



How sustainability data can help unlock business and environmental benefits

Colin Seward - Sr. Director, Chief Sustainability Office
PSOGRN-1893

An aerial photograph of a person sitting on a laptop in a field of tall grass and green plants. The person is wearing a light-colored shirt and dark pants. The laptop is open and the person appears to be working. The background is a vast field of green vegetation under a clear sky.

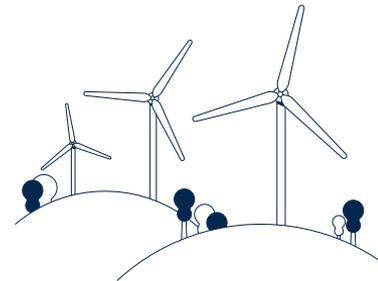
“CIOs should develop an ESG¹ data strategy that goes beyond hindsight to also support insight and foresight.”

Kristin Moyer

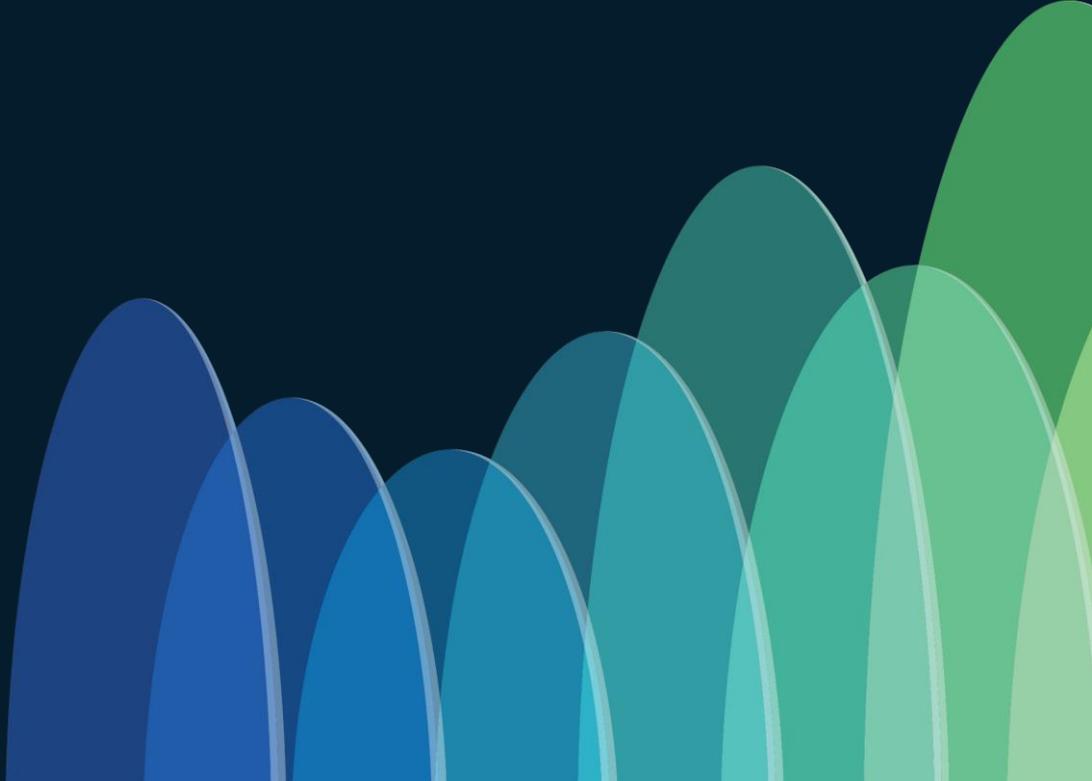
Gartner Distinguished VP Analyst

Agenda

- **A quick look into the world of sustainability data**
 - Its increasing importance and some of the challenges
 - Our internal use cases and what data we collect
 - Cisco's Sustainability Data Foundation (SDF)
- **Unlocking Business and Environmental Benefits**
 - How sustainability data informs our product design
 - Understanding the carbon footprint and ways to decarbonize
 - The importance of energy consumption data
 - Embedding sustainability in the IT Operating Model



A quick look into the world of sustainability data



The Growing Importance of Sustainability Data

External Stakeholders

- **Regulators, raters, rankers, standard setters** e.g. CSRD, EED, CDP, EcoVadis, DJSI, SBTi
- **Customers:** RFPs, reporting, strategy
- **Investors, academics, media:** tracking progress, identifying industry trends and risks, learning best practices

Internal Stakeholders

- **Executive leaders:** Strategy, compliance, goal tracking, risks, business opportunities
- **Business functions:** Decision making in ESG team, facilities, finance, procurement, supply chain, legal, sales & marketing, IT etc



But it's challenging...



Growing demand

Audiences with multiple, different needs are increasing their calls for data

Complexity

Corporate data exists across many business organizations with different owners and levels of maturity

Evolving standards

Reporting standards and regulations continue to evolve and mature

Onerous process

Data availability and collection can be manual and labor intensive

Increased scrutiny

Validated and assured data is needed for accurate reporting and to avoid greenwashing

Skills gap

Resources with knowledge and experience are in short supply

Cisco is rising to the challenge with the creation of the **Sustainability Data Foundation.**

An enterprise data platform that
serves as Cisco's source of
sustainability-related data for a
range of use cases.

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Business Use Cases Drove Requirements



Strategy & Performance

Enabling us to **better track progress** on our emissions reductions and other environmental goals and develop strategies to achieve them.



Products & Solutions

Empowering engineers to make **design decisions** to support sustainability and develop dashboards to provide **insights and advice** to customers



Go To Market

Meeting customer expectations to receive **sustainability related data** on the products they buy, given the increased **importance of sustainability in purchase decisions**



Purpose & Reporting

Delivering transparent and rigorous ESG reporting, **elevated as a core corporate metric** that is as crucial as financial reporting

Cisco Sustainability Data Foundation (SDF)

Example Data Types for Sustainability at Cisco



Products

- Power / size / weight
- Product Carbon Footprint
 - Ecolabels



Supply Chain

- Component materials
- Manufacture, assemble, test
 - Circularity score



Logistics

- Packaging, weight, materials
- Transport mode / distance
 - SAF procurement



Procurement

- Direct & indirect spend
- Supplier locations / goals
- Carbon offset purchases



Operations

- Renewable energy
- Building energy usage
- Water usage / waste



Customers

- Corporate goals
- Renewable energy
- Equipment location



Use Case Specific

- Product migration path
- Consolidation ratios
- Returns Information



Third Party Data

- Emission factors
- Electricity costs
- Equivalencies

Cisco's
Sustainability
Data Foundation
goal is broader
than just a data
repository

Governance



Actionable Insights

Standardization of insights and recommendations

User Interface Standards

Guidance on how to **display the data** in dashboards and applications and disclaimers to include on source and use

Calculation Libraries

Calculated output that aligns with **industry standards**
e.g., greenhouse gas accounting principles

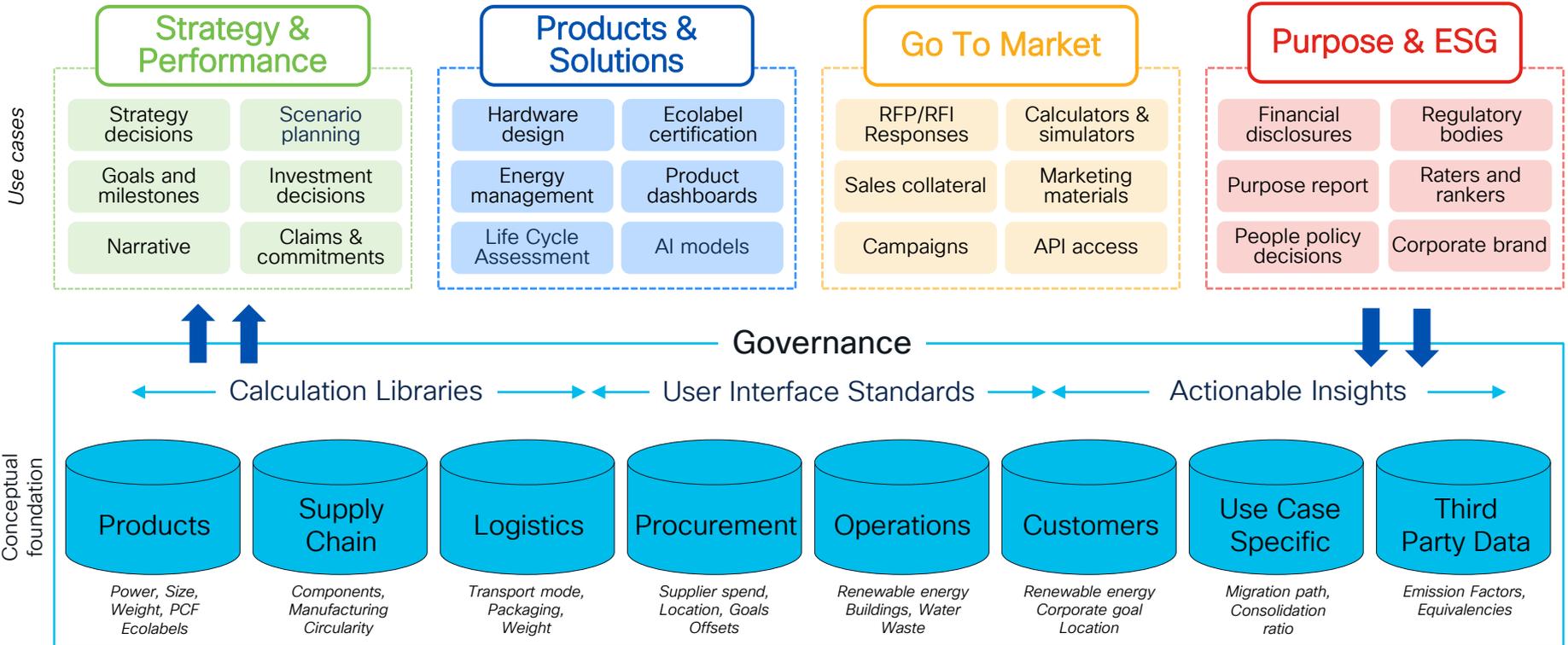
Data Repositories

Curated data from sources inside and outside of the company. Some existing, some new.

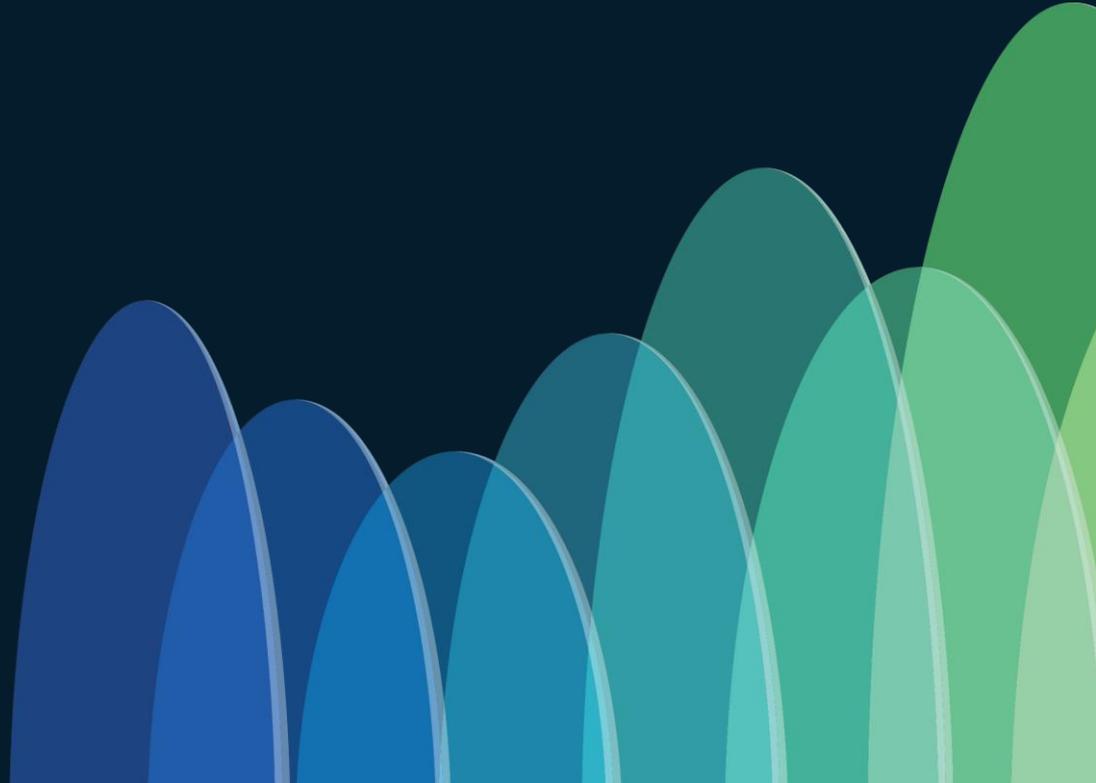
Enterprise Platform

Aligned to the **enterprise data architecture** and strategy with data quality, security and access controls

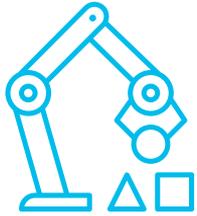
Cisco Sustainability Data Foundation (SDF)



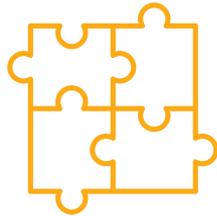
Unlocking Business and Environmental Benefits



Cisco's Circular Design Strategy



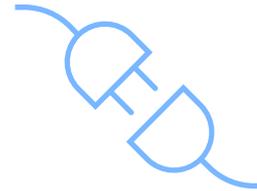
Material use



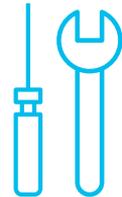
Standardize and modularize



Packaging and accessories



Smart energy consumption



Disassembly, repair and reuse

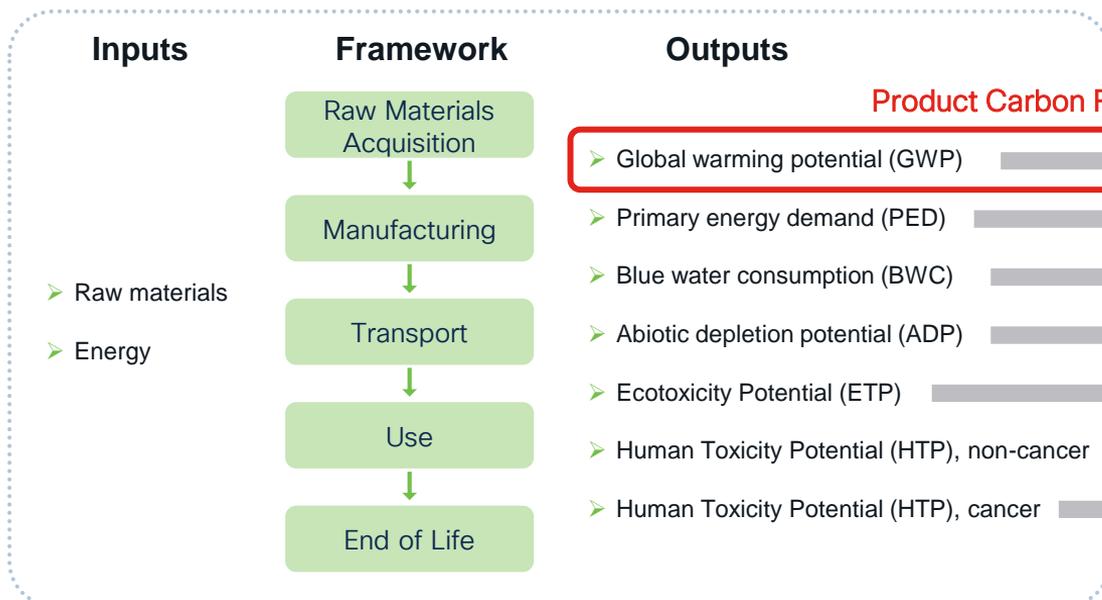


of new Cisco products and packaging to incorporate circular design principles by 2025

Life Cycle Assessments & Product Carbon Footprints

LCA's & PCF's

Life Cycle Assessment (LCA)

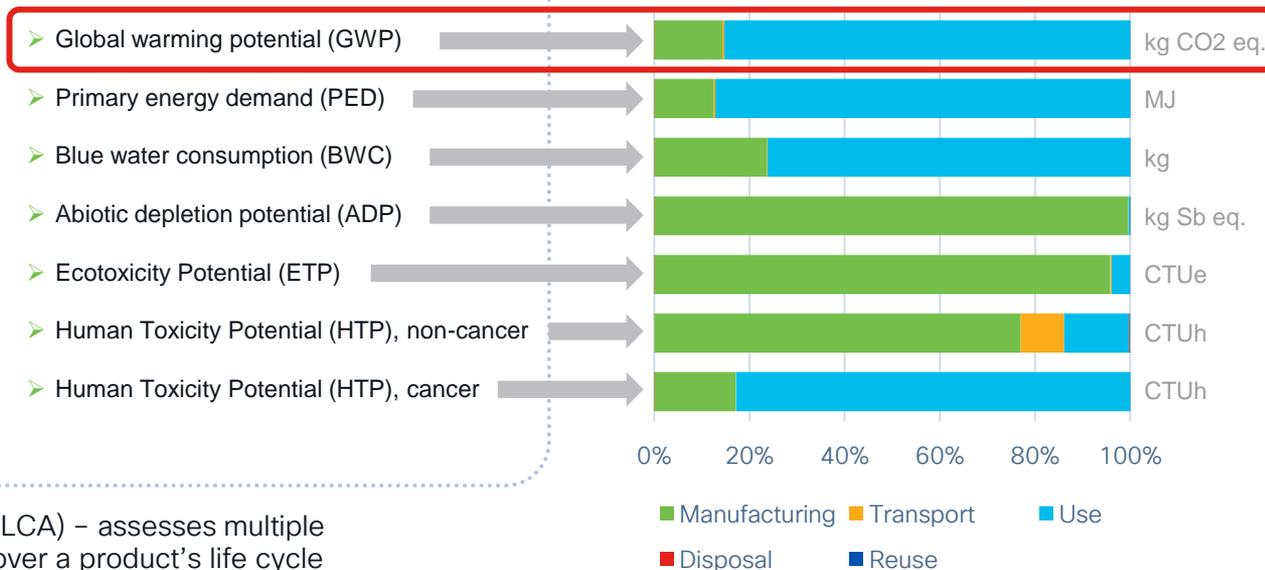


Life Cycle Assessment (LCA) – assesses multiple environmental impacts over a product’s life cycle

Product Carbon Footprint (PCF)

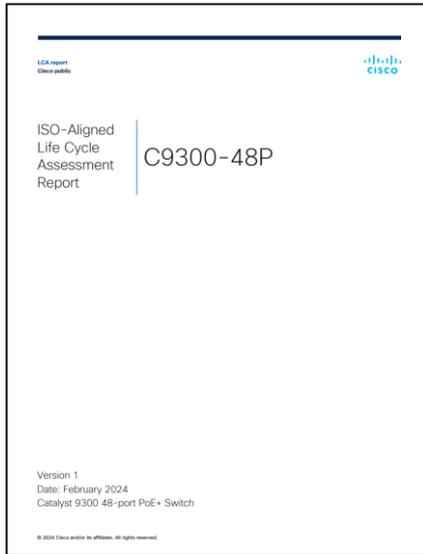
C9300-48P

Units

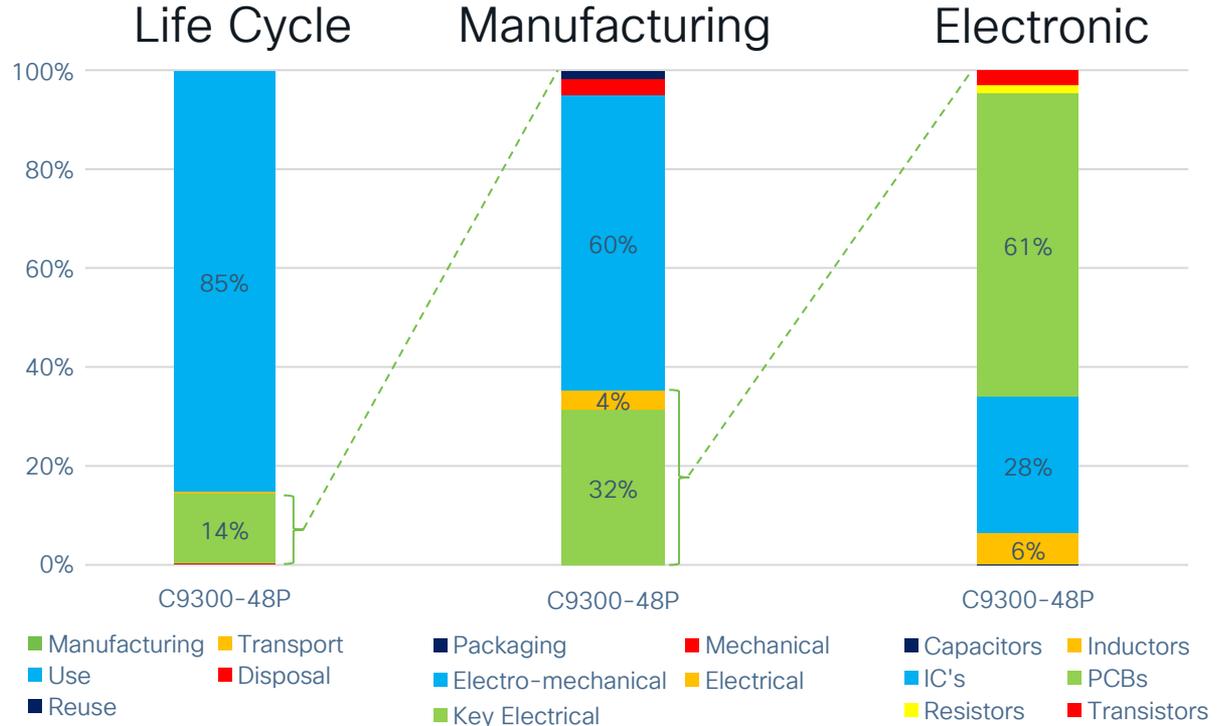


Using an LCA for Hotspot Analysis

Global warming potential (GWP)

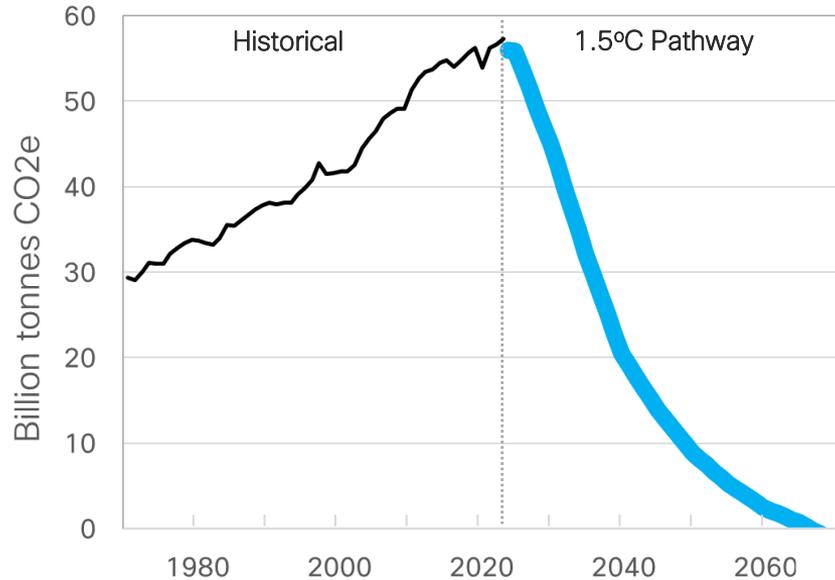


https://www.cisco.com/c/dam/en_us/about/csr/environmental-sustainability/c9300-48p-switch-iso-aligned-lca-report-full-report.pdf



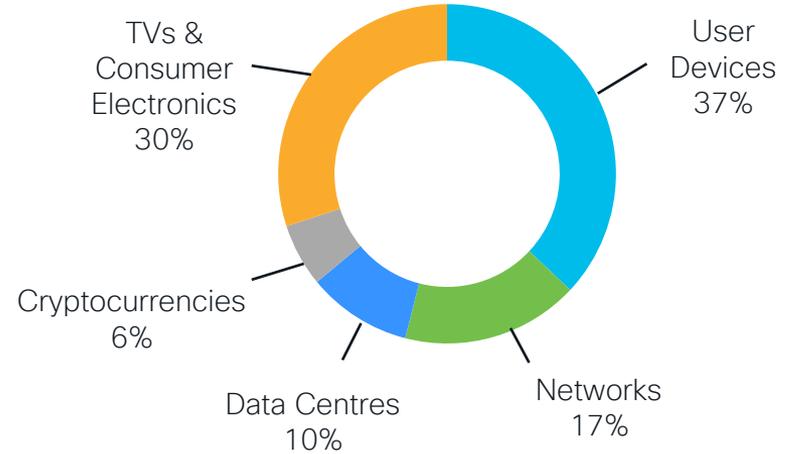
Putting IT Emissions in perspective

Total GHG emissions
~60 Billion tonnes CO₂e



Based on data from: EDGARv2024, Friedlingstein et al. 2023, IIASA (AR6 Scenario database)

Digital GHG emissions
~1.2 Billion tonnes CO₂e (~2.1% Total)

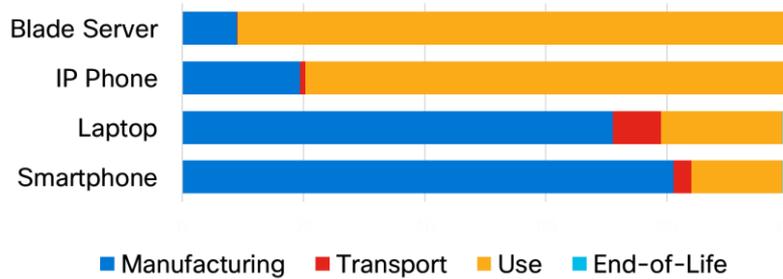


Digital = ICT + Entertainment & Media

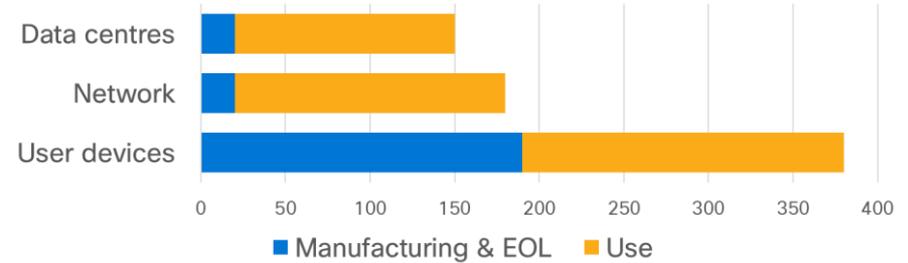
Source: Malmmodin et al (2023, 2024)

Carbon Footprint 101

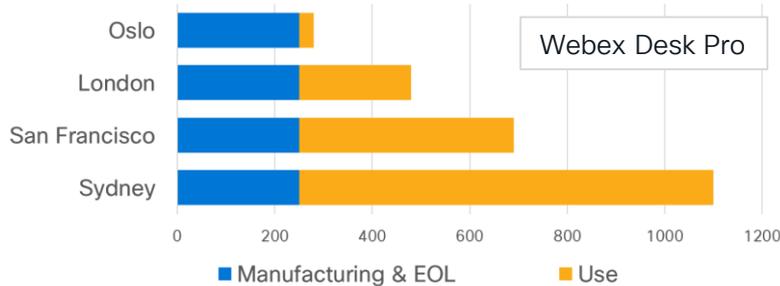
What it is?¹



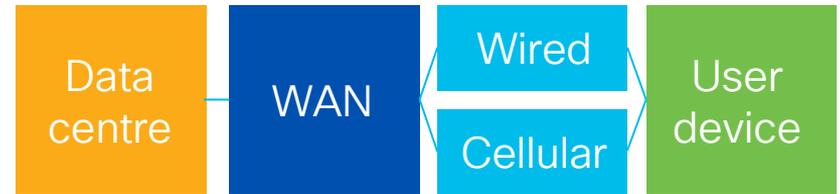
How many are there?³



Where it is?²



Systems thinking⁴



Data Sources: ¹Cisco(2020) & Apple (2022), ²Cisco (2021), ³Malmodin (2018), ⁴Carbon Trust (2021)

Cisco Product Carbon Footprint (PCF) Report

Breakdown by lifecycle emission phases

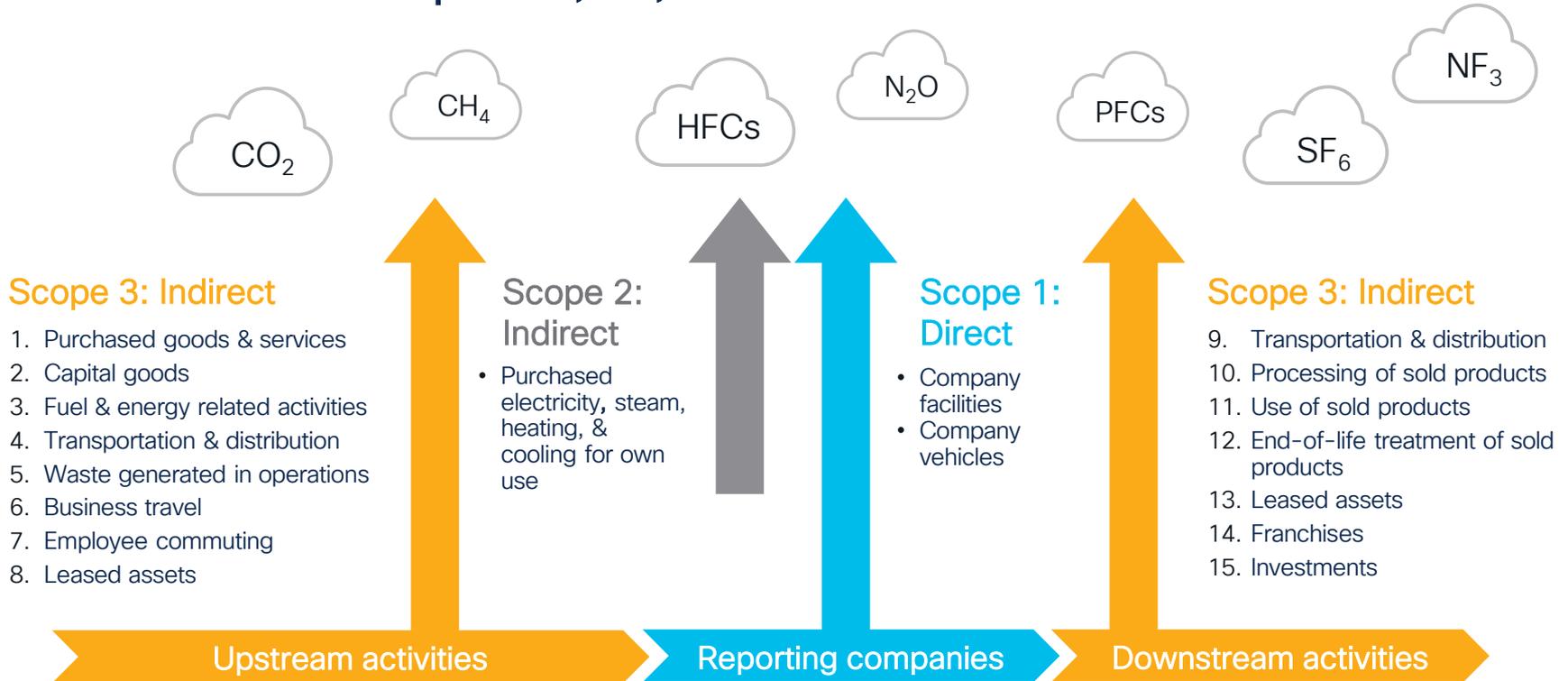
Product ID	Country of use	Product Power	Operating Lifetime	Breakdown by lifecycle emission phases					Uncertainty Estimate for each phase			
				Manufacturing	Transport	Use	End of Life	Total	Manufacturing	Transportation	Use Emissions	End of Life Emissions
Product ID (PID)	In Scope	Estimated Product Power (W)	Assumed Operating Lifetime (years)	Manufacturing Emissions (kg CO2e)	Transportation Emissions (kg CO2e)	Use Emissions (kg CO2e/year)	End of Life Emissions (kg CO2e)	Product Carbon Footprint (kg CO2e)	Manufacturing Emissions Uncertainty (kg CO2e)	Transportation Emissions Uncertainty (kg CO2e)	Use Emissions Uncertainty (kg CO2e)	End of Life Emissions Uncertainty (kg CO2e)
Enter product use location	UK											
C891F-K9	Valid	18	5	103	45	33	8	319	+/-51	+/-23	+/-7	+/-4
C9200L-24T-4G-E	Valid	36	5	236	105	64	61	722	+/-118	+/-52	+/-13	+/-30
C9300L-48P-4X-A	Valid	88	5	356	156	160	90	1,401	+/-178	+/-78	+/-32	+/-45
C9500-48Y4C-A	Valid	230	5	440	197	416	123	2,838	+/-220	+/-98	+/-83	+/-62
FPR1120-ASA-K9	Valid	27	5	188	83	49	24	539	+/-94	+/-41	+/-10	+/-12
FPR2130-ASA-K9	Valid	112	5	556	240	202	58	1,866	+/-278	+/-120	+/-40	+/-29
ISR4221/K9	Valid	24	5	162	71	43	19	469	+/-81	+/-36	+/-9	+/-10
N9K-C92348GC-X	Valid	150	5	449	198	271	118	2,121	+/-225	+/-99	+/-54	+/-59
UCSC-C220-M5SX	Valid	232	5	2,784	368	420	400	5,650	+/-1392	+/-184	+/-84	+/-200
UCSC-C220-M7S	Valid	337	5	2,957	410	608	560	6,968	+/-1478	+/-205	+/-122	+/-280
WS-C3850-24T-E	Valid	83	5	400	177	150	92	1,418	+/-200	+/-88	+/-30	+/-46
AIR-AP1562E-E-K9	Valid	19	5	132	64	34	31	398	+/-66	+/-32	+/-7	+/-15
ASR1001X-2.5G-K9	Valid	138	5	507	224	249	70	2,048	+/-253	+/-112	+/-50	+/-35
N77-C7706	Valid	2,714	5	4,614	2,035	4,905	1,092	32,264	+/-2307	+/-1018	+/-981	+/-546

- Customers may use the information to estimate their carbon footprint from purchased Cisco products, to do their GHG emissions reporting, to do “hot spot” analysis, or to understand the analysis Cisco has done.
- Cisco PCF’s assume typical operating conditions in use for 24 hours per day, 365 days per year over 5 years
- All estimates are published with uncertainty values (Production, Transport, End of Life +/-50% and Use +/-20%)

How can a PCF connect to a GHG inventory?

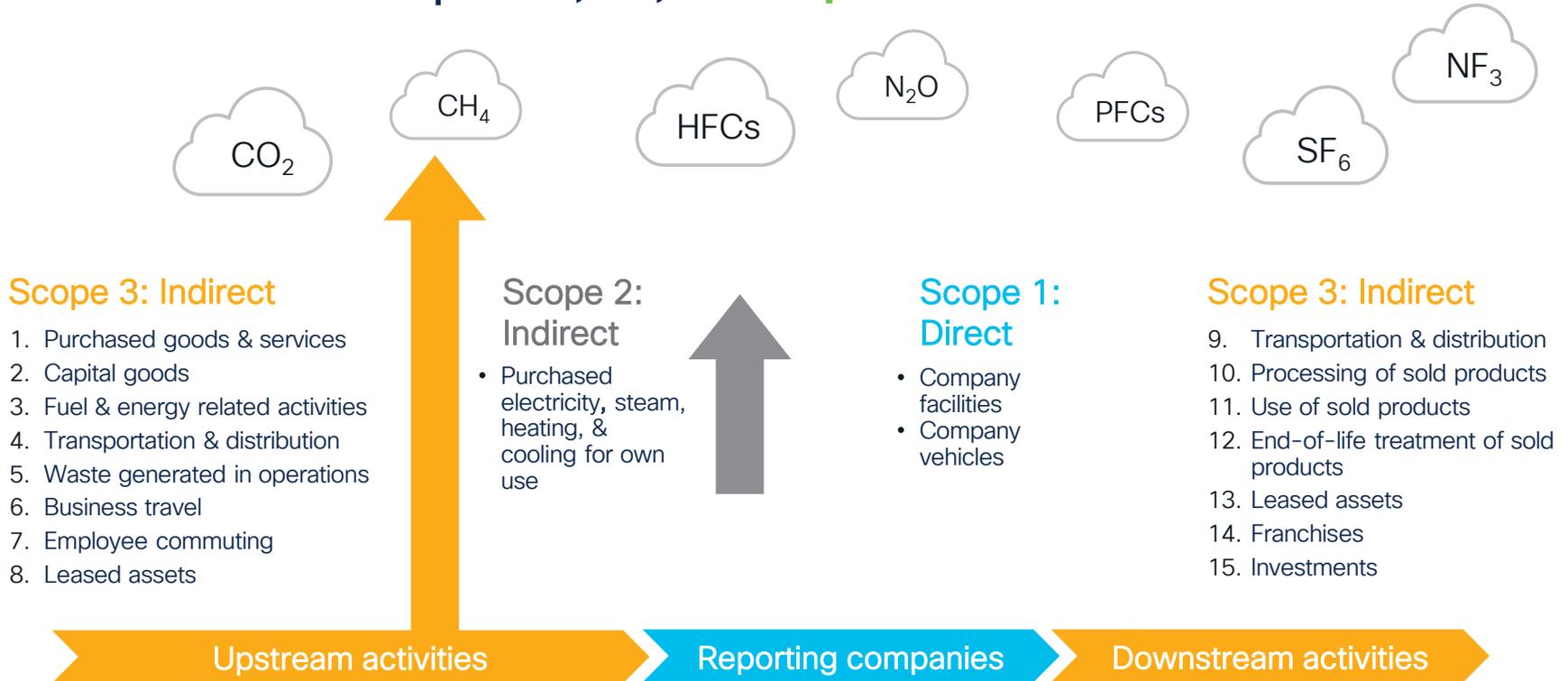
Product Carbon Footprint		Customer's GHG Emissions		Cisco's GHG Emissions
Manufacturing	➔	Scope 3 Category 1 Purchased Goods & Services	➔	Scope 3 Category 1 Purchased Goods & Services
Transport	➔	Scope 3 Category 4 & 9 Transportation & Distribution	➔	Scope 3 Category 4 & 9 Transportation & Distribution
Use	➔	Scope 2 or Scope 3 Category 8 GHG Emissions	➔	Scope 3 Category 11 Use of Sold Products
End-of-Life	➔	Scope 3 Category 5 Waste Generated in Operations	➔	Scope 3 Category 12 End-of-Life Treatment of Sold Products

What are Scope 1, 2, & 3



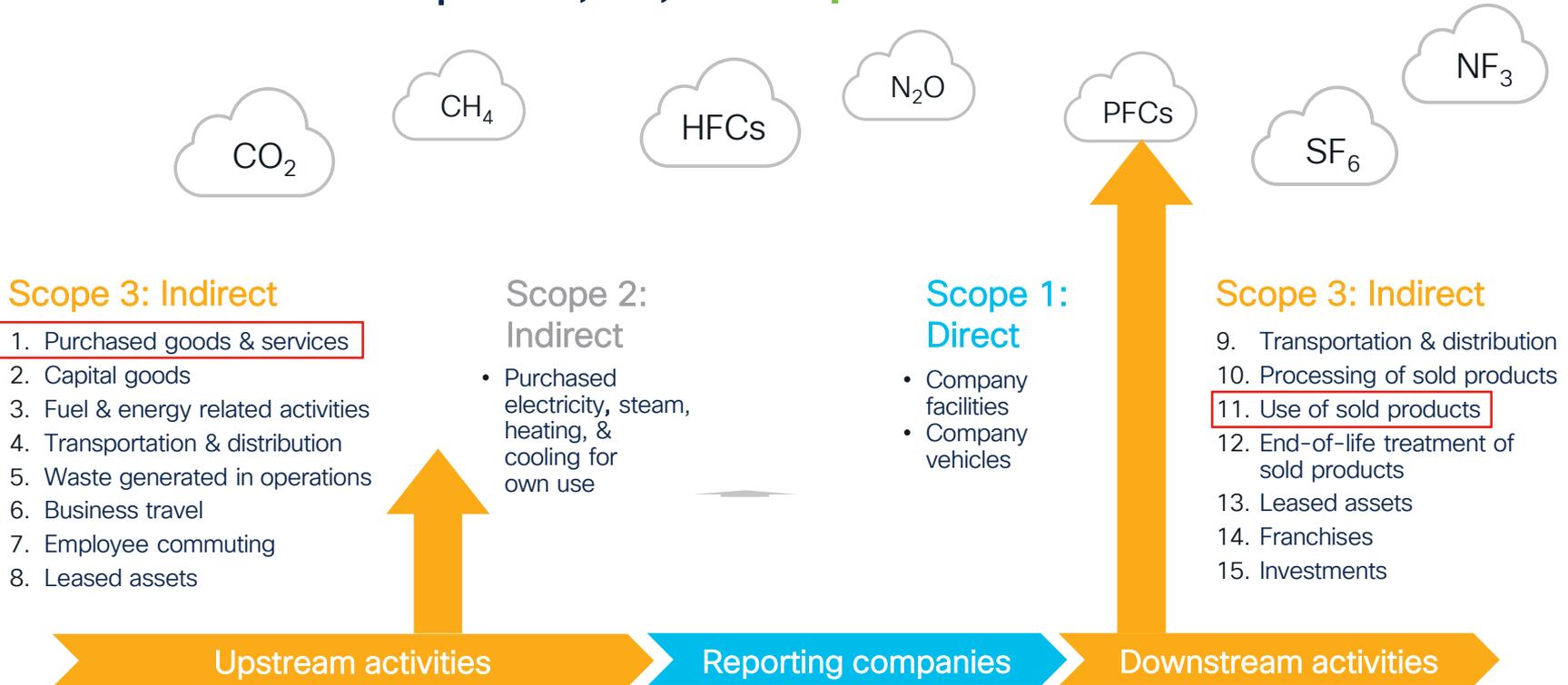
Based on: Greenhouse Gas Protocol, Technical Guidance for Calculating Scope 3 Emissions

What are Scope 1, 2, & 3 | IT



Based on: Greenhouse Gas Protocol, Technical Guidance for Calculating Scope 3 Emissions

What are Scope 1, 2, & 3 | Cisco



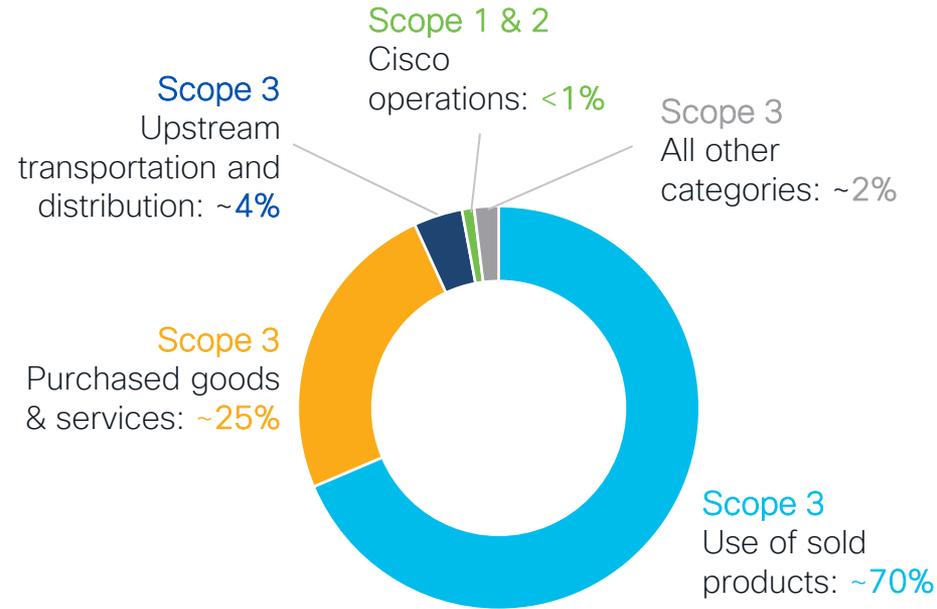
Based on: Greenhouse Gas Protocol, Technical Guidance for Calculating Scope 3 Emissions

Cisco's Goal Net zero GHG emissions across our value chain by 2040

Our 2040 net-zero goal and near-term targets are approved by the Science Based Targets initiative (SBTi).



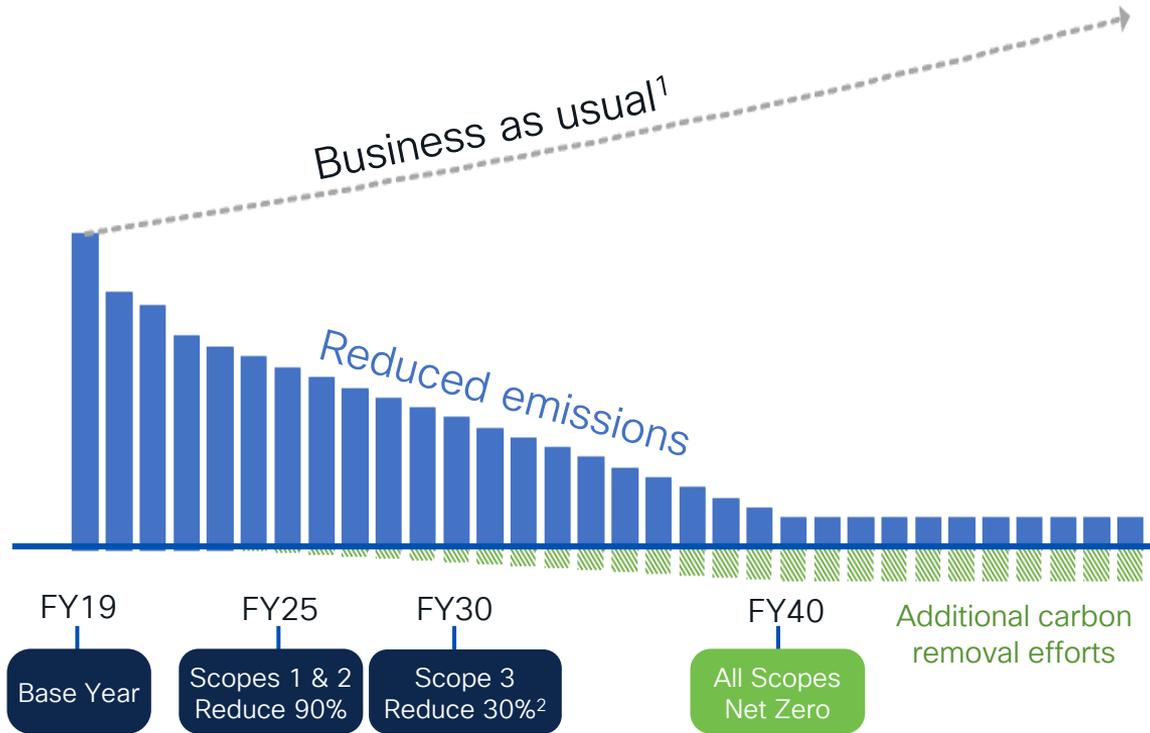
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Source: Cisco's Fiscal Year 2024 ("FY 24") Scope 1, 2, and 3 GHG emissions



Net Zero Modelling



Net Zero modelling may include external and internal factors such as the examples below:-

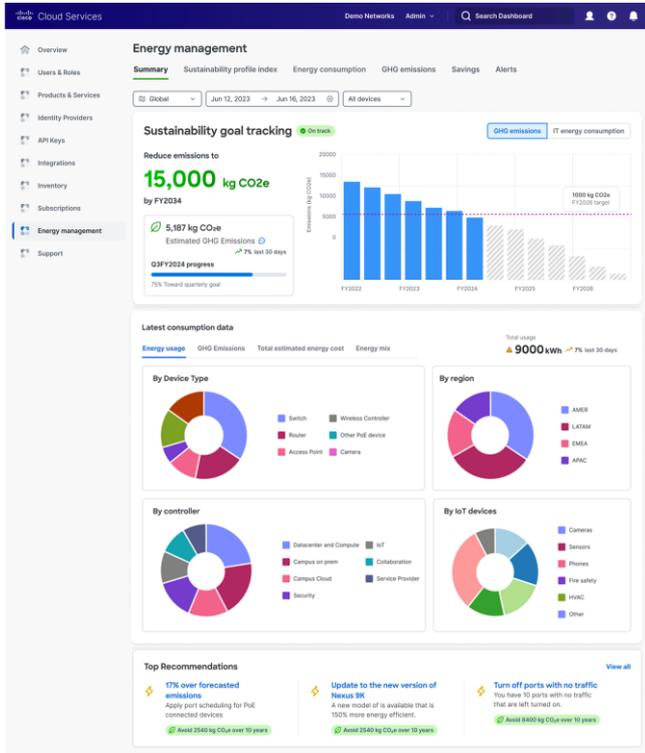
Internal Factors

- Business growth
- Product power efficiency
- Architectural migrations
- Real time telemetry
- Circular business transformation
- Supplier goal setting
- Product lifespan

External Factors

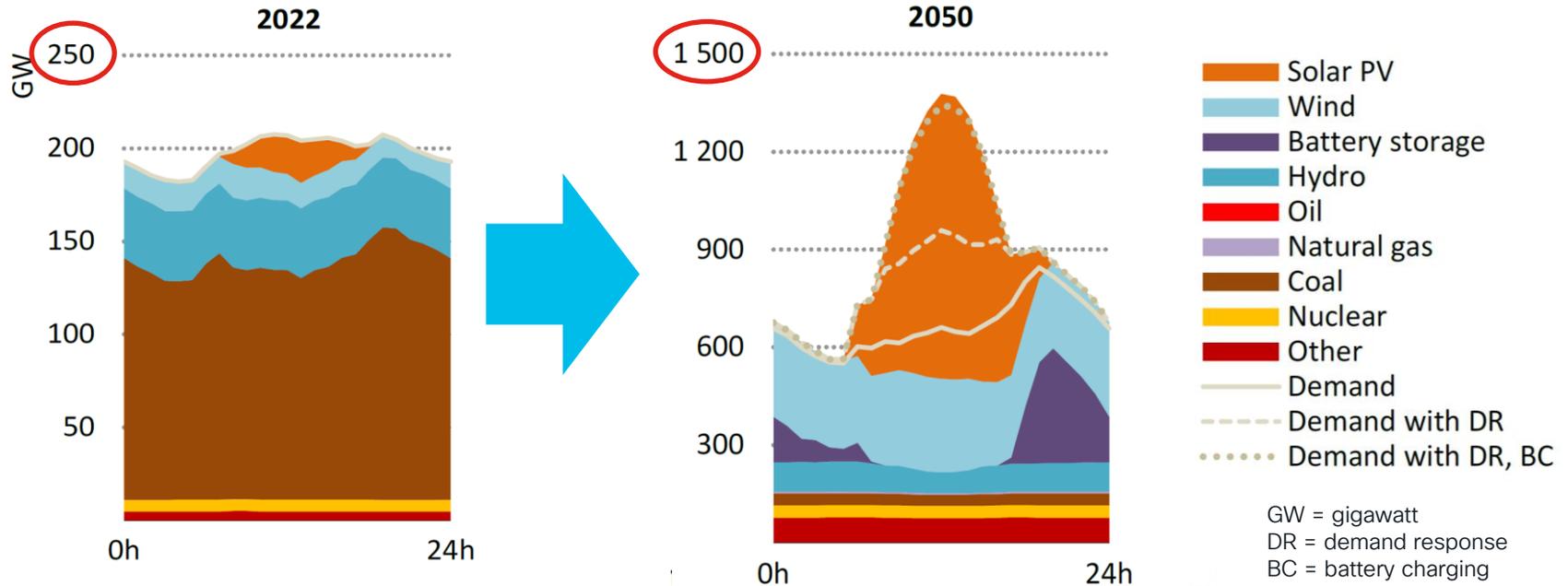
- Electric grid decarbonization
- Customer adoption of clean energy
- Regulatory restrictions on ICT
- ICT Spending / GDP Growth
- GHG accounting changes
- Mode shift adoption
- Cost of carbon offsets

Measuring & Managing Energy Consumption



Evolution of Electricity Generation

Hourly electricity generation by source for a sample day in August in India
 - using Announced Pledges Scenario (APS) 2022 and 2050

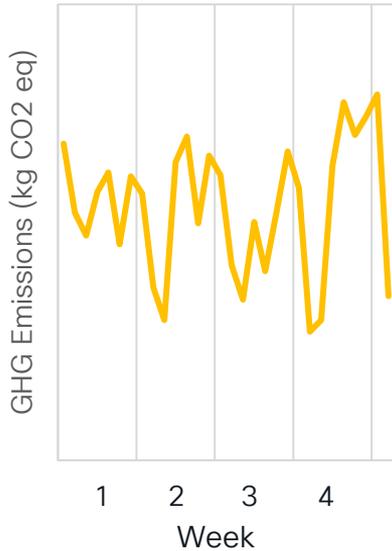


IEA (2023), World Energy Outlook 2023

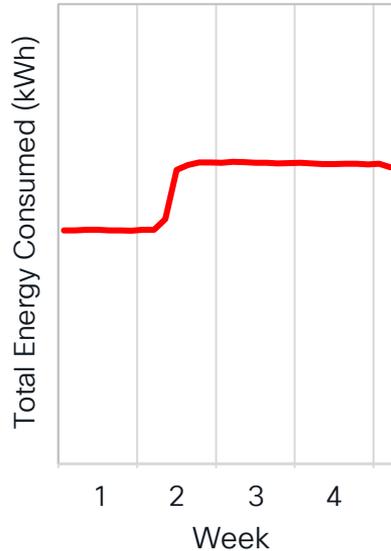
IEA. CC BY 4.0.

Spotting Trends

GHG Emissions using Electricity Maps

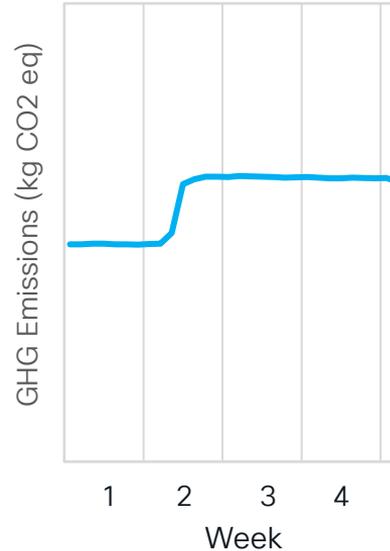


Energy Consumption



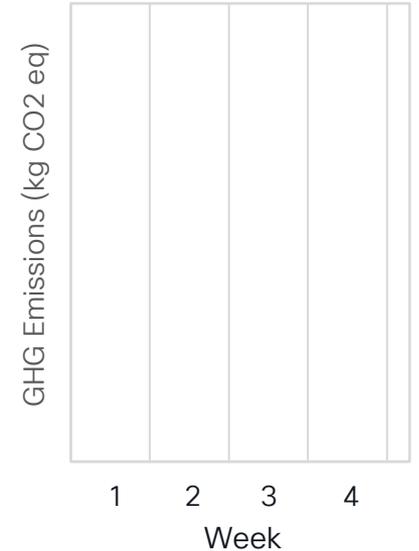
Location-based accounting

GHG Emissions using IEA Emission Factors



Market-based accounting

GHG Emissions using Corporate Emission Factors



100% Renewable Energy!!

Estimating Savings for Infrastructure Modernization

Old Architecture

Nexus 2k, 5k, 7k



New Architecture

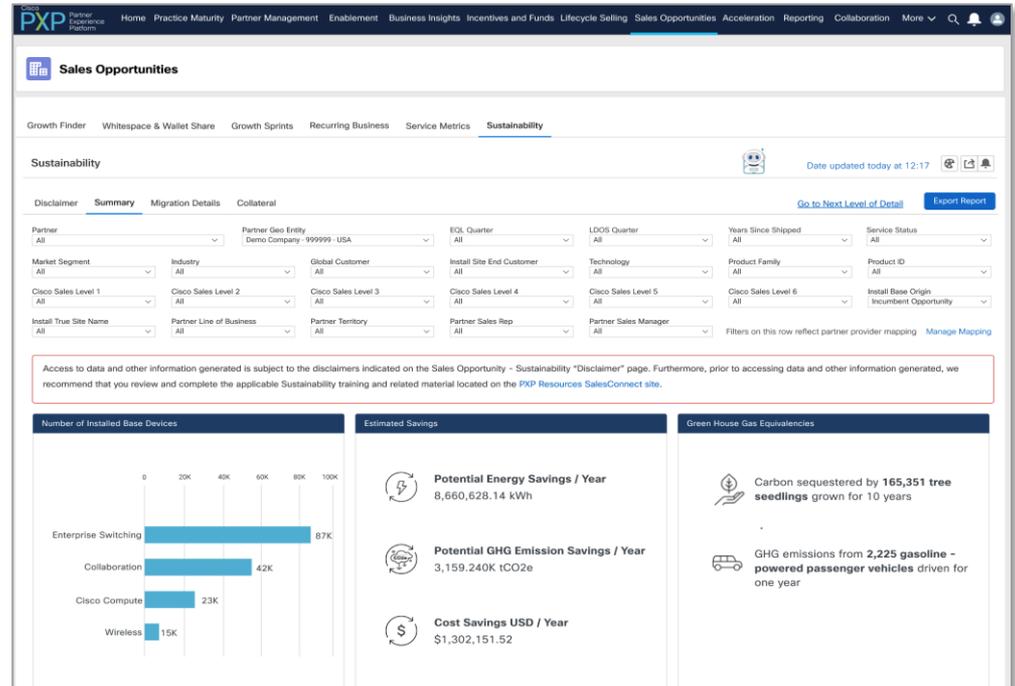
Nexus 93XX



Estimated savings

Consolidation 26 → 10 racks
 Energy saving ~2.5 → 0.7 GWh
 Energy cost saving ~€0.7M / year

Partner Sustainability Estimator



IT Sustainability Framework

Align & Support Company Sustainability Goals & Initiatives

Sustainable by Design



- Design principles / Best practices
- Life Cycle & System Thinking
- Review design impact with stakeholders

Responsible Procurement



- Analyze IT spend
- Prioritize focus areas
- Supplier scorecard / goal tracking
- Supplier Code of Conduct

Optimization of Operations



- Holistic service view
- Extend life / Improve performance
- Asset utilization / Remove excess
- Automation to scale

Asset Life Cycle Management



- Consider at design phase
- Process assets to next-best use
- Leverage supplier best practices
- Asset traceability

Energy Management



- Source renewables
- Measure & monitor use / energy visibility
- Improve power efficiency
- Optimize energy consumption

Employee Culture

Summary

1. The **importance of sustainability data is growing**, but managing that data is challenging
2. IT needs to build a **sustainability data foundation** for both itself & the company
3. A **Life Cycle Assessment (LCA)** provides an understanding of the environmental impact across multiple impact categories
4. A subset of an LCA is Global Warming Potential (GWP) which is often referred to as **Product Carbon Footprint (PCF)**
5. Digital (ICT + Entertainment & Media) is approximately 2% of global GHG emissions.
6. PCFs can be used to help baseline your IT GHG emissions, **identify hot spots**, and think through how you can decarbonize
7. Use phase is often the largest part of a PCF for Cisco equipment so **energy measurement and energy optimization are important**
8. **Modernizing** to more energy efficient products or **consolidation** can be levers, they can also save money which helps with the ROI
9. Embed actions into an **IT Sustainability Framework** to operationalize them
10. Lastly, remember **sustainability isn't just about GHG emissions**. Energy, e-waste, water are also all important in an IT function.

Webex App

Questions?

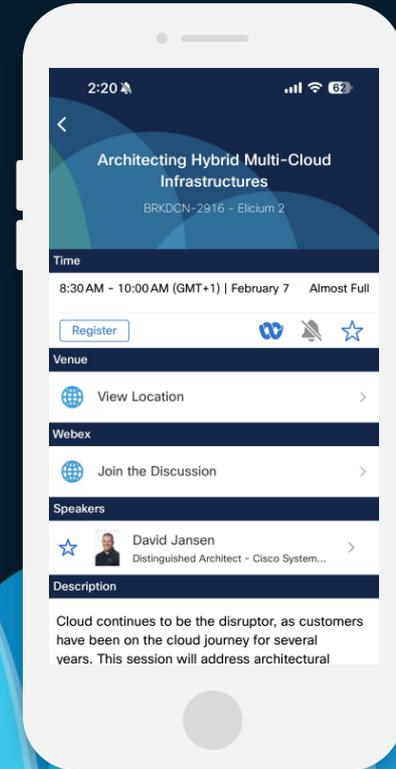
Use the Webex app to chat with the speaker after the session

How

- 1 Find this session in the Cisco Events mobile app
- 2 Click “Join the Discussion”
- 3 Install the Webex app or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated by the speaker until February 28, 2025.

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(from 11:30 on Thursday, while supplies last)



All surveys can be taken in the Cisco Events mobile app or by logging in to the Session Catalog and clicking the 'Participant Dashboard'



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Contact me at: cseward@cisco.com

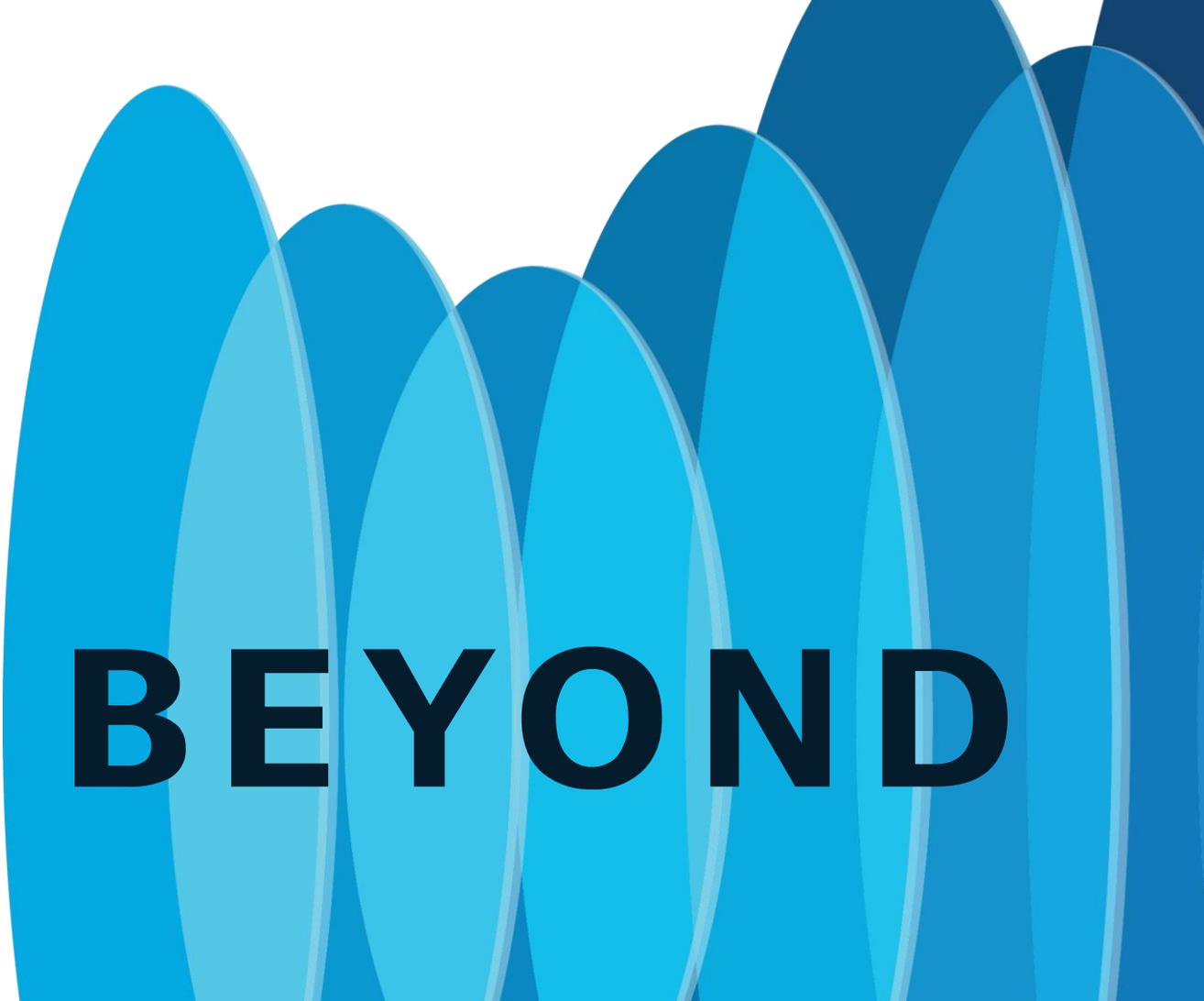


Thank you

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GO BEYOND

A series of overlapping, vertically-oriented ovals in various shades of blue, ranging from light to dark, positioned on the right side of the image.