THE BEST RUN **SAP**

SAP Intelligent Sustainability Platform

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March 28, 2024

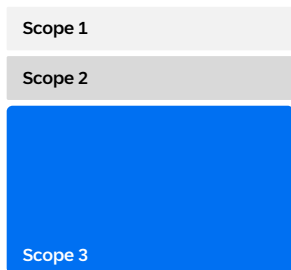# Climate Action is more relevant than ever: Companies need to act now

>70%
of many companies' carbon footprint is as a result of **scope 3 emissions***. The figure depends on the industry and business model.

| Scope 1 |
| Scope 2 |
| **Scope 3** |

20x
increase in the number of global climate change **regulations** since 1997.

34%
of world-wide major companies **have a net-zero target**. 93% will fail if they do not increase their effort significantly.

-90%**

2010   2050
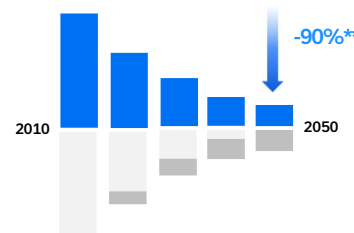
10%
of companies **have a comprehensive understanding** of their greenhouse gas emissions.

!

***Scope 3 emissions** are all indirect greenhouse gas emissions that occur in a company's supply chain, excluding those from direct operations (Scope 1) and purchased energy (Scope 2).

Report: Regulatory frameworks are evolving quickly
Increased demand for auditable and comparable emission data

Carbon disclosure requirements are rapidly evolving

global best practice for how organizations communicate and demonstrate accountability for their impacts on the environment, economy and people

GRI

The Climate Corporate Data Accountability Act requires companies in California to report their Scope 1, 2, and 3 GHG emissions

SB253

CSRD will start to have impact in 2024, up to 50.000 companies within the EU need to start recording their sustainability impact

CSRD

comprehensive global baseline of sustainability disclosures focused on the needs of investors and the financial markets

ISSB

climate-related disclosure for more than 30,000 such organizations by 2027.

SEC

regulators, jurisdictions and international standards to use TCFD's recommendations in development of climate related reporting standards

TCFD
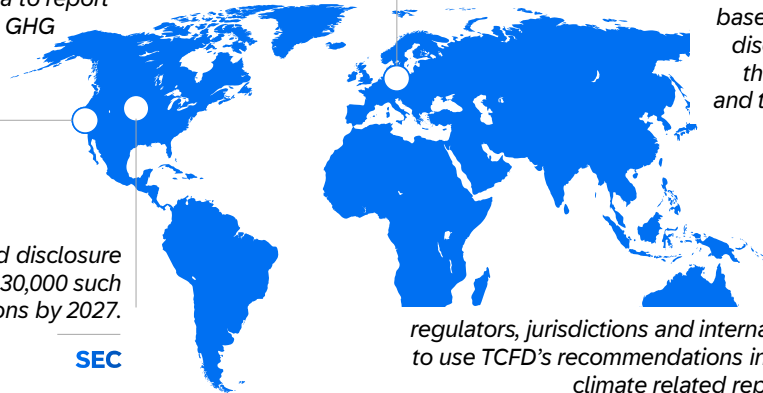
WHY SAP?

Our auditing capabilities meet carbon disclosure requirements

SAP brings long standing experience to provide audit-proof results from the financial to carbon reporting

We synchronize financial and carbon flows for integrated reporting capabilities

Our reliable data strategy allows you to keep up with current and upcoming disclosure and audit requirements

Climate related financial disclosure

Governance

Strategy

Risk
Management

Metrics &
Targets

Governance
The organization´s governance around climate-related risks and opportunities.

Strategy
Reflect sustainable value creation and risks in all finance processes – from financial planning and reporting, to costs and revenue analysis, cashflow forecasting, as well as financing and taxes

Risk Management
How climate related risks are integrated into existing risk management frameworks.

Metrics & Targets
Used to assess and manage the relevant climate-related risks and opportunities.

Agenda – SAP Sustainability Solutions Overview

- **Introduction**

- **Our Vision**
  - **Path to the Green Ledger, Green Token & Sustainability Platform**

- **Why SAP**
  - **Platform, Business Processes & Key Differentiators**

- **Sustainability Value Framework**
  - **Key Challenges, Business Value, ROI**
- **Appendix – Individual Sustainability Solutions Overview**

You Can't Manage What You Don't Measure Video

You can't manage what you don't measure

Path to Green Ledger

Aggregated Averages → Moving from averages to actuals → Transactional Actuals
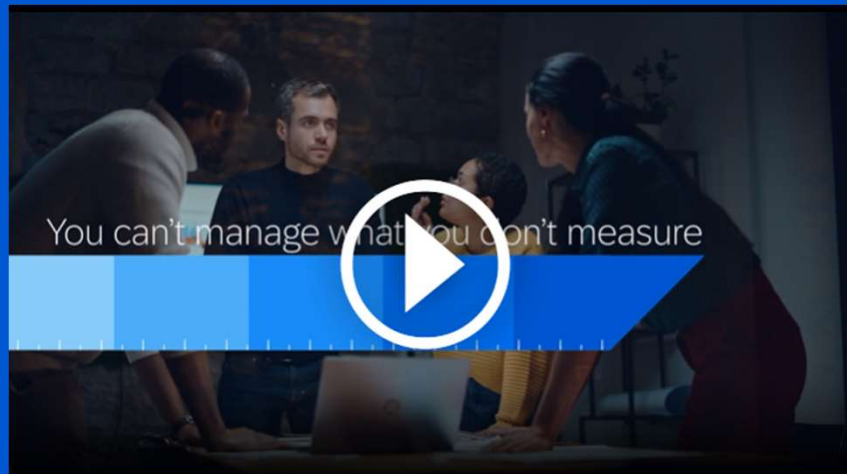
SAP Sustainability Control Tower	SAP Sustainability Footprint Management	SAP Sustainability Data Exchange	Green Ledger

Restricted Availability

Roadmap

SAP S/4HANA Cloud for EHS Environment Management

SAP Green Ledger – Carbon Accounting Hub

The Green Ledger - Carbon Accounting Hub

- Runs On SAP BTP

- Connects to multiple Accounting Systems, SAP and non-SAP

- Connects to multiple Emissions Management Systems, SAP and non-SAP

- Is a finance-grade application

- With own persistency for Green Ledger Journal Entries

- And operational Analytics

Green Ledger - Carbon Accounting Hub **supports**

- Technical connectivity and flexibility

- Enterprise Analytics

- And is future-proof

SAP Analytics Cloud

SAP S/4HANA (w. Carbon Sub Ledgers)	SAP Green Ledger – Carbon Accounting Hub	SAP Sustainability Footprint Mgmt
SAP S/4HANA		SAP Carbon Data Exchange
Non-SAP		Non-SAP

SAP BTP
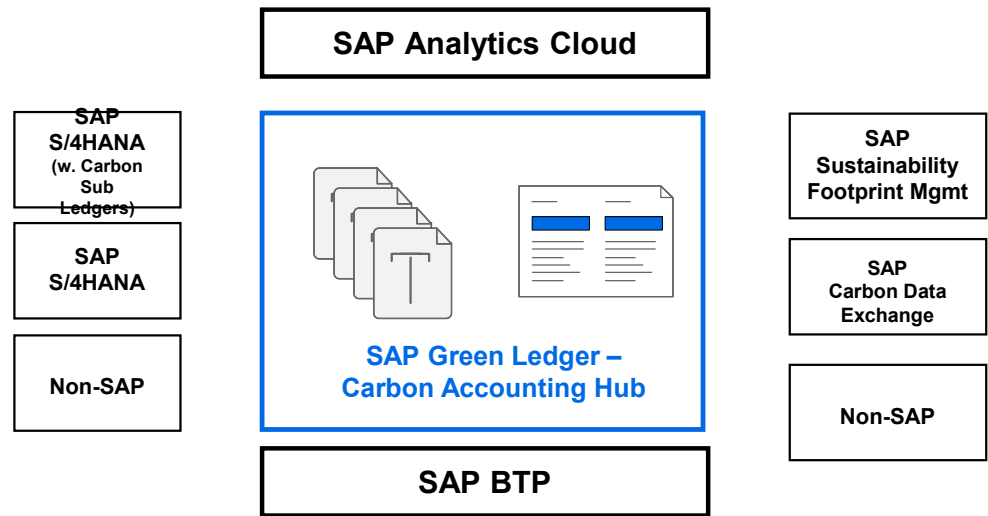
SAP Green Token

Combining three innovative principles

Tokenization
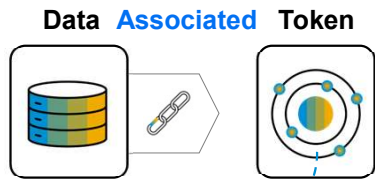
Data **Associated** **Token**

1 Token

Material	CO_2 Footprint	Production Date
Plastic Waste	0.2	11/01/2023
Qty	ISCC+ Cert	Unique ID
1 kg	A123XX5678	X123YY465
Origin	Producer	Material Source
Singapore	Location Hub A	PCR

Example

A unique digital twin of the physical material capturing and tracing sustainability attributes across the supply chain

Blockchain

Token **Blockchain**

Ledger
Stores data
on a blockchain

Distributed Network
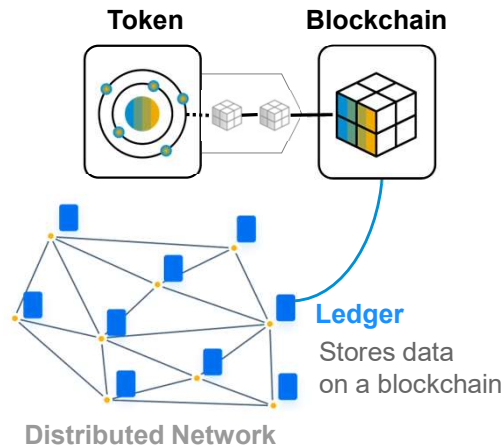
An immutable and distributed ledger for validation, notarization, and data transfer

Chain of Custody

IN **OUT**

Material
Conversion
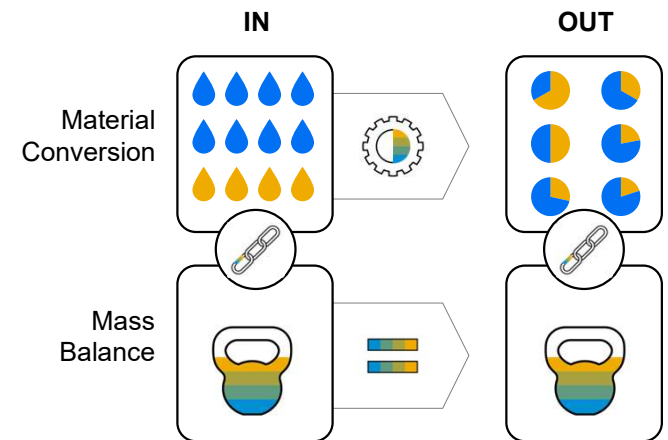
Mass
Balance

Segregated and mass balance accounting to facilitate traceability of mixed and continuously processed materials

Use Case
Extended Chemicals

Tokenization Blockchain Chain of Custody Model

INBOUND	CONVERSION	OUTBOUND	AUDITING & REPORTING

Waste Collection & Fossil Fuels

Mixing at Storage & Handling

Production and Converting
Yielding of Tokens at Ratio

Raw plastics from **Origin 1**

Raw plastics from **Origin 2**

Raw plastics from **Origin 3**

Small Yield / Token Loss

- CO2 Footprint
- Certification
- Full Traceability
- Chain of Custody Model

50% Origin 1
20% Origin 2
30% Origin 3

Auditing is efficient and simple with 'chain of custody' blockchain ledger

Immutable Chain of Custody (Blockchain) across multiple business partner

Token get transferred to supply chain actor 'wallets'

Sustainability Commitments mapped to SAP Cloud for Sustainability Enterprises

Industry Capabilities
to solve your specific challenges

Business Network
for carbon data sharing

Partner Ecosystem
geared towards sustainability

Supplier Management

SAP Cloud for Sustainable Enterprises

Holistic Steering and Reporting / Planning and Modeling:
Sustainability Control Tower(SCT)

Reporting and Disclosure

Climate Change.

Environment Management

Innovation

Climate Action:
-Scope 1,2: Env. Mgmt.
-Scope 3 Sustainability
Footprint Mgmt..

Circularity:
- Green Token (GT)
-Enterprise Product
Development (EPD)

Social Responsibility:
- HR System
-Ariba Supplier Mgmt.
-Workplace Safety

Human Rights

Occupational Safety

Enterprise Resource Planning System (S/4HANA)

Green Ledger
Sustainable Digital Thread

Carbon –Related Financial Mgmt.

SAP Business Technology Platform

Climate Action: Sustainability Solutions

LCA Databases

External data sources

Carbon Networks

The Green Ledger

SCT Sustainability Control Tower

Emissions Mgmt.

Sustainability Footprint Mgmt..

Product Compliance over lifecycle

Responsible Design & Production

Raw Material Transparency GreenToken

Sustainability Data Exchange

New built-in AI capabilities for your businesss

SAP S/4HANA
Intelligent collections ●

SAP S/4HANA
Sales order auto-completion ●

SAP Intelligent Product Recommendations
Configurable product quotation ●

SAP Digital Assistant for CX
Intelligent questions & answers ▲
Customer 360 profile summary &
Scheduling assistant ▲

SAP Extended Warehouse Management
● Slotting recommendation

SAP Predictive Replenishment
● Replenishment optimization

SAP Transportation Management
▲ Goods receipt processing

Finance

Sales & Service

Supply chain

SAP BUSINESS AI

SAP Ariba Buying
Product recommendations ●

SAP Business Network
Invoice conversion ●

SAP Central Invoice Management
General ledger line-item identification ●

Procurement

IT & Cross-Function

SAP Digital Assistant
▲ Product documentation search

SAP Signavio Process Manager
▲ Process model generation and documentation

SAP Analytics Cloud
▲ Natural language queries

Marketing & Commerce

HR

SAP Digital Assistant for CX
Natural language marketing analytics ▲
Product description generation & review summaries ▲

SAP SuccessFactors
● Skill and career path recommendations
▲ Job description & interview questions generation

Sustainability Key Figure ledger across the enterprise

RECORD

- Sustainability Metric management
- Data Sourcing & Integration
- Data Quality assurance
- Data enrichment & calculation
- Period closing

REPORT

- KPI Tracking
- Analytics
- Reporting
- Benchmarking*

ACT

- Target setting and planning
- Simulation and forecasting*
- Initiatives tracking*
- Embedding in business processes*

*Some capabilities are planned as part of Sustainability Control Tower roadmap and may not be available today

Why SAP

Products

Sustainable products

Operations

Sustainable Operations

Supply Chain

Sustainable supply Chain

SAP® ERP

ESG

Financial Ledger

Green Ledger

Workforce

Diversity & Inclusion and safe workforce

Sales & Distribution

Offer sustainable products & Services

Business Process Approach

No company becomes sustainable until their business processes become sustainable.
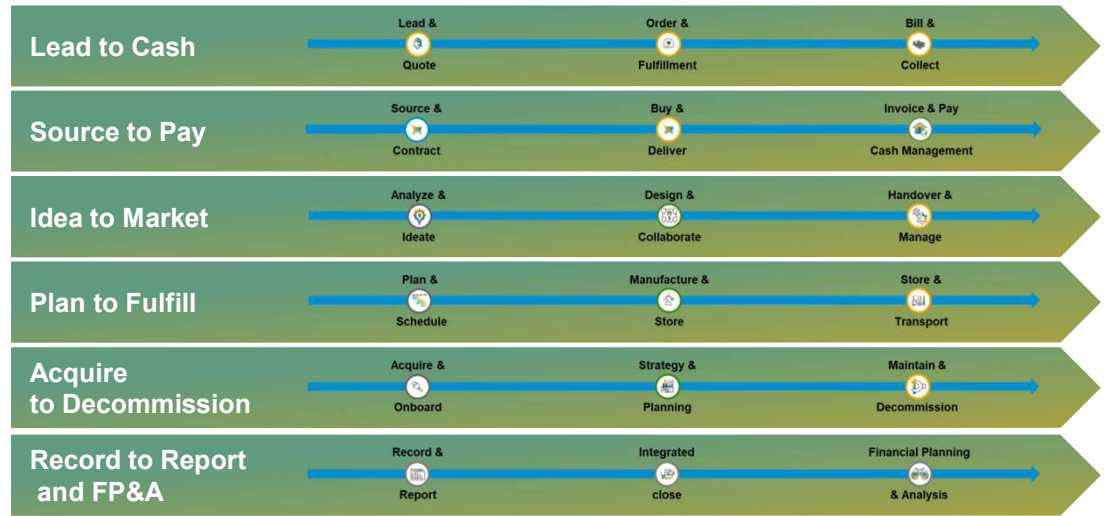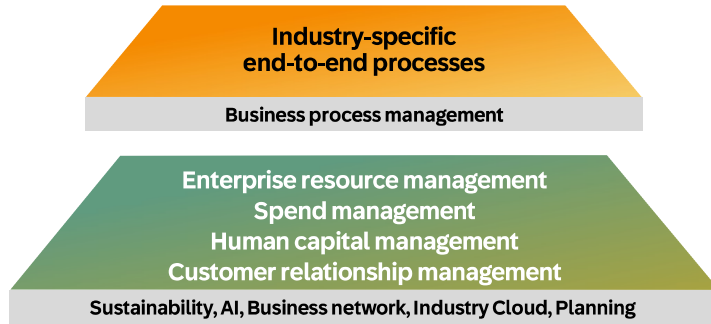
Analytics Layer — Competitor "Bolt on" with reporting

SAP Analytics Cloud
- Viewing and sharing
- Data analysis & visualization
- Planning
- Business Content

3rd party Reporting & Analytics

Business Process Layer – SAP right to win

SAP "Embed" Sustainability and AI in Business Process

Industry-specific end-to-end processes

Business process management

Enterprise resource management
Spend management
Human capital management
Customer relationship management

Sustainability, AI, Business network, Industry Cloud, Planning

Process			
Lead to Cash	Lead & Quote	Order & Fulfillment	Bill & Collect
Source to Pay	Source & Contract	Buy & Deliver	Invoice & Pay / Cash Management
Idea to Market	Analyze & Ideate	Design & Collaborate	Handover & Manage
Plan to Fulfill	Plan & Schedule	Manufacture & Store	Store & Transport
Acquire to Decommission	Acquire & Onboard	Strategy & Planning	Maintain & Decommission
Record to Report and FP&A	Record & Report	Integrated close	Financial Planning & Analysis

Data Layer — Competitor "Bolt on" with reporting

Business technology platform

App dev | Integration | Data and analytics | AI

Microsoft Azure   aws   Google Cloud Platform   Alibaba Cloud

SAP Business Technology Platform (BTP)

SAP Integration Suite
- Domain Model & Metadata
- Master Data Integration
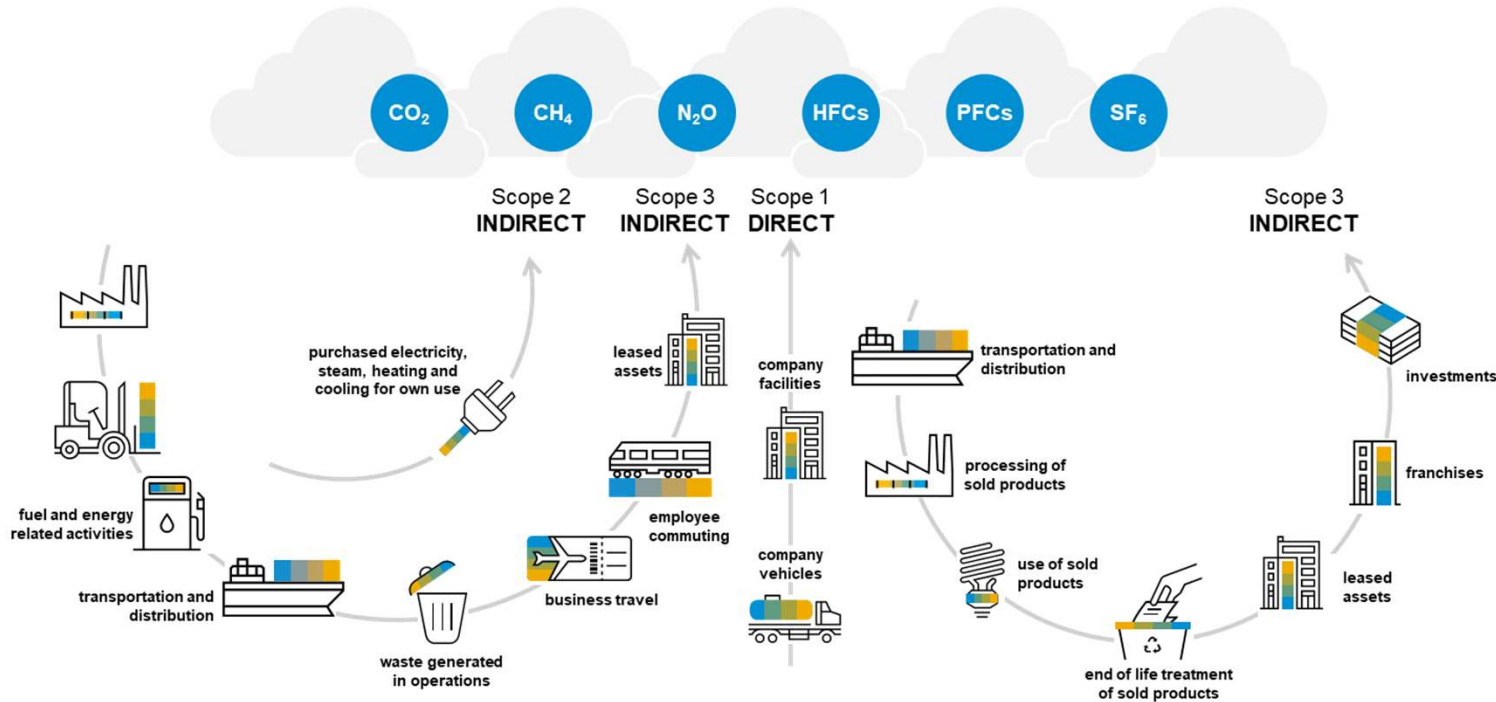- Data Integration
- Data Fabric

SAP Extension Suite
- User Experience
- IoT & Big Data
- Data Mart & Analytics
- Data Science & Intelligence
- SAP Build

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Collecting emissions data without proper tools is impossible

1. Emissions tracking will be difficult, especially Scope 3 (indirect)
2. Measuring and monetizing carbon emissions will require changing operational processes and HSE compliance activities
3. Risk exposure and risk management are difficult to address because of rapidly evolving regulatory issues

CO_2 CH_4 N_2O HFCs   PFCs SF_6

Scope 2 **INDIRECT**   Scope 3 **INDIRECT**   Scope 1 **DIRECT**   Scope 3 **INDIRECT**

purchased electricity, steam, heating and cooling for own use

leased assets

company facilities

transportation and distribution

investments

fuel and energy related activities

employee commuting

company vehicles

processing of sold products

franchises

transportation and distribution

business travel

use of sold products

leased assets

waste generated in operations

end of life treatment of sold products

How does my location compare to other locations?
BU Manager

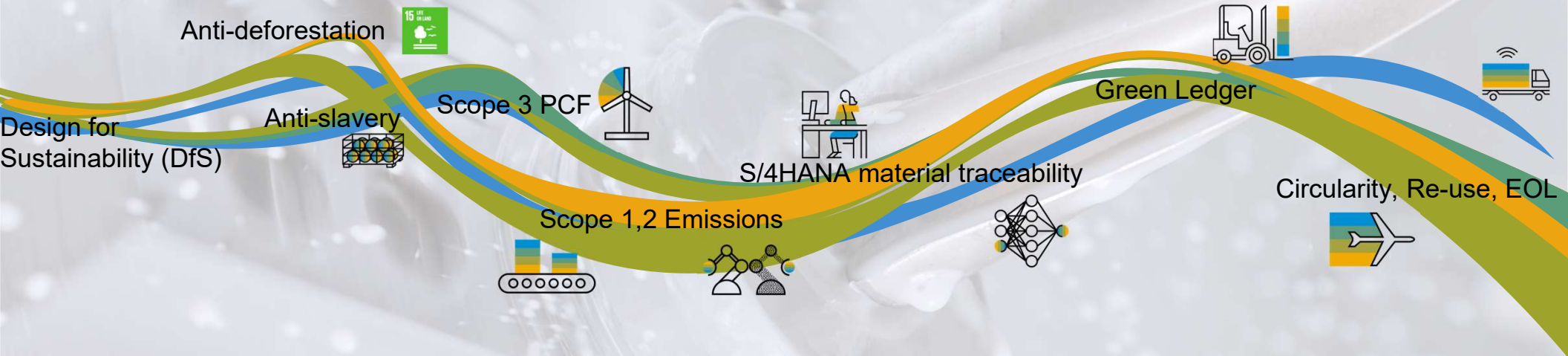What is the CO_2 footprint and cost per region and sector?
Controller

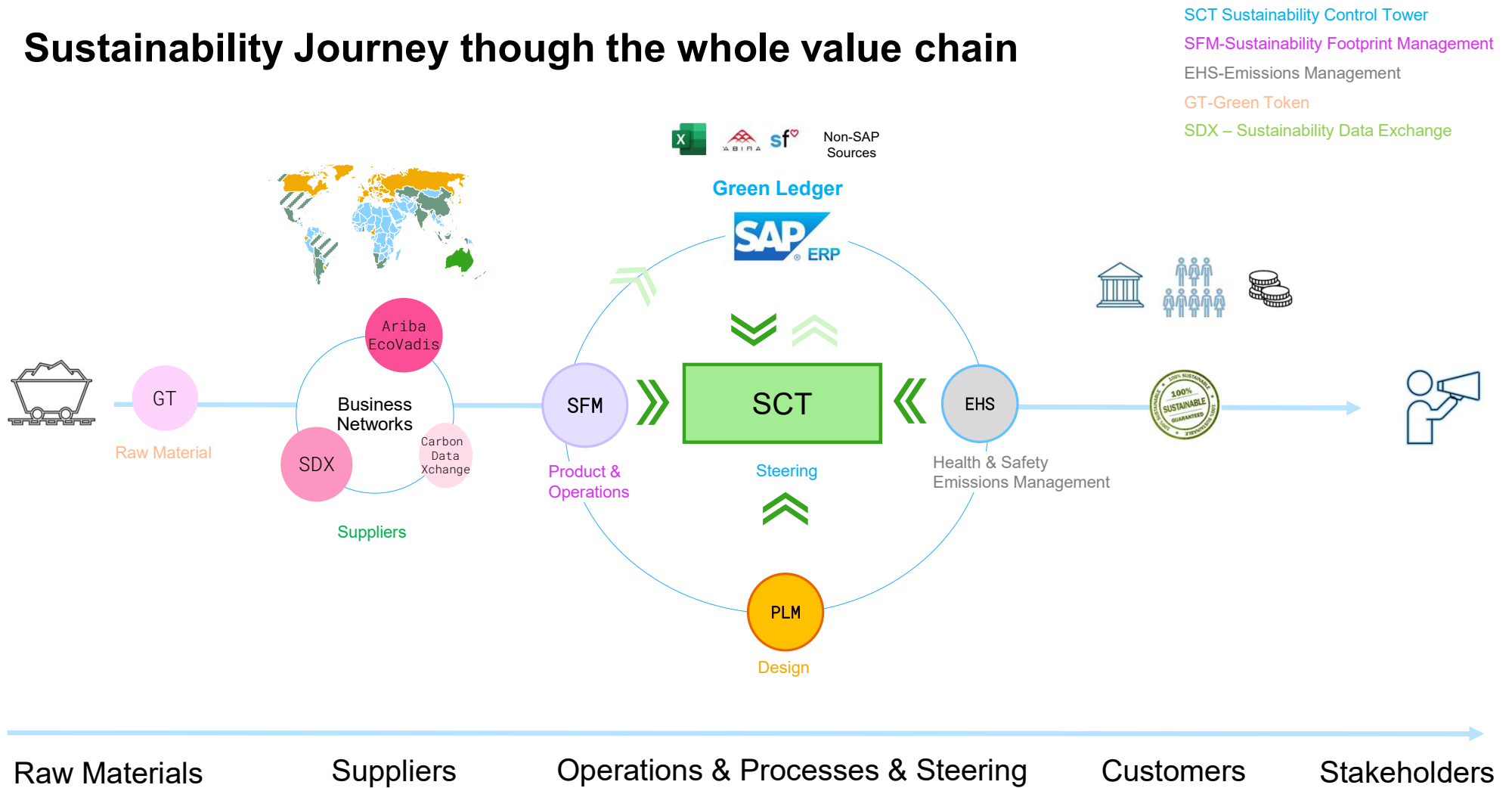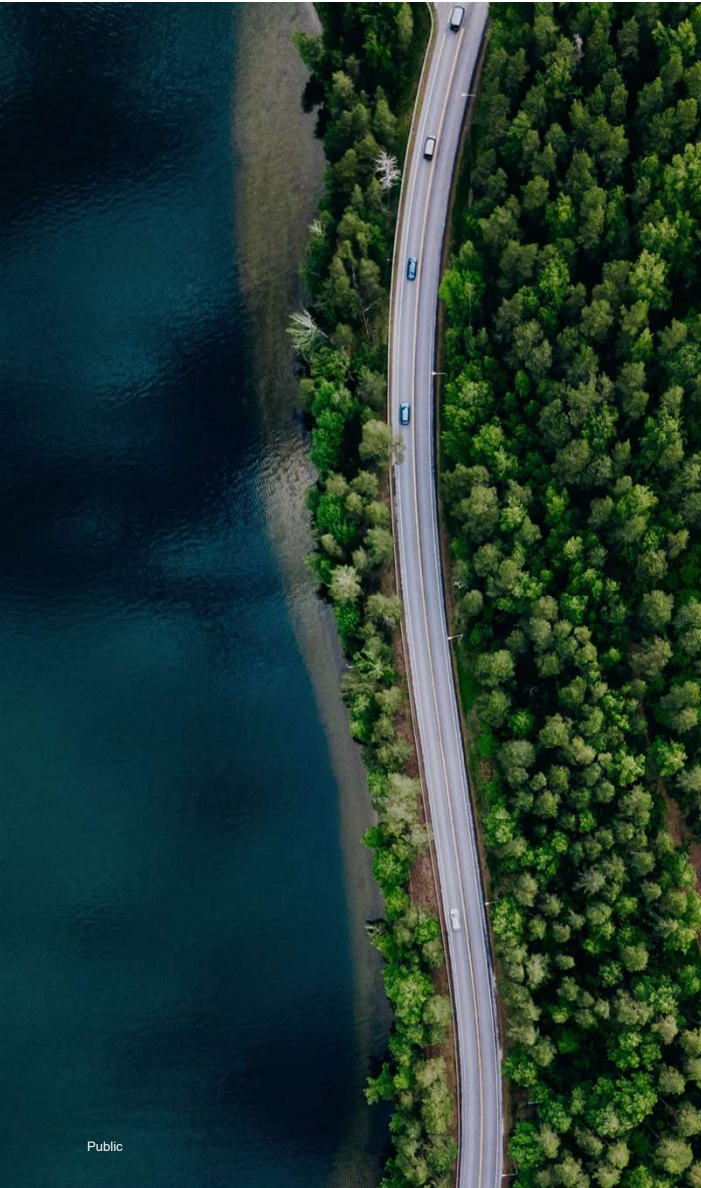What is your consolidated CO_2 footprint of your company?
Regulators

Sustainable Digital Thread

Weave Sustainability Threads around ERP Digital Thread

Anti-deforestation

Scope 3 PCF

Design for
Sustainability (DfS)

Anti-slavery

Scope 1,2 Emissions

S/4HANA material traceability

Green Ledger

Circularity, Re-use, EOL

Sustainability Journey though the whole value chain

SCT Sustainability Control Tower
SFM-Sustainability Footprint Management
EHS-Emissions Management
GT-Green Token
SDX – Sustainability Data Exchange

Non-SAP Sources

Green Ledger

SAP® ERP

Ariba EcoVadis

Business Networks

GT

Raw Material

SDX

Carbon Data Xchange

Suppliers

SFM

Product & Operations

SCT

Steering

PLM

Design

EHS

Health & Safety
Emissions Management

100% SUSTAINABLE GUARANTEED

Raw Materials   Suppliers   Operations & Processes & Steering   Customers   Stakeholders

We are the right partner for your sustainability journey

Most comprehensive portfolio with holistic vision
Embed sustainability into your business DNA with our **extensive range of solutions** while **evolving** towards a **Green Ledger**[1]

Seamless E2E integration into business processes
Leverage SAP systems[2] with embedded ESG solutions to **gather the required data** (scope 1-3) in good quality **along your supply chain**

Industry specific solutions & networks
Knowing your **industry specific challenges** we provide the right solution & **connect you with the largest network**

Sustainability | Key Differentiators for SAP

Broad portfolio of sustainability solutions

- SAP provides sustainability solutions covering ESG reporting, carbon accounting, eliminating waste and pollution, health & safety, and DEI.

Integration with business applications and platform

- Pre-built integration with SAP ERP and other business processes.
- Seamlessly integrate data to provide actuals not averages.
- Leverage BTP platform for lower TCO.

End-to-end coverage of the entire business cycle and supply chain

- SAP covers the entire business cycle: CRM, Supply Chain, Financials/Operations, HCM, and Spend Management / Business Networks.
- SAP business networks can enable data collaboration between companies and suppliers (essential for Scope 3 reporting).

Vision for green ledger

- SAP provides the unique value proposition of applying financial accounting practices as a blueprint for sustainability accounting.
- Pioneering the green ledger, to record, report, and act on carbon in sync with financial data for every business transaction.

SAP's sustainability performance

- IDC has found that SAP performs exceptionally well in comparison with its peers, placing in the top 3 of 23 software vendors that were assessed using IDC's sustainability framework.

SAP is recognized as industry leader for sustainability

SAP's best-in class position is reflected in our investor base and testified by external ratings

Institutional Investors

41,7% of SAP's institutional investors are classified as ESG Investors. This is above industry and regional benchmarks.

Source: NASDAQ, Shareholder ID

SAP's Investor Base

as of July 2023

Ratings and Rankings

as of January, 2023

Leading Capital Market Ratings
Focus on Environment, Social and Governance (ESG), guiding investment decisions

Corporate ESG Performance — Prime
RATED BY ISS ESG

B rating (prime)

1st decile

MSCI

ESG Leader Software & Services Industry

AAA

Industry Average:
A

Member of
Dow Jones Sustainability Indices
Powered by the S&P Global CSA

#1 as one of two companies in the software industry

80/100

Industry Average:
17/100

Leading Climate Rating
used by our customers and investors

CDP
DISCLOSURE INSIGHT ACTION

Rating

B

Industry Average:
C

Leading Supplier Assessment
ESG, used by our customers

ecovadis

94th decile – Gold rating

70/100

among the top 5 percent of companies assessed by EcoVadis
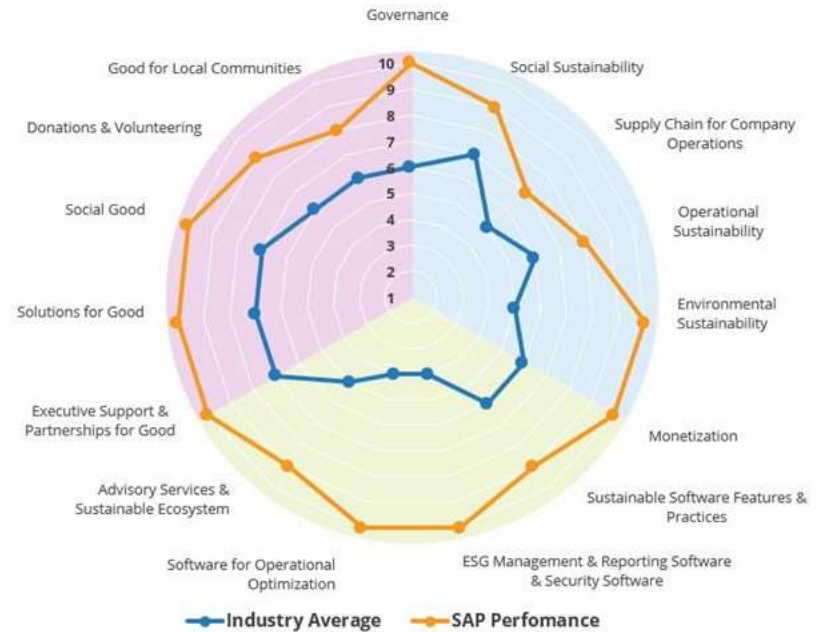
IT Analyst Rating
ESG, includes vendor performance ('Enabler')

IDC

Placed in top three performers out of 23 vendors, performing

"exceptionally well"

Outperforming Industry Average in every aspect

- Industry Average
- SAP Perfomance

Source: Sustainability Index for Software Providers: SAP, IDC, 2023 | SAP Top Three in IDC Sustainability Index
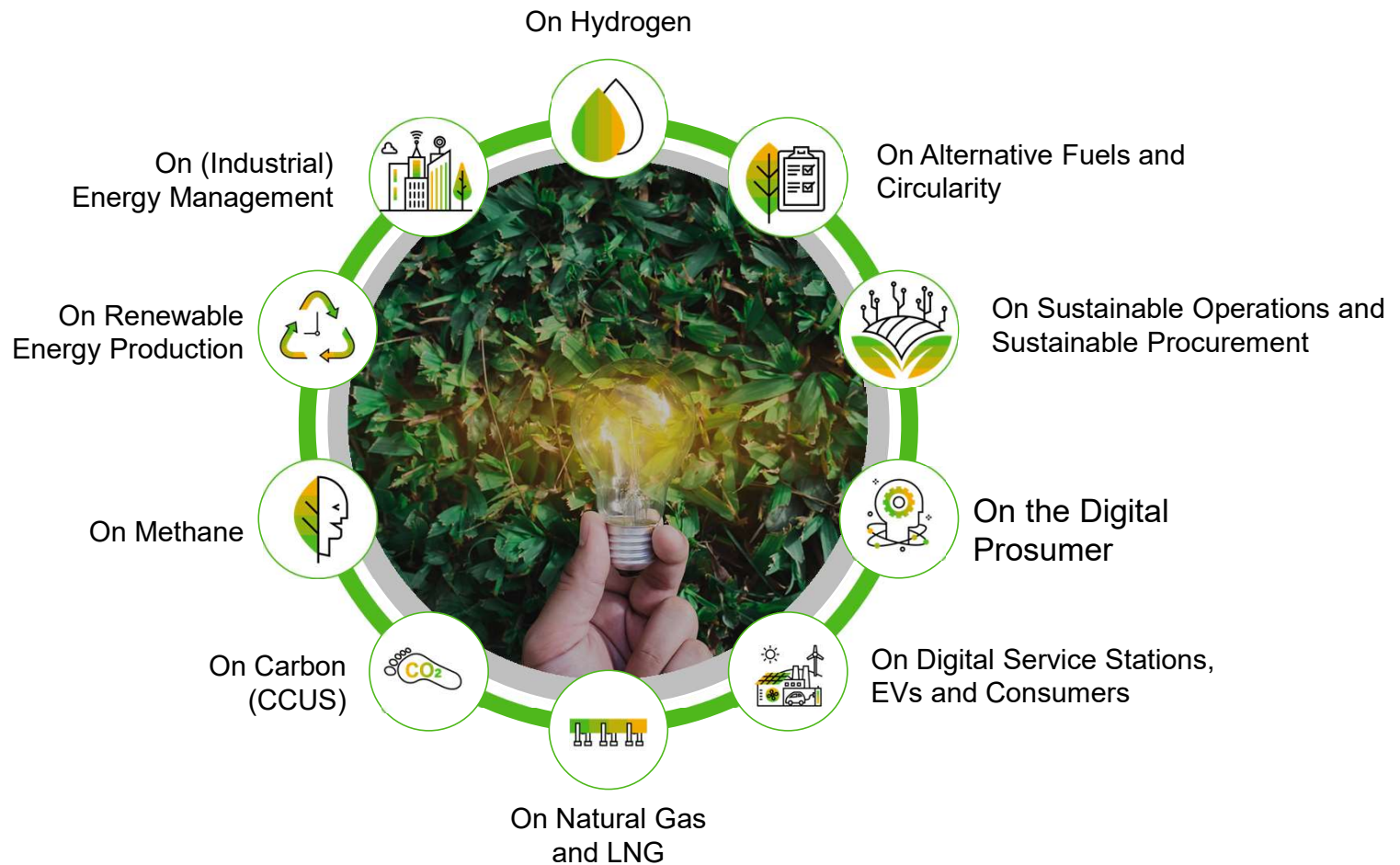
SAP Sustainability Solutions

	Capability Needs	How SAP can help	Solutions
Environment	▪ Manage environmental impact by monitoring and **tracking air, water, GHG** and waste outputs ▪ **Insights on the environmental impacts of products** across the entire lifecycle for disclosure & process optimization ▪ Integrating top-, bottom- & green line performance insights to know the **relationship between sustainability and business success**	**Greenhouse Gas Emissions & Wastewater:** ▪ Calculating product footprints periodically and at scale across the entire product lifecycle. ▪ Calculating air pollutants, greenhouse gas (GHG) emissions, and wastewater emissions. ▪ Monitoring progress and gain actionable insights from dependable sustainability data **Energy Consumption:** Gathering and managing energy and resource efficiency and processes in real-time.	SAP Sustainability Footprint Management SAP EHS Environment Management for Corporate GHG Emissions SAP EHS for Waste Management Green Token SAP Sustainability Control Tower (SCT)
Social	▪ Unlock the **full potential** of an individual, a team, or organization ▪ Provide all employees with the **opportunity** to learn skills that will allow them to thrive in a digital world ▪ Social and **inclusive entrepreneurship** is the foundation of economic growth and the engine of humanitarian and environmental impact	**Driving Zero Inequality:** ▪ Capturing continuous feedback from every employee experience and take the right actions to impact engagement, DE&I, productivity, and innovation. **Hiring, Learning, Employee Turnover:** ▪ Helping securing the right talent through results-oriented recruiting practices and embedded engagement, learning and automation **Engaging with Communities:** Ability to understand and act on company's true impact on society, the environment and communities, and to better manage trade-offs	SAP SuccessFactors Human Experience Management (HXM) Suite, Fieldglass, Qualtrics Employee XM, SAP Ariba Spend Analysis, Ariba Network, SAP Ariba Supplier Risk, SAP Ariba Buying SAP SuccessFactors Opportunity Marketplace SAP SuccessFactors Learning SAP Sustainability Control Tower
Governance	▪ **Improve governance**, mitigate fraud risk, and safeguard business continuity ▪ Drive a **consistent process** for incident entry, investigation, and corrective actions ▪ Identifying and managing all manner of hazards and risks to the **well-being** of the workforce ▪ Actionable insights into **supplier's environmental, social, and ethical risks**	▪ Helping managing risk and compliance in business, and helps organizations to securely develop and administrate solutions across on-premise, cloud, and hybrid environments ▪ Mitigating risk with integrated environment, health, and safety management ▪ Transparent supply chain network	SAP Product Compliance SAP EHS Incident Management SAP Health & Safety Management SAP Occupational Health SAP Logistics Business Network SAP Sustainability Control Tower

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Key Energy Transition Topics

On Hydrogen

On (Industrial) Energy Management

On Alternative Fuels and Circularity

On Renewable Energy Production

On Sustainable Operations and Sustainable Procurement

On Methane

On the Digital Prosumer

On Carbon (CCUS)

On Digital Service Stations, EVs and Consumers

On Natural Gas and LNG

Sustainability has multiple stakeholders, each with a role in achieving ESG goals and regulations

Sustainable Finance

Sustainable Supply Chain

Sustainable Workplace

Sustainable Procurement

Sustainable Manufacturing and R&D

Sustainable IT

Sustainable Sales & Marketing

Record
Report
Act

ZERO EMISSIONS
with Climate Action

ZERO WASTE
with Circular Economy

ZERO INEQUALITY
Social Responsibility

We estimated the business value of recommended sustainability initiatives

Your Return on Sustainability Investment is generally substantial

SAP Sustainable Value Framework

Financial Impact	Strategic Impact

Standardized Global Frameworks Such as TCFD, GRI, EU Taxonomy, etc.

Expected Improvement**

1~8% operational efficiencies

1~4% supplier risk & mgmt.

1~2% profitability

Cost Reduction

Intangible Benefits

1~6% stakeholder engagement

5~10% talent acquisition & retention

10~20% uptake media coverage

ACHIEVE ESG KPIs

Sustainable Business Value

Climate Impact Social Responsibility Waste Reduction

7~12% customer loyalty

1~4% sales increase

Revenue Growth

Risk and Compliance

3~10% risk reduction

2~6% corporate valuation

Incremental Sustainability Investment → ESG Business Value

Sustainability Transformation

ESG KPIs

Environmental
- Scope 1, 2, 3 emissions & intensity
- Hydrocarbon spills (frequency and volume)
- Volatile organic compound intensity
- % of production or assets in areas with conservation, protection, and water-stressed regions
- % of offshore and hydraulic fracking in the production mix

Social Responsibility
- Lost time injury frequency rate
- # of accidents / fatalities per million hours worked
- % of women in workforce & gender pay gap
- % of operations & assets in conflict zones
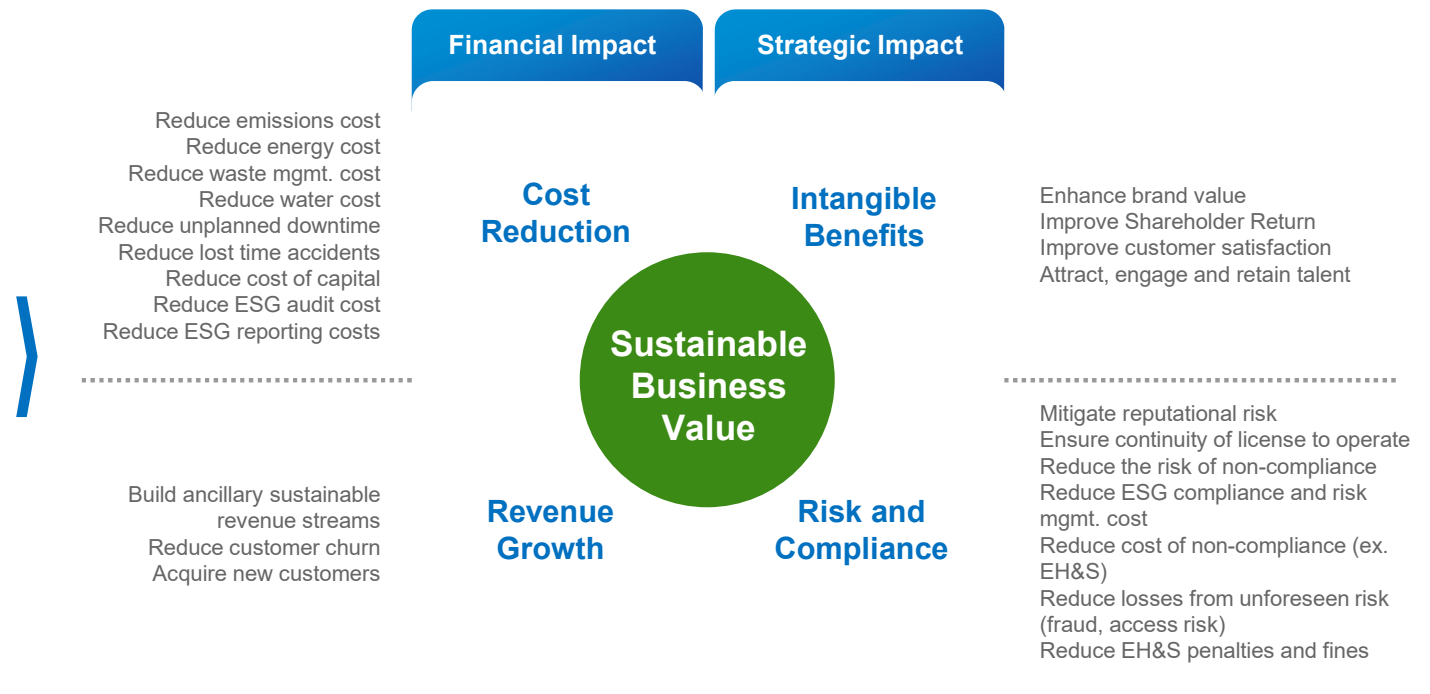- Customer Satisfaction

Governance
- # of environmental accidents (per year, per Bn)
- Environmental violation fines / penalties (% of Rev)
- ESG risk management cost (% of revenue)
- Risk of stranded assets due to future regulations
- Carbon Price Liability Exposure

Economic
- R&D expenses related to sustainability (% of total)
- % of production sites with recognized environmental certification

SAP Sustainable Value Framework

Financial Impact

Strategic Impact

Reduce emissions cost
Reduce energy cost
Reduce waste mgmt. cost
Reduce water cost
Reduce unplanned downtime
Reduce lost time accidents
Reduce cost of capital
Reduce ESG audit cost
Reduce ESG reporting costs

Cost Reduction

Intangible Benefits

Enhance brand value
Improve Shareholder Return
Improve customer satisfaction
Attract, engage and retain talent

Sustainable Business Value

Build ancillary sustainable revenue streams
Reduce customer churn
Acquire new customers

Revenue Growth

Risk and Compliance

Mitigate reputational risk
Ensure continuity of license to operate
Reduce the risk of non-compliance
Reduce ESG compliance and risk mgmt. cost
Reduce cost of non-compliance (ex. EH&S)
Reduce losses from unforeseen risk (fraud, access risk)
Reduce EH&S penalties and fines

Enterprise Sustainability in RISE with SAP
Enable business processes with sustainability to drive enterprise value

Companies benefit from **sustainability embedded in business processes** that deliver:

Cost Reduction**
1~8% operational efficiencies
1~4% supplier risk & mgmt.
1~2% profitability

Intangible Benefits
1~6% stakeholder engagement
5~10% talent acquisition & retention
10~20% uptake media coverage

Sustainability
Carbon & Waste Reduction

Revenue Growth
7~12% customer loyalty
1~4% sales increase

Risk and Compliance
3~10% risk reduction
2~6% corporate valuation

Process	Benefits	Roles
Sustainable Lead to Cash	1. Grow Revenue with more Sustainable Products and Services 2. Increase Sustainability Brand Perception 3. Promote More Sustainable Consumption/Circularity	CRO, CMO
Sustainable Source to Pay	1. Enable Procurement to buy Sustainable Products 2. Automate Sustainable Procurement Execution 3. Include ESGS risks in Supplier Risk Management 4. Create a safer workplace for External Workforce	CPO
Sustainable Idea to Market	1. Product Compliance with regulations 2. Scope 3 Product Carbon Footprint (PCF) 3. Traceability & Transparency 4. More Sustainable Product Design	R&D, COO, CSO, CSCO, Regulatory
Sustainable Plan to Fulfill	1. Sustainable Supply Chain Planning 2. Sustainable Manufacturing 3. Sustainable Transportation 4. Sustainable Warehousing	Planning, Manufacturing, Logistics
Sustainable Acquire to Decommission	1. Lower Scope 1,2 Emissions / Carbon Liability with asset-level emissions 2. Plan and acquire more efficient assets 3. Extend asset life, optimize MRO, decommission safely	Operations Capital Asset Planning
Sustainable Record to Report and FP&A	1. Comply with Local and Global ESG Regulations 2. Mitigate Sustainability Risks 3. Invest in more Sustainable Projects **4. Manage Carbon Exposure Liabilities.**	CFO, CSO

"Carbon Might Be Your Company's Biggest Financial Liability"

Harvard Business Review

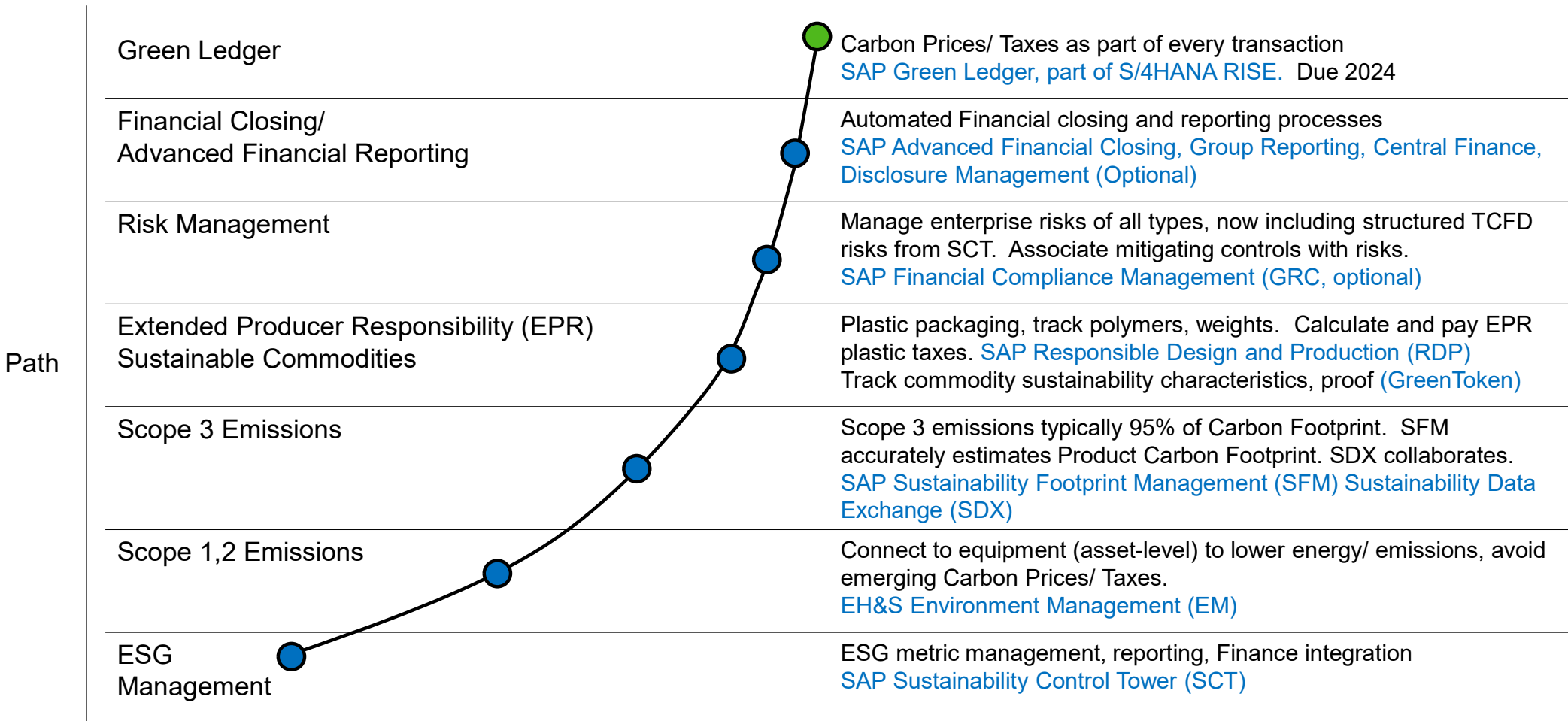EVOLUTION OF GLOBAL REVENUES FROM CARBON TAXES AND ETSs OVER TIME (NOMINAL)
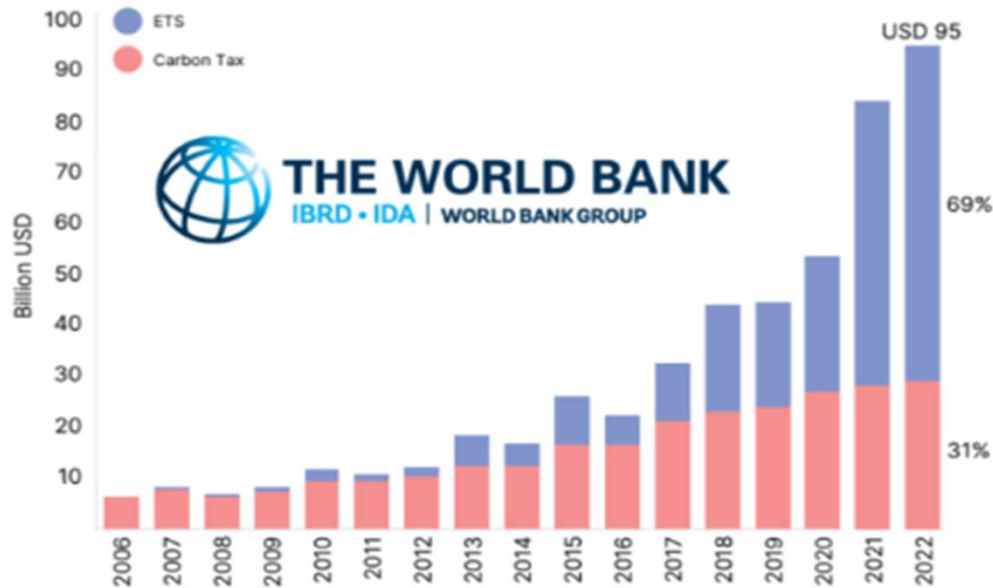
Example of Carbon Liability **2022**

Scope 1 & 2: **3,725,000** (MTCO2e) x $50-$100 per MT

Range = **$186,250,000 - $372,500,000**

Path to the Green Ledger

Path		
Green Ledger	🟢	Carbon Prices/ Taxes as part of every transaction SAP Green Ledger, part of S/4HANA RISE. Due 2024
Financial Closing/ **Advanced Financial Reporting**	🔵	Automated Financial closing and reporting processes SAP Advanced Financial Closing, Group Reporting, Central Finance, Disclosure Management (Optional)
Risk Management	🔵	Manage enterprise risks of all types, now including structured TCFD risks from SCT. Associate mitigating controls with risks. SAP Financial Compliance Management (GRC, optional)
Extended Producer Responsibility (EPR) **Sustainable Commodities**	🔵	Plastic packaging, track polymers, weights. Calculate and pay EPR plastic taxes. SAP Responsible Design and Production (RDP) Track commodity sustainability characteristics, proof (GreenToken)
Scope 3 Emissions	🔵	Scope 3 emissions typically 95% of Carbon Footprint. SFM accurately estimates Product Carbon Footprint. SDX collaborates. SAP Sustainability Footprint Management (SFM) Sustainability Data Exchange (SDX)
Scope 1,2 Emissions	🔵	Connect to equipment (asset-level) to lower energy/ emissions, avoid emerging Carbon Prices/ Taxes. EH&S Environment Management (EM)
ESG **Management**	🔵	ESG metric management, reporting, Finance integration SAP Sustainability Control Tower (SCT)

THANK YOU

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