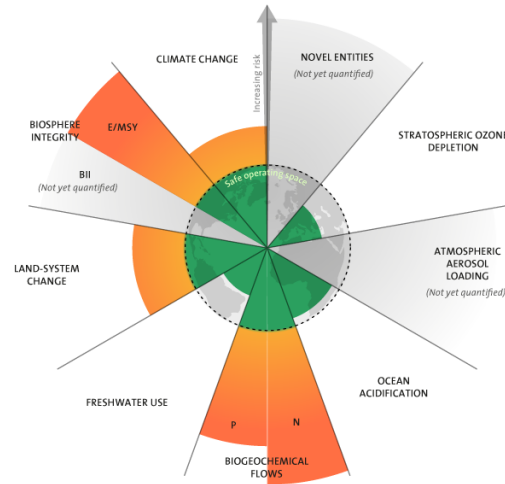
7 out of 9 planetary boundaries are now exceeded

2009



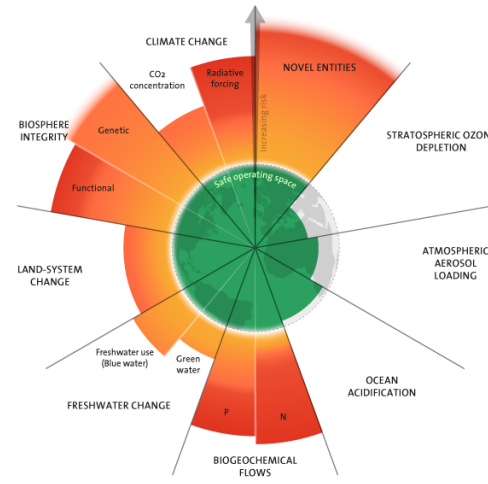
7 boundaries assessed,
3 crossed

2015



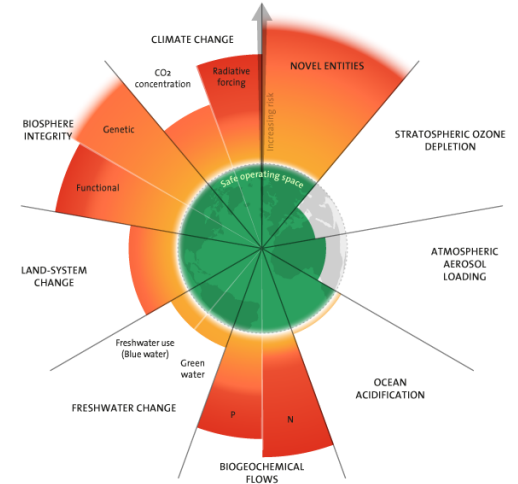
7 boundaries assessed,
4 crossed

2023



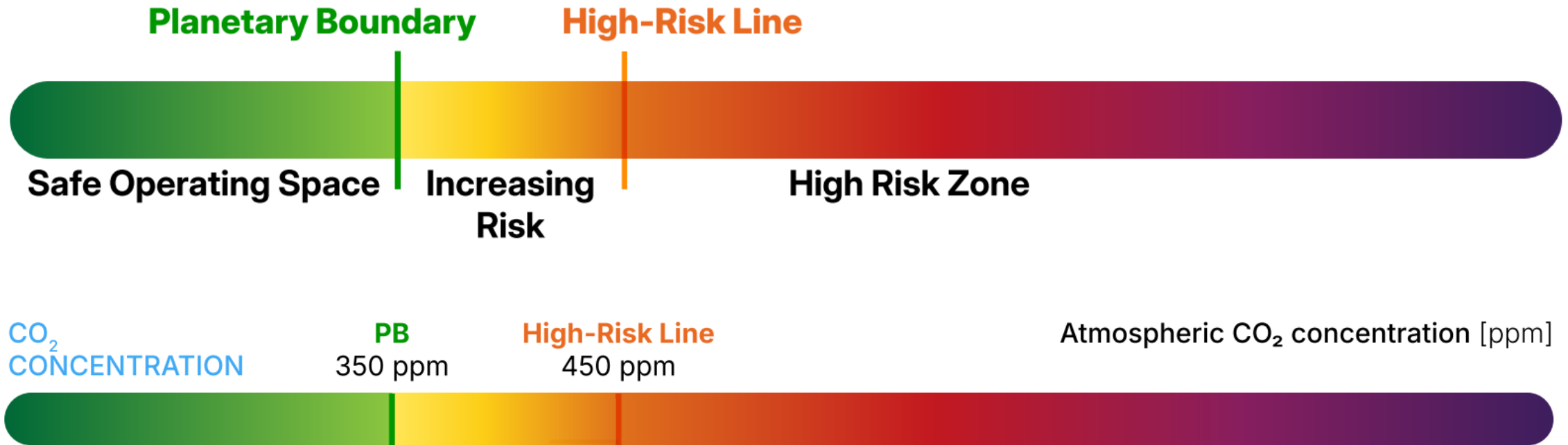
9 boundaries assessed,
6 crossed

2025



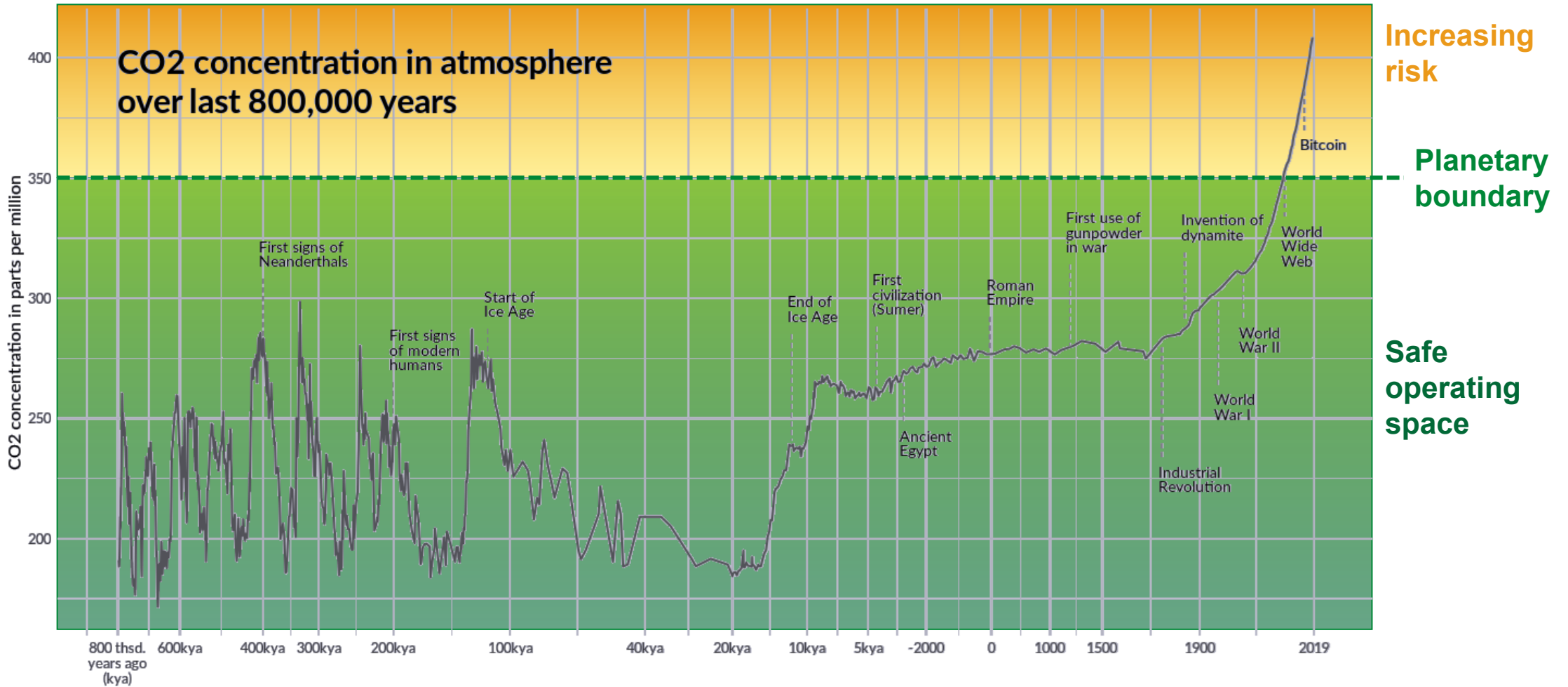
9 boundaries assessed,
7 crossed

What is a planetary boundary?

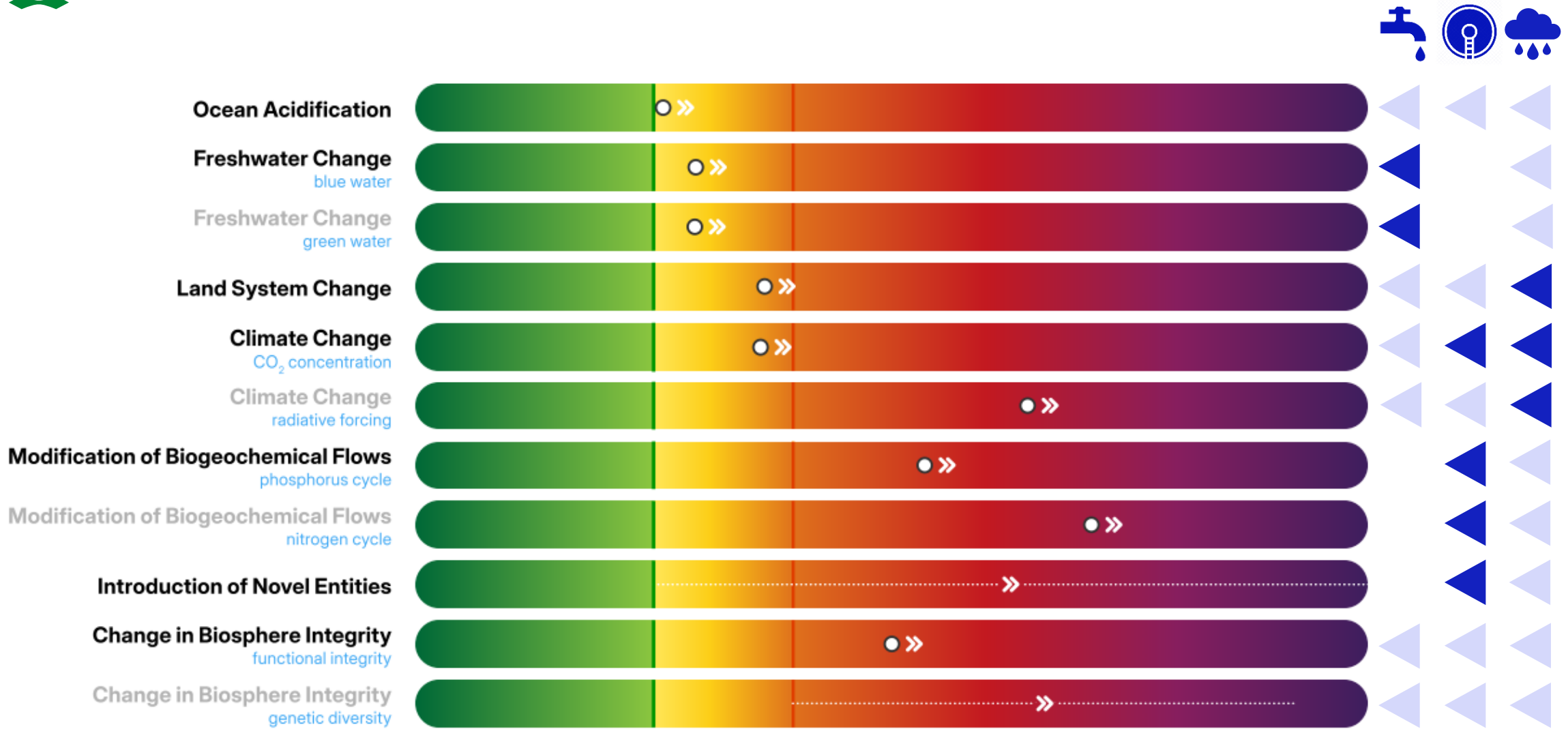


Based on Sakschewski et al. (2025). Planetary Health Check 2025. A Scientific Assessment of the State of the Planet. DOI: 10.48485/pik.2025.017

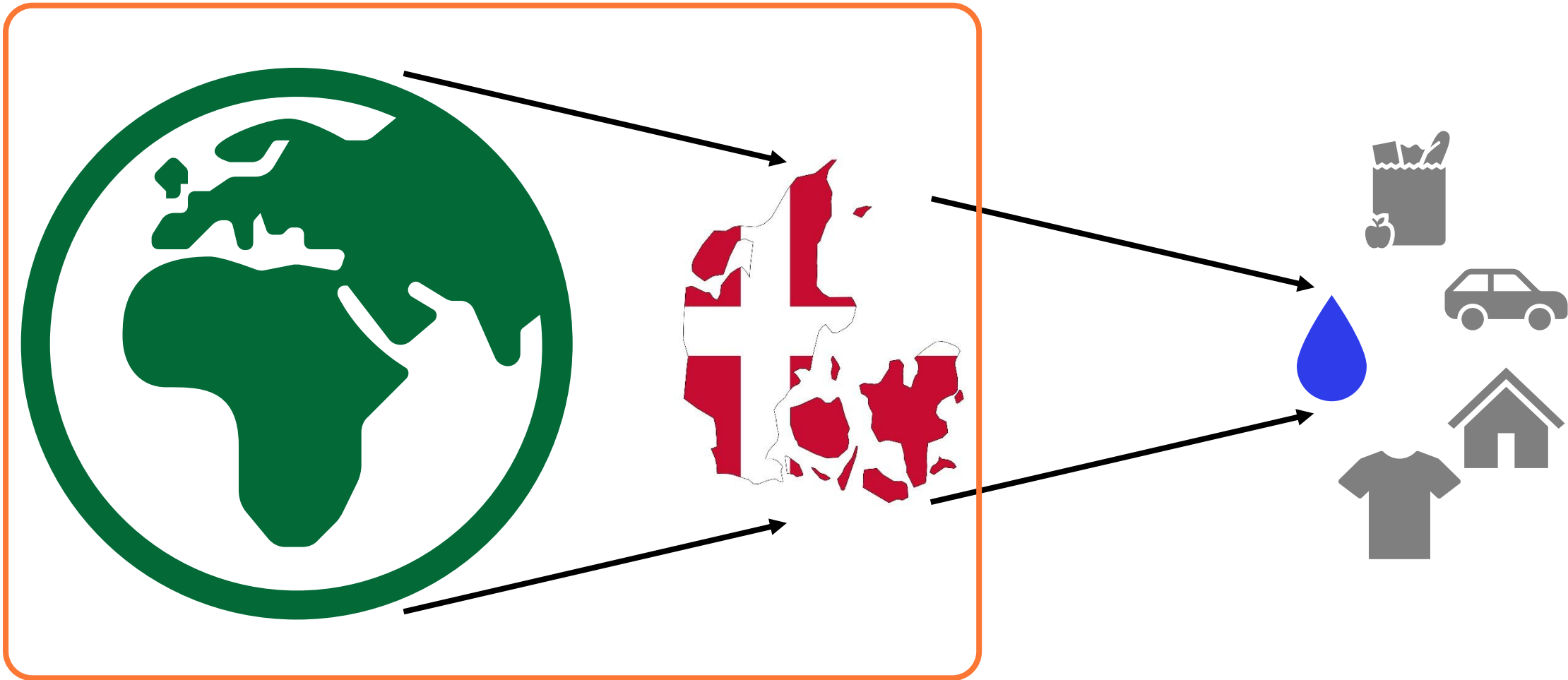
What is a planetary boundary?



Time is warped using sqrt scale before 1900 for readability. Graphic: Gregor Aisch, vis4.net
 Source: NOAA (1959-today), NASA (1850-1958), Monnin et al., Petit et al., Siegenthaler et al., Luethi et al. (800kya-1850)

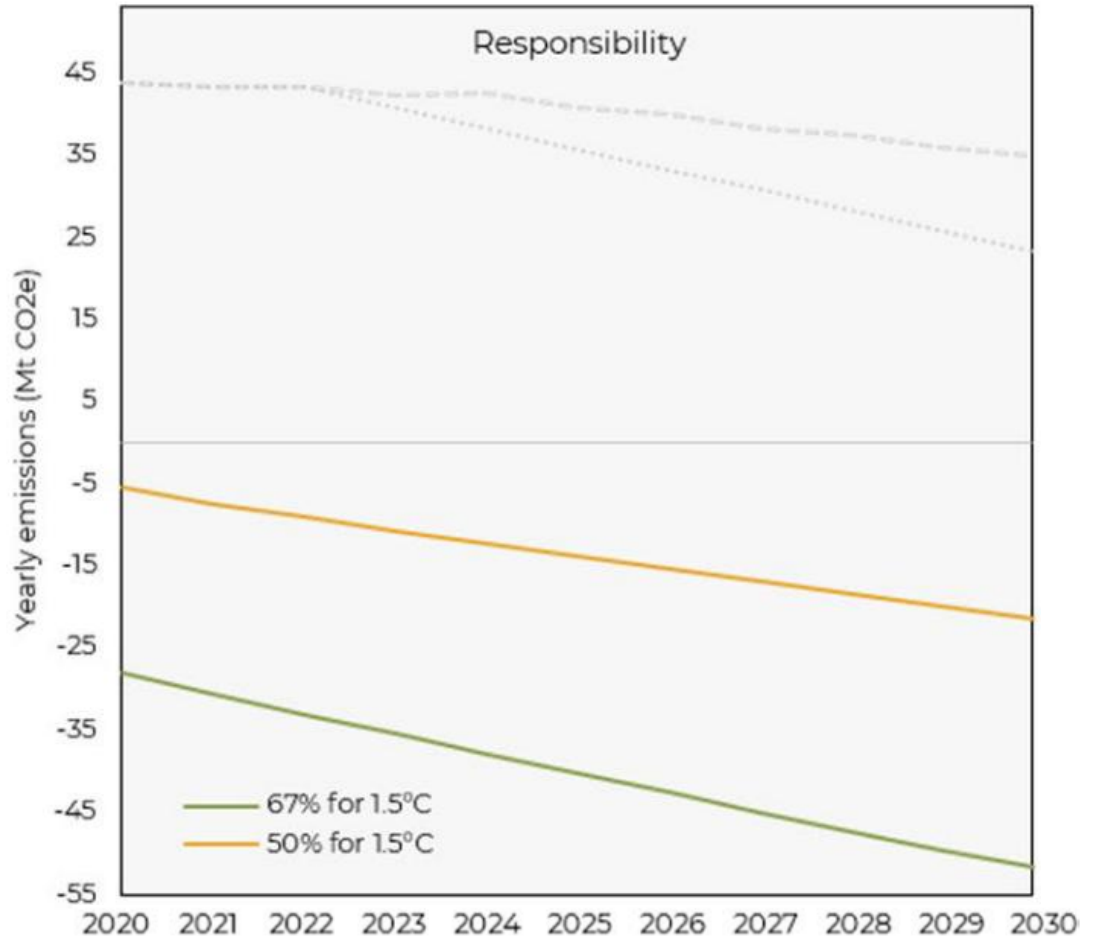
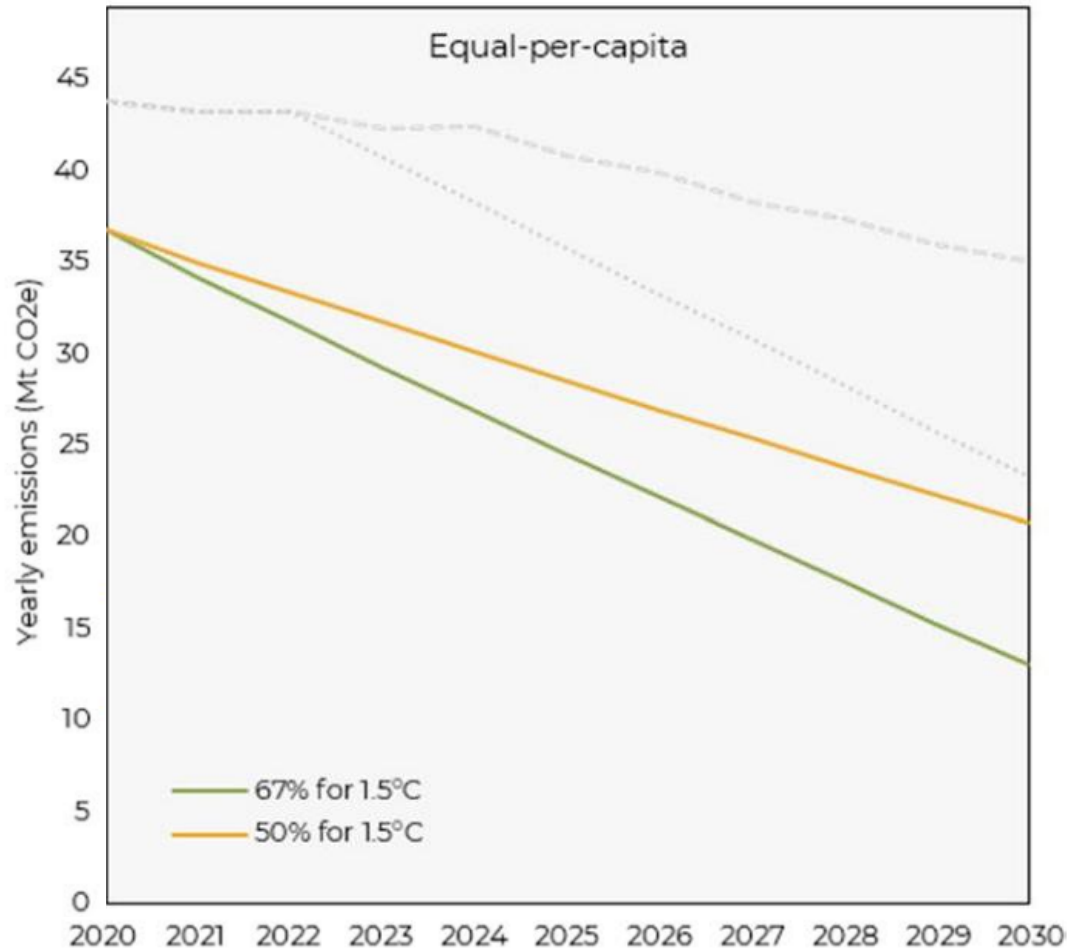


How do we share the safe operating space?

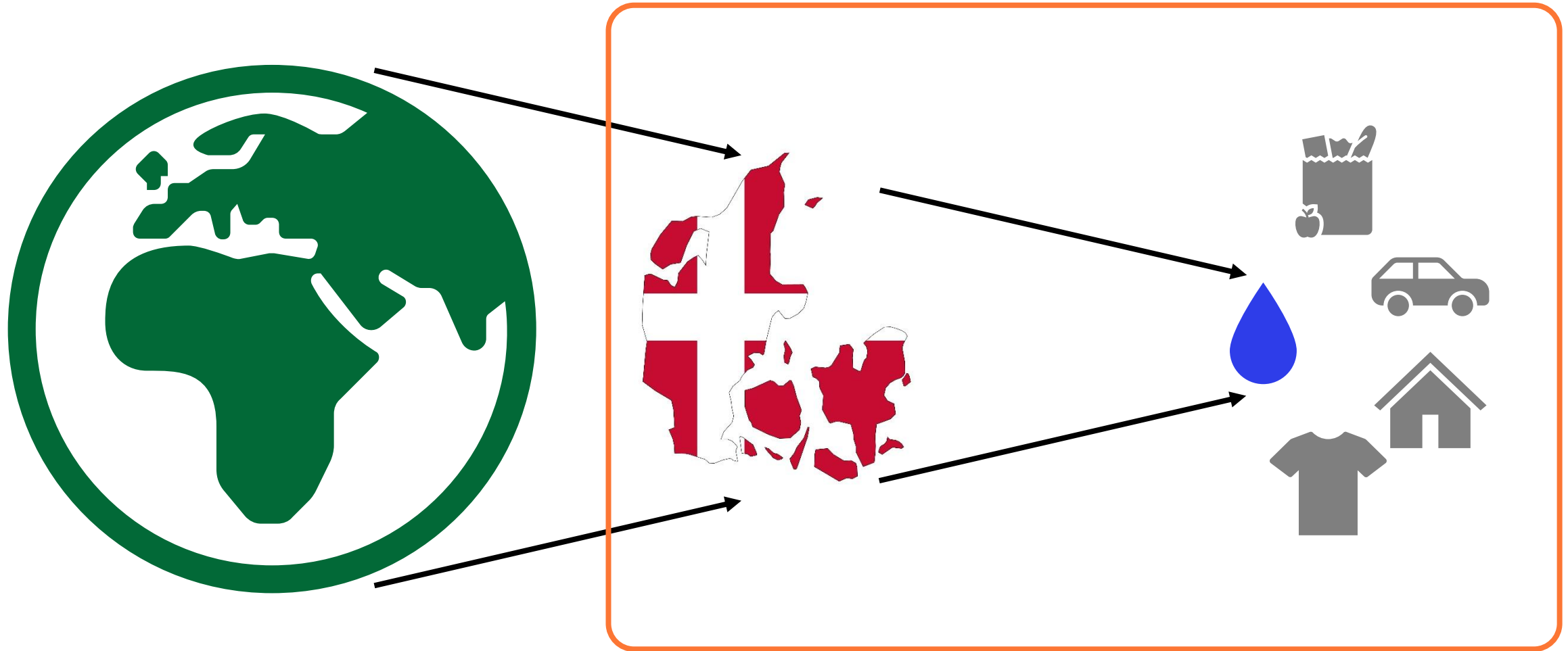


Inspired by Hjalsted et al. (2021). Sharing the safe operating space: Exploring ethical allocation principles to operationalize the planetary boundaries and assess absolute sustainability at individual and industrial sector levels. DOI: 10.1111/jiec.13050

Denmark's share of the global carbon budget

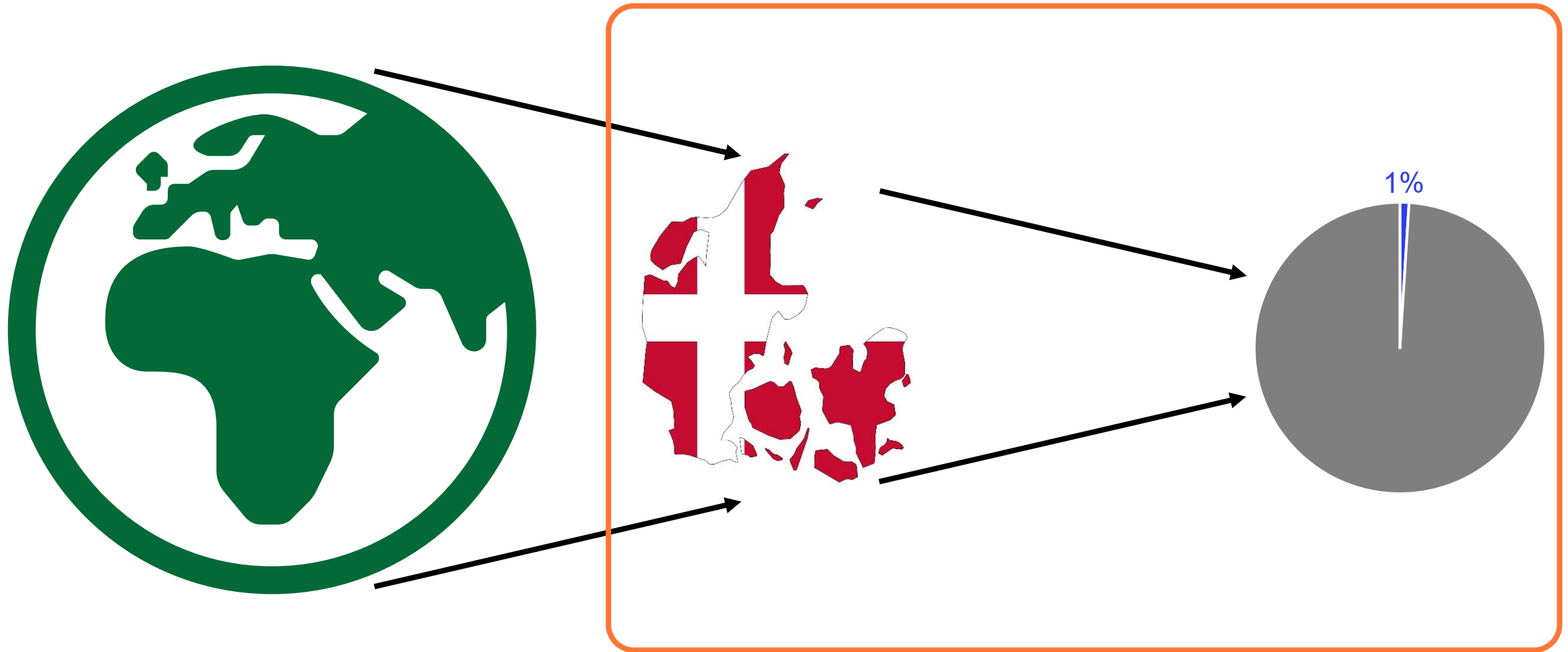


How do we share the safe operating space?



Inspired by Hjalsted et al. (2021). Sharing the safe operating space: Exploring ethical allocation principles to operationalize the planetary boundaries and assess absolute sustainability at individual and industrial sector levels. DOI: 10.1111/jiec.13050

How do we share the safe operating space?

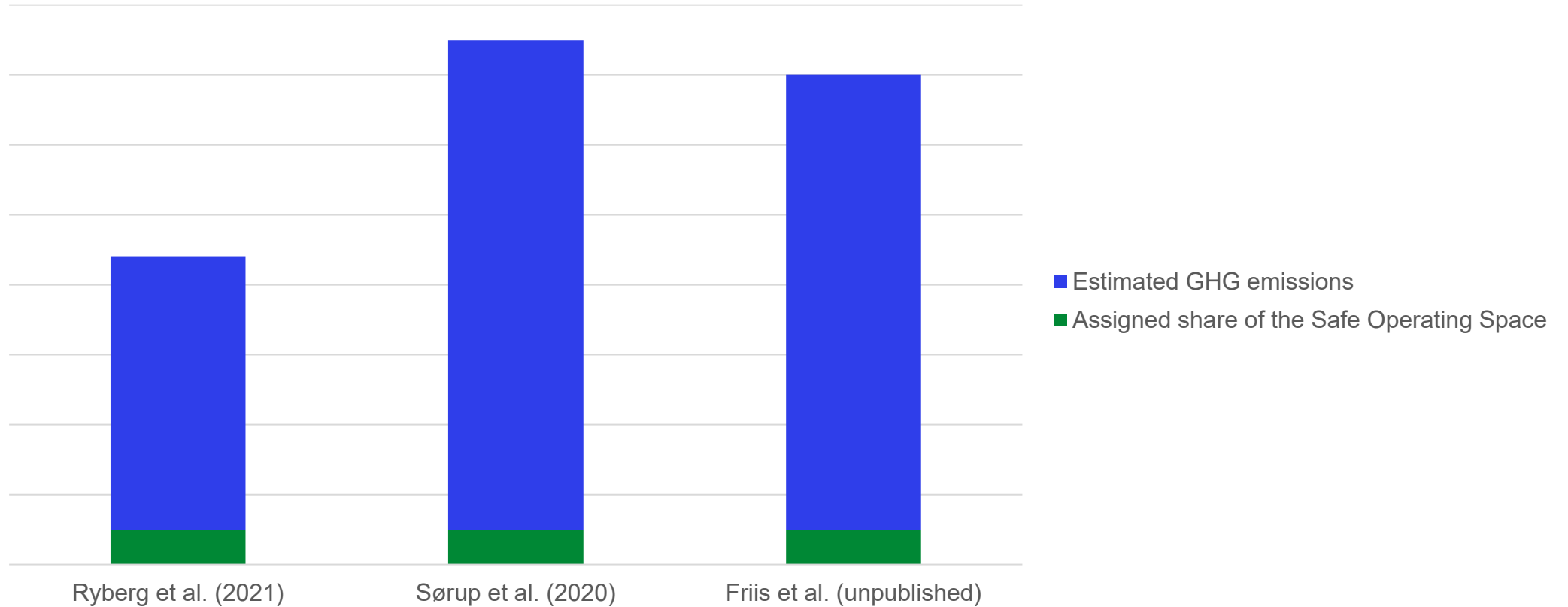


Inspired by Hjalsted et al. (2021). Sharing the safe operating space:

Exploring ethical allocation principles to operationalize the planetary boundaries and assess absolute sustainability at individual and industrial sector levels. DOI: 10.1111/jiec.13050

Inspired by Ryberg et al. (2021) Absolute environmental sustainability assessment of a Danish utility company relative to the Planetary Boundaries. DOI: 10.1111/jiec.13075

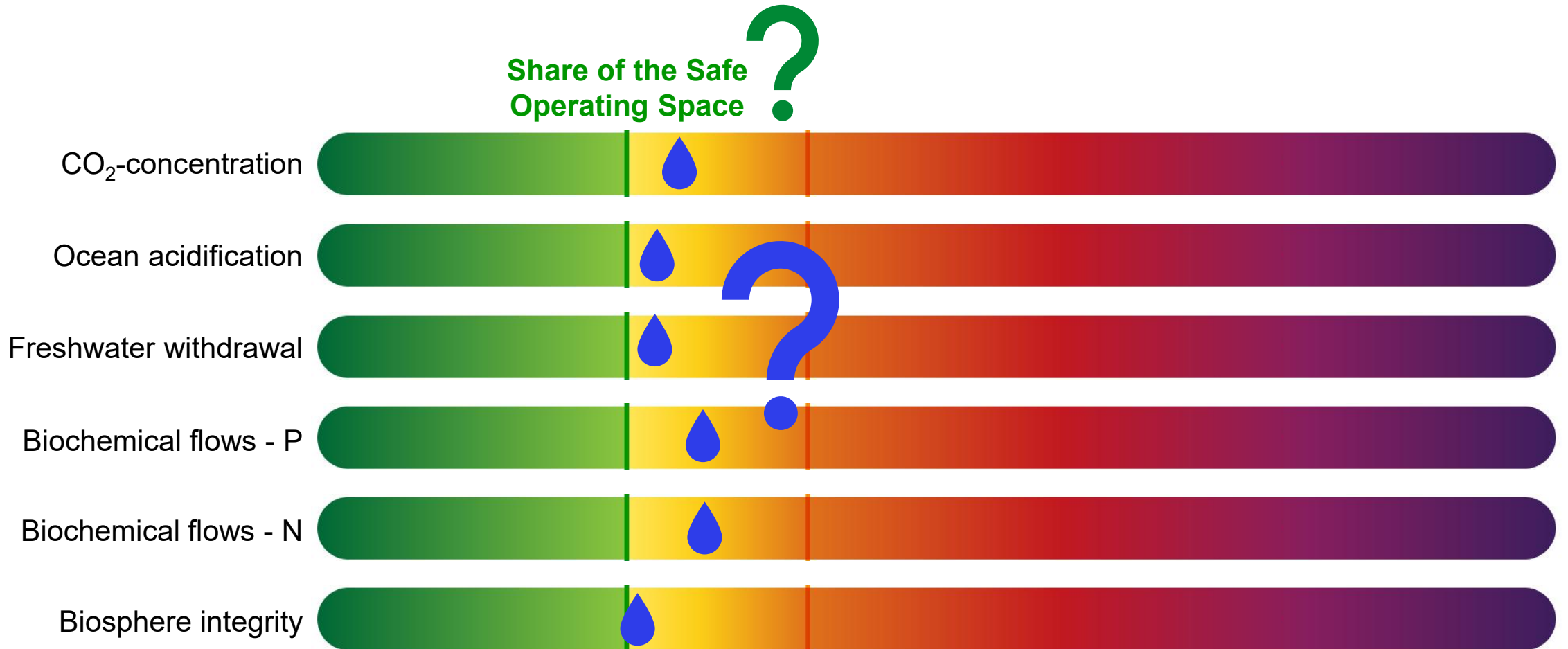
Example: Climate change impact from the Danish water sector



Based on Ryberg et al. (2021) Absolute environmental sustainability assessment of a Danish utility company relative to the Planetary Boundaries. DOI: 10.1111/jiec.13075

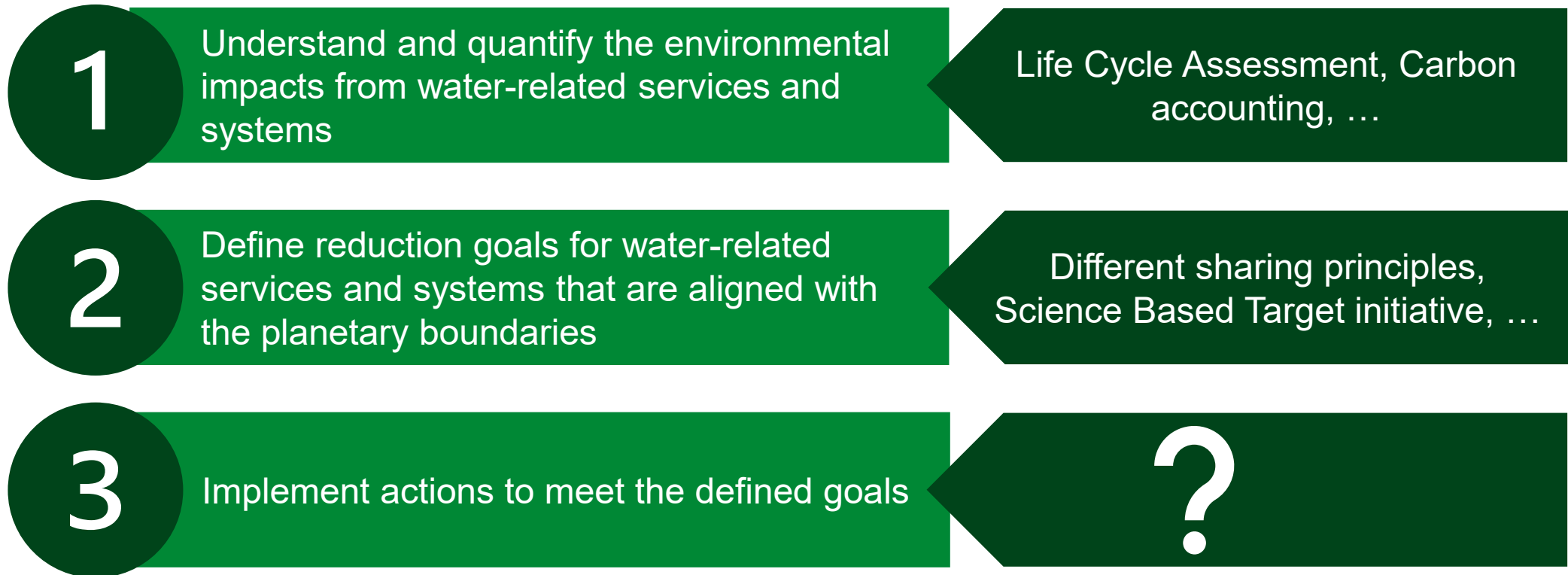
Based on Sørup et al. (2020) Urban water management: Can UN SDG 6 be met within the Planetary Boundaries? DOI: 10.1016/j.envsci.2020.01.015

Example: Other environmental impacts from a Danish water & wastewater utility

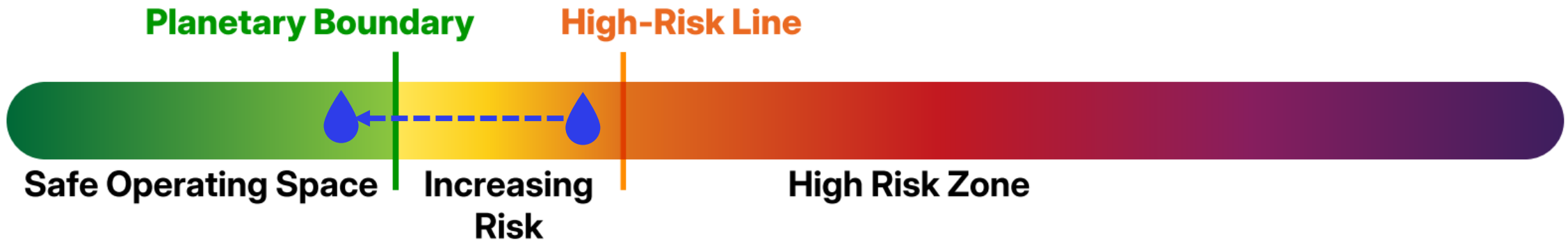
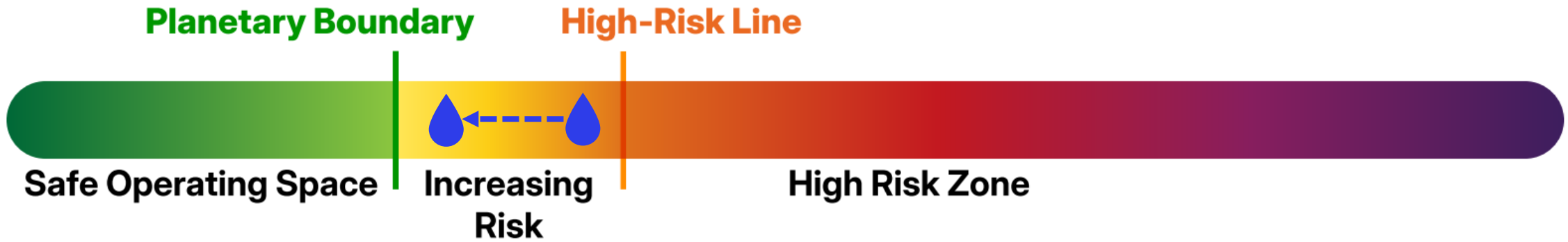


Estimate based on Ryberg et al. (2021) Absolute environmental sustainability assessment of a Danish utility company relative to the Planetary Boundaries. DOI: 10.1111/jiec.13075

How can the planetary boundaries help to make the water sector more sustainable?



From "better" to "good enough"



Sarah Brudler Friis
sabr@dtu.dk

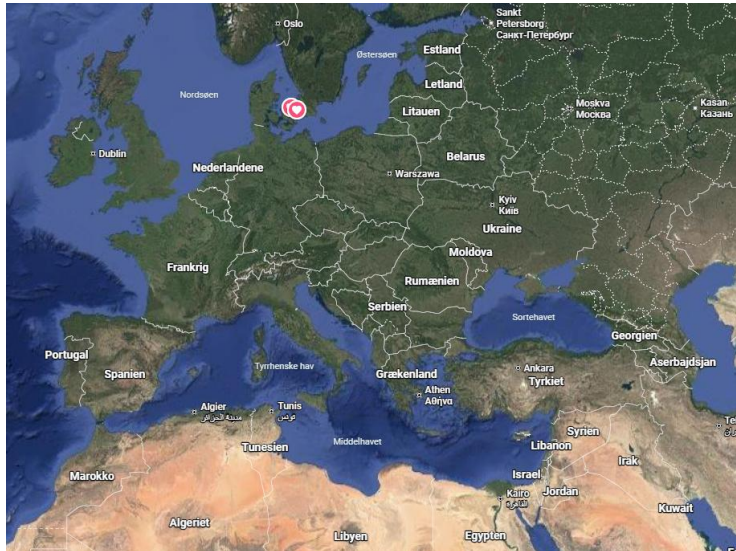
Questions?

FREDERIKSBERG UTILITY USING ABSOLUTE SUSTAINABILITY ASSESSMENT FOR DECISION SUPPORT

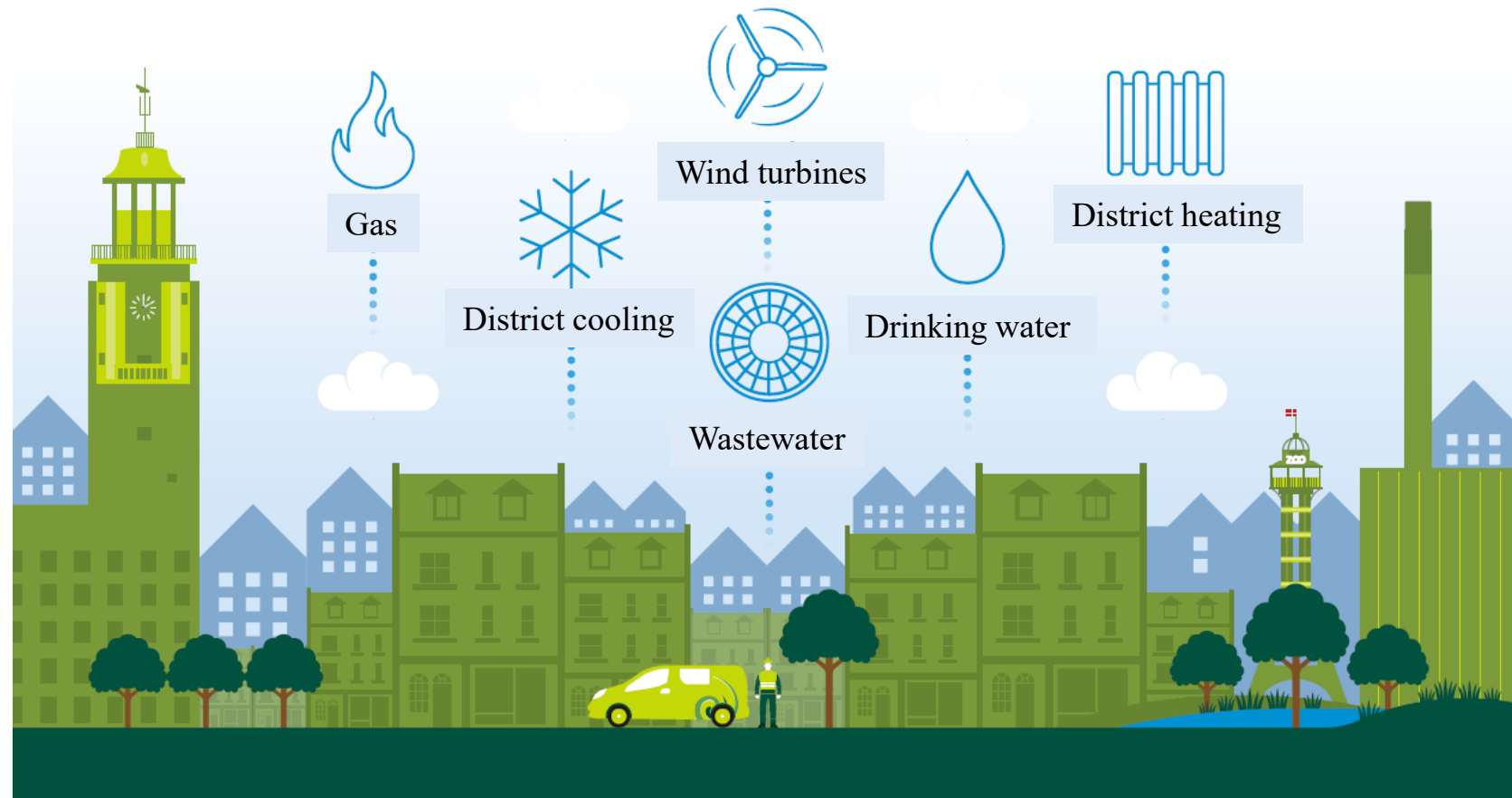
IWA webinar: Planetary boundaries and absolute sustainability in the water sector

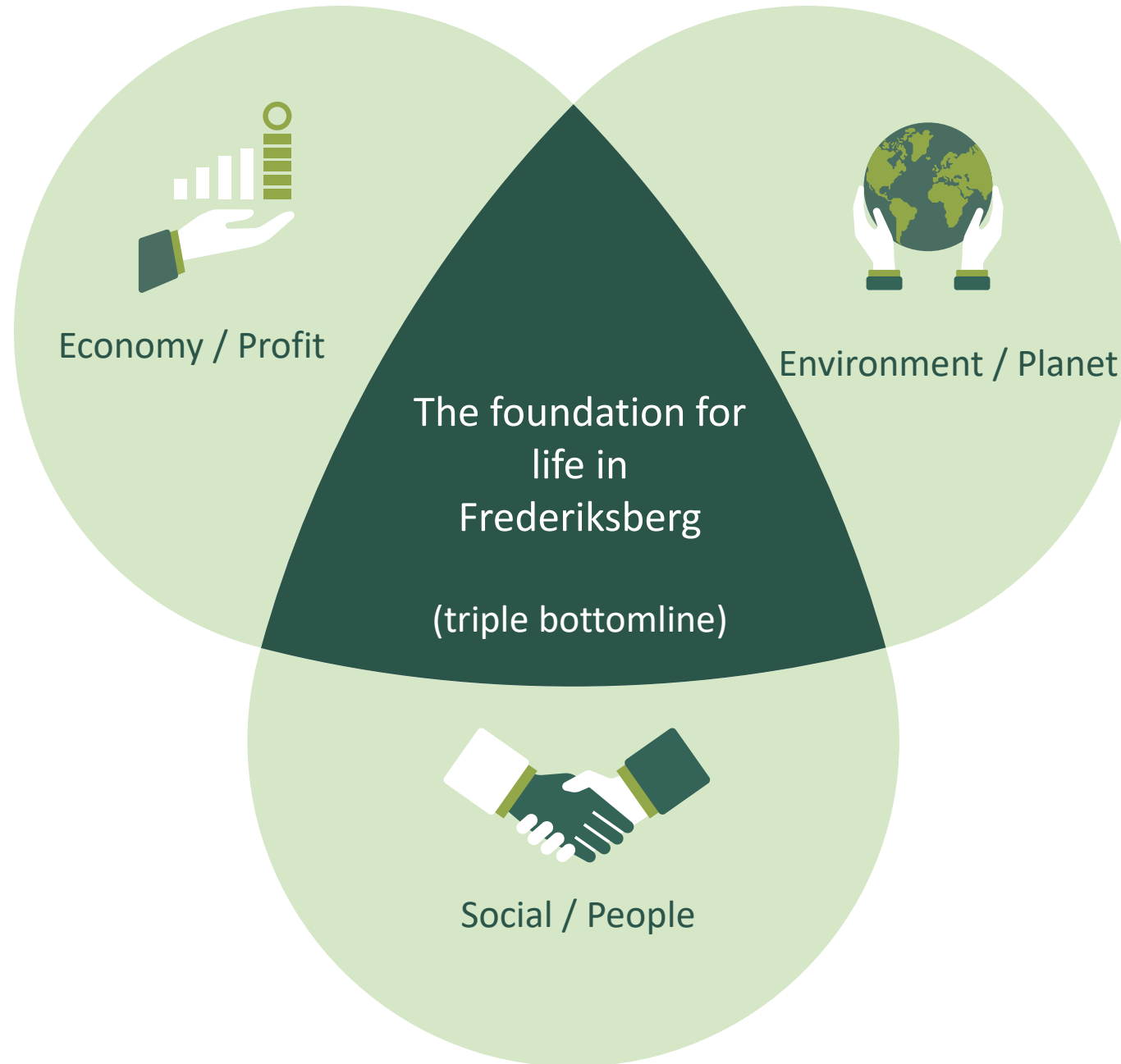


FREDERIKSBERG UTILITY



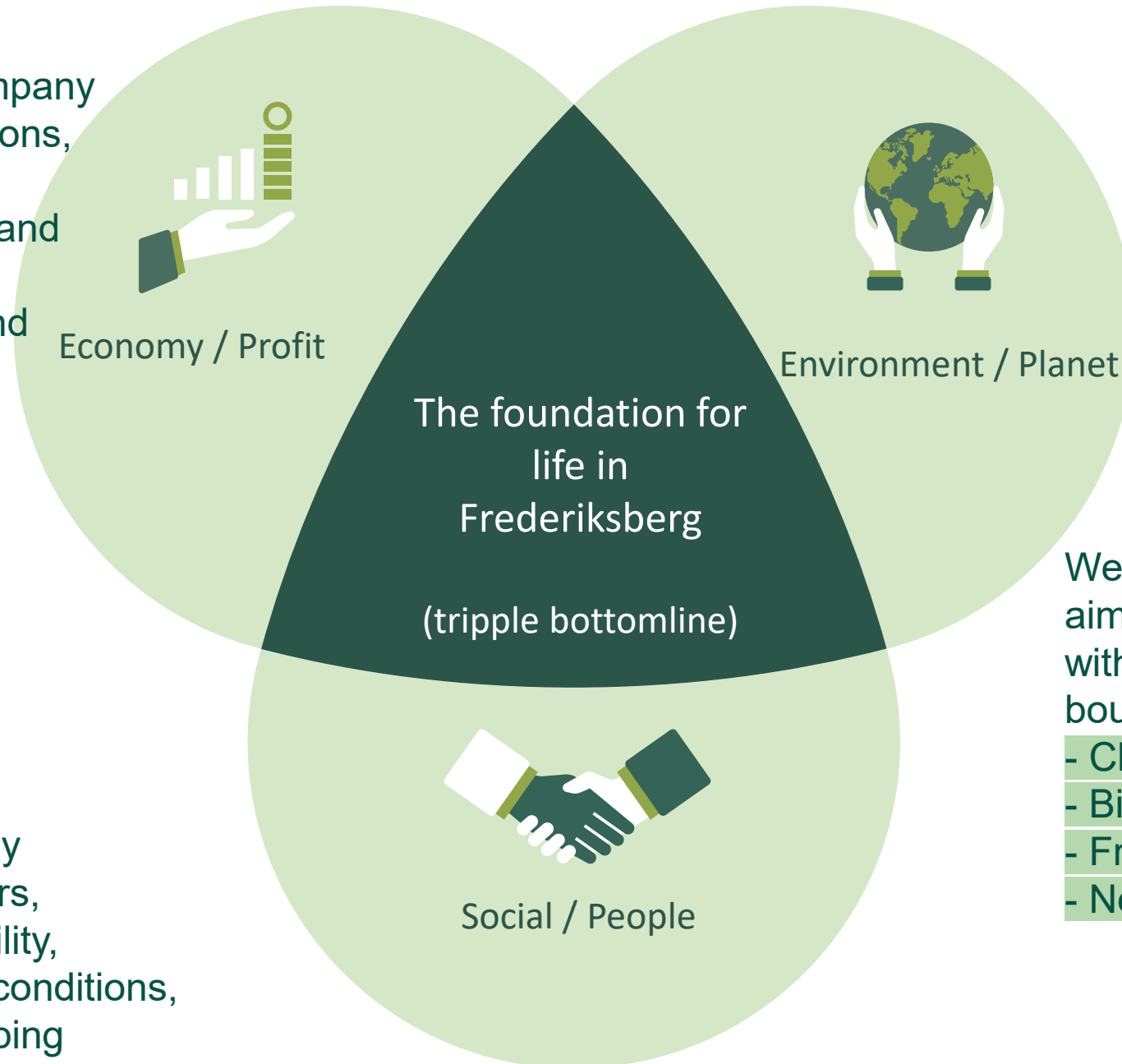
Is a multi utility with 150 employees. Surrounded by Copenhagen





We:

- support the long-term development of our company through efficient operations,
- ensure improving infrastructure, systems and services
- priority on IT security and digitization



We:

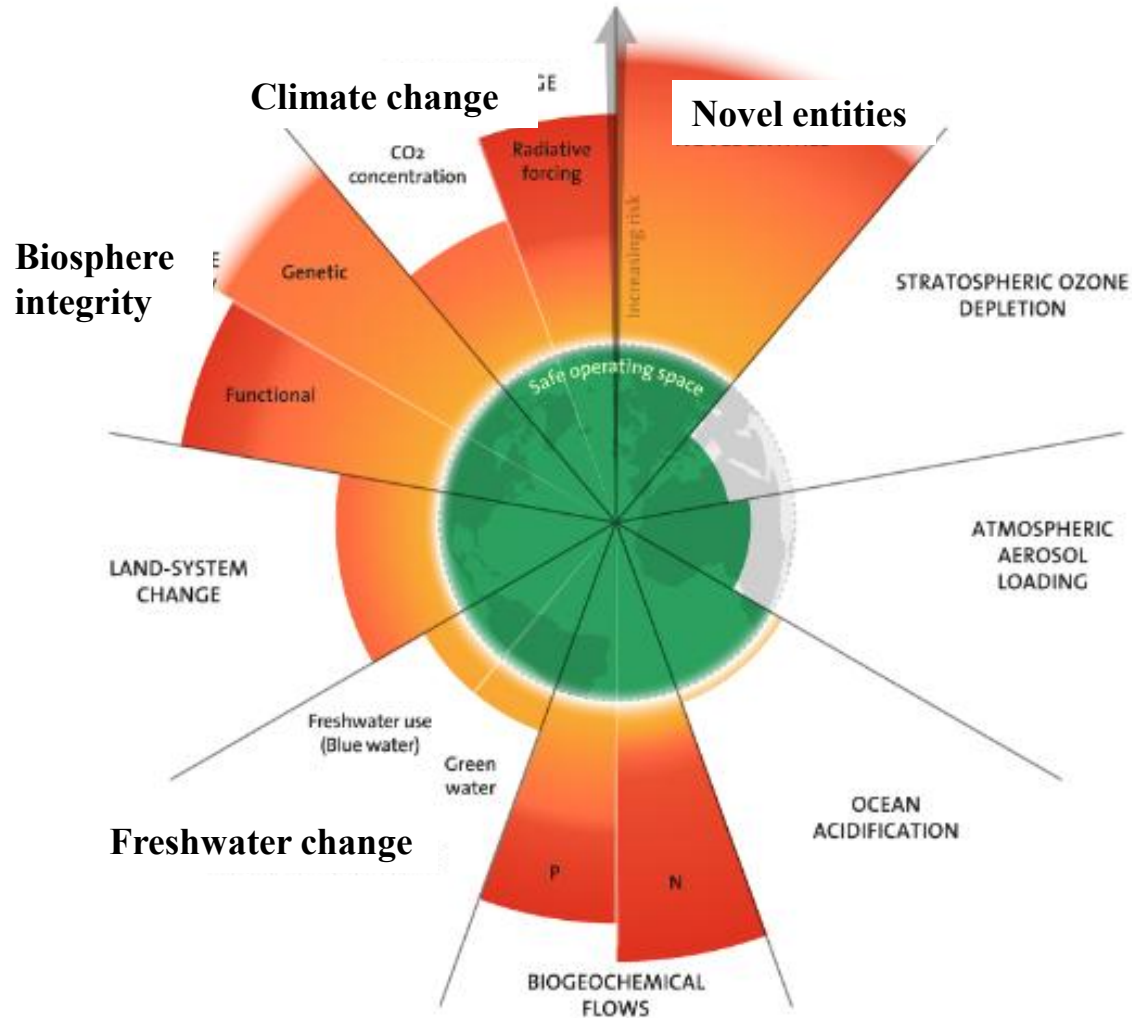
- ensure secure supply
- involve our customers,
- take local responsibility,
- care about working conditions,
- contribute to developing Frederiksberg as an attractive city

We:

aim to reduce our footprints within four planetary boundaries:

- Climate change,
- Biosphere damage,
- Freshwater withdrawal, and
- Novel entities

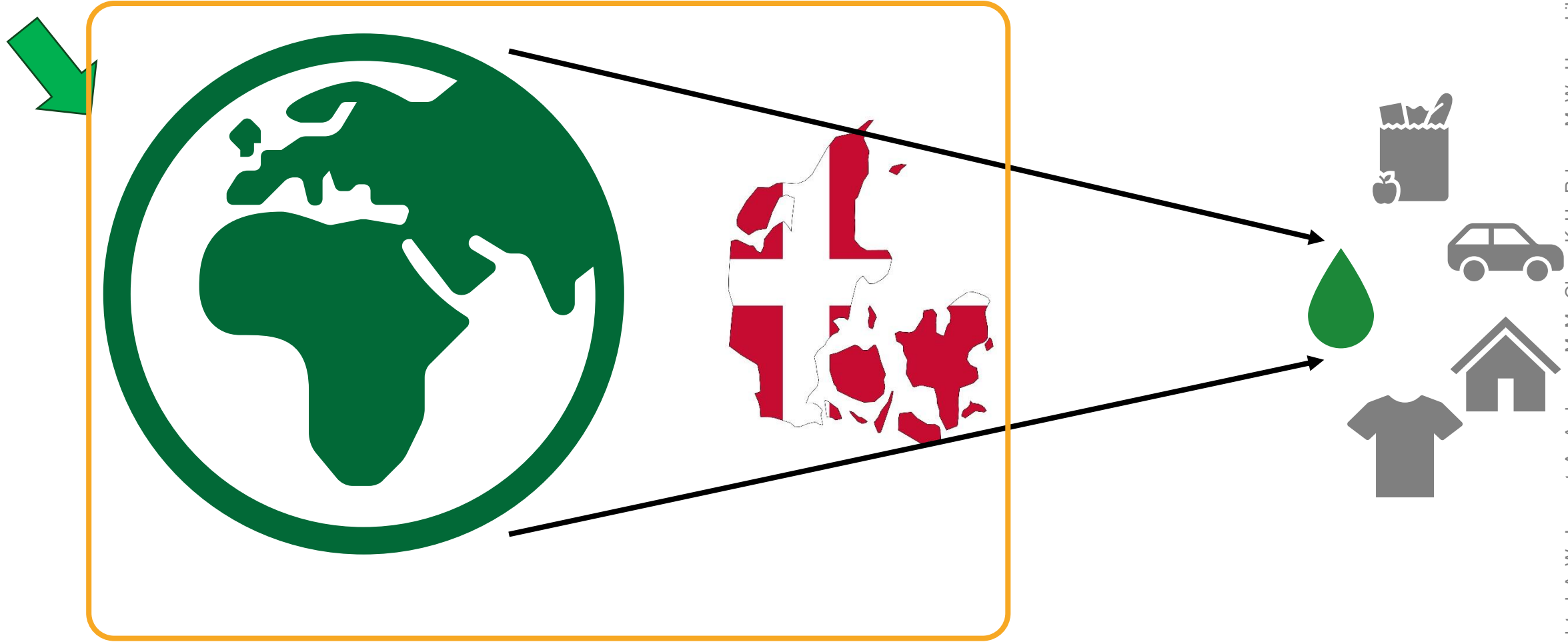
PLANETARY BOUNDARIES



We use life-cycle assessment (LCA), spend based or if suitable screening methods to assess the environmental impacts combined with the planetary boundaries impact assessment method



CHALLENGES – HOW TO ALLOCATE SHARES OF CARRYING CAPACITY TO INDIVIDUALS OR E.G. THE WATER SECTOR ?

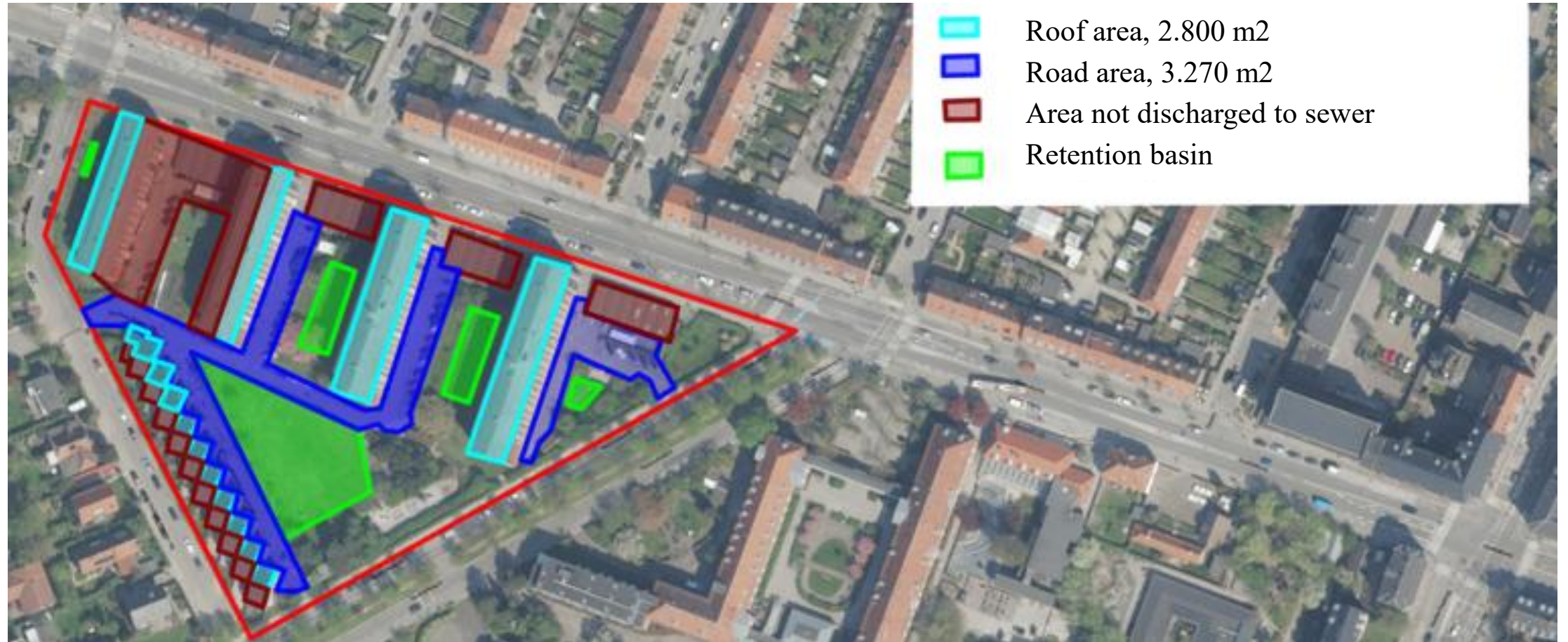


LCA OF CLIMATE ADAPTATION IN A RESIDENTIAL AREA

THREE SCENARIOS FOR HANDLING STORMWATER IN A 400 M³ RESERVOIR OVER 75 YEARS IN A RESIDENTIAL AREA HOUSING 430 PEOPLE

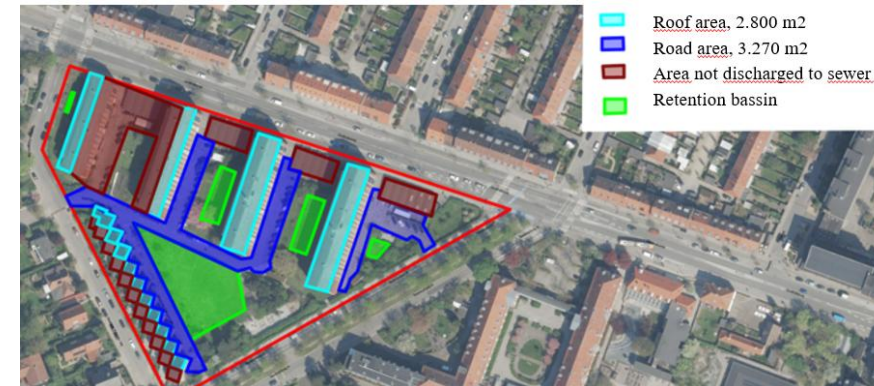


CLIMATE ADAPTATION IN A RESIDENTIAL AREA

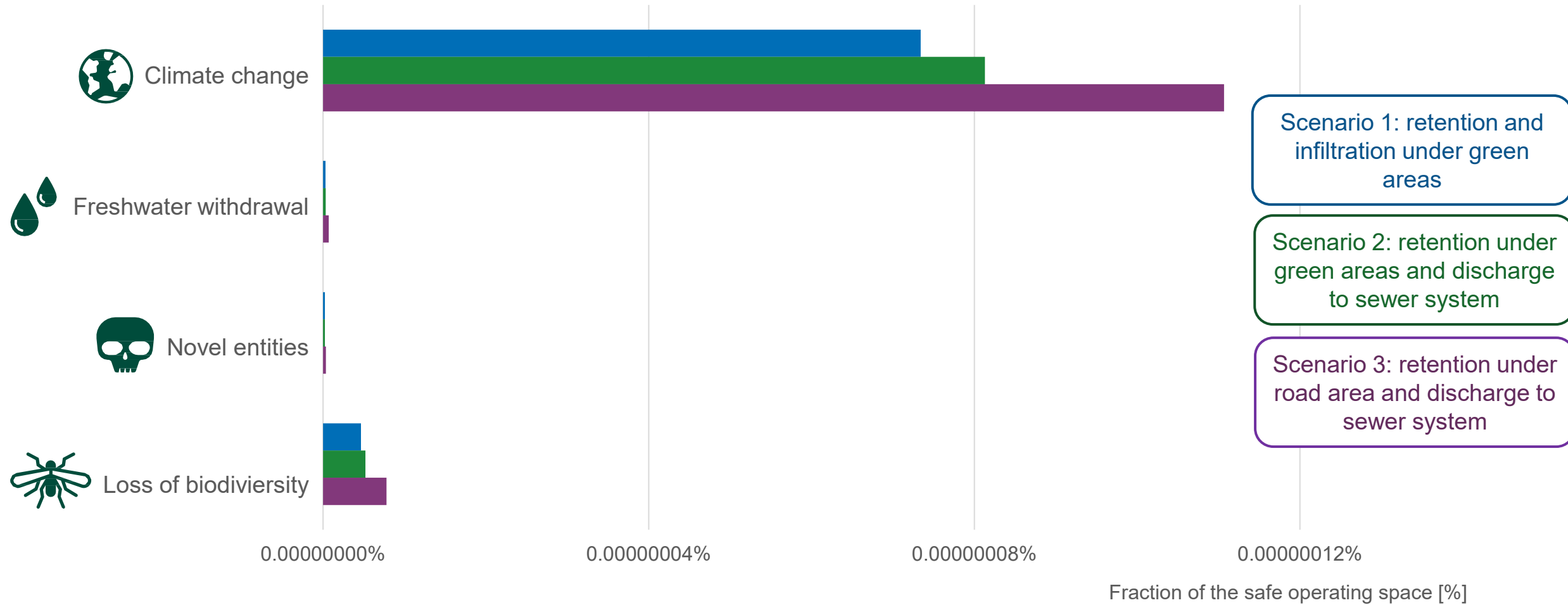


Scenarios handling roof and stormwater

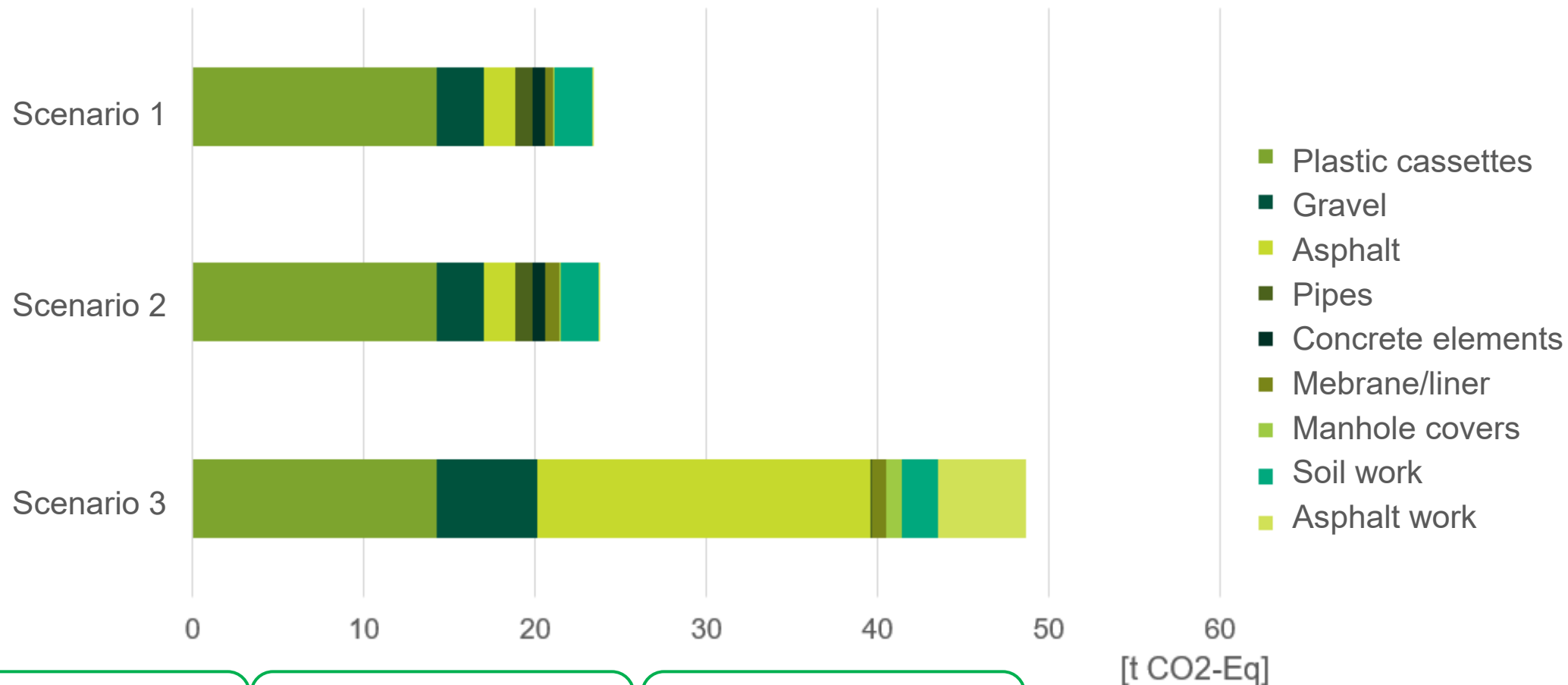
- **Scenario 1** – Infrastructure with *retention and infiltration under green areas*. Stormwater is transported in concrete drains to plastic cassettes where some is placed under green area and some in bottom of a basin allowing water to infiltrate into groundwater.
- **Scenario 2** – Infrastructure with *retention under green areas and discharge to combined sewer system*. Stormwater is transported in concrete drains to plastic cassettes where some is placed under green area and some in bottom of basin. Stormwater is discharged to sewer system.
- **Scenario 3** – Infrastructure with *retention under road area and discharge to combined sewer system*. Stormwater is transported to plastic cassettes under road area and discharged to sewer system.



ENVIRONMENTAL IMPACTS



CLIMATE CHANGE: implementation phase

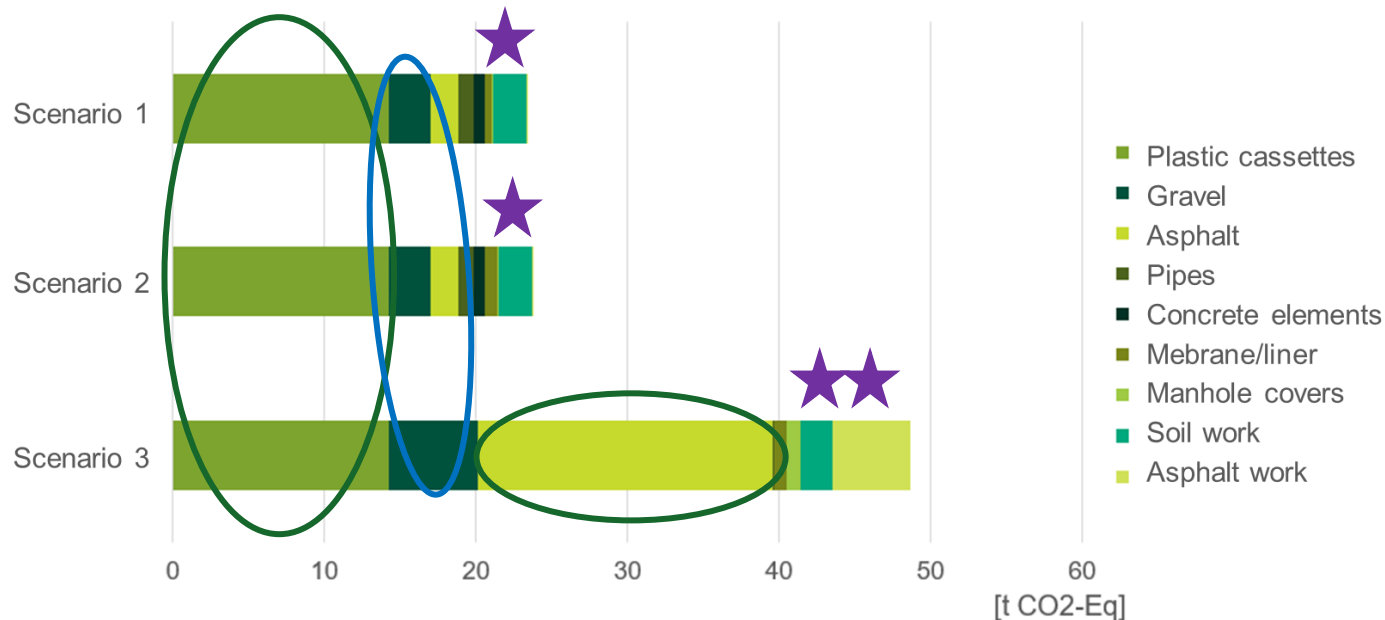


Scenario 1: retention and infiltration under green areas

Scenario 2: retention under green areas and discharge to sewer system

Scenario 3: retention under road area and discharge to sewer system

🌍 CLIMATE CHANGE: implementation phase



Hotspots where we can take action to reduce carbon emissions:

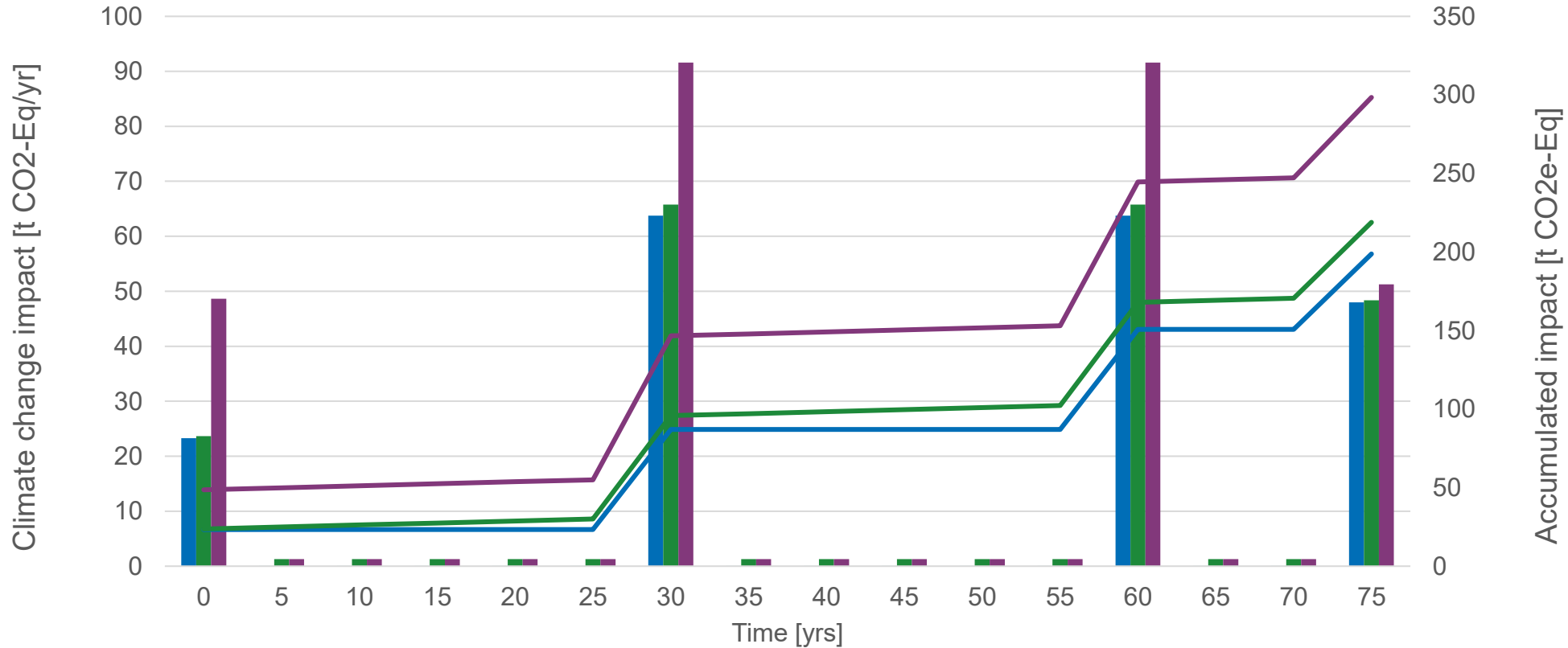
- Environmental product declaration (EPD) allowing to choose product with the lowest carbon footprint: plastic cassettes, asphalt
- Electrical machines when establishing, instead of diesel machines
- Direct reuse of raw materials e.g. gravel and sand reducing production of new materials and transportation

Scenario 1: retention and infiltration under green areas

Scenario 2: retention under green areas and discharge to sewer system

Scenario 3: retention under road area and discharge to sewer system

CLIMATE CHANGE



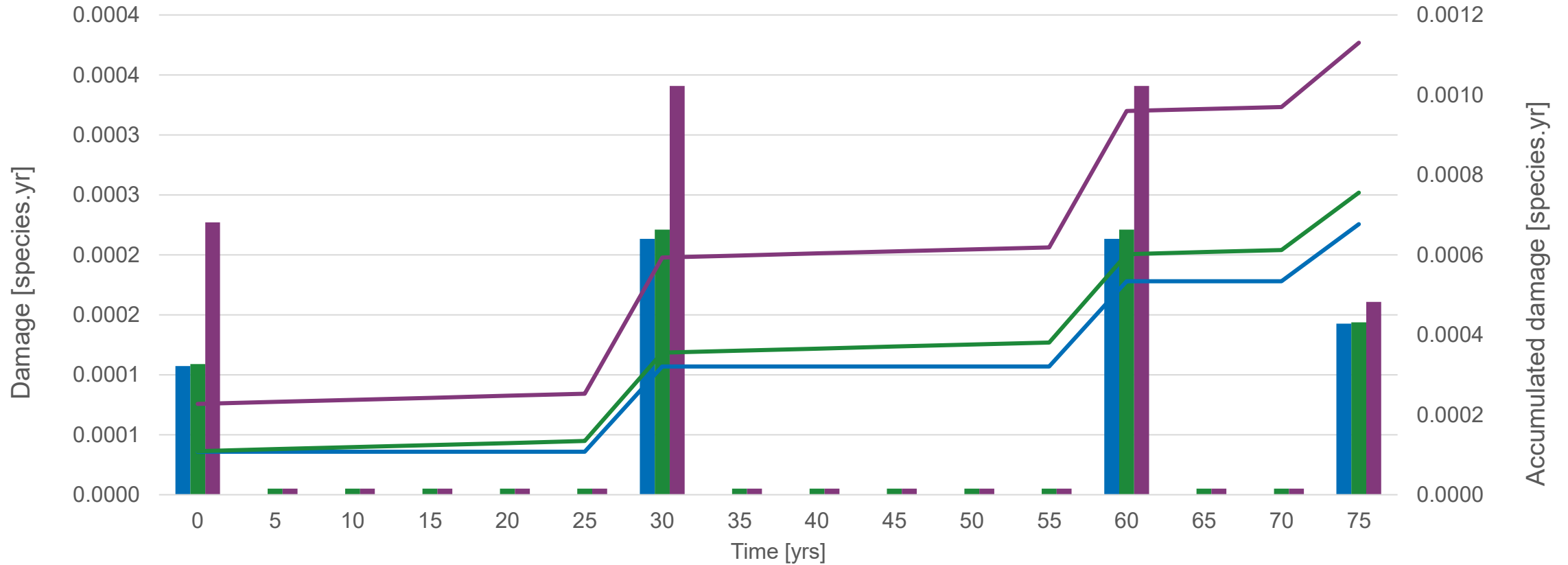
Gap between scenarios increases over 75 years!

Scenario 1: retention and infiltration under green areas

Scenario 2: retention under green areas and discharge to sewer system

Scenario 3: retention under road area and discharge to sewer system

BIODIVERSITY DAMAGE



Scenario 1: retention and infiltration under green areas

Scenario 2: retention under green areas and discharge to sewer system

Scenario 3: retention under road area and discharge to sewer system

CONCLUSION

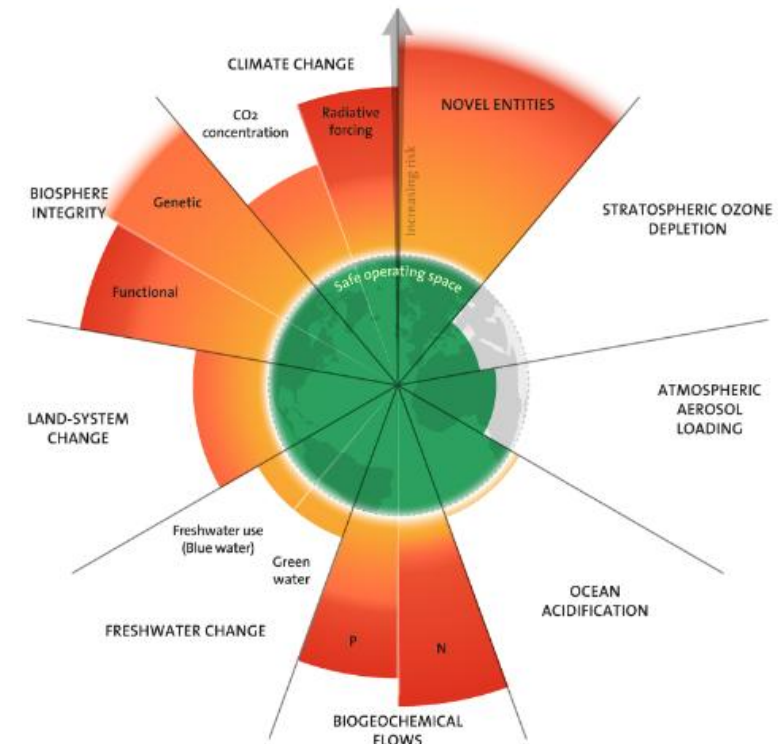
In this specific case of climate adaptation in a residential area:

- Climate change was the boundary with highest attention needed followed by biodiversity damage
- Solution with retention and discharge under green areas has lowest impacts, especially as it reduced environmental impacts connected to road works
- We have focus on reducing carbon emissions choosing electrical machines instead of machinery running on diesel (fossil fuels)
- Also focus on reducing the purchase of new materials, especially gravel and sand, by increasing direct reuse

CONCLUSION

In general

- Life-cycle assessment was crucial to understand the full impacts of various scenarios as:
 - covers more categories (boundaries) than just a carbon foot-print
 - makes you consider the whole life cycle
- Planetary boundaries helps in communicating which boundaries are impacted and how much. No need to weight impact categories since the scale is that we have only one planet!



THANKS FOR YOUR ATTENTION!

Questions



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Science Based Targets in the water sector



ANDY WILLIAMS
ASSOCIATE DIRECTOR CARBON CONSULTING

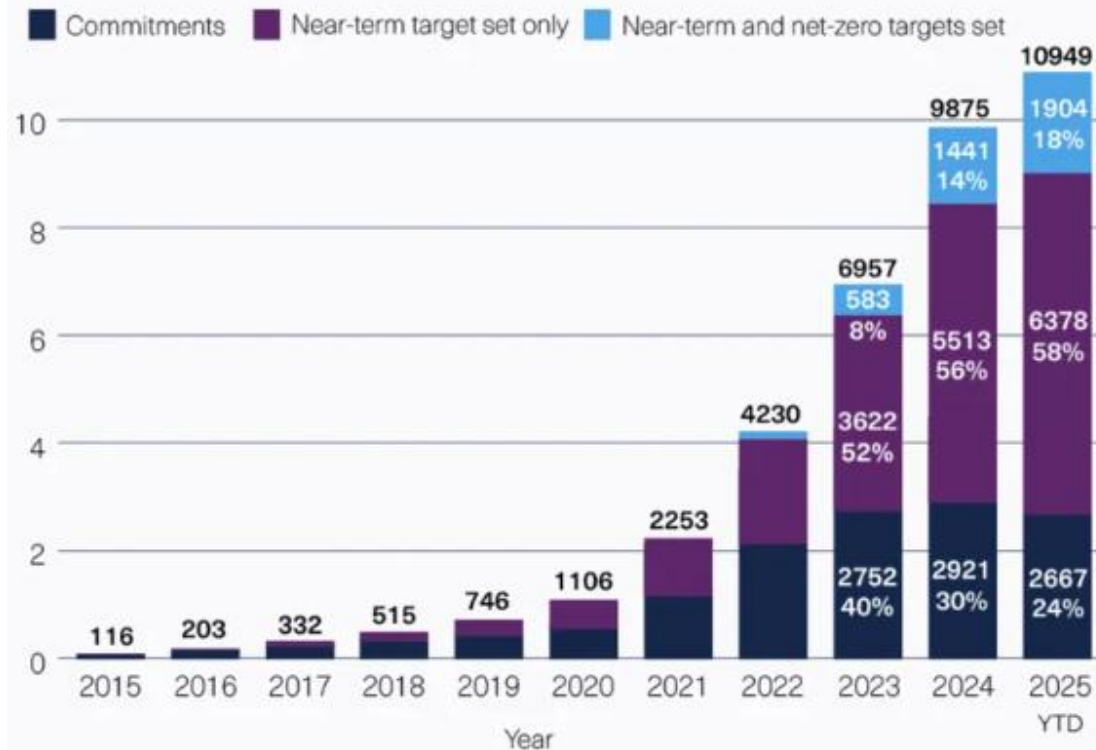
ANDY.WILLIAMS@JACOBS.COM



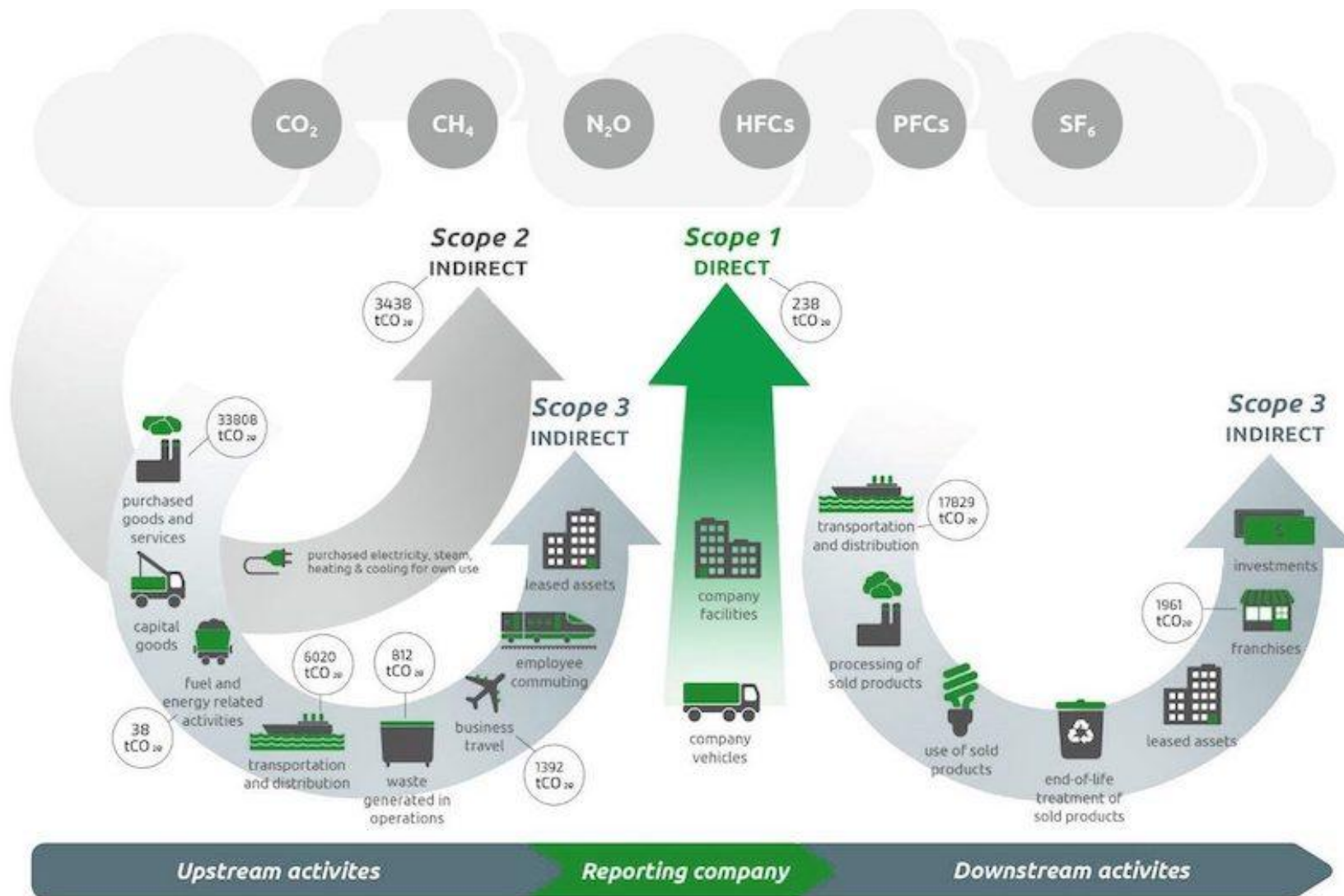
Jacobs

1. WHAT IS THE SCIENCE BASED TARGETS INITIATIVE (SBTi) AND HOW DOES IT LINK WITH PLANETARY BOUNDARIES?

Companies with SBTi commitments or targets, cumulative, thousands

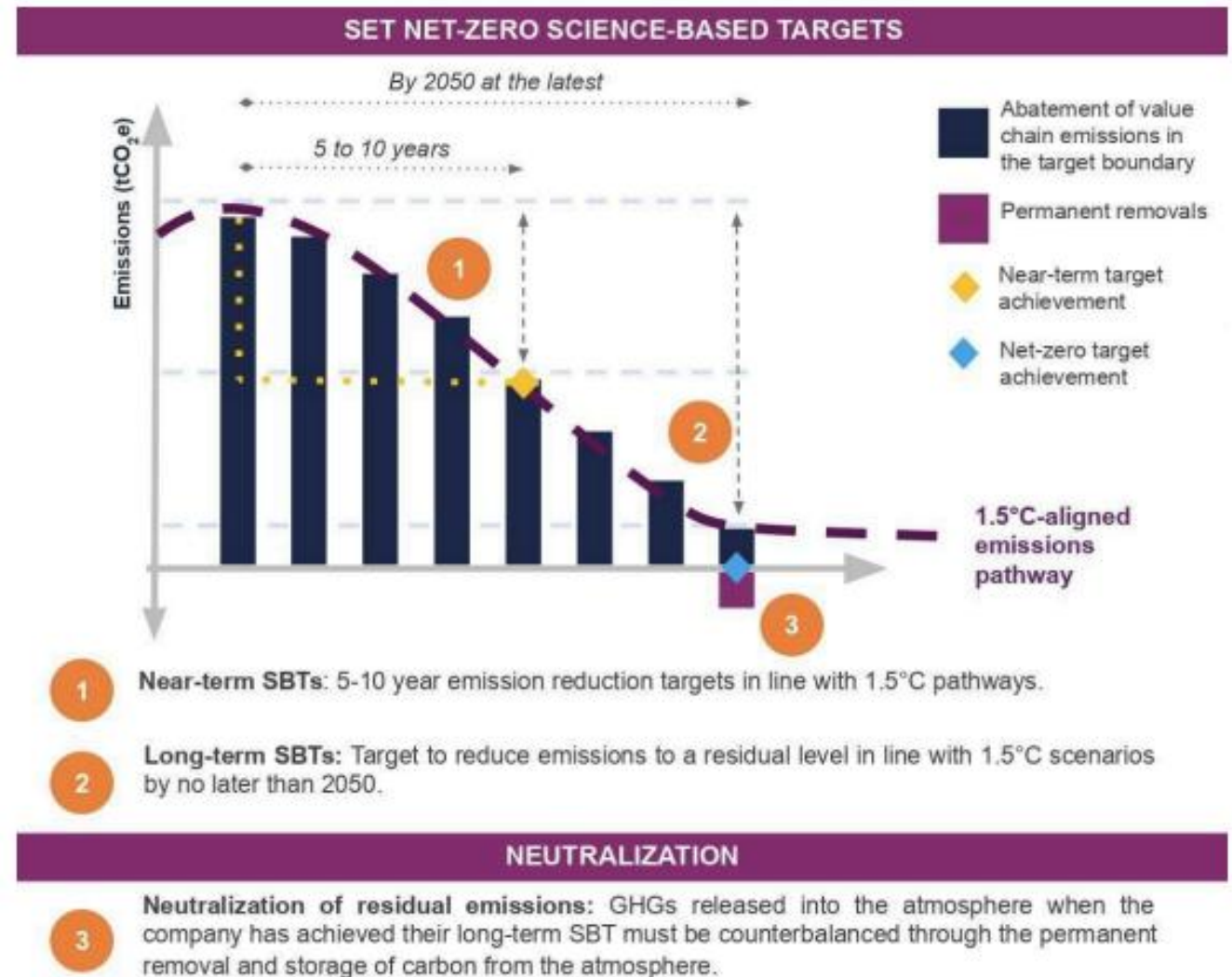


1.CONTEXT - SCOPES



2. WHAT ARE SBT?

- Key requirements include focusing on rapid, deep emissions cuts; **setting near- and long-term targets**;
- Only claiming achievement of net-zero after long-term targets are met;
- Investing in mitigation both within and outside the value chain.



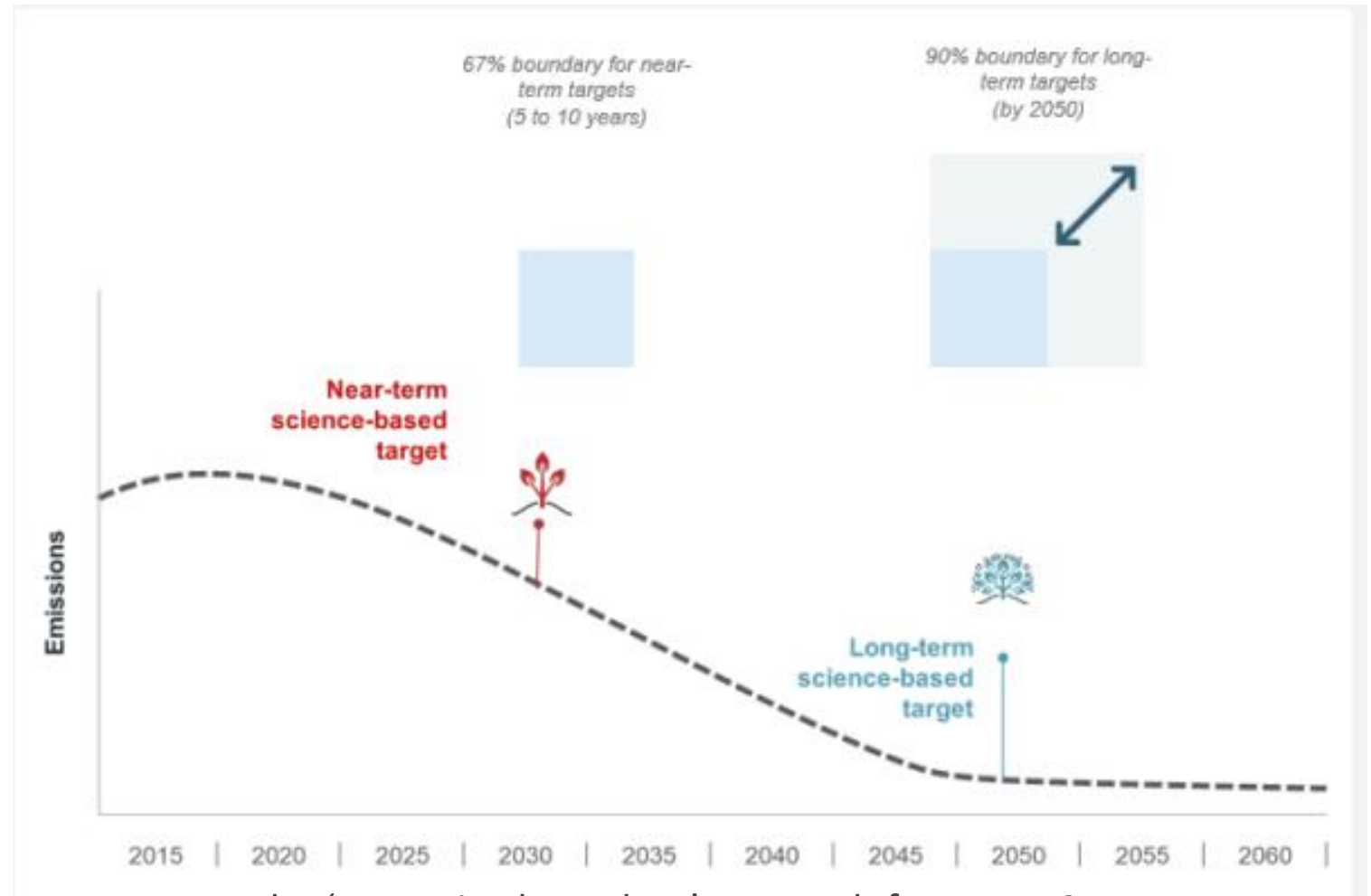
2. WHAT ARE SBT?



- Scope 1 and 2 mandated - will soon require separate targets (rather than combined) should cover at least 95 percent of company-wide emissions
- Companies must set scope 3 targets that collectively cover at least 67% of total mandatory (reported and excluded) scope 3 emissions,

2. WHAT ARE SBT?

- Start with near term targets and reductions – carbon reduced now is given more weighting than future reductions due to cumulative impact
- Can expand coverage over time – recognizes that scope 3 data is often lower quality



The 'expansive boundary' approach for scope 3

3.WHAT ARE THE BENEFITS/COSTS/RISKS? WHY GET SBT?

Benefits

- Build business resilience and increase competitiveness
- Drive innovation and transform business practices
- Build credibility and reputation

Costs

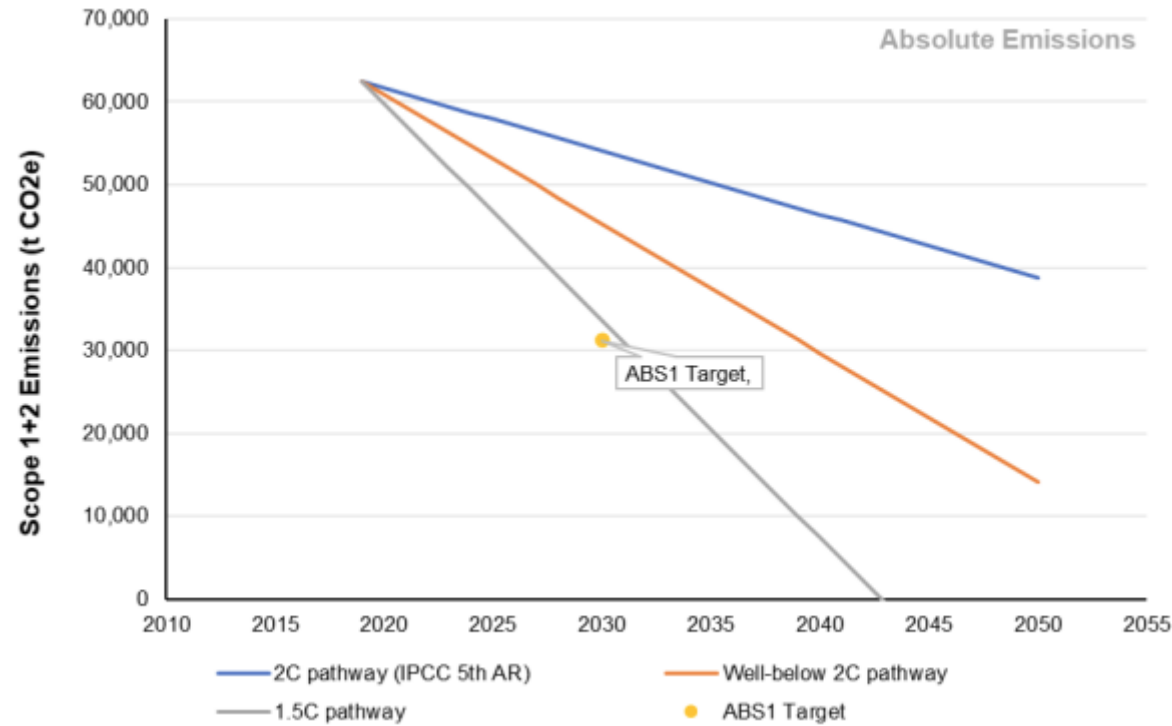
- Depends on turnover but ranges between \$2k for SME up to \$34k for large organisations with full package

Risks

- Public commitment with stringent criteria

4. EXAMPLES

Jacobs



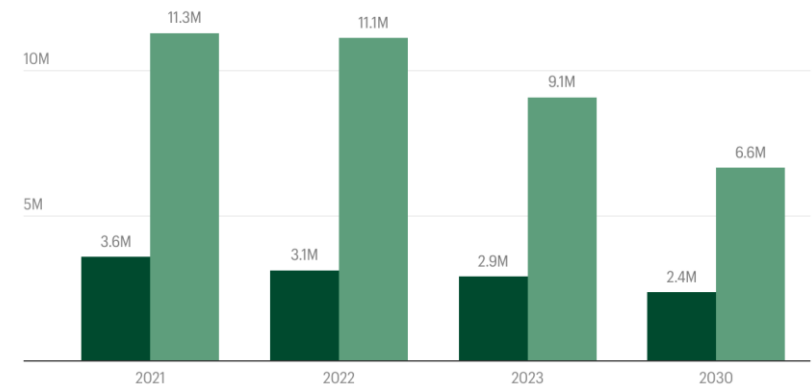
3M

3M pledges to cut supply-chain emissions

3M announced its first goal to cut scope 3 emissions — those coming from the company's supply chain and not directly under its control — by 41%.

METRIC TONS OF CARBON DIOXIDE-EQUIVALENT GREENHOUSE GASES

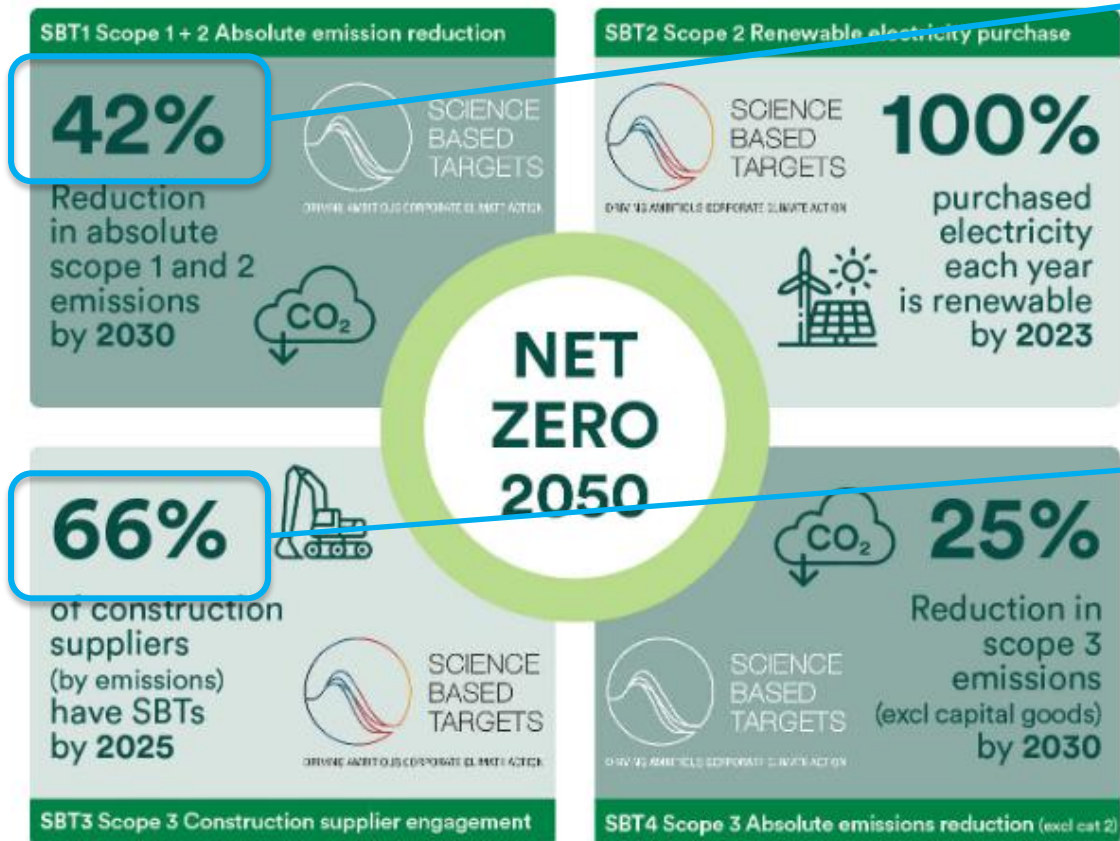
Internal (Scope 1+2) External (Scope 3)



Data excludes the health care spinoff Solventum. 2030 targets represents a baseline of 2019 for Scope 1+2 and 2021 for Scope 3.

Source: Company reports • Jim Foster, The Minnesota Star Tribune

5. WATER SECTOR



- Reduce absolute scope 1 and 2 GHG emissions 46.2% by FY2031 from a FY2020 base year.
- Severn Trent commits to reduce absolute scope 3 GHG emissions from use of sold products 13.5% within the same timeframe.
- Severn Trent commits that 70% of its suppliers by emissions covering purchased goods and services, capital goods, upstream transportation and distribution and waste generated in operations will have science-based targets by FY2026.

6.KEY CHALLENGES

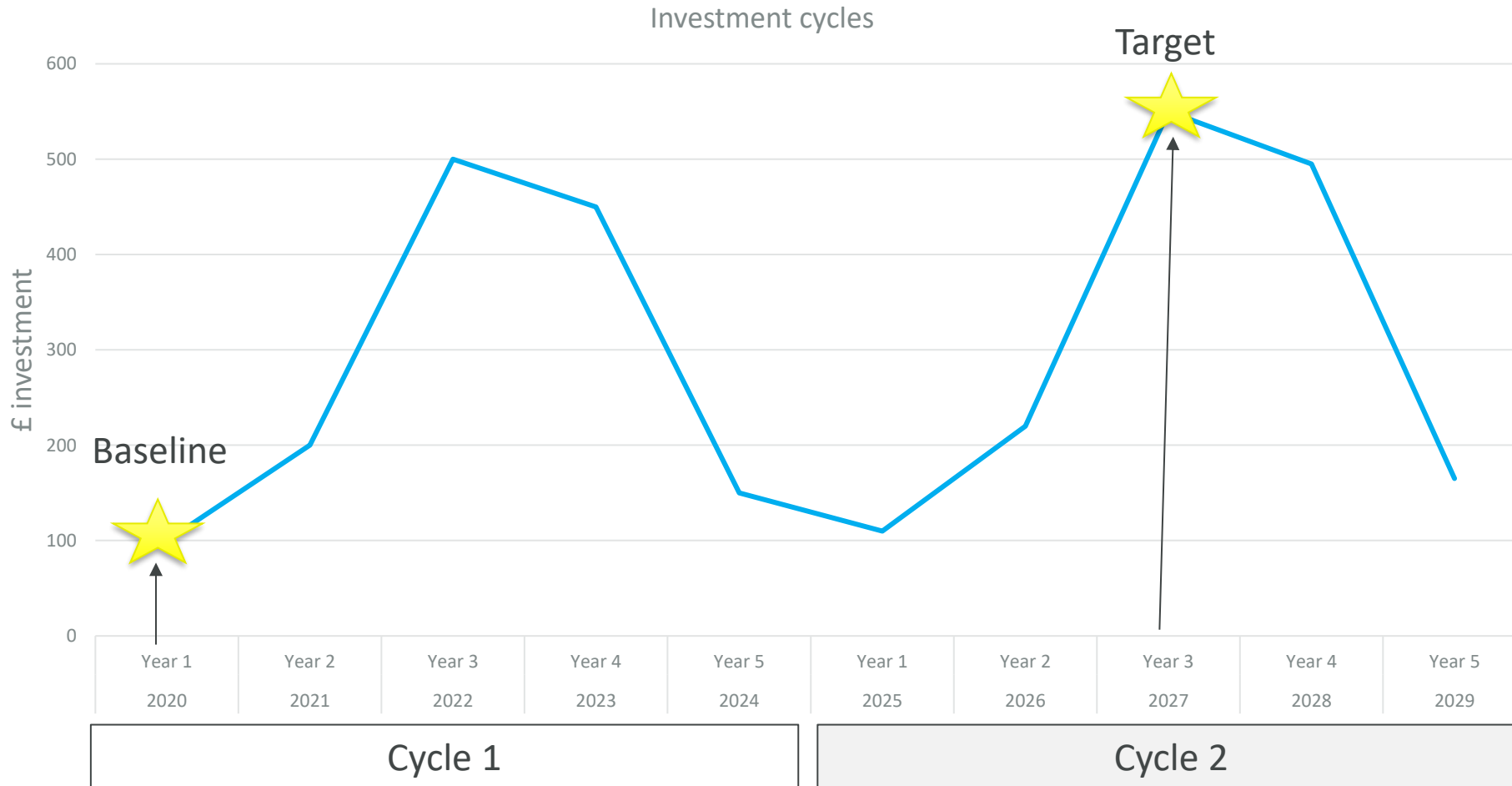
- Water specific

- Process emissions. “Emissions from wastewater treatment processes – nitrous oxide (N₂O) and methane (CH₄) – account for 82% of Severn Trent’s Scope 1 emissions. Reducing process emissions is the water industry’s most urgent net zero challenge: since wastewater treatment processes are unique to our sector”

- Infrastructure

- The framework doesn't really work for projects/ organisations set up as the delivery vehicle for a single piece of new infrastructure or a single programme of works
- Challenges for ongoing infrastructure orgs due to investment cycles
- Increases in spending but also timing is important

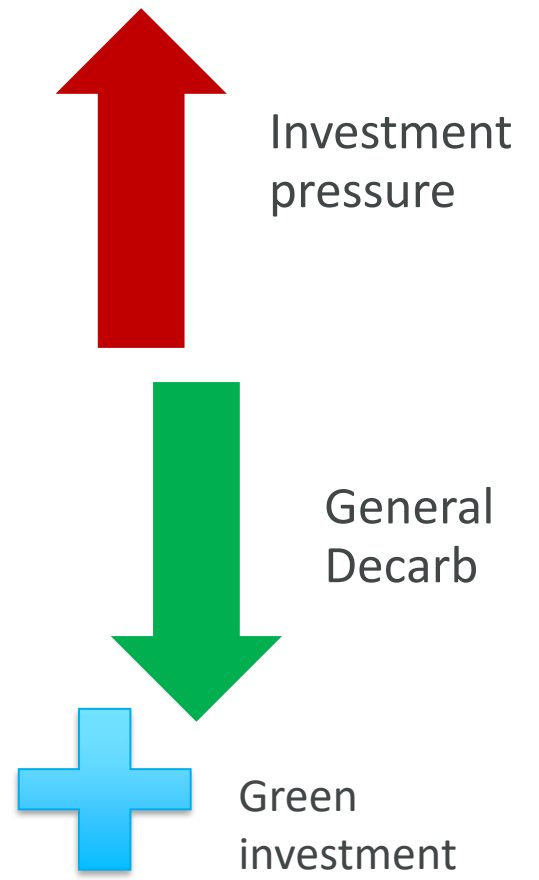
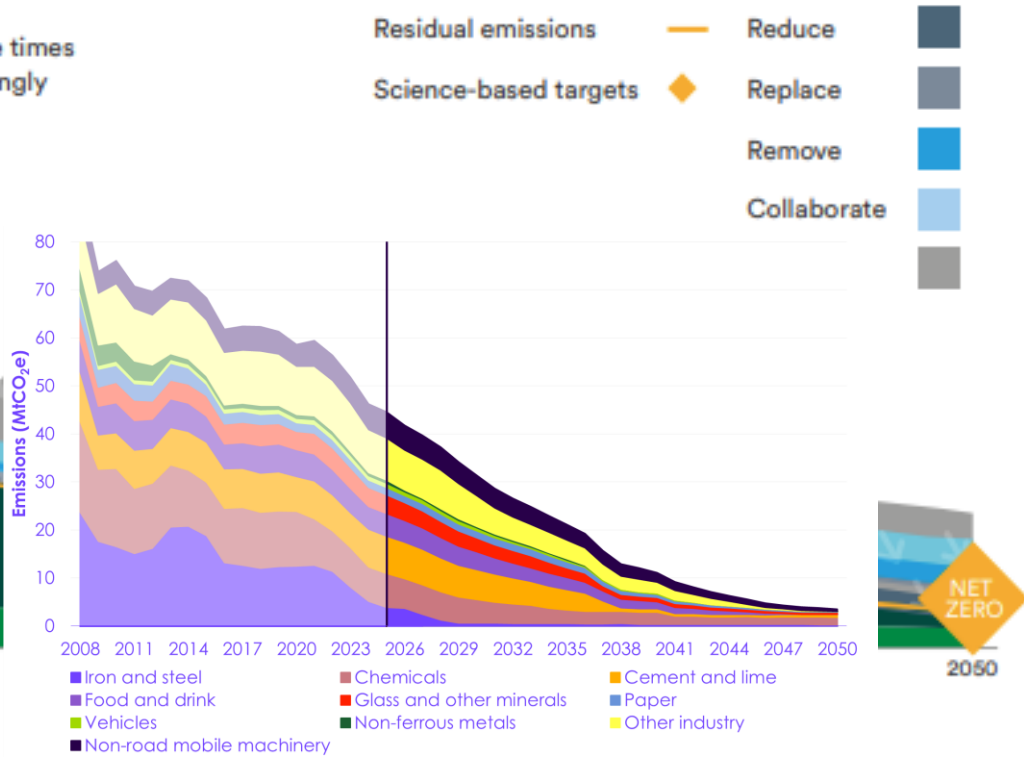
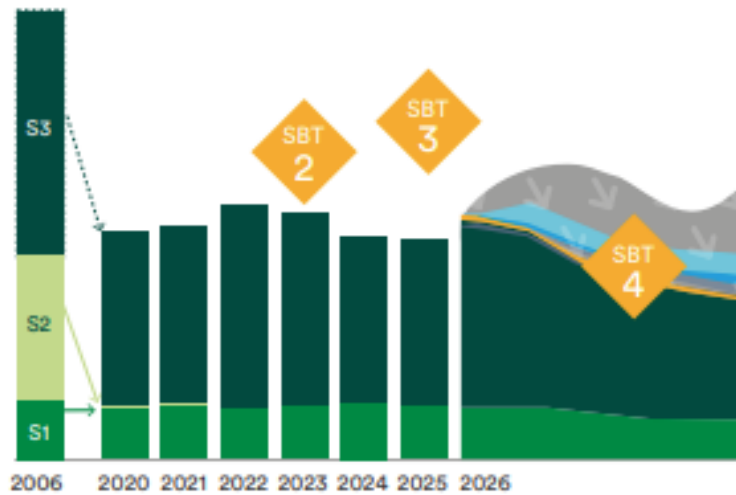
6. TIMING IS IMPORTANT



- Sets the pace of decarb needed
- Can be helped by setting intensity per unit targets (although needs to lead to absolute reductions)
- E.g. Carbon per tonne of product or unit of water

6.CASE STUDY

Approximately 70 per cent of our footprint is driven by our investment programmes, and, with AMP8 set to be about five times the size of AMP7, our scope 3 emissions will increase accordingly without net zero investment and substantial innovation.



PANEL DISCUSSION



Amanda Lake
Jacobs, UK



Miriam Feilberg
DANVA, Denmark



Berit Godskesen
Utility at Frederiksberg,
Denmark



Sarah Brudler
Technical University of
Denmark , Denmark



Andy Williams
Jacobs, UK

PANEL DISCUSSION



- Inclusion of all sustainability elements – How to work more holistically in the water sector?
- Scope 3 in the water sector – Can your perspectives improve inclusion of scope 3?
- The dilemma of investments to reach SDG's and environmental targets vs climate and sustainability goals – what is possible to meet?

NEXT WEBINAR – JUNE 9TH, 2026

SUSTAINABILITY FROM STRATEGY TO PRACTICE

- How will a strategic approach to sustainability support sustainable development by linking strategies to actions?
- How can ESG-reporting support sustainability by tracking targets, progress and follow-up of activities

The webinar will be based on cases from the global water sector:

- New Zealand
- United Kingdom
- Sweden
- Malaysia

UPCOMING IWA WEBINARS & EVENTS



IWA YOUNG WATER PROFESSIONALS
the international water association

YWP GET-TOGETHER

Career Skills - Session 4: Making the most of your IWA YWP membership

 23 MARCH 2026
14:00 GMT

REGISTER NOW
www.iwa-network.org/iwa-learn

IWA YOUNG WATER PROFESSIONALS
the international water association Steering Committee (2024-2026)

The poster is a white rectangle with a blue wavy graphic at the bottom. It contains the IWA logo and 'YOUNG WATER PROFESSIONALS' text in the top right. The main title 'YWP GET-TOGETHER' is in large blue letters. Below it, the session title 'Career Skills - Session 4: Making the most of your IWA YWP membership' is in black. At the bottom left, there is a calendar icon, the date '23 MARCH 2026', and the time '14:00 GMT'. Below that is a 'REGISTER NOW' button and the URL 'www.iwa-network.org/iwa-learn'. At the bottom right, there is another IWA logo and 'YOUNG WATER PROFESSIONALS' text, followed by 'Steering Committee (2024-2026)'.

Learn more at

<https://www.iwa-network.org/learn/ywp-get-together-career-skills-session-4-making-the-most-of-your-iwa-ywp-membership>

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WEBINAR

CWIS Current Status and Future Priorities: Insights from Africa

18 March 2026
11:00 GMT

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