

25 June 2025



P5 Presentation

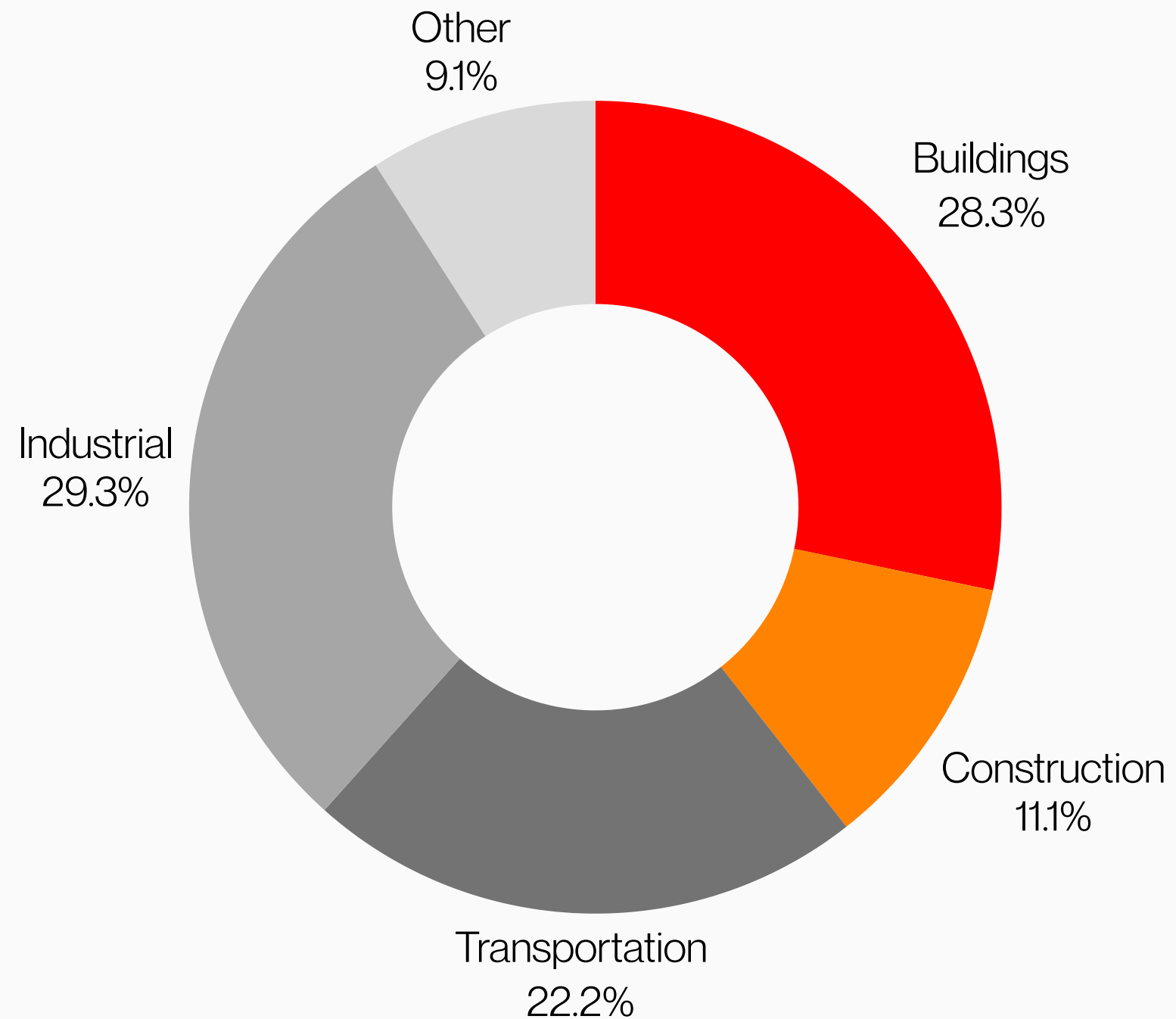
**Smart Buildings and the Future of
Sustainability Reporting:
Pathway to **CSRD** Compliance**

Grad Lab

Management of the Built Environment

Chris Zinelis (6058884)

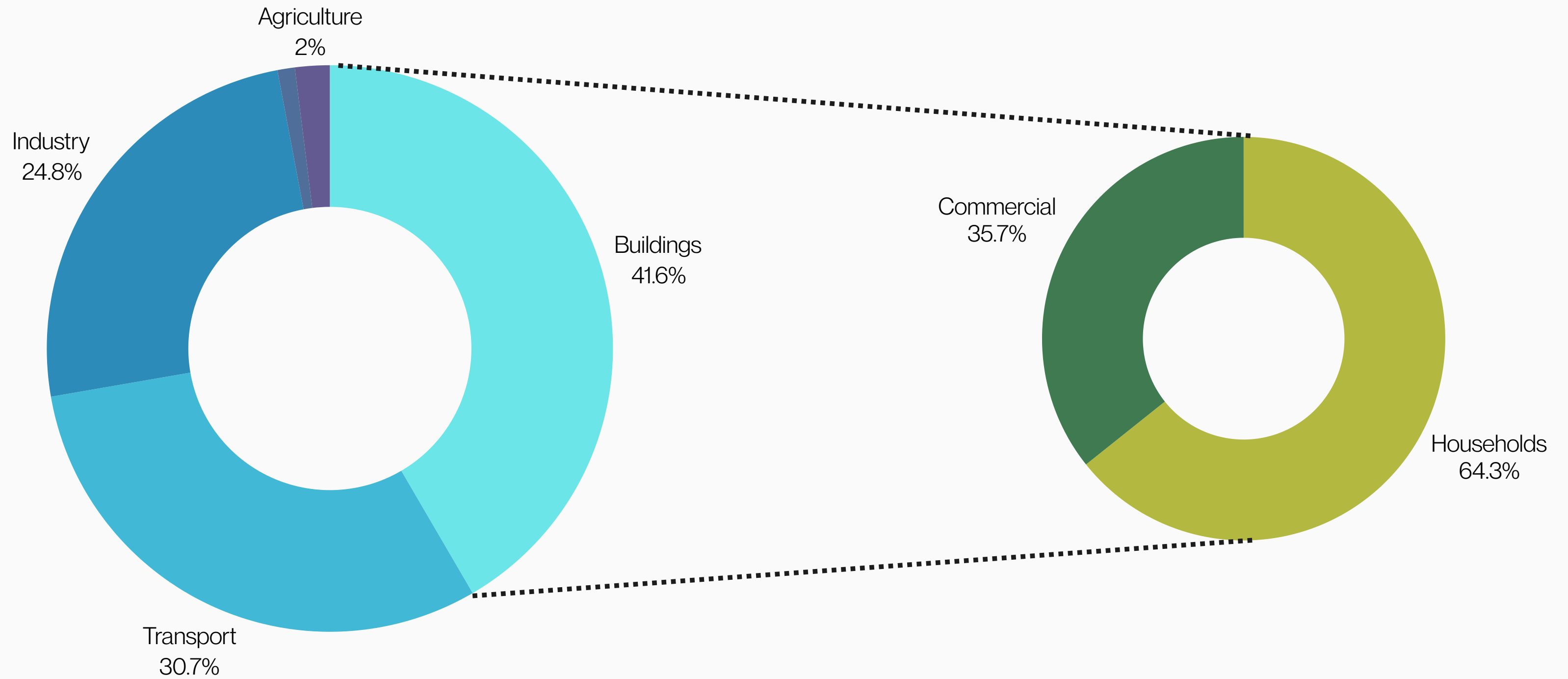
Worldwide CO₂ emmissions



REAL ESTATE:

Responsible for almost 40% of all global CO₂

Energy consumption in the EU, by sector





CLIMATE
NEUTRAL
2050

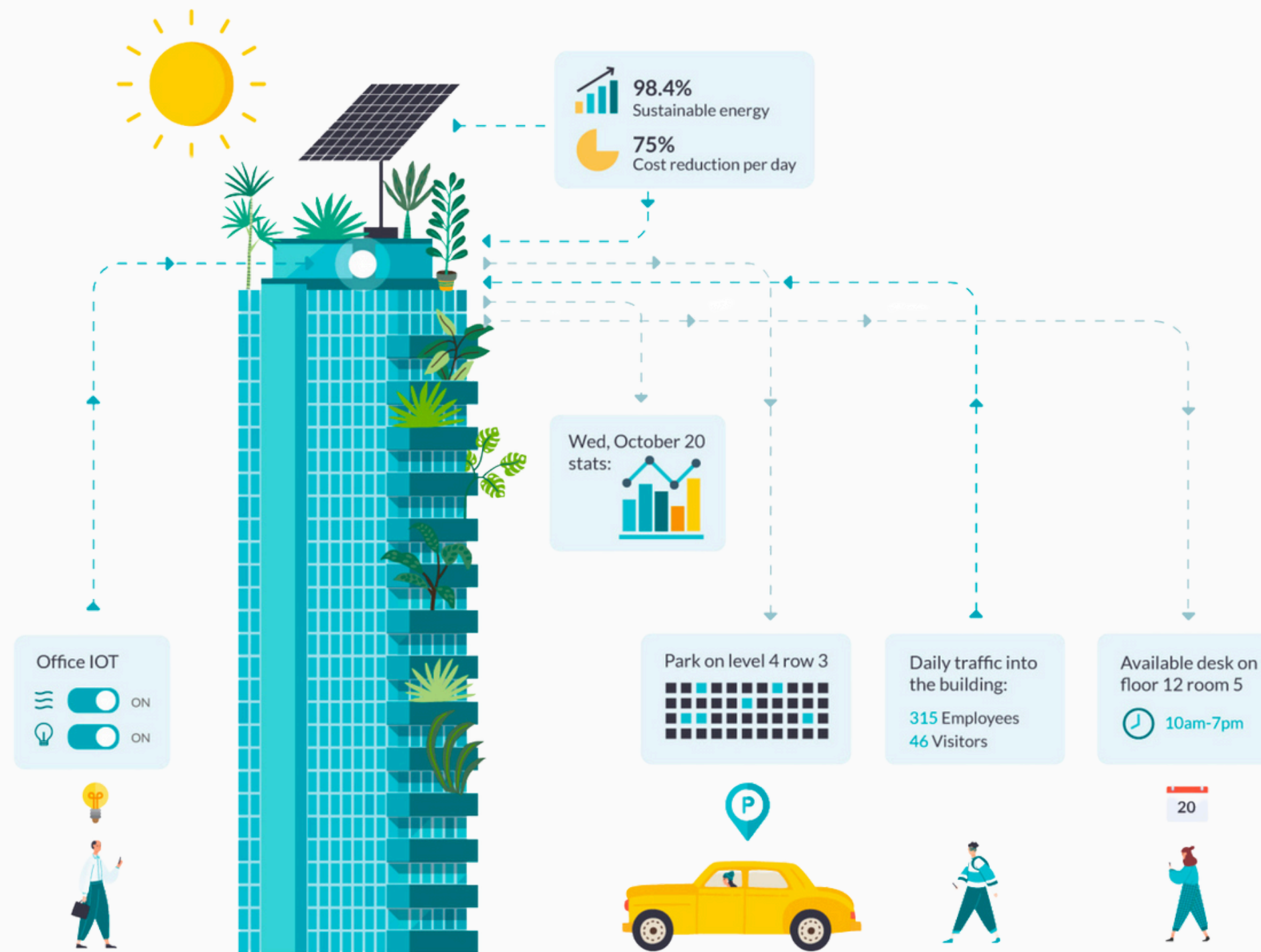


Bruxelles
décembre

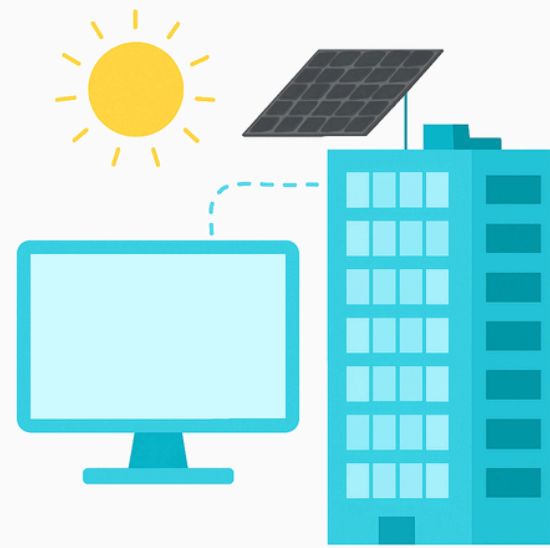
Brussels
December 2019



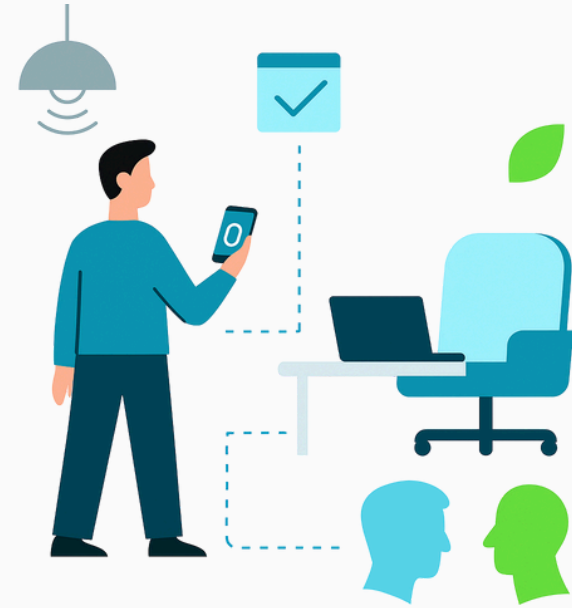
What are smart buildings?



Why do they matter?



Energy use reduction



IoT systems



Rent premiums



Retrofitting

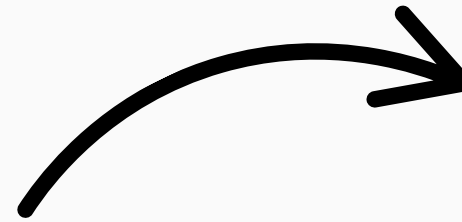


Operational insights

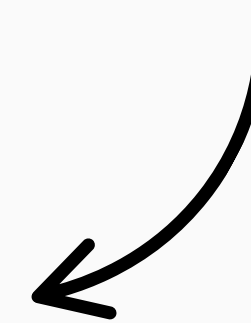
What is CSRD?



**Corporate Sustainability
Reporting Directive**



EUROPEAN LAW:
Requires companies to report
their **Environmental**, **Social**, &
Governance (ESG) performance



**What topics should be
reported?**



**European Sustainability
Reporting Standards (ESRS)**

What topics do the ESRS cover?

ENVIRONMENT

ESRS E1
Climate change

ESRS E2
Pollution

ESRS E3
Water & Marine
Resources

ESRS E4
Biodiversity &
Ecosystems

ESRS E5
Resource use &
Circular economy

SOCIAL

ESRS S1
Own Workforce

ESRS S2
Workers in the
value chain

ESRS S3
Affected
Communities

ESRS S4
Consumers &
End users

GOVERNANCE

ESRS G1
Business Conduct

Why does it matter?



Reporting Inconsistencies



Double Materiality



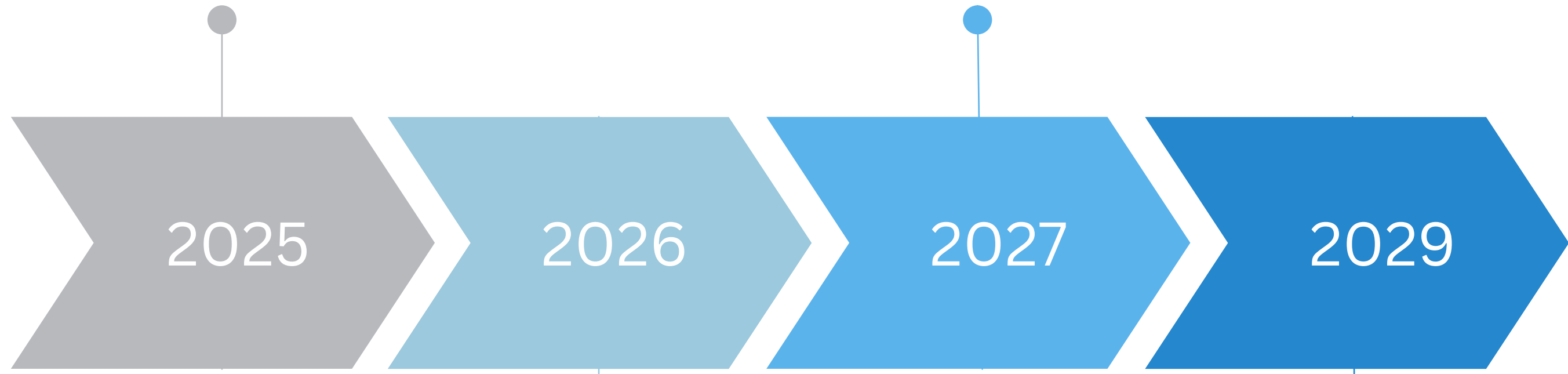
Fines for non-compliance



Evidence - based

Large EU companies
already publishing
sustainability reports

Small and medium-sized listed
companies



2025

2026

2027

2029

Large EU companies
reporting for the
first time

Large non-European
companies doing significant
business in the EU

CSRD Implementation timeline



Meet Nikos, an ESG consultant.

- **Helps real estate companies become more sustainable and align with the CSRD**
- **Handles large amounts of data**
- **Feels the process is time-consuming and complex**
- **Is looking for ways to make the process easier**
- **Knows a thing or two about smart building solutions**

How can smart building solutions facilitate compliance with the CSRD reporting?





1. Which ESRS topics are most relevant to companies in the built environment?

2. What ESRS-aligned data do companies currently collect, and how is this data measured?

3. How can smart building solutions provide verifiable ESG data in order to align with CSRD?

4. What ESRS data cannot be provided by smart building technologies?



1. Which ESRS topics are most relevant to companies in the built environment?
2. What ESRS-aligned data do companies currently collect, and how is this data measured?
3. How can smart building solutions provide verifiable ESG data in order to align with CSRD?
4. What ESRS data cannot be provided by smart building technologies?



1. Which ESRS topics are most relevant to companies in the built environment?

2. What ESRS-aligned data do companies currently collect, and how is this data measured?

3. How can smart building solutions provide verifiable ESG data in order to align with CSRD?

4. What ESRS data cannot be provided by smart building technologies?



1. Which ESRS topics are most relevant to companies in the built environment?
2. What ESRS-aligned data do companies currently collect, and how is this data measured?
3. How can smart building solutions provide verifiable ESG data in order to align with CSRD?
4. What ESRS data cannot be provided by smart building technologies?

Research Approach



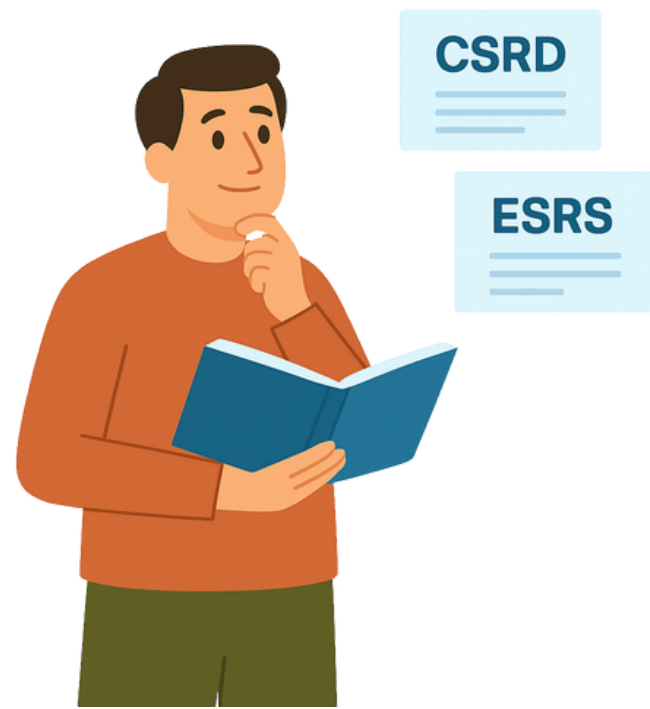
**SMART
BUILDING
COLLECTIVE**

Research Approach



SMART
BUILDING
COLLECTIVE

Research Approach



**SMART
BUILDING
COLLECTIVE**

1st Interview Set



RE Asset Management

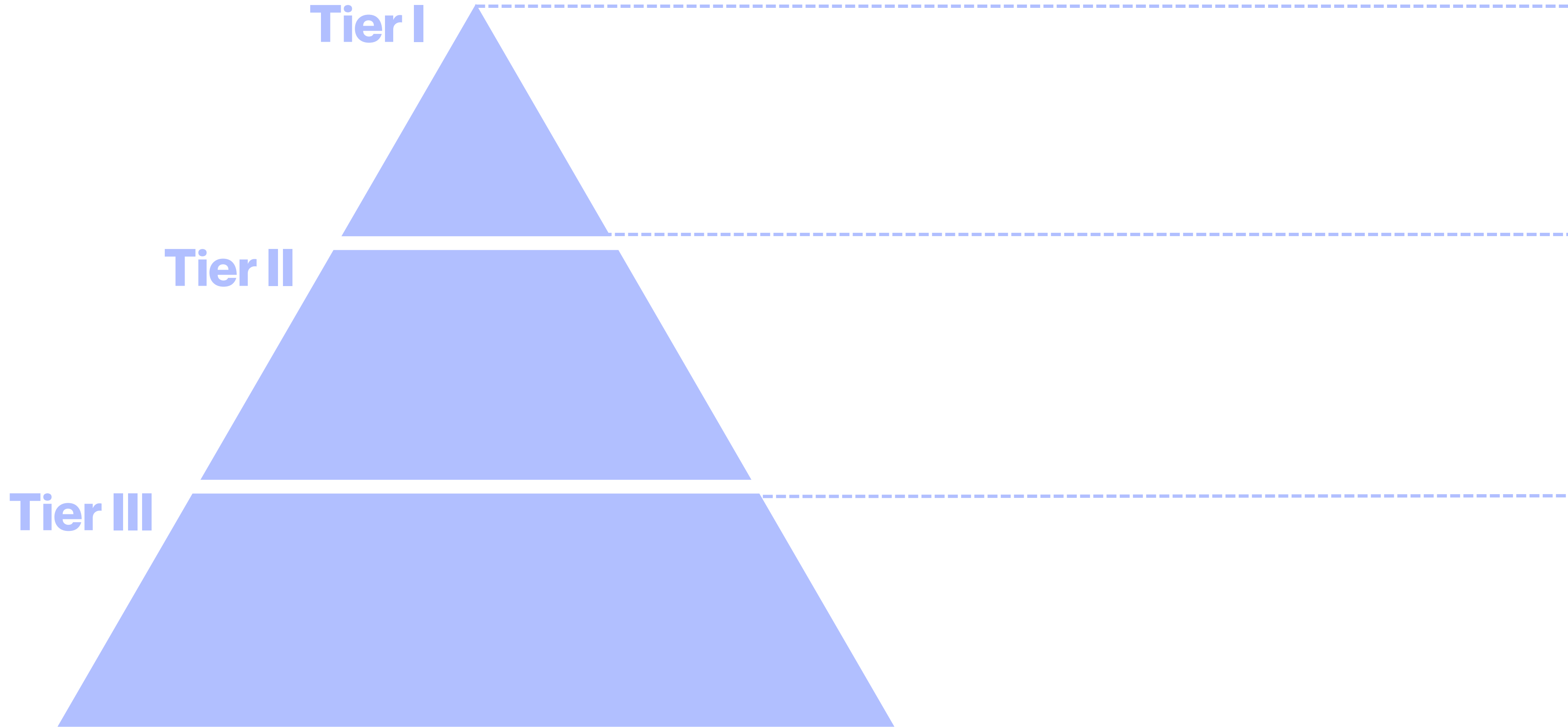


Developers/Contractors

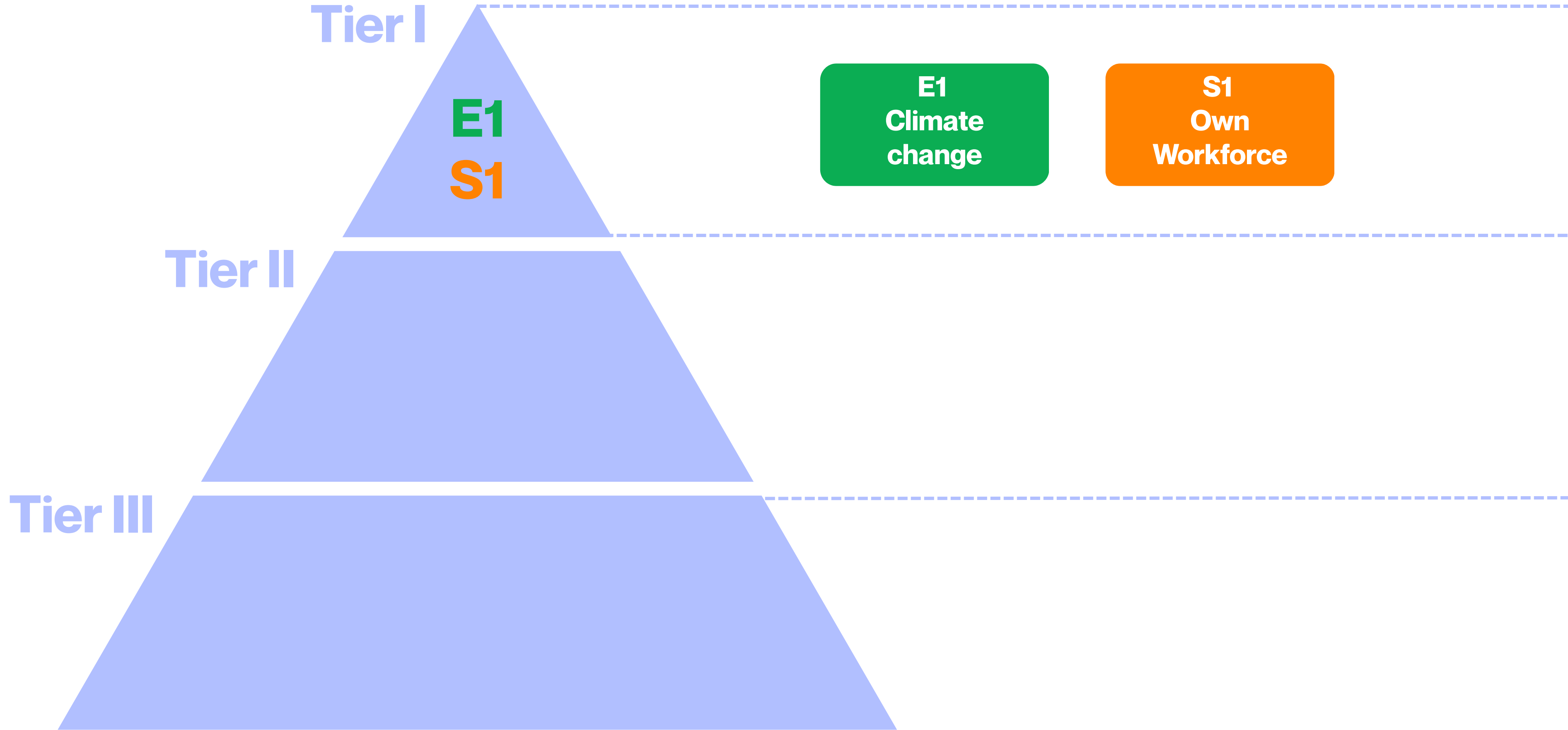


Consultants

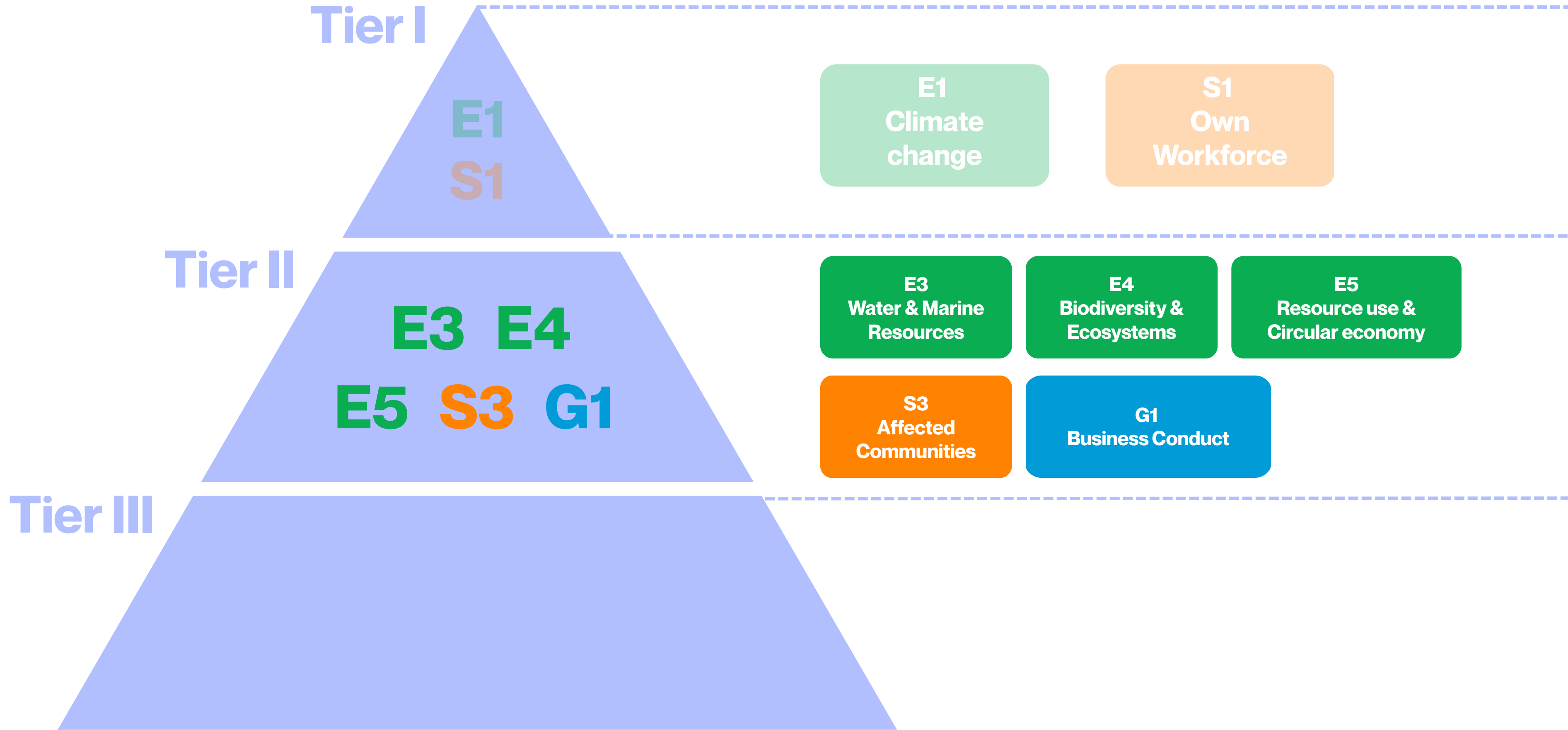
ESRS Tier List



ESRS Tier List



ESRS Tier List



Tier I

E1
S1

E1
Climate
change

S1
Own
Workforce

Tier II

E3 E4
E5 S3 G1

E3
Water & Marine
Resources

E4
Biodiversity &
Ecosystems

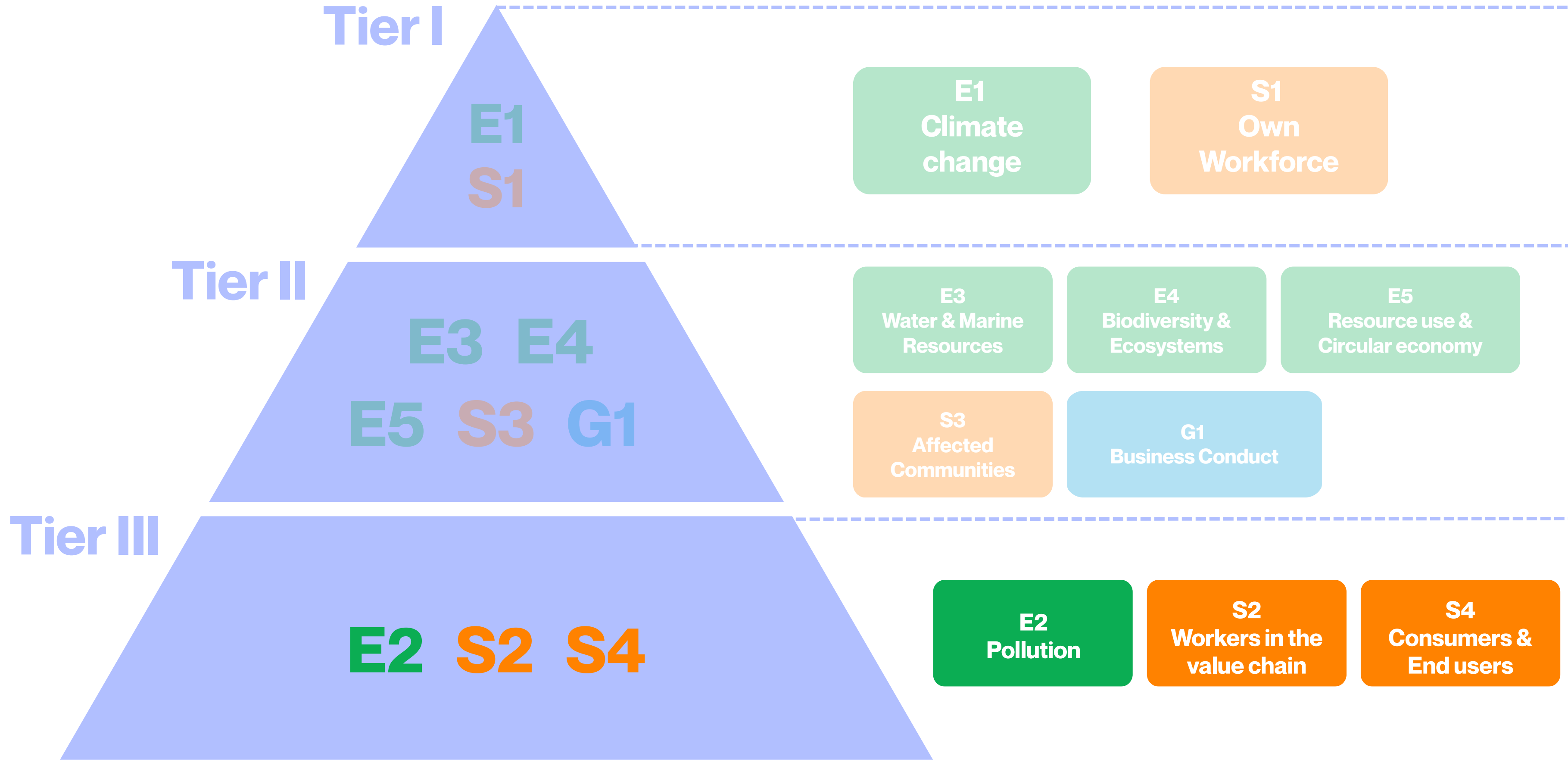
E5
Resource use &
Circular economy

S3
Affected
Communities

G1
Business Conduct

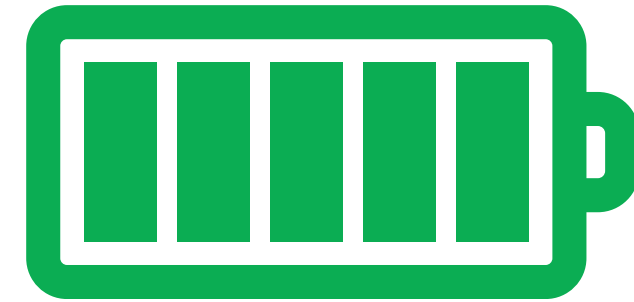
Tier III

ESRS Tier List

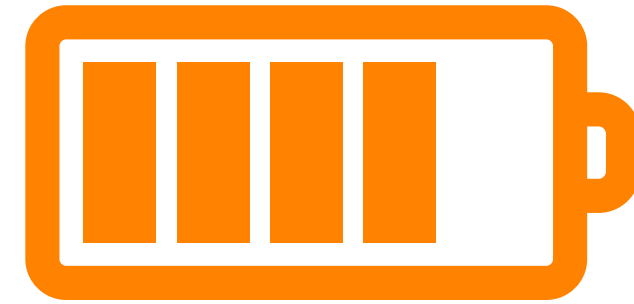


Data

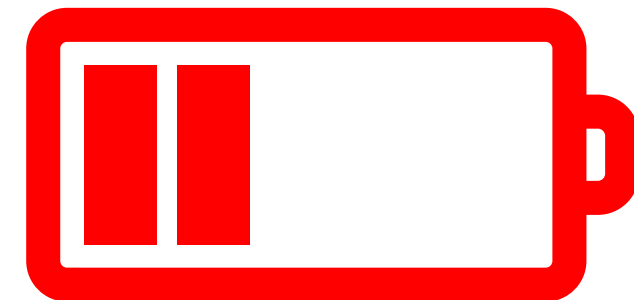
Tier I



Tier II

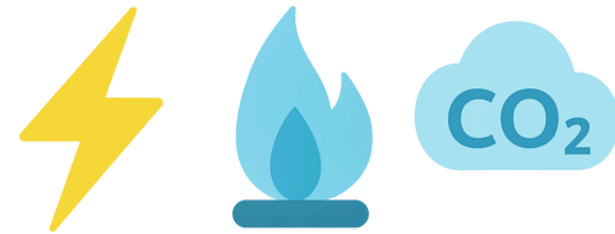


Tier III



What is measured today?

E1
Climate change



S1
Own Workforce



Tier I

E3
Water & Marine
Resources



E5
Resource use &
Circular economy



E4
Biodiversity &
Ecosystems



Tier II

S3
Affected
Communities



G1
Business Conduct



What is measured today?

E1
Climate change



S1
Own Workforce



Tier I

E3
Water & Marine
Resources



E5
Resource use &
Circular economy



E4
Biodiversity &
Ecosystems



Tier II

S3
Affected
Communities

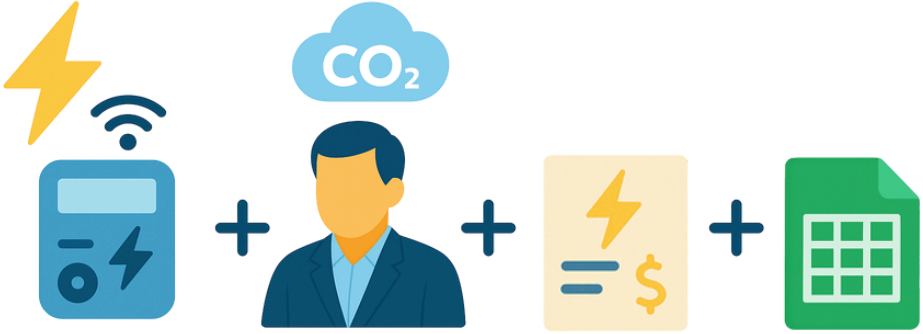


G1
Business Conduct



How is it measured?

E1
Climate change



S1
Own Workforce



Tier I

E3
Water & Marine
Resources



E5
Resource Use &
Circular Economy



E4
Biodiversity &
Ecosystems



Tier II

S3
Affected
Communities

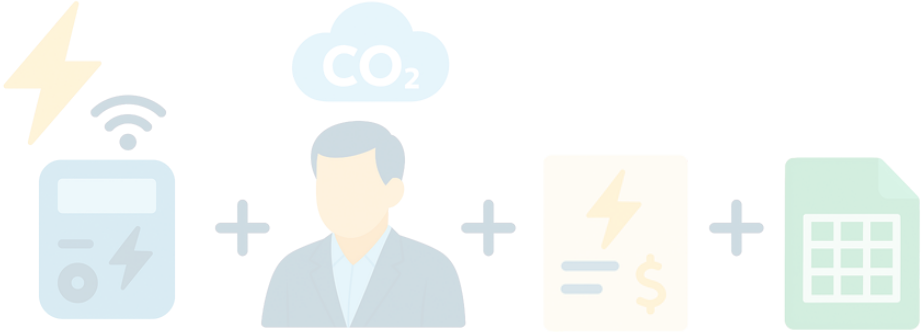


G1
Business
Conduct



How is it measured?

E1
Climate change



S1
Own Workforce



Tier I

E3
Water & Marine
Resources



E5
Resource Use &
Circular Economy



E4
Biodiversity &
Ecosystems



Tier II

S3
Affected
Communities

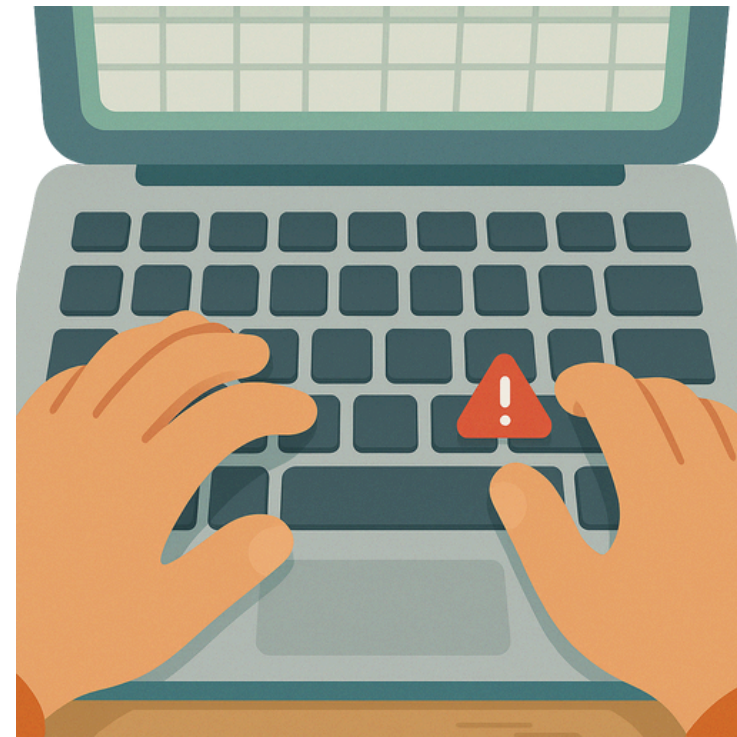
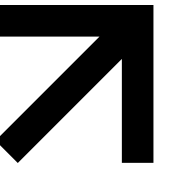


G1
Business
Conduct

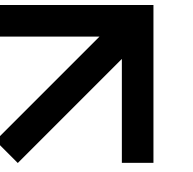


What are the issues so far?

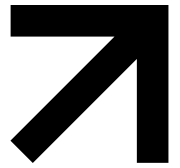
Data Entry Risks



Fragmented IT Landscape



Incomplete Data Coverage



“We accept the typo risks.”

“It's not enough to put in a smart meter. You have to have the infrastructure behind it, the cloud, the systems.”

“Different data points in biodiversity are very complicated because they require a new way of mapping all our activities.”

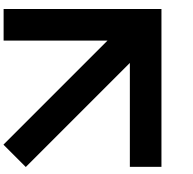
“I hate Excel...”

“The consolidation of the data is done by the consultants, we are not directly involved in that part.”

“Well, clearly the number one challenge is that tenants are not responding. They don't understand the necessity, they don't care.”

“The water requires us to manually look at bills and type in the consumption per bill.”

2nd Interview Set

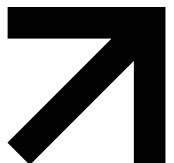


**Integrated solution providers /
Consultants**

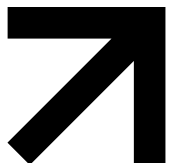


Dedicated solution vendors

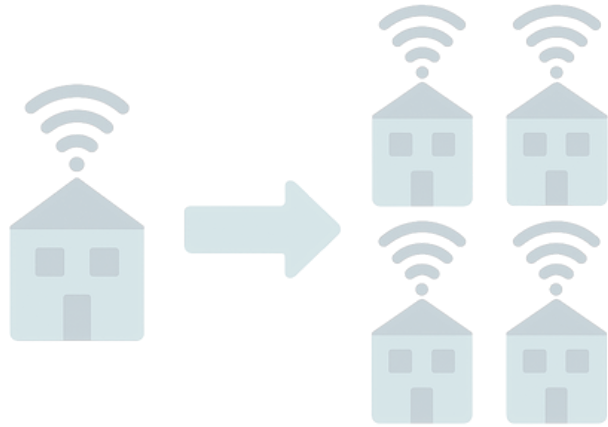
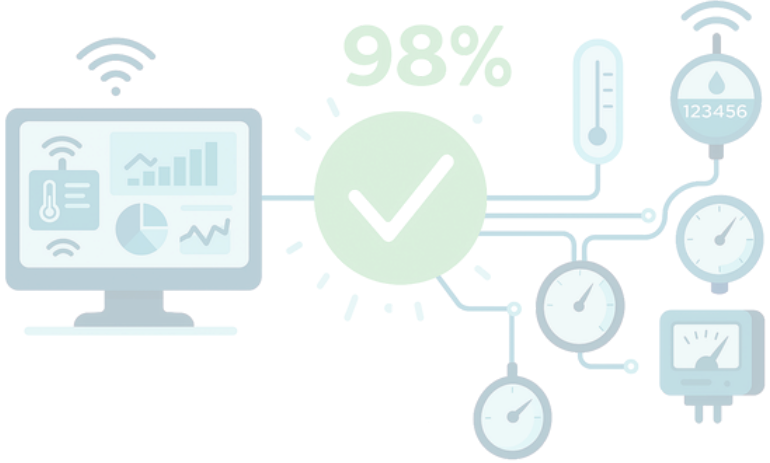
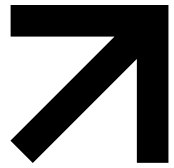
Spectrum of Available Solutions



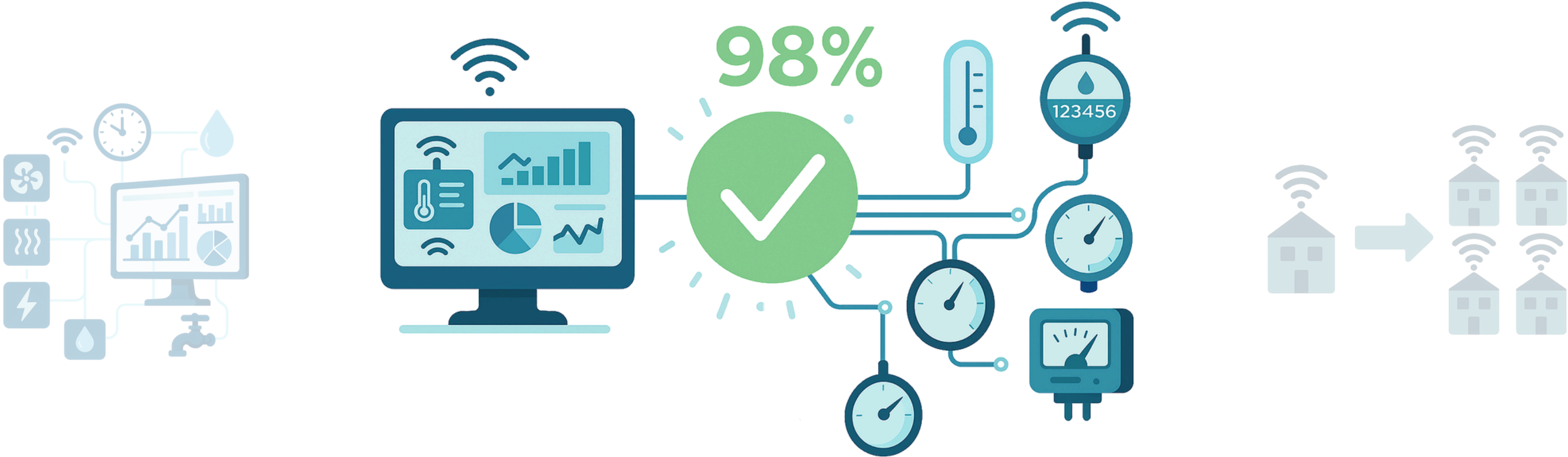
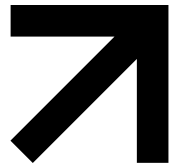
Spectrum of Available Solutions



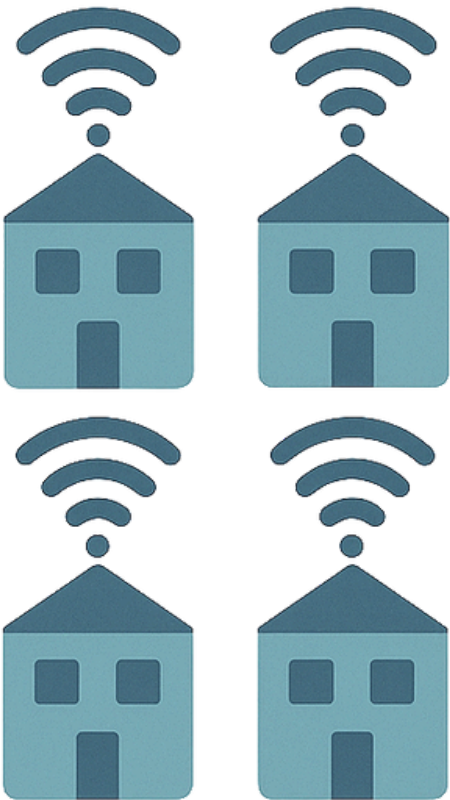
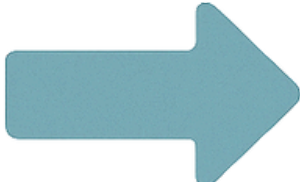
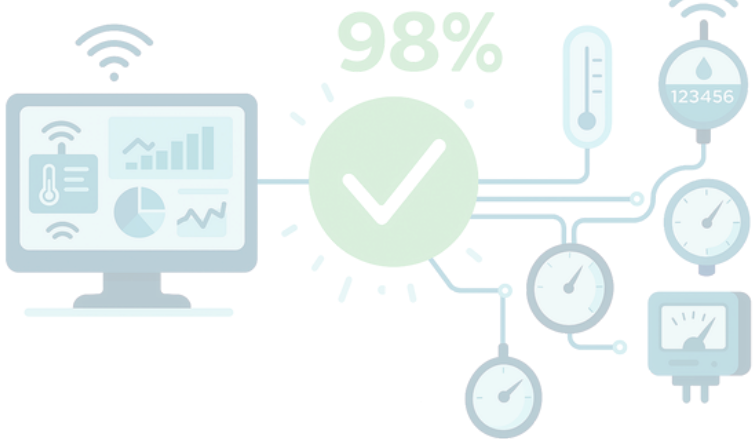
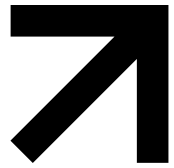
Data Accuracy, Frequency & Coverage



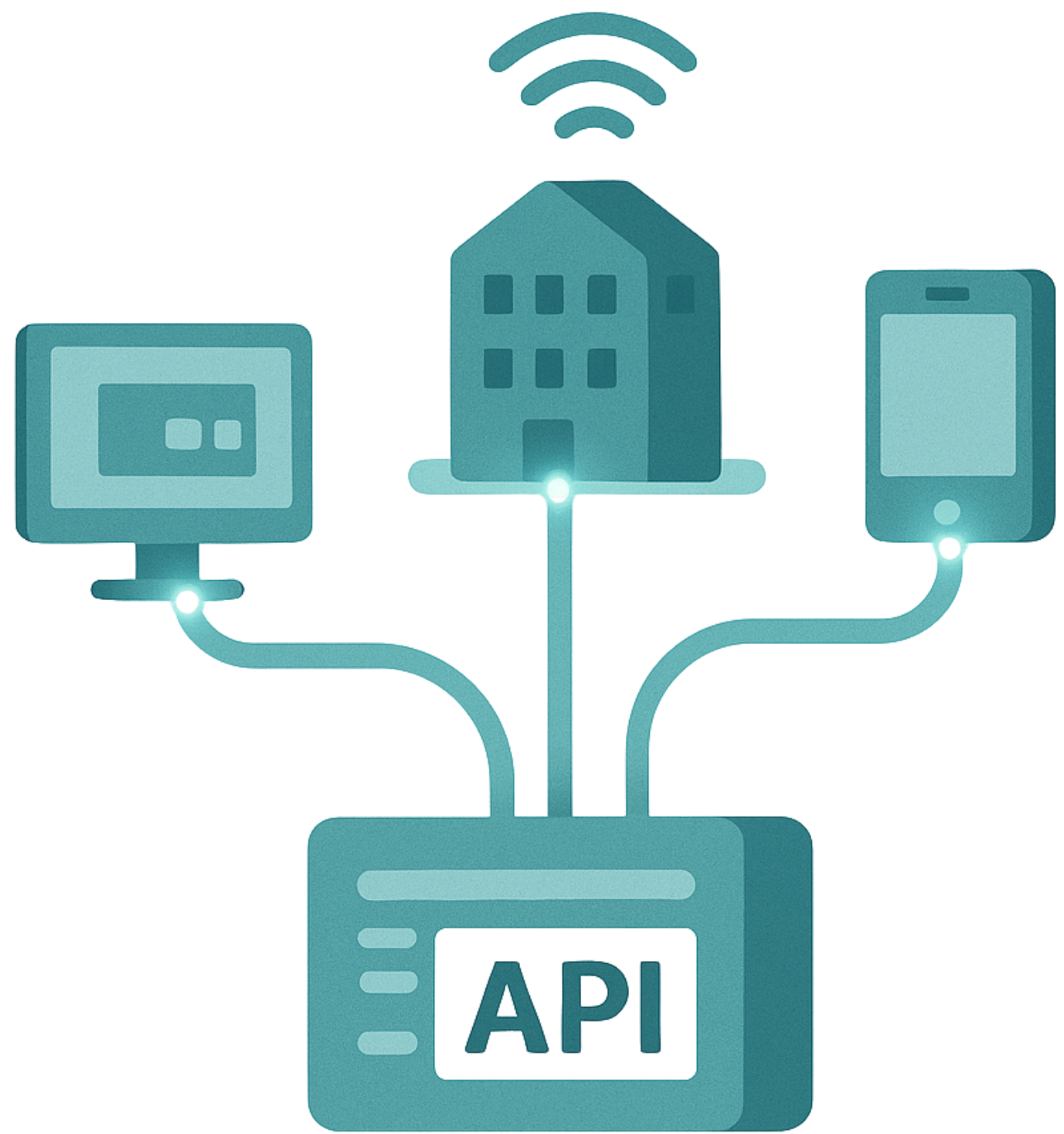
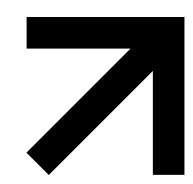
Data Accuracy, Frequency & Coverage



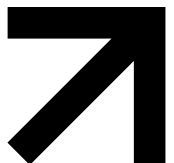
Data Accuracy, Frequency & Coverage



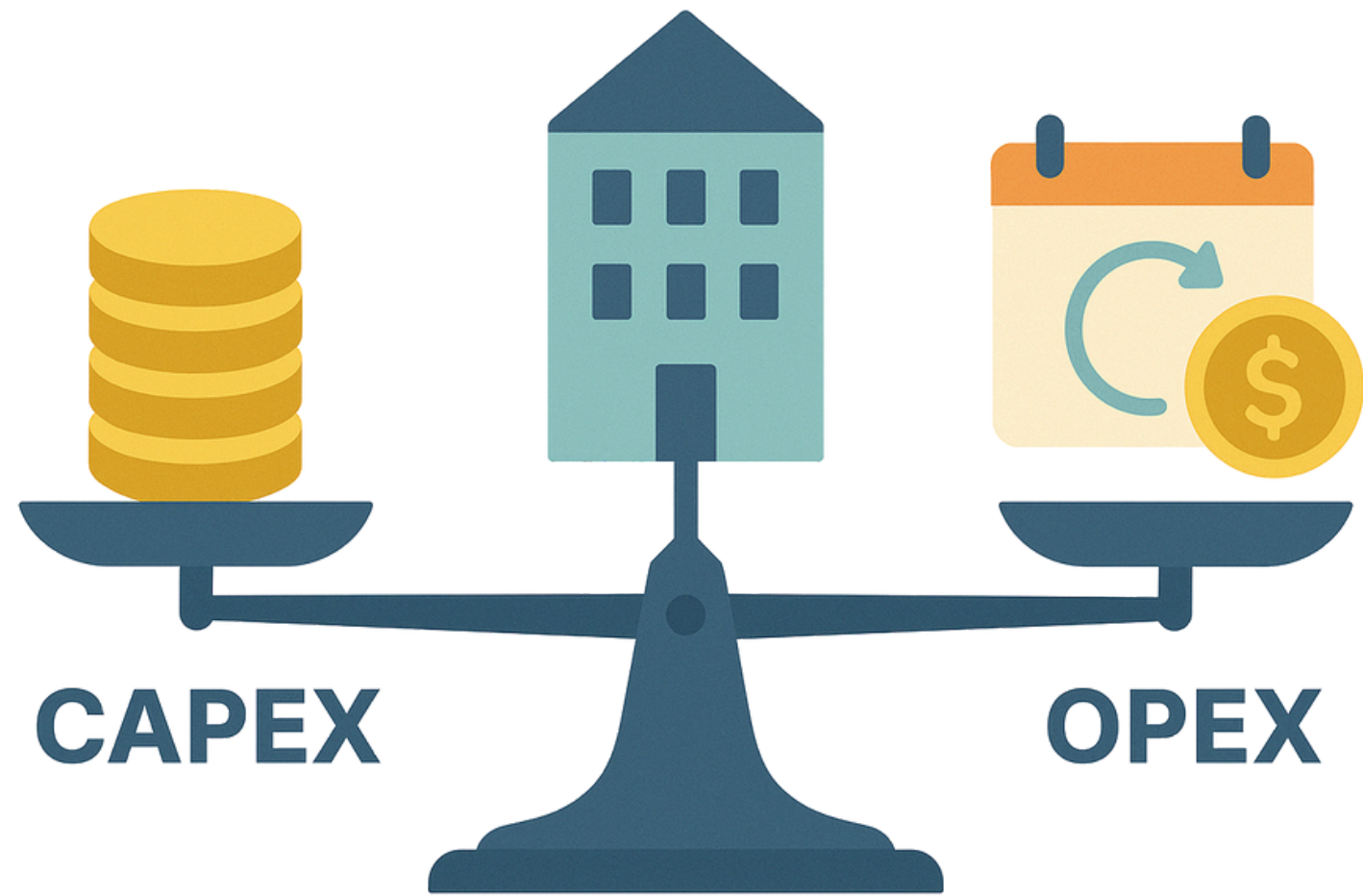
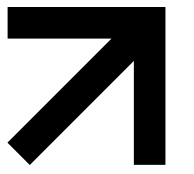
Integration & Interoperability



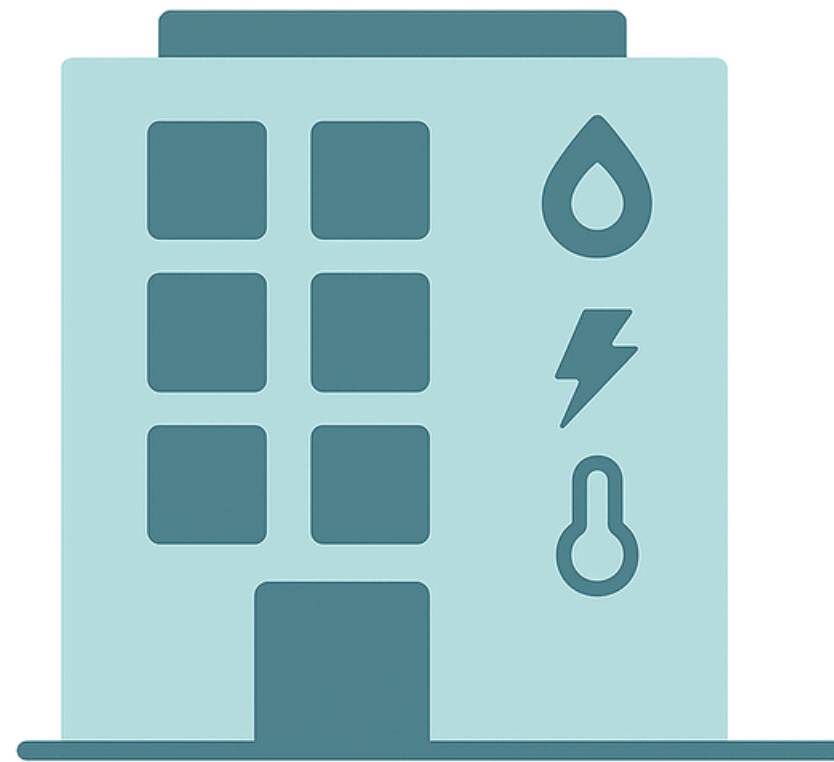
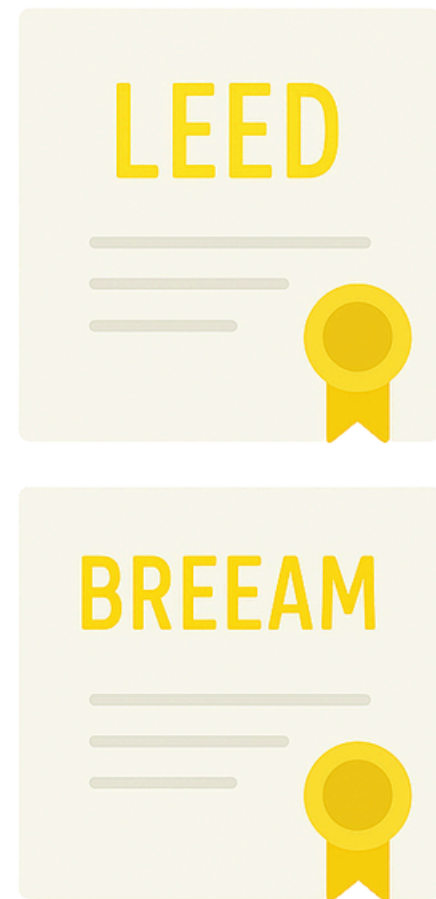
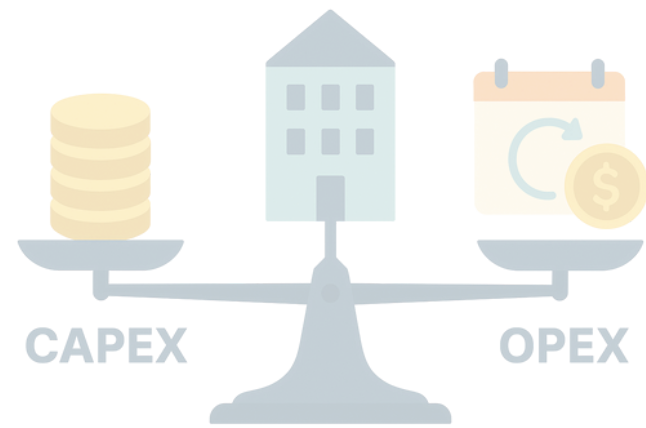
Integration & Interoperability



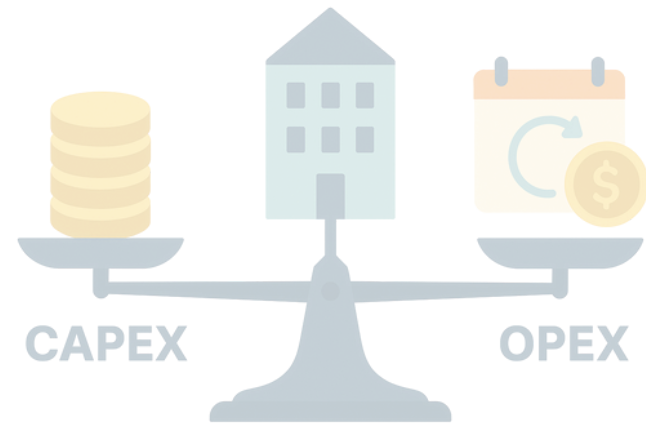
Business Model & Value Generation



Business Model & Value Generation



Business Model & Value Generation



“Our solution is fully scalable, clients only pay for what they need.”

“The data collection can be every hour, every ten minutes, every minute, whatever you want.”

“Our platform connects via API to all building systems.”

“We have achieved an accuracy rate of 99.96%. We got that by recording 50,000 parking events with a camera.”

“Most of our customers have been able to reduce their energy consumption by about 30%.”

How do smart buildings support CSRD compliance?



1. Verifiable ESG evidence
2. Enhanced supervision
3. Platform Integration
4. Uniformity & Scalability

How do smart buildings support CSRD compliance?



1. Verifiable ESG evidence
2. Enhanced supervision
3. Platform Integration
4. Uniformity & Scalability

How do smart buildings support CSRD compliance?



1. Verifiable ESG evidence
2. Enhanced supervision
3. Platform Integration
4. Uniformity & Scalability

How do smart buildings support CSRD compliance?



1. Verifiable ESG evidence
2. Enhanced supervision
3. Platform Integration
4. Uniformity & Scalability

What ESRS modules smart solutions can cover...



Mostly covered:

E1
Climate change

E3
Water & Marine
Resources

Parts of:

E4
Biodiversity &
Ecosystems

E5
Resource use &
Circular economy

S1
Own Workforce

S3
Affected
Communities

...and what not



Parts of:

E4
**Biodiversity &
Ecosystems**

E5
**Resource use &
Circular economy**

S1
Own Workforce

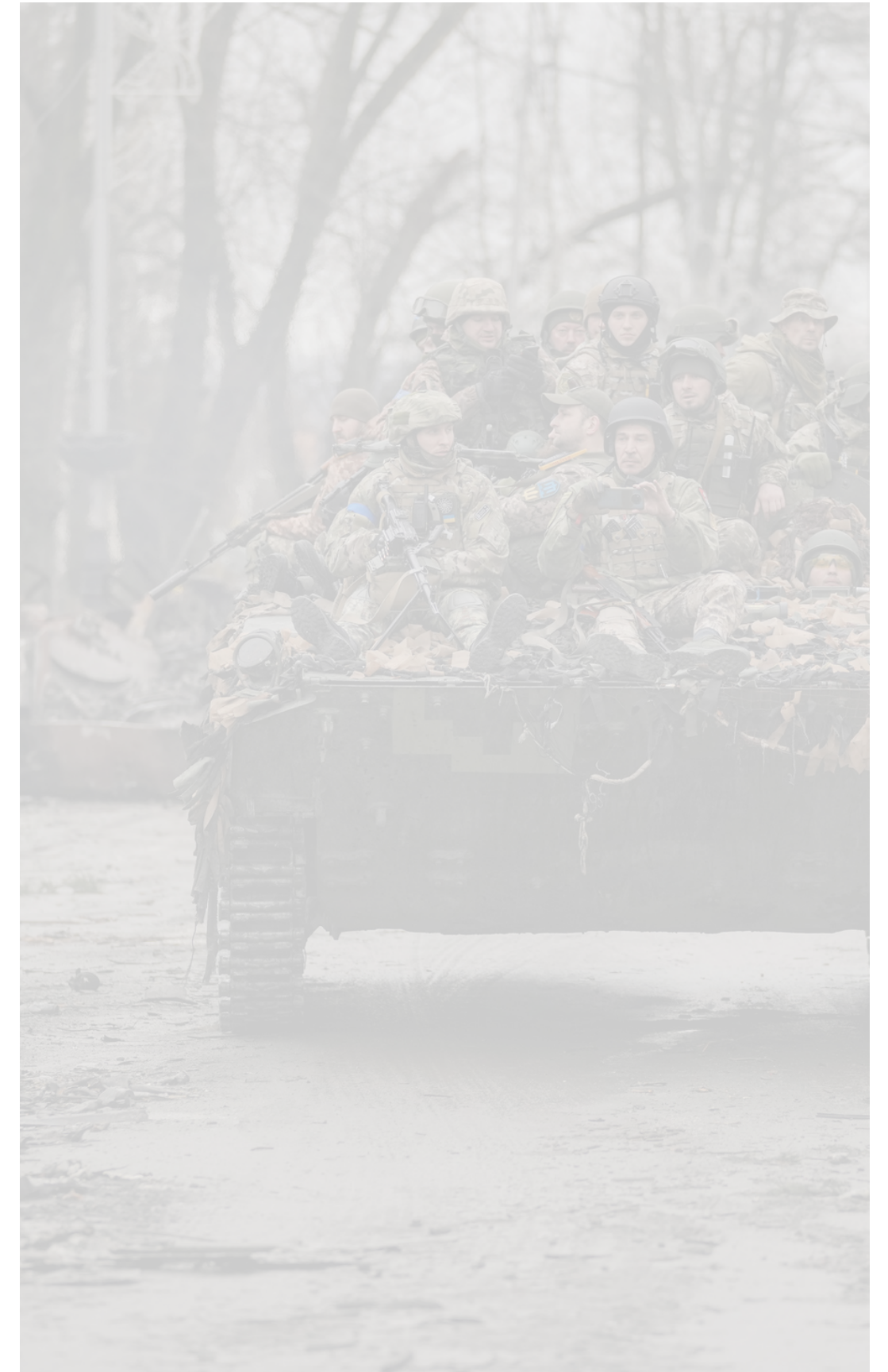
S3
**Affected
Communities**

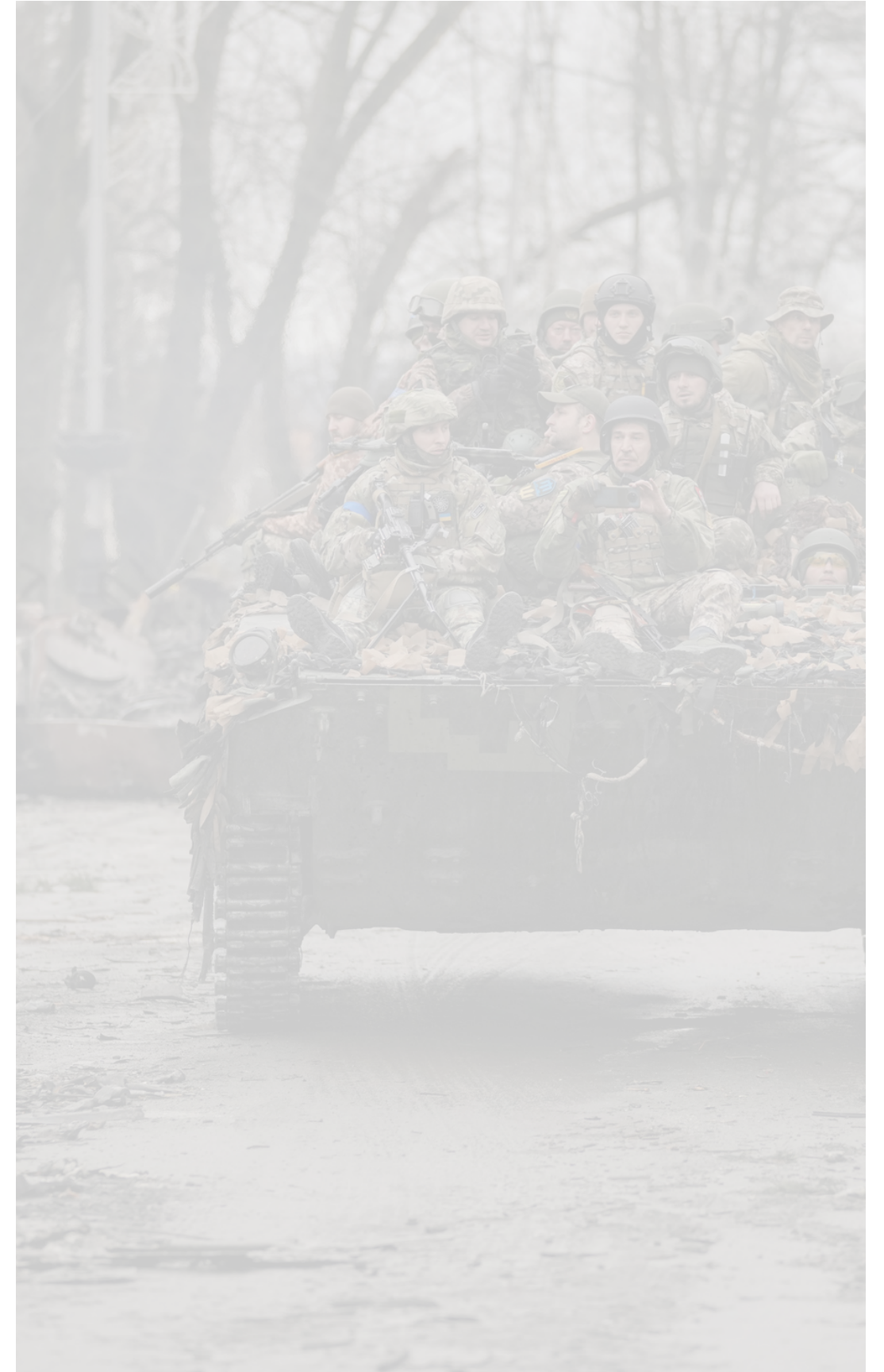
Not really:

G1
Business Conduct

Quantitative VS Qualitative









Simplification

Omnibus I and II

26 February 2025

Maybe CSRD was
a bit too much...

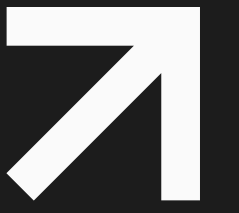


European Commission
Commission européenne



Commission européenne
European Commission





Thank You!

Questions?