

The Green Energy Transition

2023 PLM Market & Industry Forum—30 March 2023

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**The Green Energy Transition:
An Industrial Perspective**
PLM Market & Industry Forum
A CIMdata Leadership Event

30 March 2023—Ann Arbor, MI USA

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Sustainability & Green Energy

Practice Overview



Director: Mark Reisig

Mission

- Provide leadership to companies transitioning to sustainable carbon-free products and plants

Areas of Focus

- Provide management consulting services to enable clients to reduce their product carbon footprint
- Assist clients to design more sustainable eco-friendly products
- Enable clients to embed sustainability in PLM business strategies and enabling technologies through end of life, eliminating waste, increasing recyclability, reuse, and repurposing of materials and assets
- Evaluate new technologies and provide strategic management consulting services to help companies transform to meet the demands of a “net-zero” future

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Mark Reisig



Professional background



- Over 40 years of experience in digital transformation, information technology, and engineering
- Led digital initiatives in PLM, plant design, CAD, ERP, SCM, and MDM for global businesses
- Prior to CIMdata, held executive and senior management positions at Aras, General Electric, Federation, Oracle, Auto-trol Technology, and Kraft Heinz
- Has worked with all the major PLM solution providers from both an industrial perspective responsible for large global deployments, as well as deploying those technologies from a solution provider and consulting perspective
- Industry experience includes energy, aerospace, defense, automotive, industrial, high-tech electronics, medical devices, and food & beverage

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Key Takeaways



Sustainability & the Green Energy Transition is the defining issue of our time

- We are on pace to reach 2.8°C warmer than the pre-industrial period
- Corporate net-zero emission pledges are gaining momentum, but few companies understand how to reduce their carbon footprint
- Greater visibility into the supply chain is required to reduce a companies product carbon footprint (PCF)
- Embedding sustainability in PLM is fundamental to reducing PCF
- Climate change is an existential threat and offers significant business opportunities

5

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Agenda


- Earth Systems
- Sustainability & The Green Energy Transition
- The Green Energy Transition & Sustainability 2023 Survey Results
- Concluding Remarks

6


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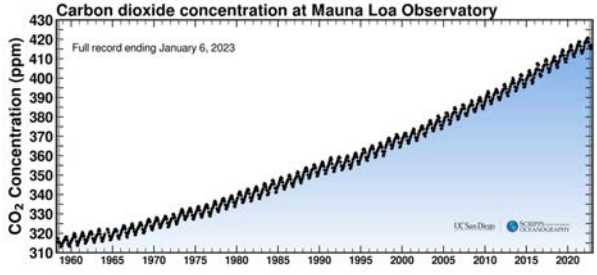
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Global Warming & Climate Change



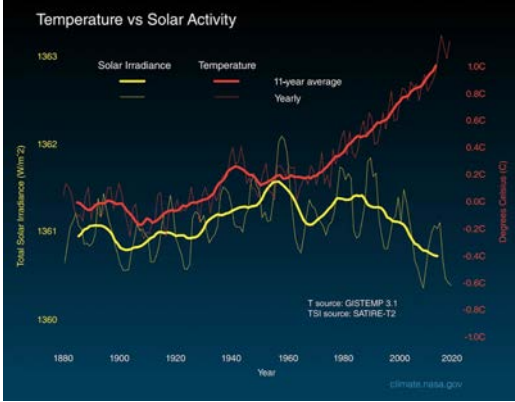
"Humans are changing Earth's climate, primarily through GHG emissions." - NASA



Carbon dioxide concentration at Mauna Loa Observatory
Full record ending January 6, 2023

UCSD/Earth & Environment

<https://keelingcurve.ucsd.edu/>



Temperature vs Solar Activity

1363
1362
1361
1360

1.0C
0.8C
0.6C
0.4C
0.2C
0.0C
-0.2C
-0.4C
-0.6C
-0.8C
-1.0C


1980 1990 2000 2020

Year


T source: GISTEMP 3.1
TSI source: SATIRE-T2

<https://climate.nasa.gov/faq/14/is-the-sun-causing-global-warming/>

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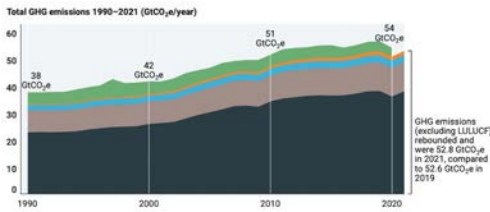


Greenhouse Gasses Continue to Rise



Nothing that we have done to date appears to be stopping its rise

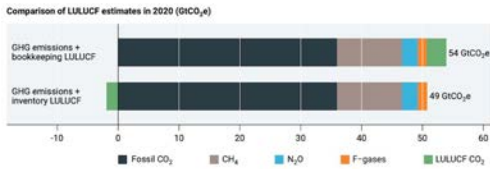
- GHG 2019 – 54.4 GtCO₂e
- GHG 2020 – 54.0 GtCO₂e
- GHG 2021 – 52.8 GtCO₂e
 - Excludes Land Use Change
- GHG 2030 – Est. 58 GtCO₂e



Total GHG emissions 1990-2021 (GtCO₂e/year)

38 GtCO₂e, 42 GtCO₂e, 51 GtCO₂e, 54 GtCO₂e

GHG emissions (excluding LULUCF) rebounded and were 52.8 GtCO₂e in 2021, compared to 52.6 GtCO₂e in 2019.



Comparison of LULUCF estimates in 2020 (GtCO₂e)

GHG emissions + bookkeeping LULUCF: 54 GtCO₂e

GHG emissions + inventory LULUCF: 49 GtCO₂e

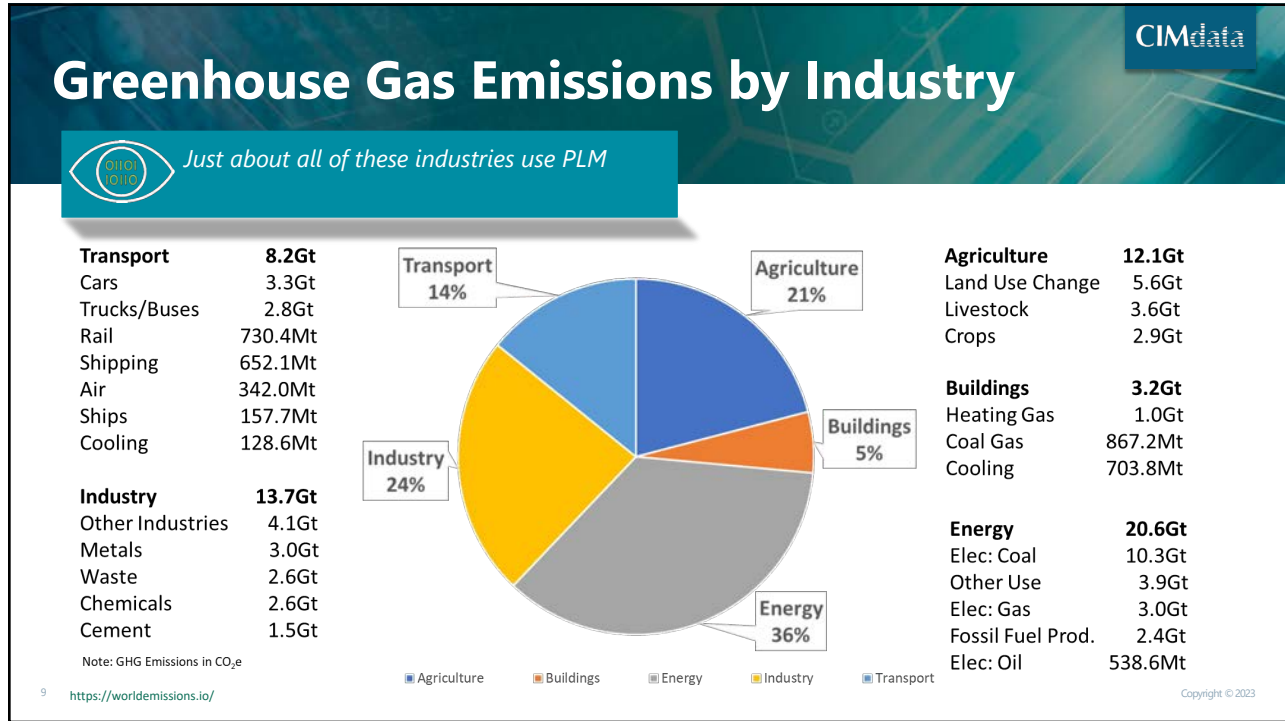
Legend: Fossil CO₂, CH₄, N₂O, F-gases, LULUCF CO₂

<https://www.unep.org/resources/emissions-gap-report-2022>

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UN Sustainability Goals

"The blueprint to achieve a better and more sustainable future for all"

- The 17 Goals were adopted by all UN Member States in 2015 as part of the 2030 Agenda for Sustainable Development, which set out a 15-year plan to achieve the Goals
- Paris Agreement - The goal is to strengthen the global response to the threat of climate change by limiting global warming to well below 2°C, preferable to 1.5°C, compared to pre-industrialized levels

<https://www.un.org/sustainabledevelopment/blog/2015/12/sustainable-development-goals-kick-off-with-start-of-new-year/>

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Not on Track for 2030

"We are in the fight of our lives, and we are losing" – Antonio Guterres

+10%

Increase in global greenhouse gas emissions projected by 2030, compared to 2010, based on available national action plans

Source: UNFCCC NDC synthesis report (Oct 2022)

-45%

Reduction in global greenhouse gas emissions needed by 2030, from 2010 levels, to keep warming to no more than 1.5 degrees Celsius

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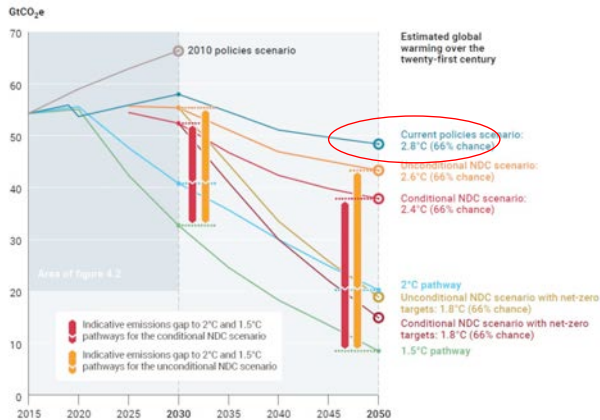
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Key Facts



"There's no credible pathway to 1.5°C in place" – UNEP Emissions Gap Report



¹³ <https://www.unep.org/resources/emissions-gap-report-2022>

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- Global Warming 2022: 1.11°C
- Projection by 2100: 2.8°C
- CO₂ Concentration: 420.99 ppm
- Ocean Acidification: 0.01 pH (30%)
- Remaining Wilderness: 23%
- Biodiversity Loss: 0.01/yr. (200/yr.)
- Population: 8 billion people

Agenda

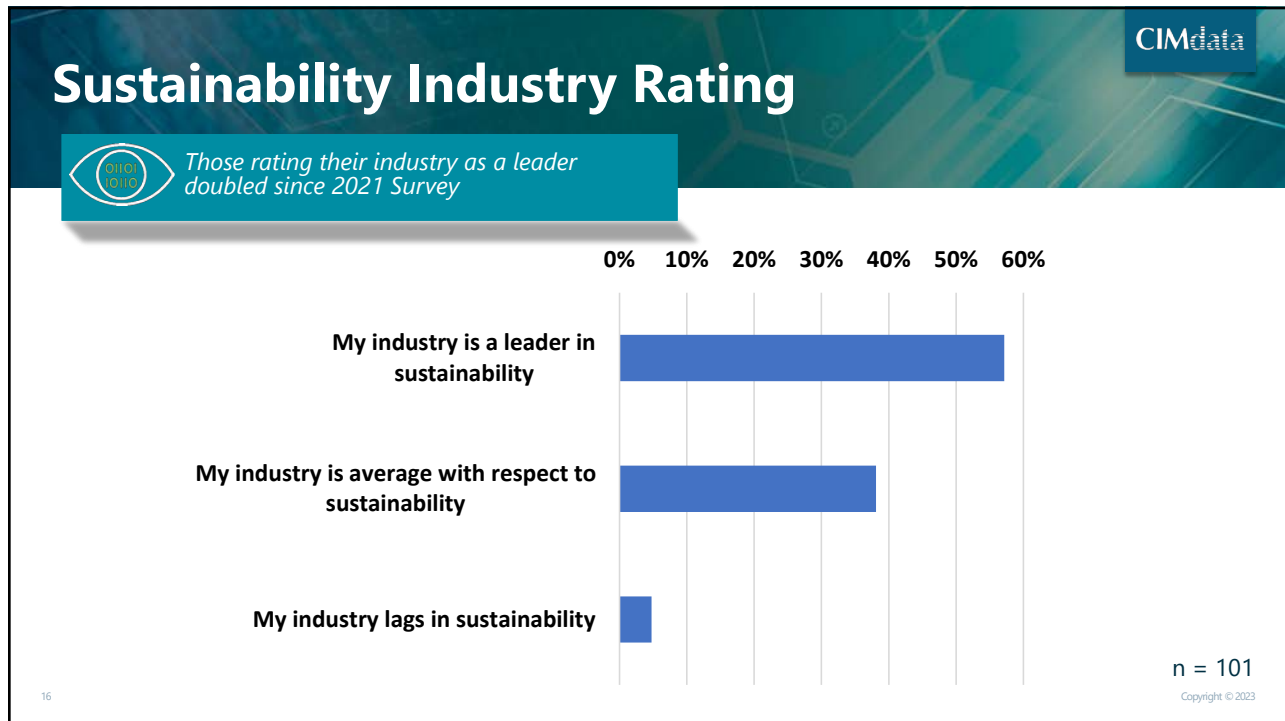
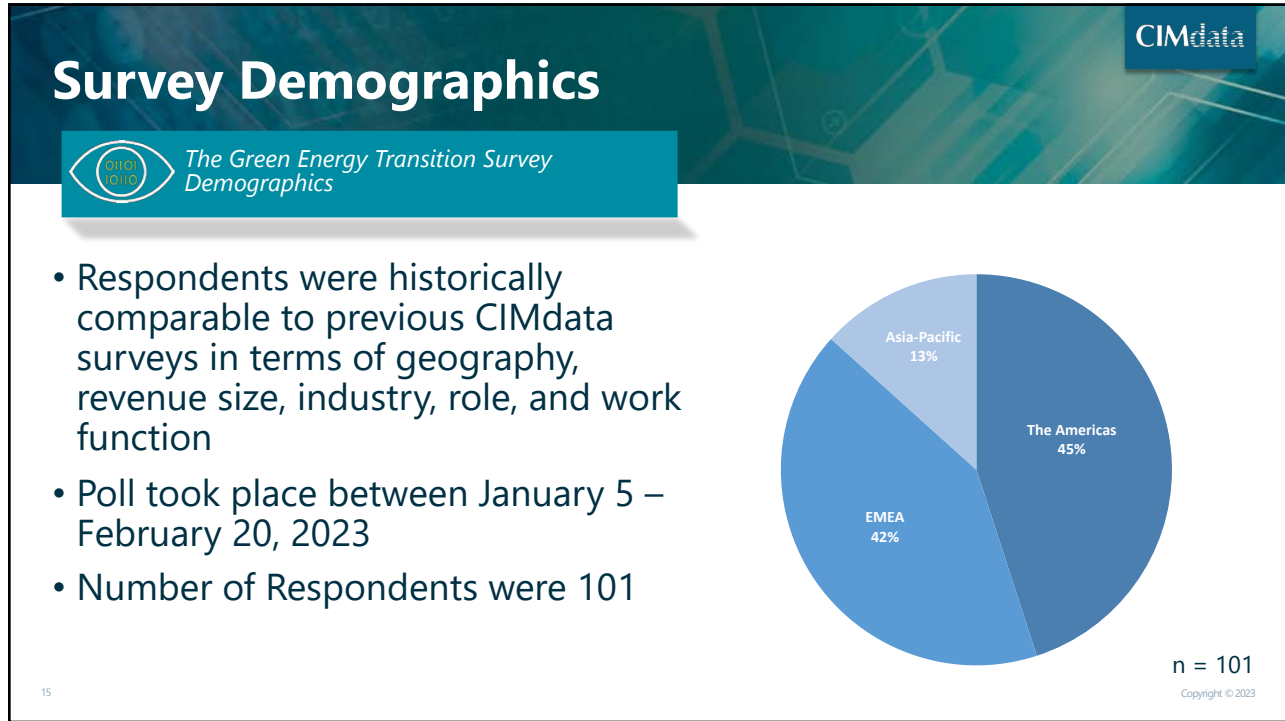
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14

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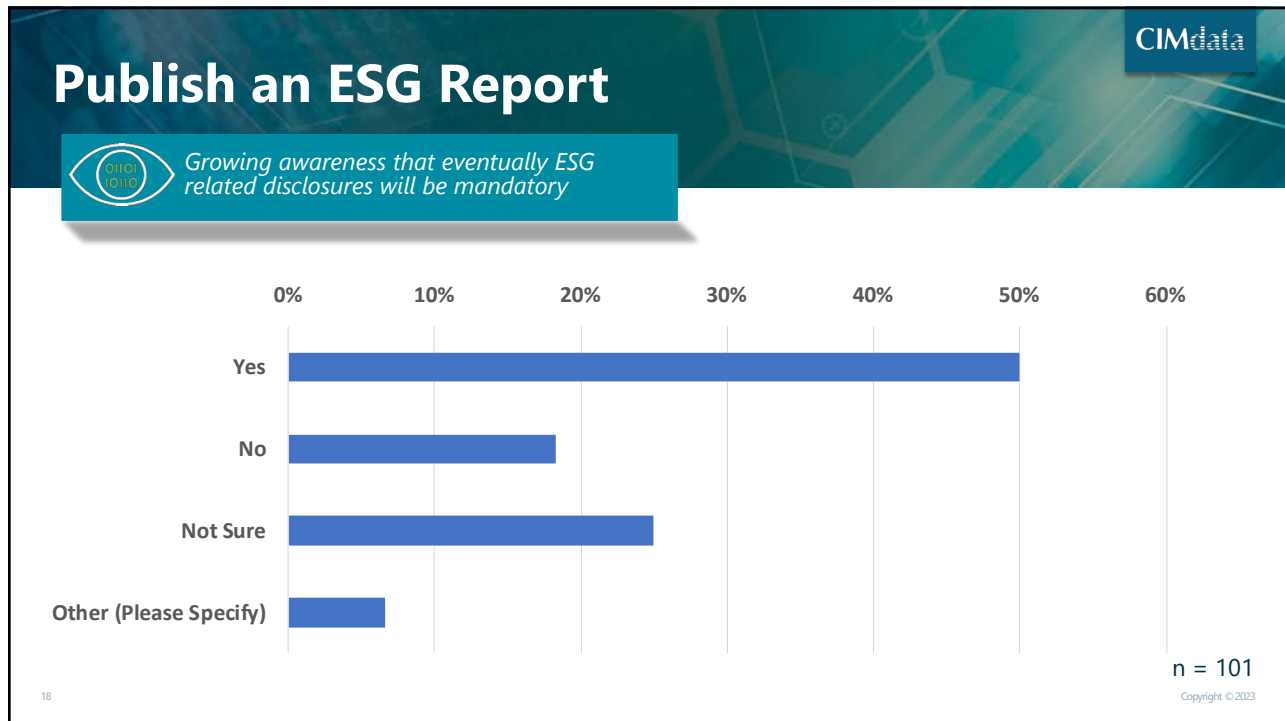
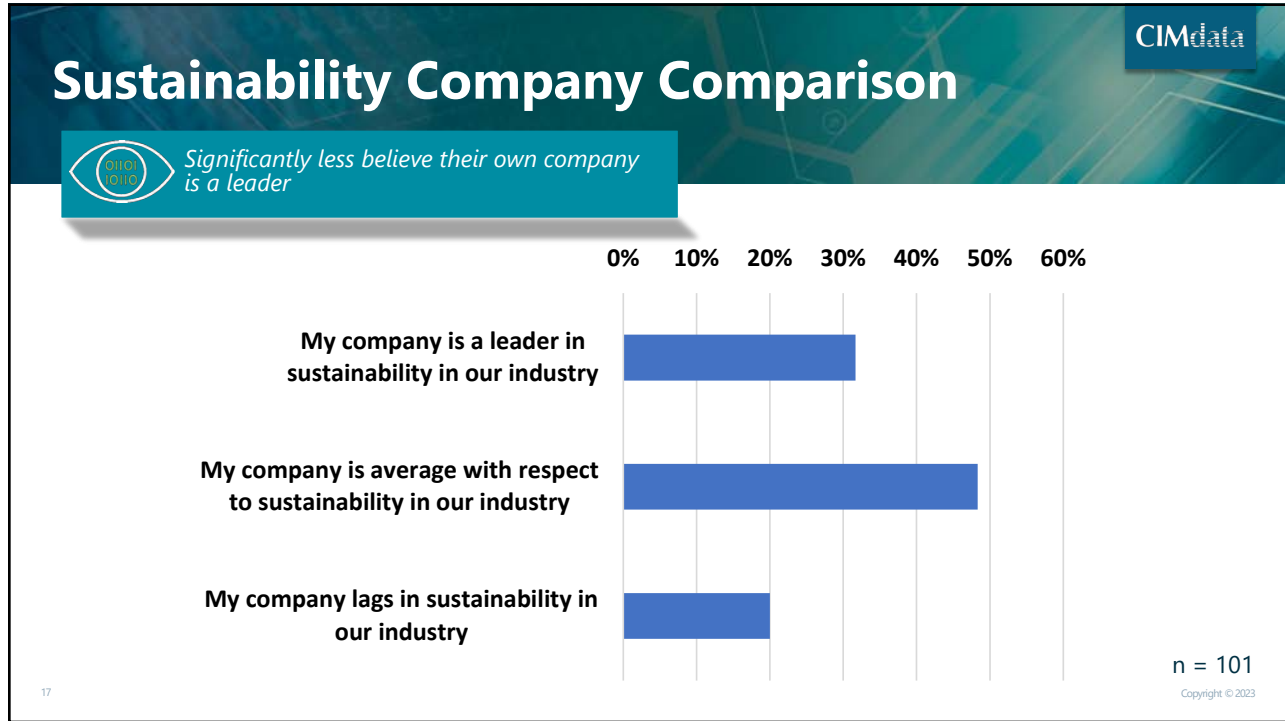
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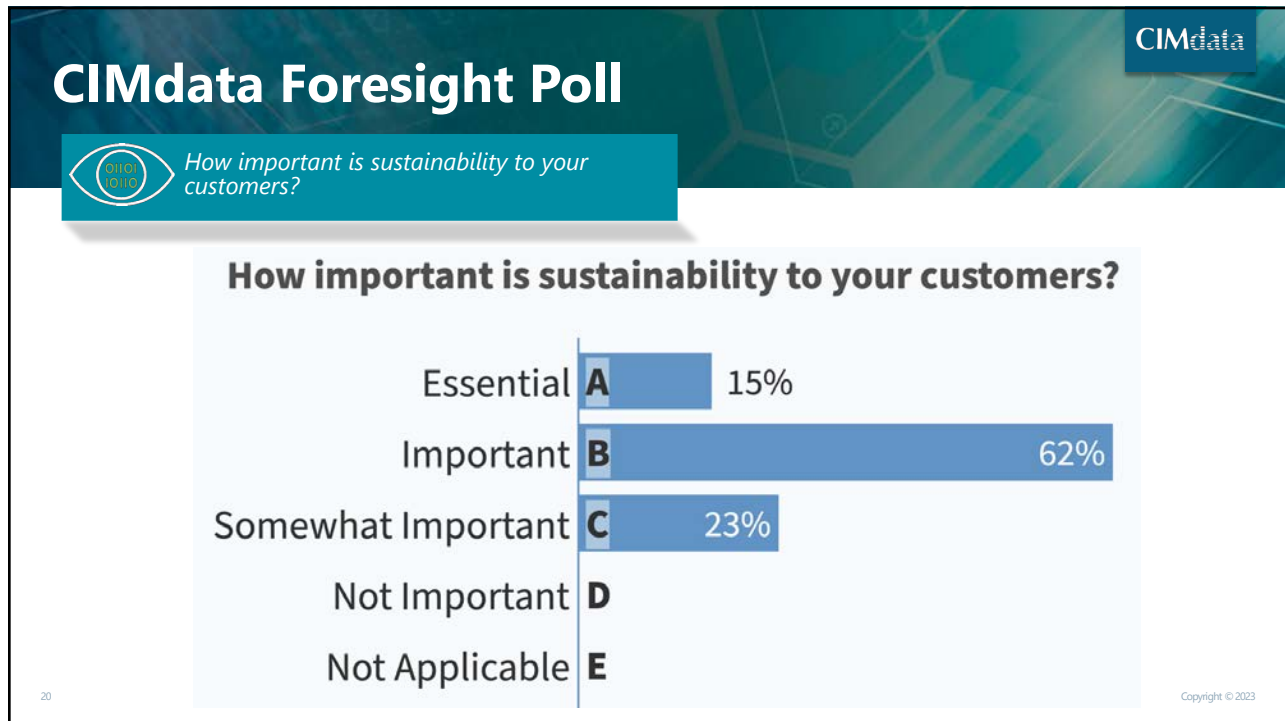
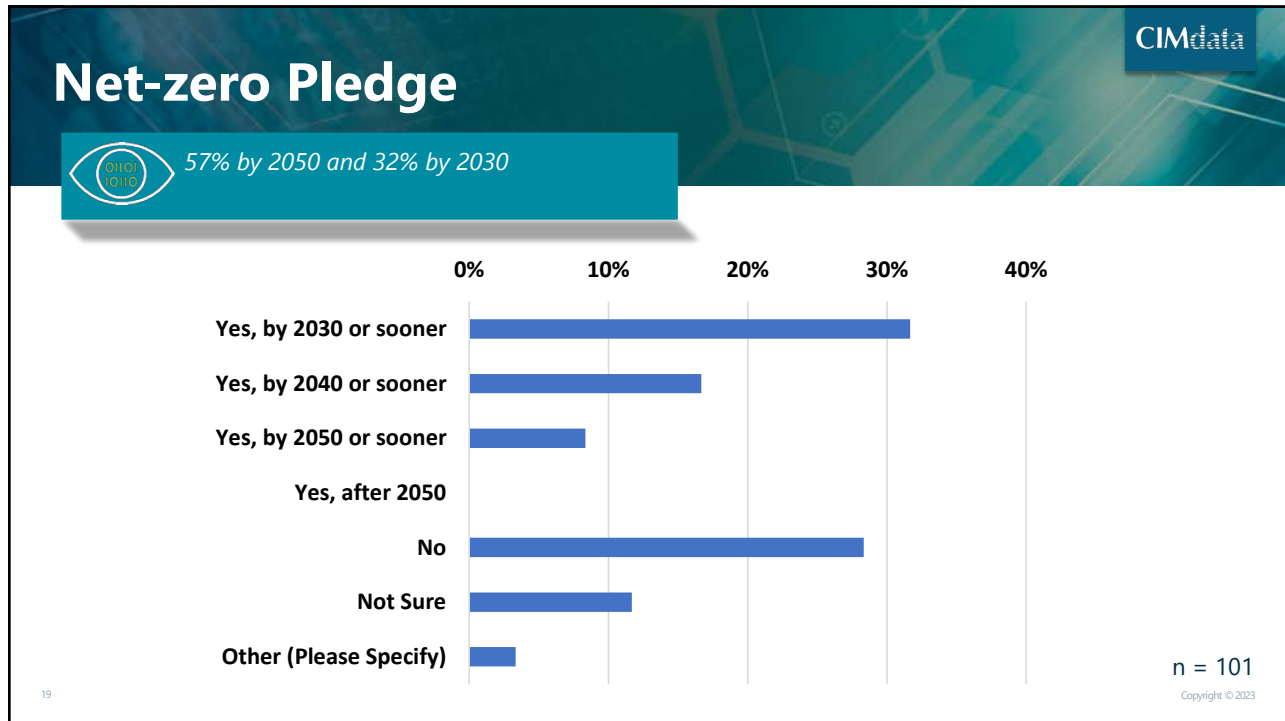
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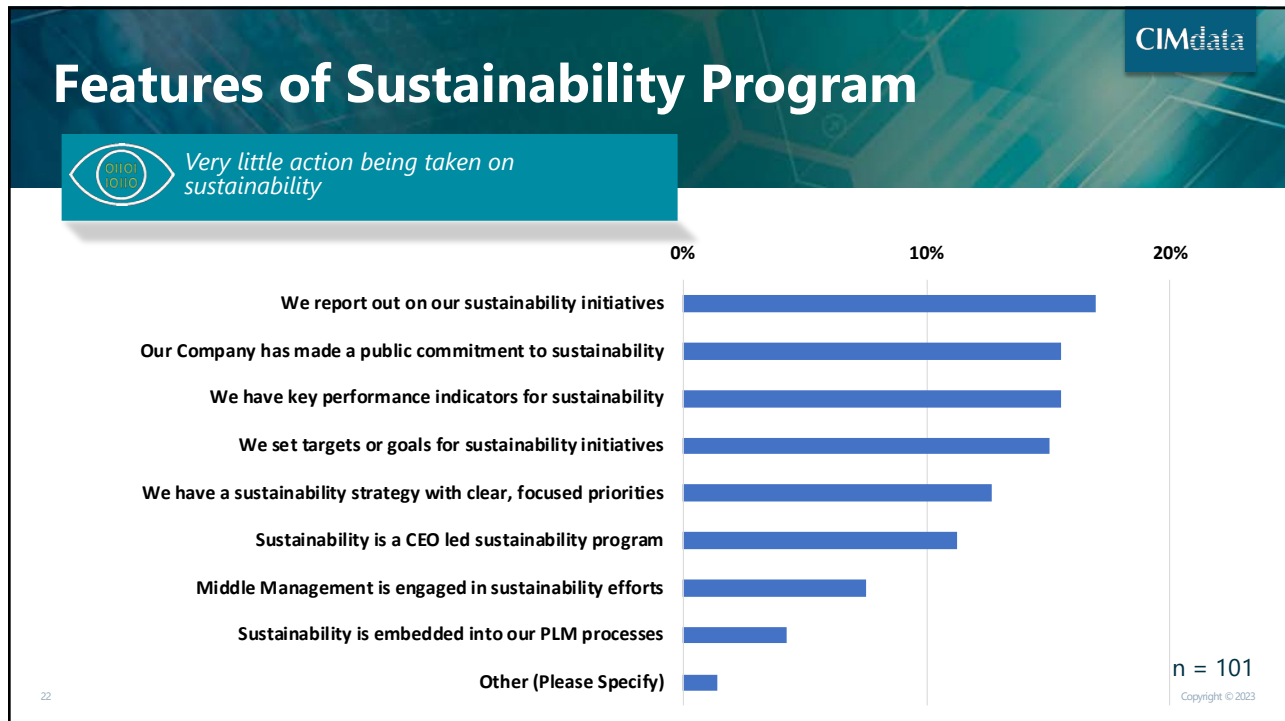
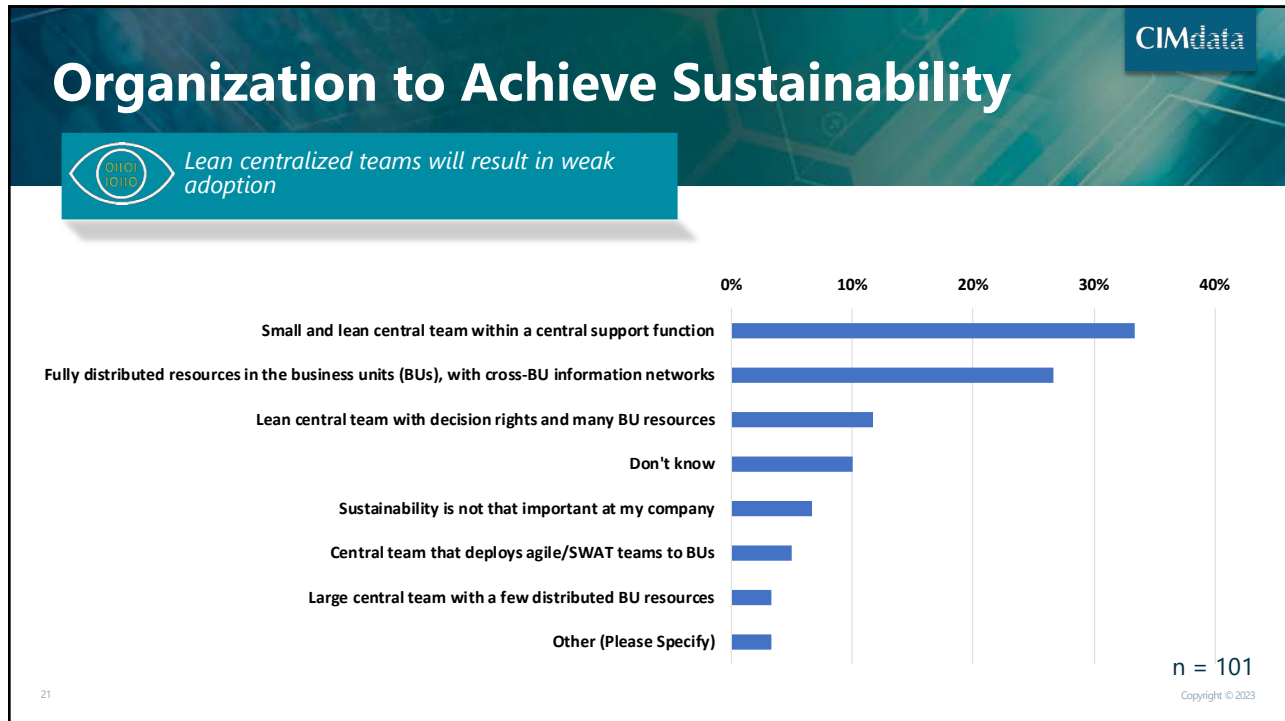
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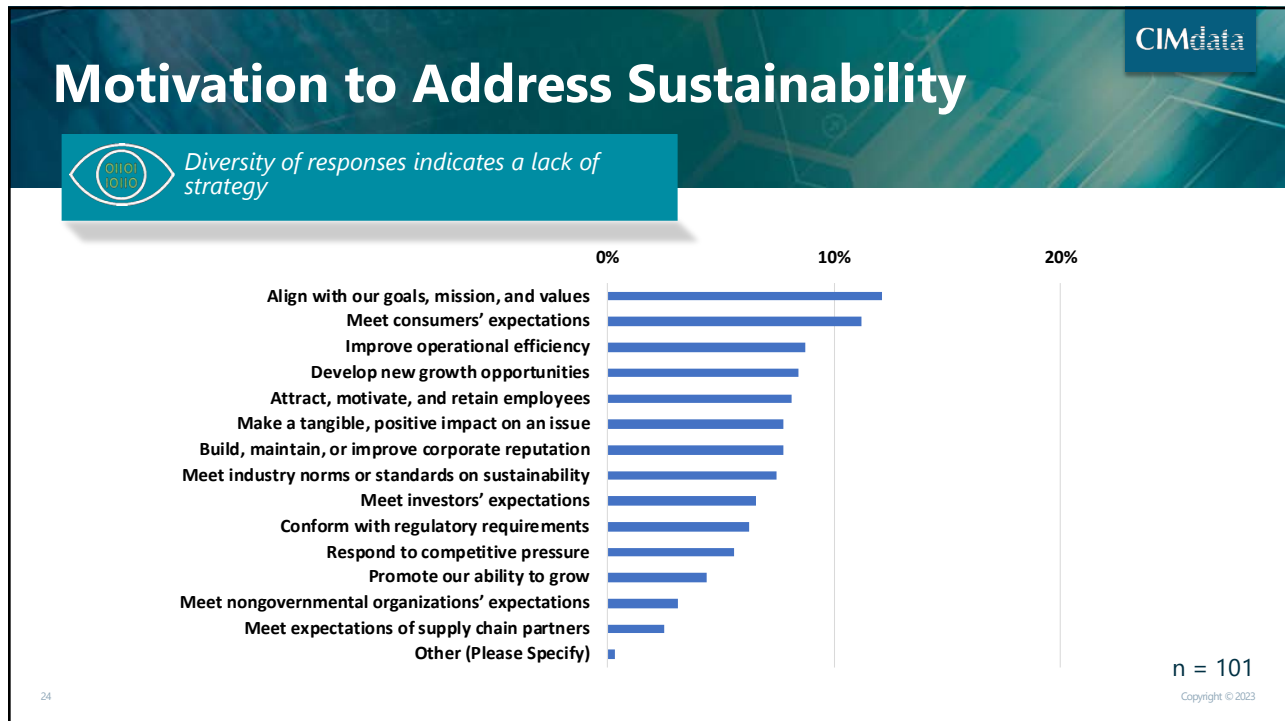
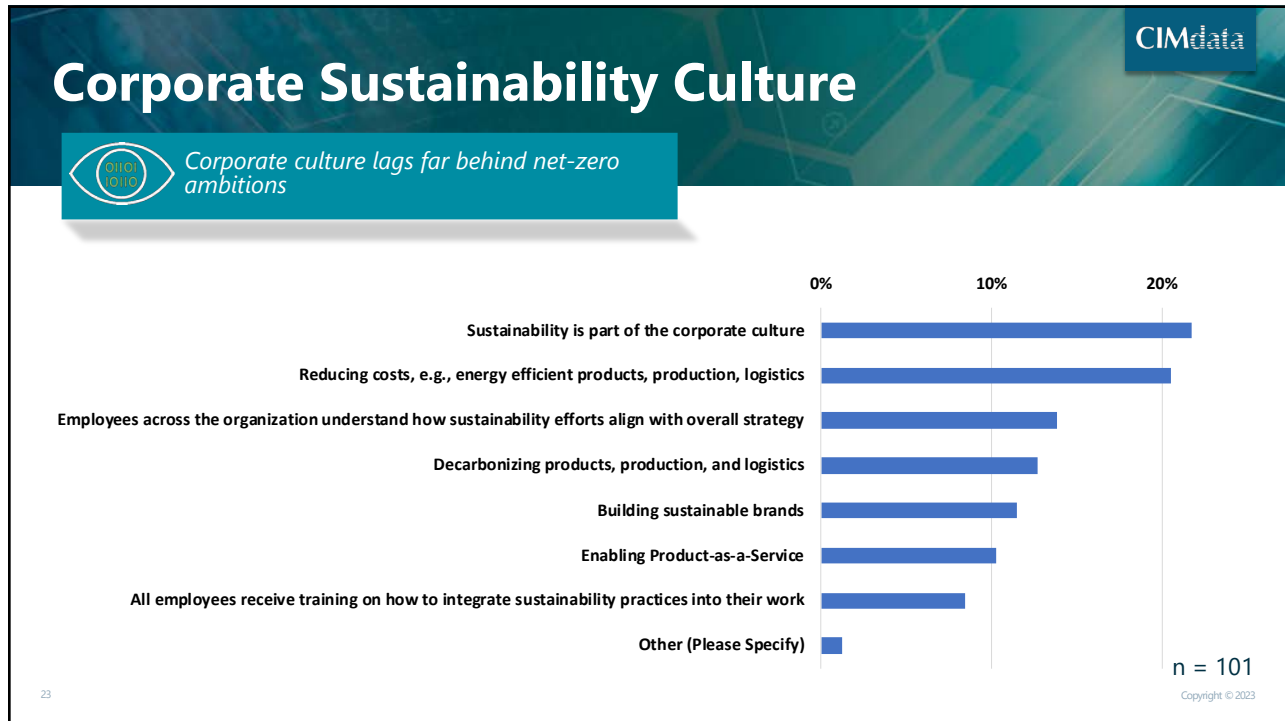
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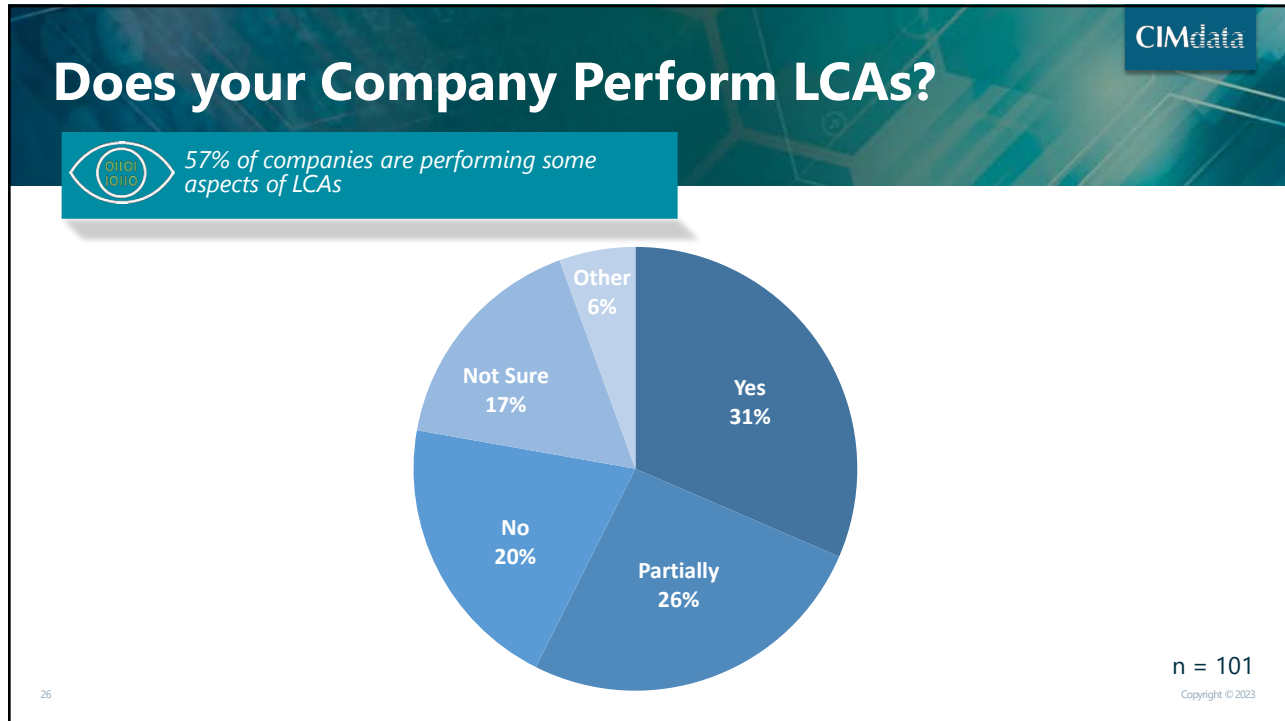
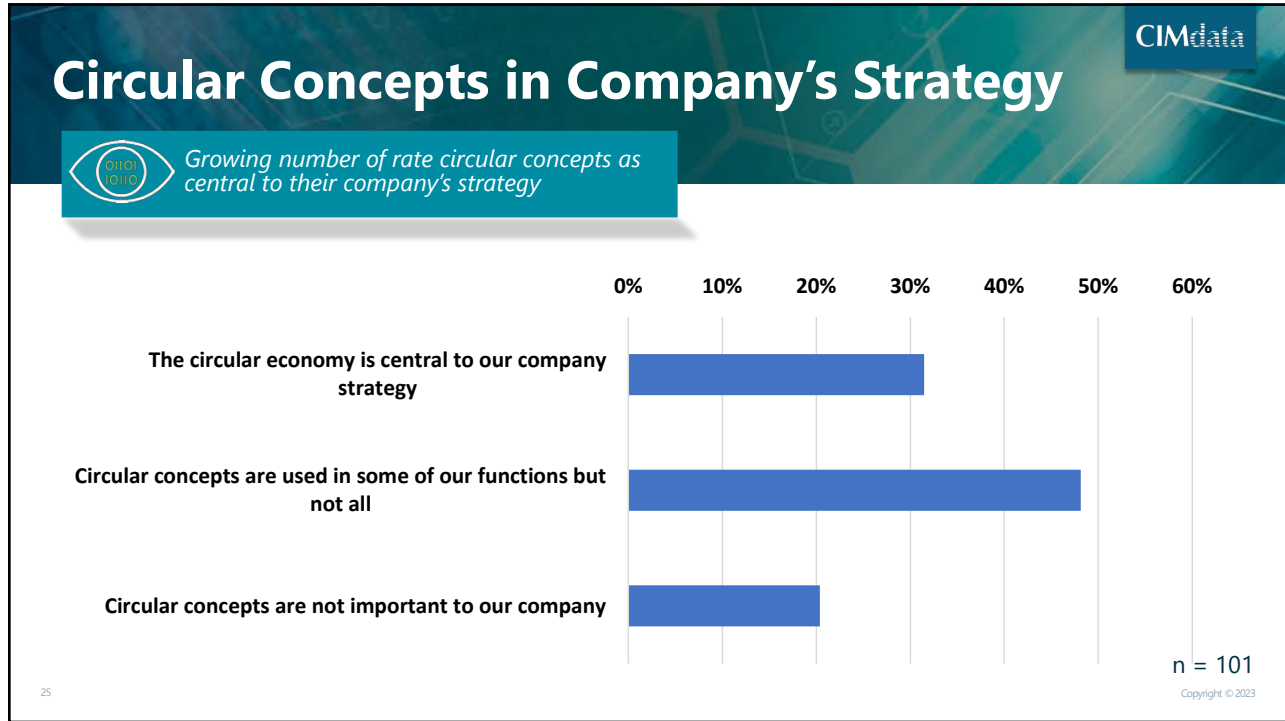
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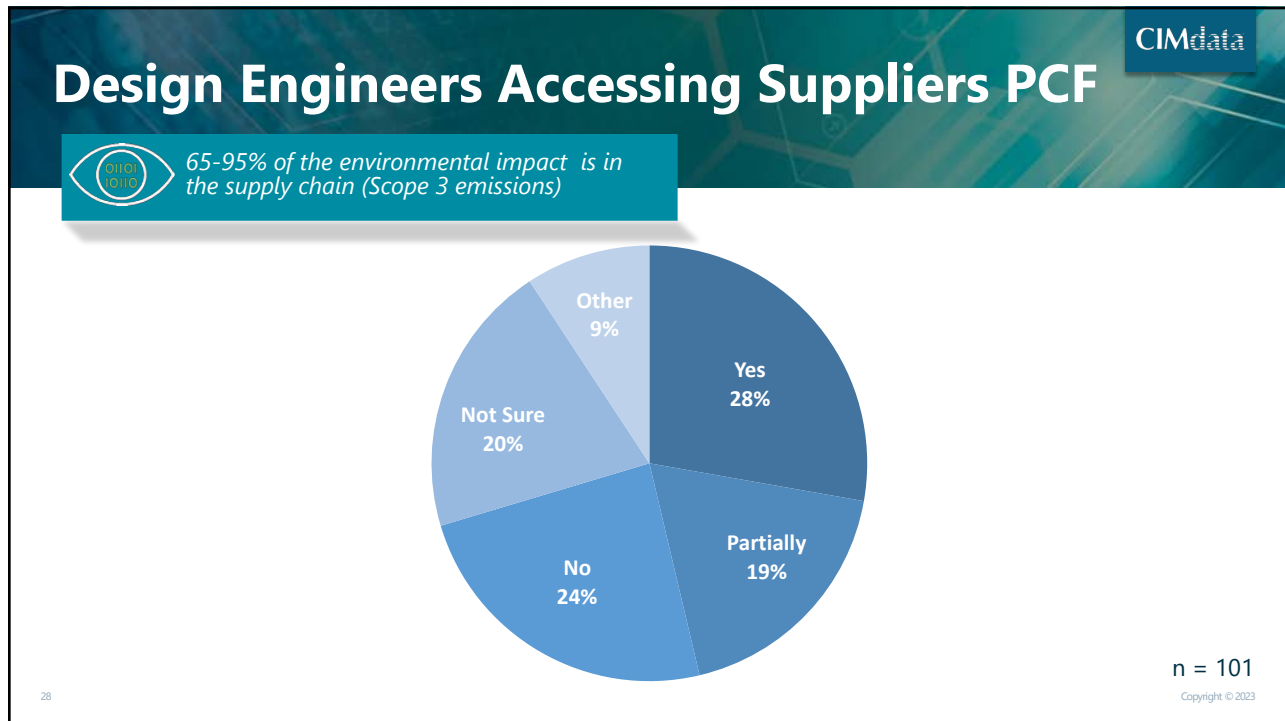
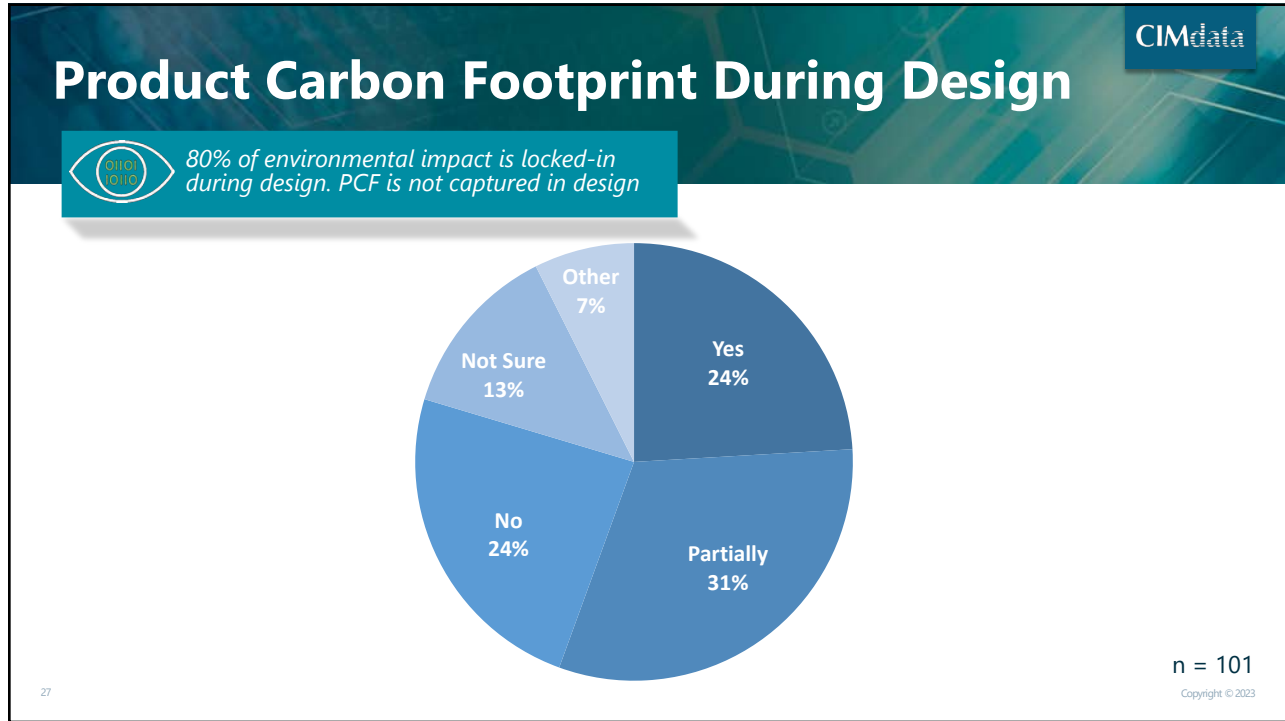
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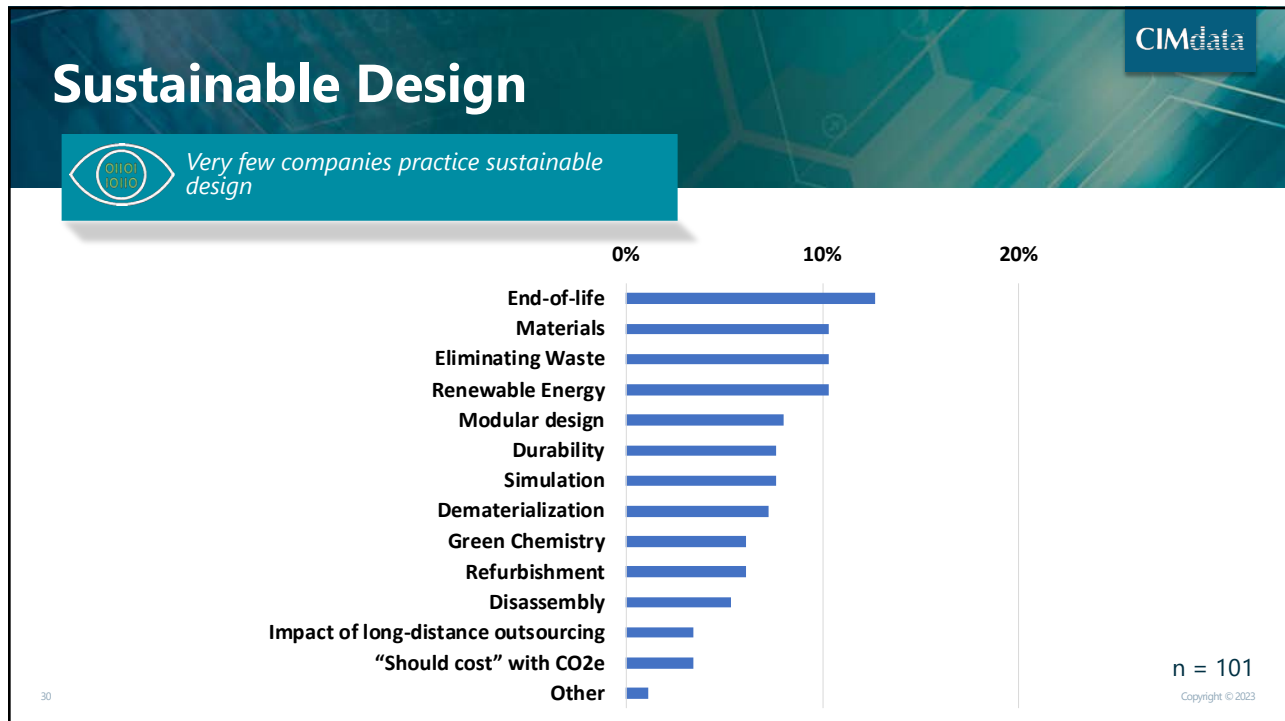
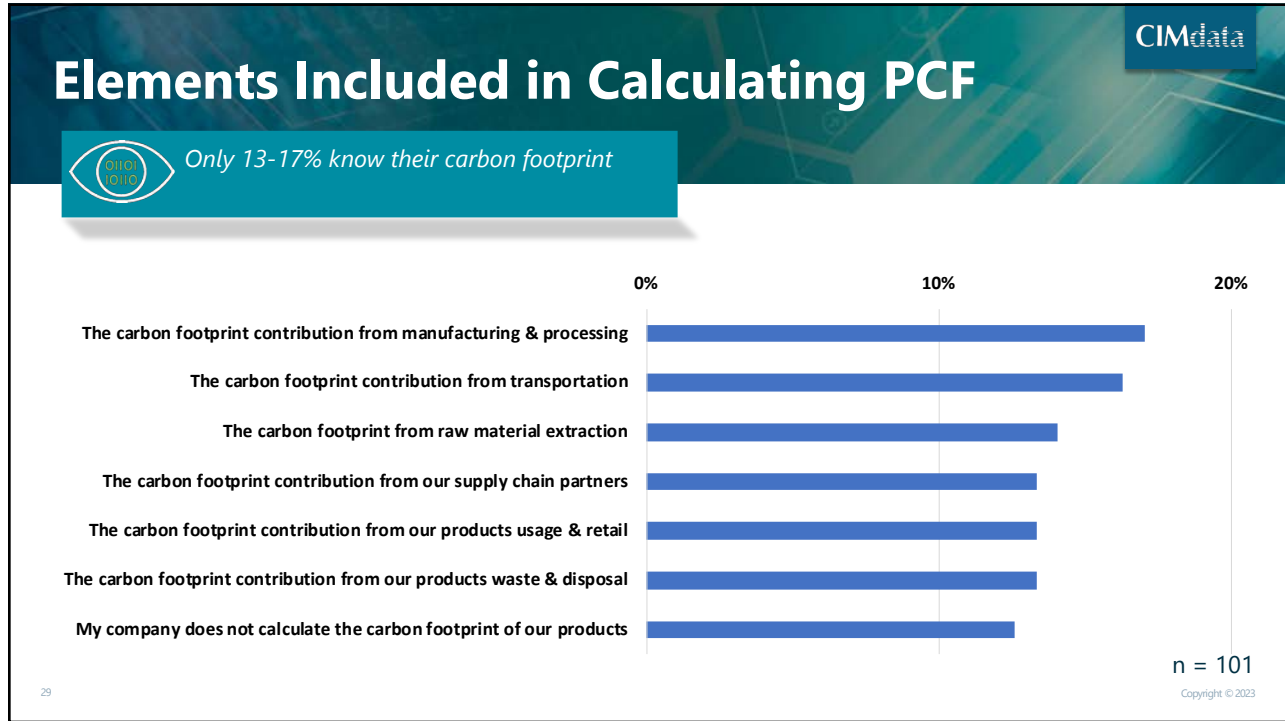
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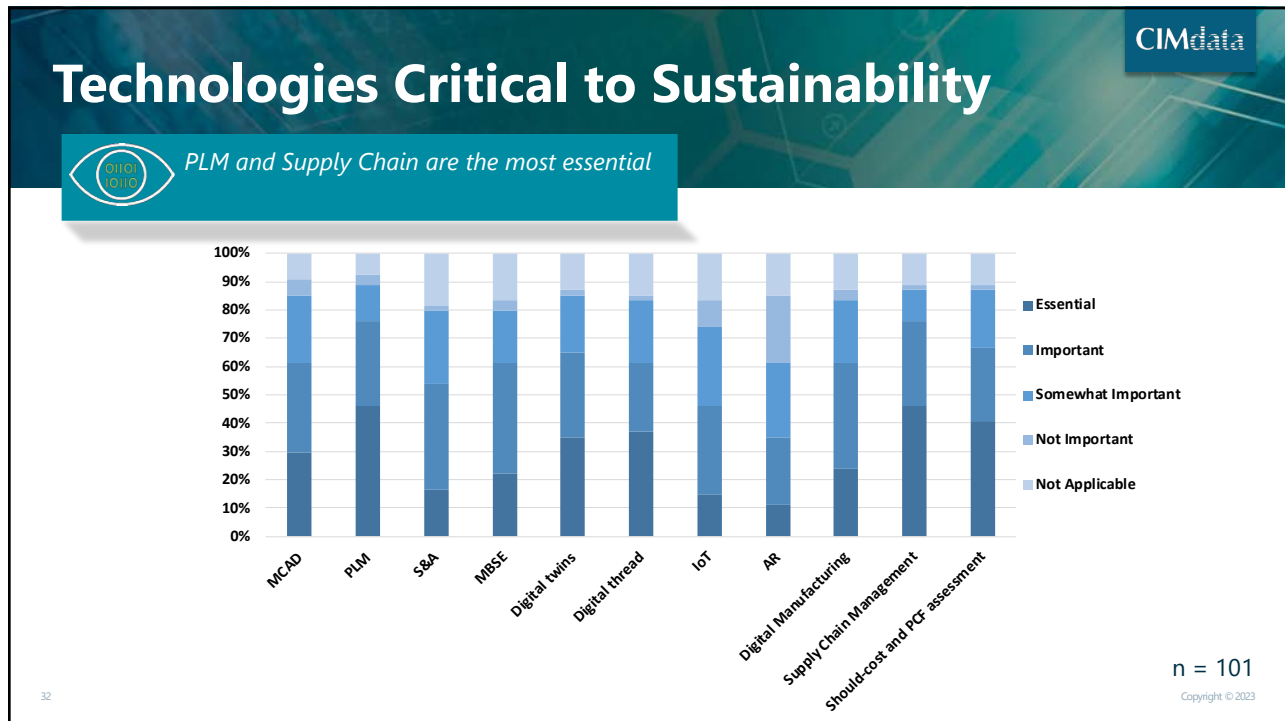
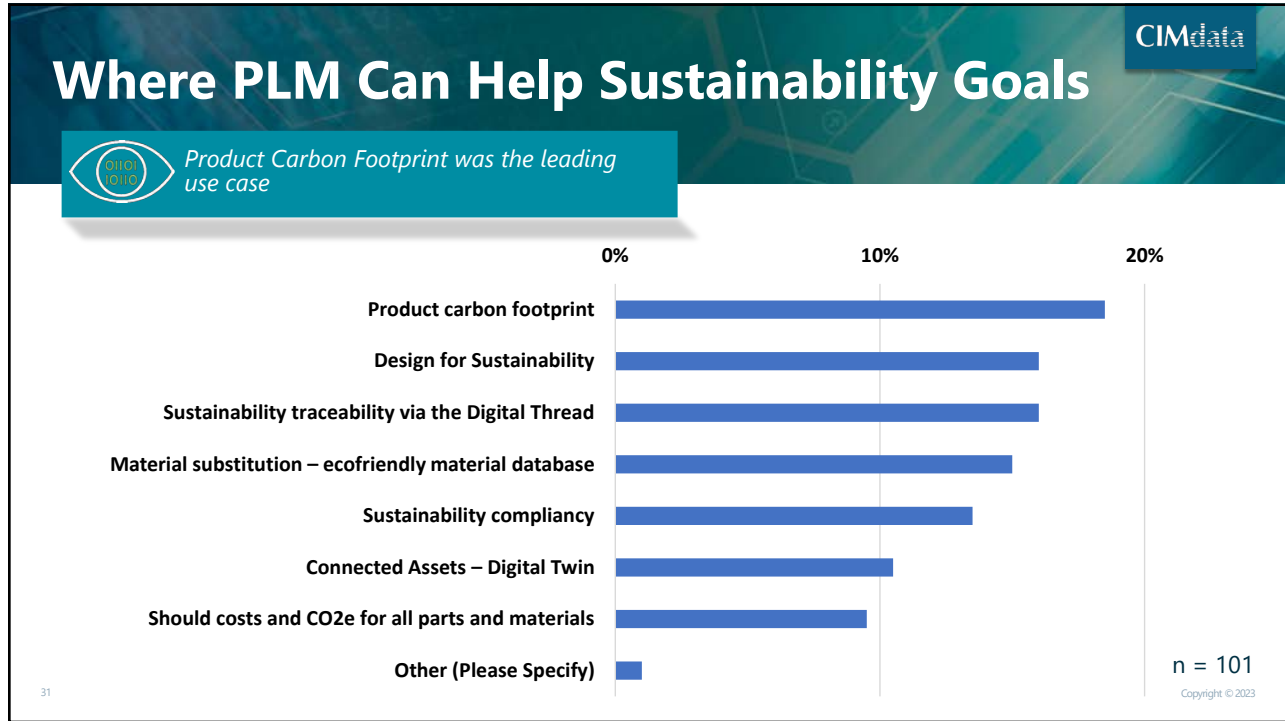
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34
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The Business Opportunity



How can PLM providers best support sustainability requirements

- Organizations need sustainability embedded in PLM to reduce their PCF, engage in sustainable design and the circular economy
- Just like PLM, this is a people, process, and technology issue
- ISVs and SIs et al. can help with all three, depending on their expertise and offerings
- Demands a systemic approach and needs to be supported by a business platform with supply chain visibility, a robust digital thread, and in many cases, digital twins
- PLM and SCM must be more symbiotic

35

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Concluding Remarks



Climate change is an existential threat that offers significant business challenges

- All life on earth is vulnerable to global warming and climate change
- Sustainability requirements are being driven top-down in companies, but not yet ingrained in the corporate culture
- Industrial organizations have a gap between their ambition and actions required to meet their goals
- Advanced capabilities in PLM, supply chain, reducing PCF, and digital twin are seen as essential
- PLM is central to sustainability; industrials, ISVs, and SI/Reseller/VARs need to succeed together

36

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To Learn More...

- Mark Reisig, Executive Consultant, and Sustainability & Green Energy Practice Director
- m.reisig@CIMdata.com
- Mobile: +1.864.320.7987
- CIMdata has several useful resources on this topic:
 - [Sustainability and Green Energy Consulting Practice](#) on this topic
 - Webinar: [The Green Energy Transition and Sustainability](#) January 23, 2023
 - Webinar: [Webinar: Meeting Sustainability and Green Energy Transition Objectives: The Industrial Perspective](#), April 27, 2023, 11:00 AM EDT
 - Article: [Accelerating the Transition to Green Energy with Product Lifecycle Management](#) (www.powermag.com)
 - Article: [Climate Change is Transforming PLM Strategies](#) March 10, 2023, (<https://industrytoday.com/>)

37

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Questions & Answers

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What's on your mind?



38

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39

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