Sustainability – Lighthouses leading the way

Agenda

Brief intro

Where are we in sustainability and decarbonization?

What are some of the main challenges?
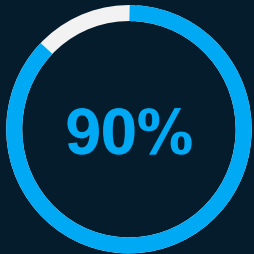
How are lighthouses leading the way?

McKinsey

Sustainability is reaching a tipping point: Strong external and internal drivers are pushing companies to do more

External

Customer demand

90%

millennials are ready **to pay more** for environmentally friendly product Vs 61% for baby boomers[1]
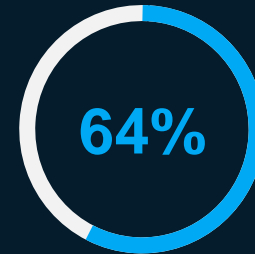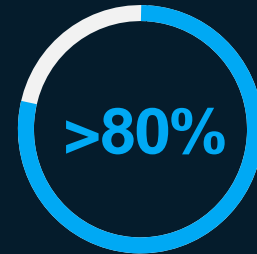
Government and regulatory impact

$100

per CO$_2$ tons recommended to drive faster carbon transition (vs 20$ today), **creating 35Bn taxes in EU by 2030**

Internal

Employee engagement

64%

millennials **won't take a job** if a company isn't strong on CSR with millennials making up 75% of the workforce by 2025[2]

Investors

>80%

investors have a sustainable investing strategy[4]

1. Nielsen 2018; 2. Cone Communications; 3. McKinsey Purpose Survey 2020; 4. Morgan Stanley

What is ESG?

Environment
Taking care our planet and surrounding environment

- Energy
- Water
- Waste
- Green house Gas
- Circular Economy

Sustainability

Responsible

Social
Building up stronger workforce and community

- Human capital development
- Voice of the worker
- Health and safety
- Labor standards

Workforce Engagement

Governance
Setting a set of practices, controls, and procedures to govern, make decisions and meet stakeholders needs

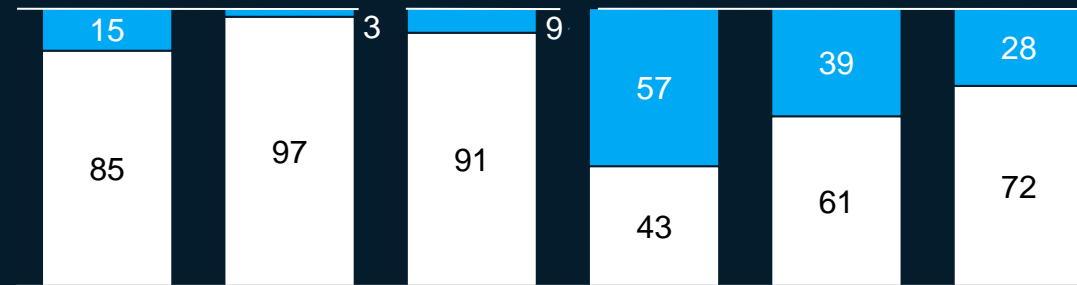- Ownership
- Accountability
- Business ethics
- Governance structure

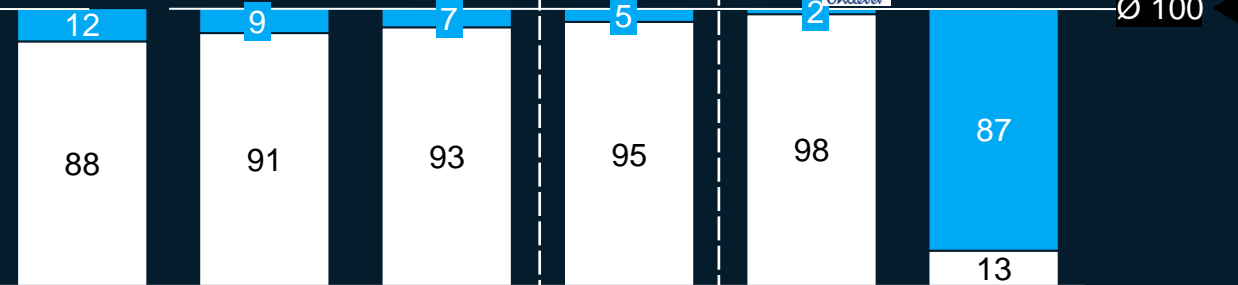# Share of scope changes significantly depending on the industries

Most similar to Bimbo | Scope 1 & 2 | Scope 3

Share[1] of Scope 3 emissions across sectors,
% of total Scope 1-3 emissions, 2018, based on CDP self-reported data

B2B companies

B2C companies

Ø 100

	Oil & Gas[2]	Mining	Cement & Concrete	Fertilizer	Packaging	Chemicals	Pharma-ceutical	Apparel	Retail	FMCG	Automotive	Air transport
Scope 1 & 2	15	3	9	57	39	28	12	9	7	5	2	87
Scope 3	85	97	91	43	61	72	88	91	93	95	98	13
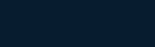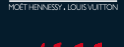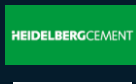
1. By selected players
2. The main source of emissions in Oil & Gas industry is use of sold refinement products and of sold natural gas, which belongs to Scope 3

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The world is off-track by every metric and will likely overshoot a 1.5°C scenario

	Needed by 2030		Status in 2022
Mitigation	**-40-45%** CO_2e from 2019[1]	↔	**+10-12%** CO_2e from 2019[2]
Adaptation	**$150-200B** Per year[3]	↔	**~$30-35B** Per year[4]
Loss & Damage	**$300B** Per year[5]	↔	**<$0.35B** Per year[6]
Finance	**~$4T** Per year[7]	↔	**$500B** Per year[7]

1. UNFCCC WGIII (2022)
2. Climate Action Tracker (2022)
3. Projected annual costs of developing country adaptation ($160-340bn), UNEP (2022)
4. $29B to developing countries in 2022 (UNEP 2022)
5. Projected L&D costs for vulnerable regions (Markandya & Gonzalez-Eguino, 2018 – as quoted by European Parliament)
6. 2022 commitments (Denmark, Belgium, Germany, Scotland, New Zealand, Austria, Wallonia)
7. Flows of climate finance only - Climate Policy Initiative (2021)

While there has been meaningful progress to net-zero ...

Non-exhaustive

138
countries have made or are considering net zero pledges

3,000+
companies have made commitments on net-zero pathways

12%
growth in annual **clean energy investment** since 2020

$70B
of VC funds were deployed in 2022 to support climate-tech ventures

~88%
decline in cost of solar PV projects between 2010 – 2021[1]
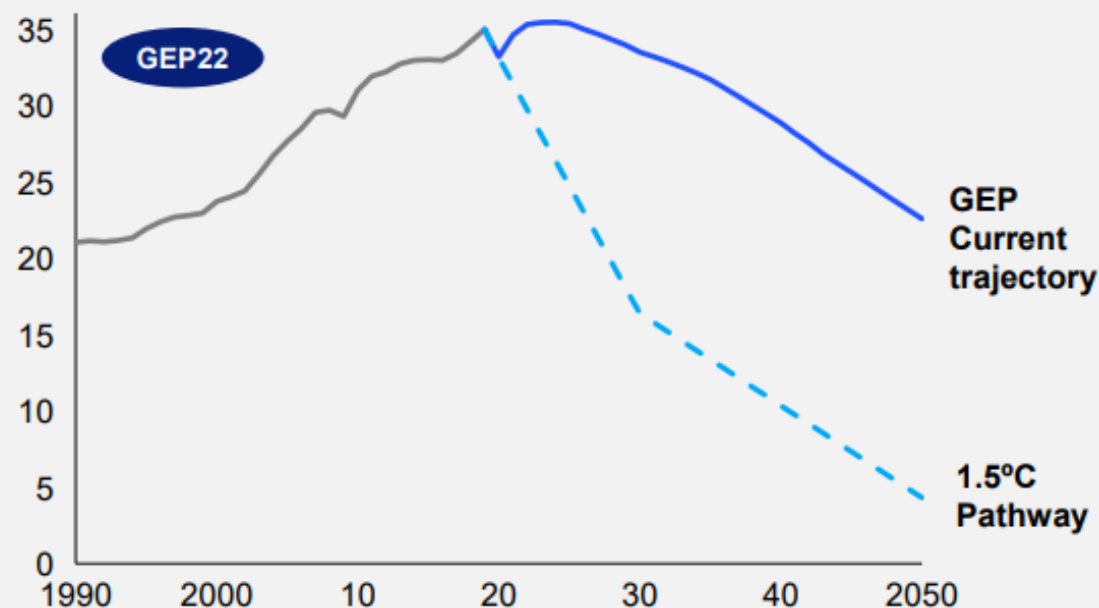
IRA, ETS, ...
increasingly **ambitious climate policy**

... the world is not on track to achieve global goals

Global gross energy-related CO2 emissions, GtCO2 p.a.

GEP22

GEP Current trajectory

1.5°C Pathway

McKinsey & Company

The Global Stock-Take (GST) is providing a state of play on progress towards the Paris Agreement targets at COP28

Preliminary outcomes

Overall status: Despite notable progress since the Paris Agreement, the world is not on track to keep global warming below 2.0°C (while aiming for 1.5°C) and the window to reach climate goals is closing

Themes	Current status per the GST report (Sep 2023)	Selected future measures (non-exhaustive)
Mitigation	• **Emissions expected to be 24GT higher** than required in 2030 • **Energy system could account** for **74% of total global mitigation**	• **Prioritize renewables** by reducing coal reliance, optimization of power infrastructure, and equitable fossil fuel phase-outs • **Set net zero deforestation targets** and policies • **Deploy system transformations** in industry, transport and cities
Adaptation	• Climate change is **intensifying global inequalities** • Only **60 out of 194 parties submitted reports** on adaptation	• **Enhance local adaptation** (e.g., local predictions, resilience tools) • **Foster transparent reporting**
Finance	• **$83bn mobilized (out of $100bn initially planned)** for developing countries • **Climate finance** flow reached $803bn in 2020 versus $892bn were invested in fossil fuels	• **Engage private sector** to finance developing countries' climate actions • **Encourage IFIs[1] to shift financial flows** towards low-carbon solutions and investments
Cooperation & Knowledge Transfer	• **Capacity limitations present barriers** for climate action • **Insufficient pledges for actions** by non-Party stakeholders • **Uneven global adoption** of climate technologies	• Leverage global expertise and foster cooperation to support **development of climate technologies, capability building and adaptation efforts**

1. International Financial Institutions

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Recent events have reminded the world that other objectives must be address in parallel to emissions reduction

Amid an energy crisis, Germany turns to the world's dirtiest fossil fuel

"…with Russia cutting natural gas deliveries to Europe, and with no quick options to replace that energy, Germany is warily turning to its most reliable — and environmentally polluting — fossil fuel."

NPR, Sept 2022

Households across the U.K. are about to experience an 80% jump in energy costs

"The latest price cap — the maximum amount that gas suppliers can charge customers — will take effect Oct. 1, just as the cold months set in.

NPR, Aug 2022

Russia's invasion of Ukraine exposure E.U.'s energy vulnerabilities

"E.U. sees adequate winter energy, but seeks longer-term independence. The [EU's] energy commissioner said the Russian invasion of Ukraine had exposed vulnerabilities in European energy supplies."

NY Times, Feb 2022

U.S., Europe Tussle Over Frenzy of Clean-Energy Subsidies

"Multinational companies are racing to invest billions of dollars in the U.S. to capture generous clean-energy incentives…sparking a move by some to come up with their own green subsidies."

Wall Street Journal, Jan 2023

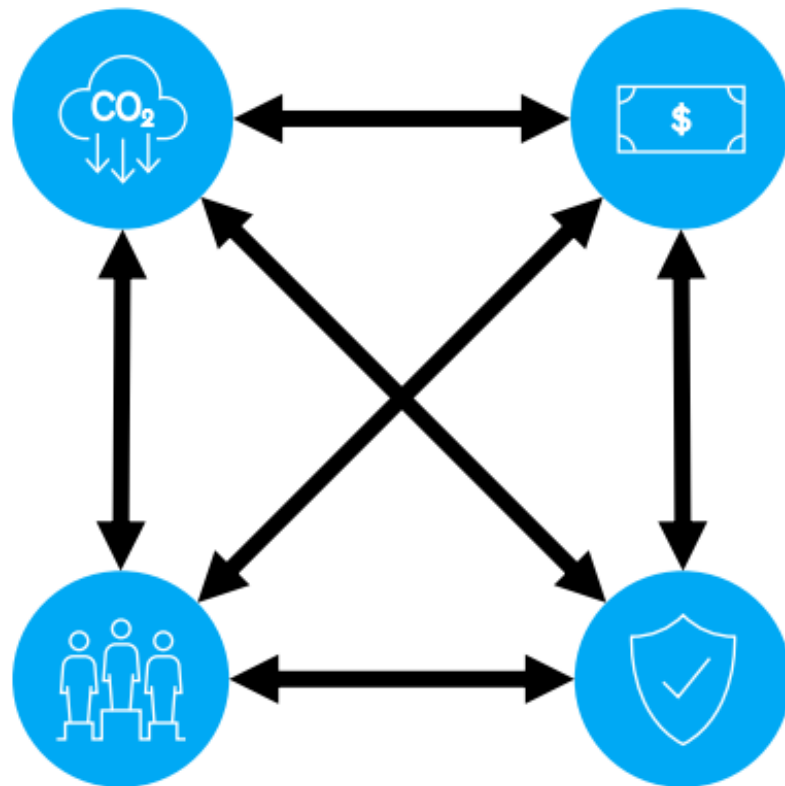**T**ransition   **A**ffordability   **S**ecurity   **C**ompetitiveness

We need to address the "quadrilemma" to create an affordable, secure, and competitive path to net-zero

Transition

Reducing greenhouse gas emissions to net-zero and managing physical risk

Affordability

Ensuring affordable energy, materials and food access across countries and income levels

Competitiveness

Enabling countries to compete and benefit from economic opportunities, while also mitigating potential risks of changing competitive dynamics

Security

Ensuring that energy, materials and food is supplied from secure sources, and supply will reliably meet demand, even in the event of system changes

McKinsey & Company

A poorly executed transition could create tensions with affordability, security and competitiveness

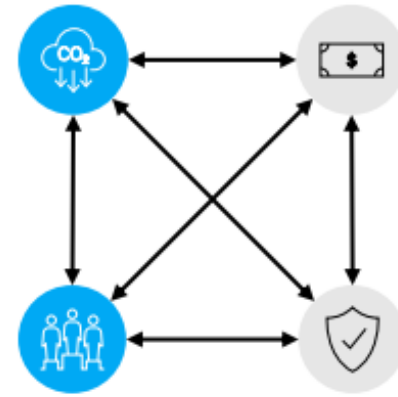**Energy and material prices could rise** due to a disorderly phase out of fossils or shortages of key material

Societal commitments would rise to support spending that is not yet cost competitive
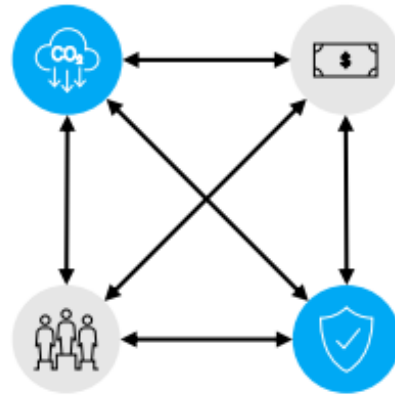
Increasing dependence on new materials and new **integration challenges** could disrupt access to key inputs

Countries are driving a range of policies and compete for market share of growing climate technologies

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McKinsey

What a Lighthouse is: What makes a Advanced Lighthouse

What makes an Advanced Lighthouse?

Impact achieved
Step-change in **innovation (operating model, product, service, business model)** considering level of advancement of industry and company

Integrated use cases
Multiple integrated 4IR use cases deployed at scale

Enablers
Best-practice on enablers such as a clear 4IR[1] strategy, workforce engagement, capability-building and agile use case development

Technology platforms
Scalable **4IR technology platforms** on which multiple 4IR technologies are deployed

Additional criteria to be designated a Sustainability Lighthouse

Intent
Sustainability impact targeted as **part of 4IR[1] journey**

Impact
Multiple environmental categories with **step-change improvements**

Scale
Sustainability impact across **multiple 4IR[1] use cases deployed**

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1. Fourth Industrial Revolution

153 Lighthouses are leading the way in deploying Industry 4.0 – some of them with sustainability angel

Americas   EMEA   Asia

Sector				Total
Advanced industries	7	17	59	**83**
Consumer Packaged Goods		8	17	**28**
	3			
Process Industries		8	11	**21**
	2			
Pharmaceuticals & Medical products		10	7	**20**
	3			
Warehousing & Logistics				**1**

Alibaba.com   Henkel
DANONE
Mondelēz International   P&G
TSINGTAO 青岛啤酒
Coca-Cola   Unilever

6 LATAM Lighthouses

GROUPE RENAULT
Curitiba, BR

MODEC
Rio de Janeiro, BR

Henkel
Toluca MX

flex ● ●
Sorocaba, BR

Unilever
Indaiatuba, BR
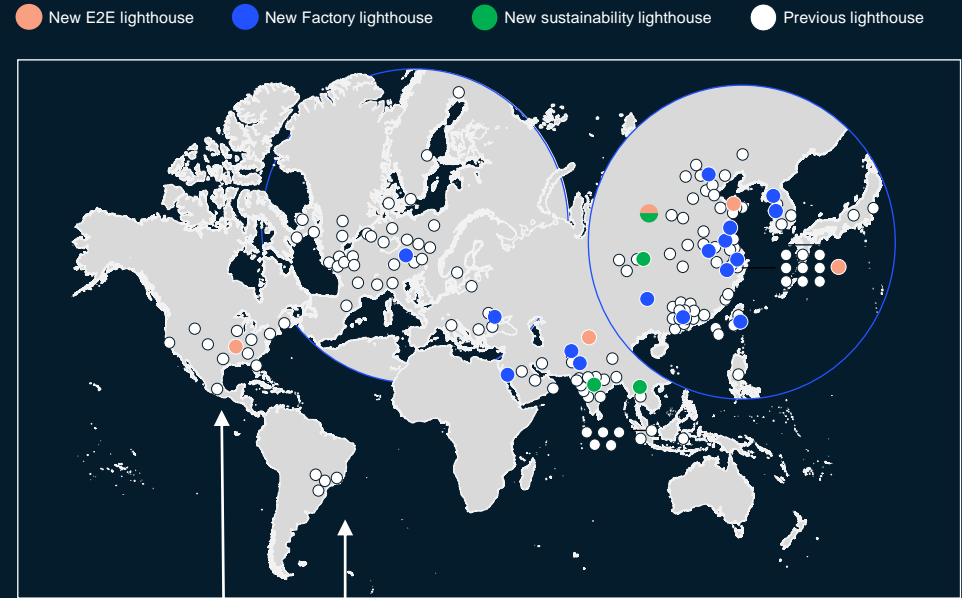
To date, 153 lighthouses from different industry sectors have been identified and all have joined a unique cross-company learning journey to share insights and experiences, and incubate new potential partnerships

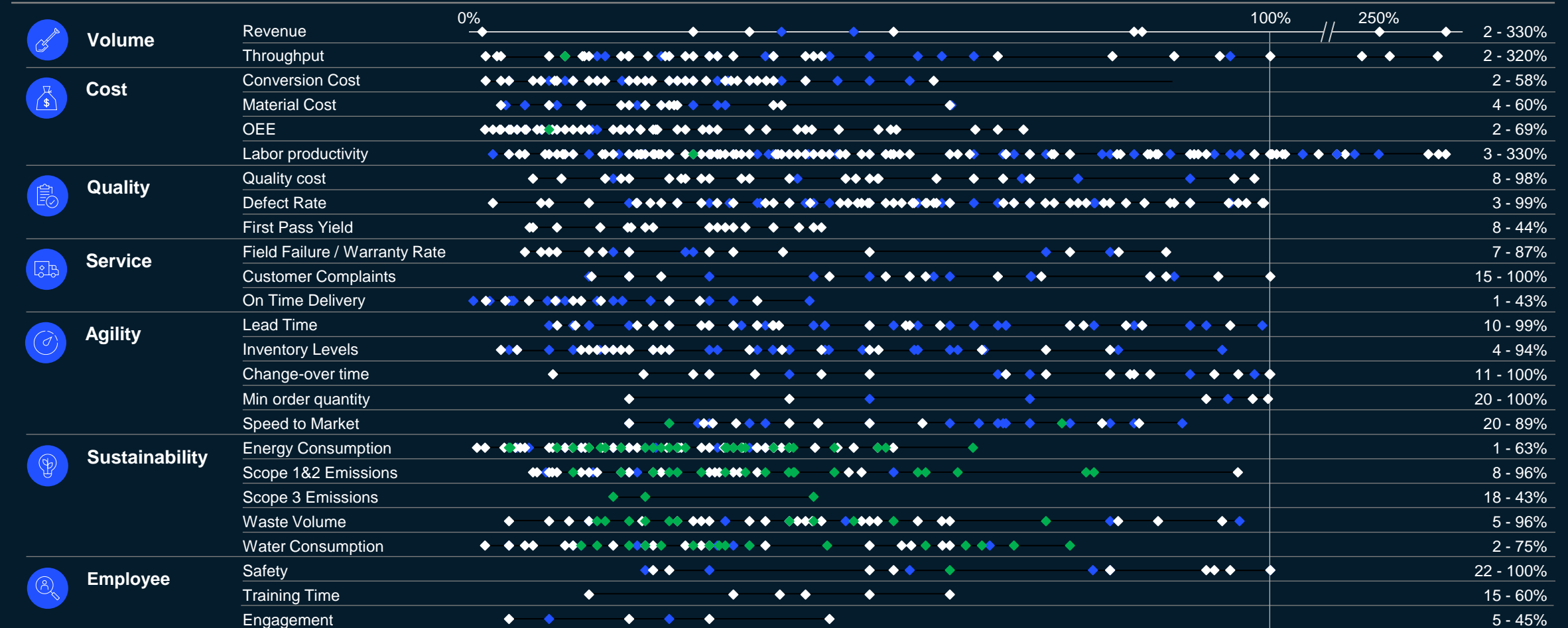3 sustainability LH – J&J, Schneider Electric, Western Digital

Lighthouses' digital journey reveal impact across operational performance indicators and environmental sustainability

Key types of lighthouses: ◆ E2E ◆ Factory ◆ Sustainability

KPI improvements

Impact range observed

Category	KPI	Range
Volume	Revenue	2 - 330%
	Throughput	2 - 320%
Cost	Conversion Cost	2 - 58%
	Material Cost	4 - 60%
	OEE	2 - 69%
	Labor productivity	3 - 330%
Quality	Quality cost	8 - 98%
	Defect Rate	3 - 99%
	First Pass Yield	8 - 44%
Service	Field Failure / Warranty Rate	7 - 87%
	Customer Complaints	15 - 100%
	On Time Delivery	1 - 43%
Agility	Lead Time	10 - 99%
	Inventory Levels	4 - 94%
	Change-over time	11 - 100%
	Min order quantity	20 - 100%
	Speed to Market	20 - 89%
Sustainability	Energy Consumption	1 - 63%
	Scope 1&2 Emissions	8 - 96%
	Scope 3 Emissions	18 - 43%
	Waste Volume	5 - 96%
	Water Consumption	2 - 75%
Employee	Safety	22 - 100%
	Training Time	15 - 60%
	Engagement	5 - 45%

The Lighthouses drive responsible impact through eco-efficiency and workforce engagement

Overview of components of responsible 4IR

Environment
Taking care our planet and surrounding environment

- ⚡ Energy
- 💧 Water
- 🗑 Waste
- ☁ Green house Gas
- ♻ Circular Economy

Sustainability

Responsible

Social
Building up stronger workforce and community

- Human capital development
- Voice of the worker
- Health and safety
- Labor standards

Workforce Engagement

Governance
Setting a set of practices, controls, and procedures to govern, make decisions and meet stakeholders needs

- Ownership
- Accountability
- Business ethics
- Governance structure

McKinsey & Company   19

Lighthouses reporting sustainability improvement also show productivity increase

KPIs improvements	Impact range observed[1]
	● 🍃 Sustainability ◆ 📈 Productivity

Sustainability:
- Energy efficiency
- GHG emissions
- Waste reduction
- Water consumption reduction

Productivity:
- Factory output increase
- Inventory reduction
- OEE increase
- Operating cost reduction
- Product cost reduction
- Productivity increase
- Quality cost reduction

X-axis: 0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100% 110% 140% 150% 400%

1. Each dot represents a single lighthouse that recorded this impact

Eco-efficiency in lighthouse use cases

The room for **synergy between technology, productivity and sustainability goals** across different industries is evident in lighthouse use cases across all industries

Success stories of **eco-efficiency** can be found in the use of **digital twin, artificial intelligence and IoT technologies** in production

These **eco-efficiency success stories** support the **disproval of the traditional perspective** that sustainability comes at the cost of productivity

The presence of **eco-efficiency impact cases across the performance spectrum** also reinforces that no matter the scale of the use case, **there is room for sustainability impact in most digital transformations**

# The three new Sustainability Lighthouses show step change in environmental sustainability

Site	Change story	Top 2 use cases	Impact	
Western Digital Penang, Malaysia	Western Digital achieved a reduction in energy by 41%, water consumption by 45% and material waste by 16% through a vertically integrated smart factory. 4IR technologies, such as IOT sensors, digital twin modeling, analytics powered plant management system and lights out automation with machine learning increased their sustainability impacts, while the site grew 43% (CAGR) in the last 4 years.	Smart energy usage optimization via real time IIOT applications	↓ **39.9%**	GHG (Scope 2)
		Lights-out automation with digital twin capacity optimization for sustainability	↓ **45.6%**	Energy usage in production assembly
Johnson & Johnson Janssen Cork, Ireland	Janssen Sciences Ireland has been long supporting regional initiatives for sustainability improvement and now enabling the corporate 2030 Pledge of carbon neutrality. Through 4IR enabled real time release, adaptive process control and other sustainability efforts, the site has optimized its processes and reduced carbon emissions per kg of product by 56%, while site footprint was expanded by 34% to meet the growing business needs.	Digital twin of sustainability	↓ **32.0%**	CO2 avoidance
		IIoT real time sensor based data aggregation for energy, emissions, waste, and water management	↓ **43.0%**	Material Waste
Schneider Electric Le Vaudreuil, France	Schneider Electric Le Vaudreuil has implemented IIoT sensors connected to digital platforms unlocking data to optimize energy management (25%), reduce material waste (17%) and minimize CO2 emissions (25%) with the objective to be Net Zero Carbon by 2025 without offset and ahead of global Schneider Electric pledge. The smart factory is equipped with a zero reject water recycling station connected to cloud analytics and monitored by AI model to predict process drifts & leading globally to 64% water reduction	Sustainability optimization powered by advanced digital solutions	↓ **27.0%**	Energy used for compressed air
		Artificial Intelligence-powered process control	↓ **22.0%**	Sludge waste

1. Active Pharmaceutical Ingredient

Western Digital achieved a major sustainability impact through 4IR while business grew 40%+

To become more **sustainable** with 40%+ CAGR business growth, Western Digital in Penang, Malaysia **implemented** a wide range of **Fourth Industrial Revolution technology solutions**, such as IIOT platform, Machine Learning, etc., to optimize energy and water consumption and reduce GHG emission and waste.

Smart energy usage optimization through real time IIOT applications

An intelligent, multi-variable model based self-regulating plant management system, connected to 1000+ IIoT sensors, 500+ equipment and 15 utility systems
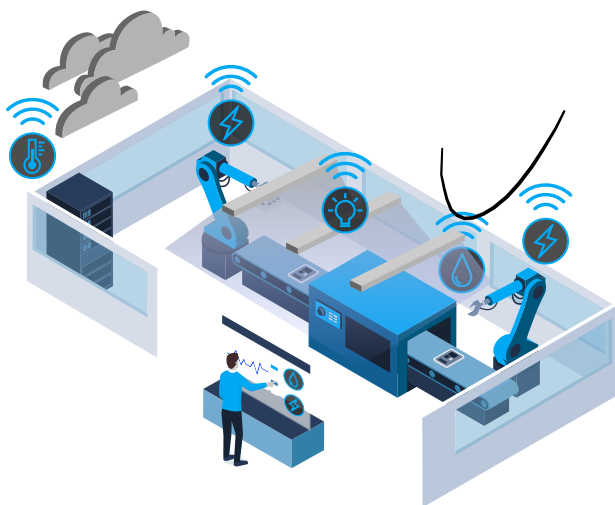
Lights-out automation with digital twin capacity optimization

Implemented lights-out operations through automation coupled with intelligent remote production Command Center and Digital Twin optimizing capacity for high-mix, high-volume production
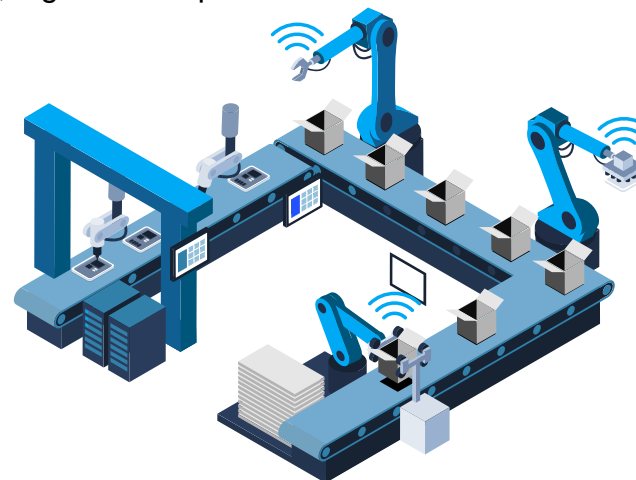
Impact & Achievements[1]

41%
Energy consumption reduction

41%
Scope 2 **GHG** emission reduction
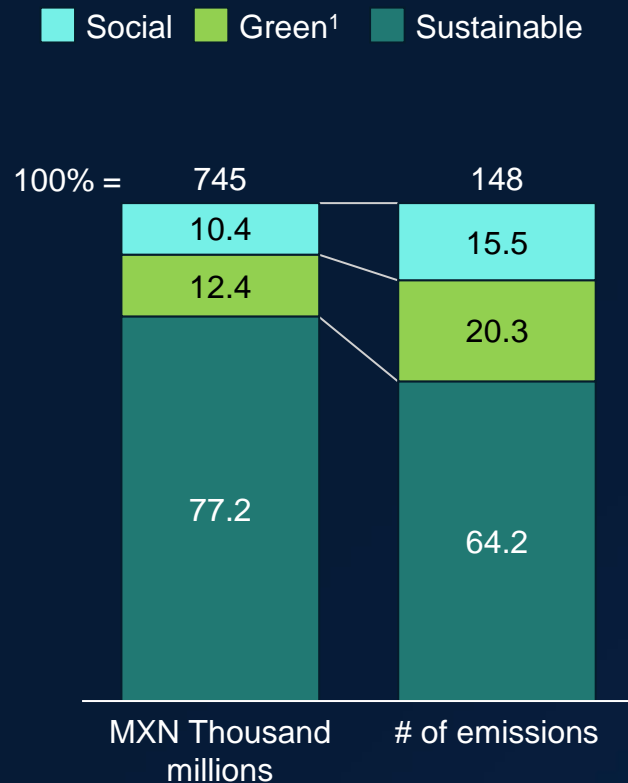
45%
Water consumption optimization

16%
Material **waste** reduction

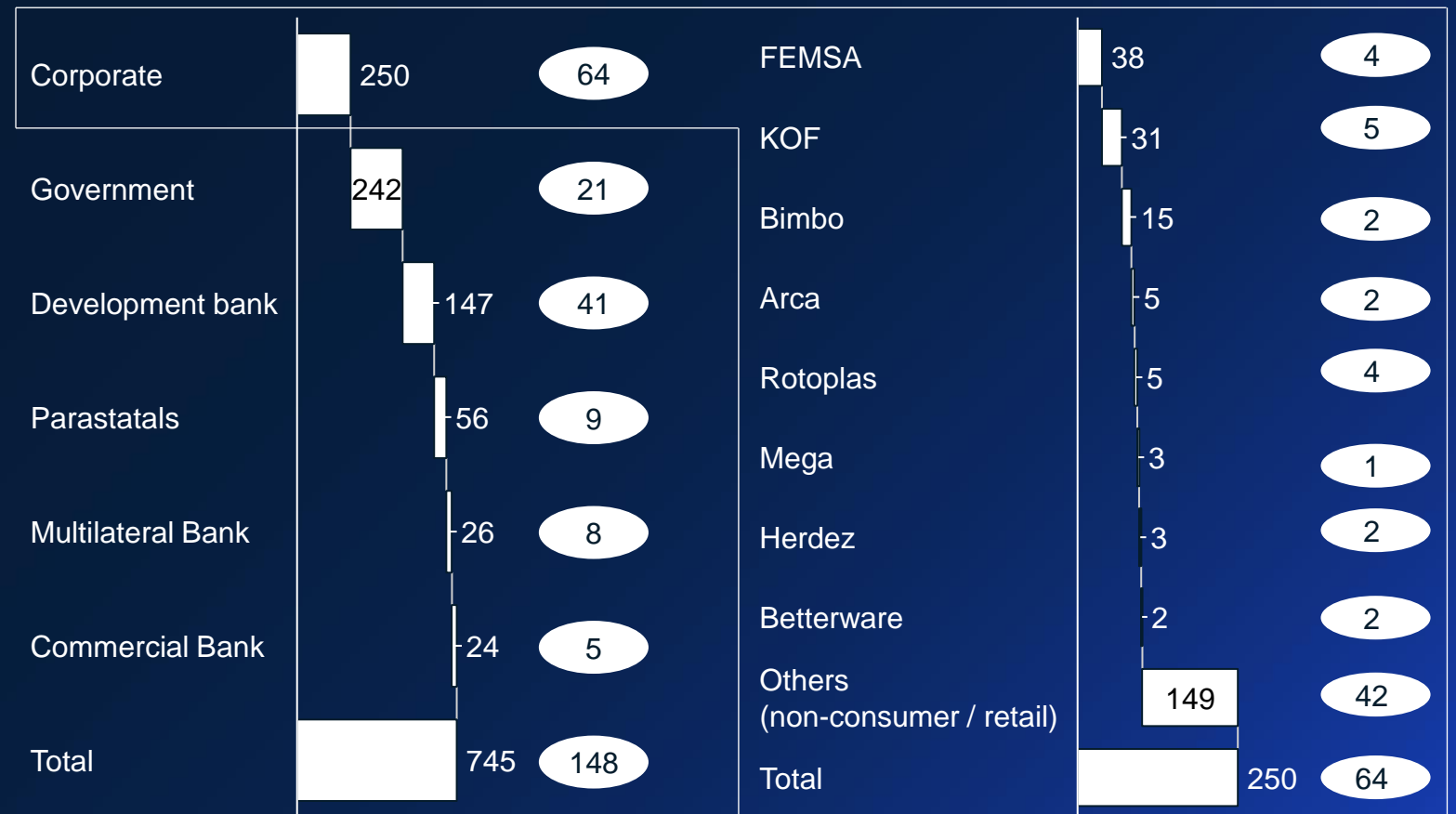1. All the impact and achievements numbers are normalized to volume

In Mexico there has been 148 sustainable, green, and social bonds issued with a total value of ~$148 K million MXN

Number and value of sustainable, green, and social bonds issued in Mexico

Breakdown of bonds issued by type of player and detail for consumer goods / retail companies

Legend: ■ Social ■ Green[1] ■ Sustainable

100% =	745	148
Social	10.4	15.5
Green	12.4	20.3
Sustainable	77.2	64.2

MXN Thousand millions | # of emissions

Type of player	MXN	#
Corporate	250	64
Government	242	21
Development bank	147	41
Parastatals	56	9
Multilateral Bank	26	8
Commercial Bank	24	5
Total	745	148

Company	MXN	#
FEMSA	38	4
KOF	31	5
Bimbo	15	2
Arca	5	2
Rotoplas	5	4
Mega	3	1
Herdez	3	2
Betterware	2	2
Others (non-consumer / retail)	149	42
Total	250	64

1. Including green and blue bonds

Source: Consejo Consultivo de Finanzas Verdes

Across CPGs, there is a wide variation in the targets that are tied to the sustainable, green, and social bonds

Examples of environmental targets tied to bonds

Preliminary

	Scope 1 emissions reduction target	Scope 2 emissions reduction target	Scope 3 emissions reduction target	Water consumption	Other targets
BIMBO	✓ 50% reduction (from 2019 to 2030)	✓ 100% renewable energy (from 2019 to 2025)	✓ From 2019: 12.5% reduction by 2025, 17.5% by 2027, and 28% reduction by 2030	✓ Treated water utilization of 96% by 2023, 98% by 2024, 100% by 2025	✗
Coca-Cola FEMSA	✗ Has a 50% scope 1 and 2 reduction target from 2015 to 2030 not linked to bond	✓ 100% renewable energy (from 2020 to 2030)	✗ Has a 20% scope 3 reduction target from 2015 to 2030 not linked to bond	✓ From 2020 reduce liters of water per liter produce by 9% in 2024, 15% in 2026, ~20% by 2030	✓ Use 50% of recycled resin by 2030 (vs. 29% in 2020)
ARCA CONTINENTAL	✗	✓ >60% renewable energy (from 2021 to 2026)	✗	✓ From 2021 reduce liters of water per liter produce by ~4% in 2026	✓ Use >30% of recycled resin by 2026 (vs. 28% in 2021)
GRUPO HERDEZ	✗	✗	✗	✓ Reduction of M3 consumed per ton vs 2018 of 20% 2024, and 23.8% by 2028	✗
FEMSA	✗	✓ 65% renewable energy by 2025 and 85% by 2030 (vs. 22% in 2017)	✗	✗	✓ Increase % of waste diverted from landfills to 65% by 2025 and to 100% by 2030 (vs. 52% in 2019)

Source: Company web sites; team analysis