



CLUSTIV

Business & Technologies Growth opportunities – Energy Segment

Clustiv Team

July 2023



VALUES



Business, Technology & Innovation



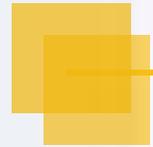
Excellent governance with organizational care & Eco-social friendliness

MISSION

To help world to be a carbon neutral place

VISION

“ Providing best solutions for clean and renewable energy to impact society and environment“



WHY



- ⊗ Evidence shows that our planet has been getting hotter, with global average temperatures now 1.2°C higher than in the pre-industrial era¹.
- ⊗ 1.2°C doesn't sound like much, but the reality is that we're already feeling the effects of incremental warming, including erratic weather patterns – such as **heatwaves, floods and severe storms** – loss of polar ice, acidification of our oceans and rising sea levels.
- ⊗ Global temperatures are on track to increase by as much as 2.7°C by 2100* based on current policies worldwide, which could **render parts of the planet uninhabitable**.

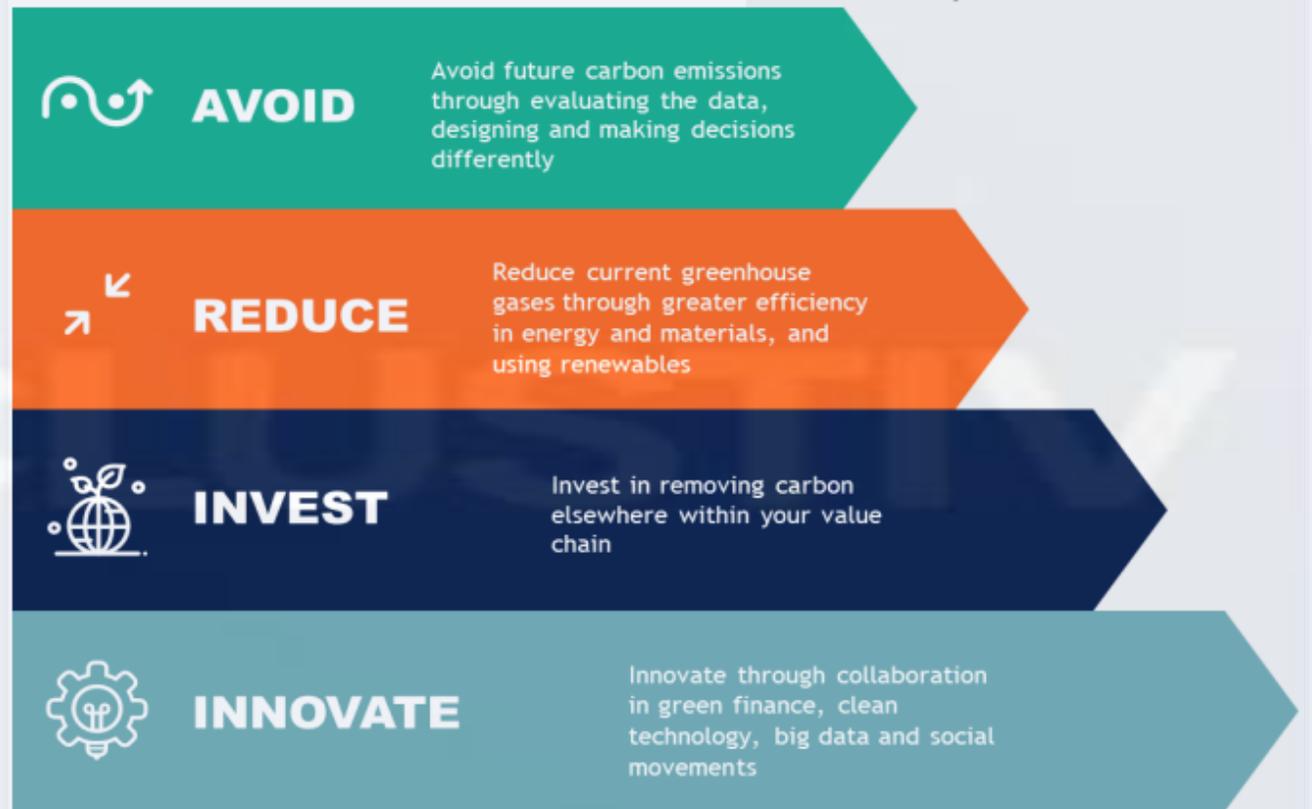
¹United Nations: Climate Change

HOW

Key components to building towards Net Zero:

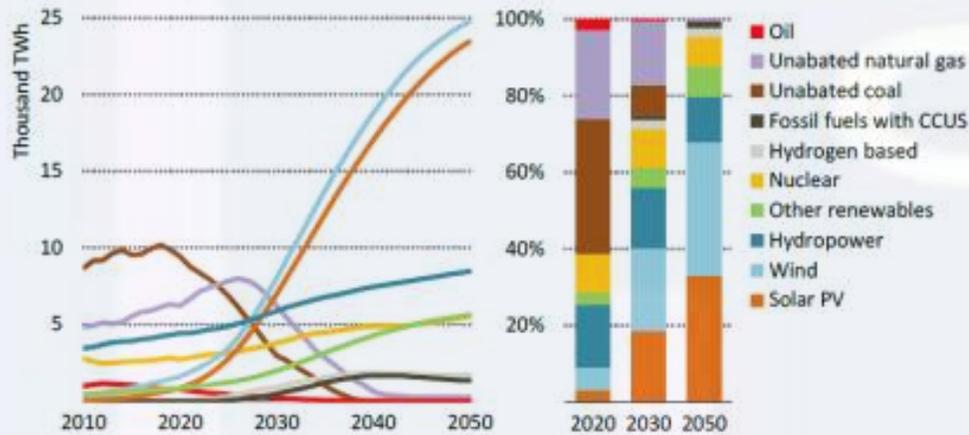
- Better design
- More informed decision-making
- Circularity of materials
- Smarter built environment and transportation
- Utilization digital tool and talent pool
- Low carbon supply chains

Strategic Framework



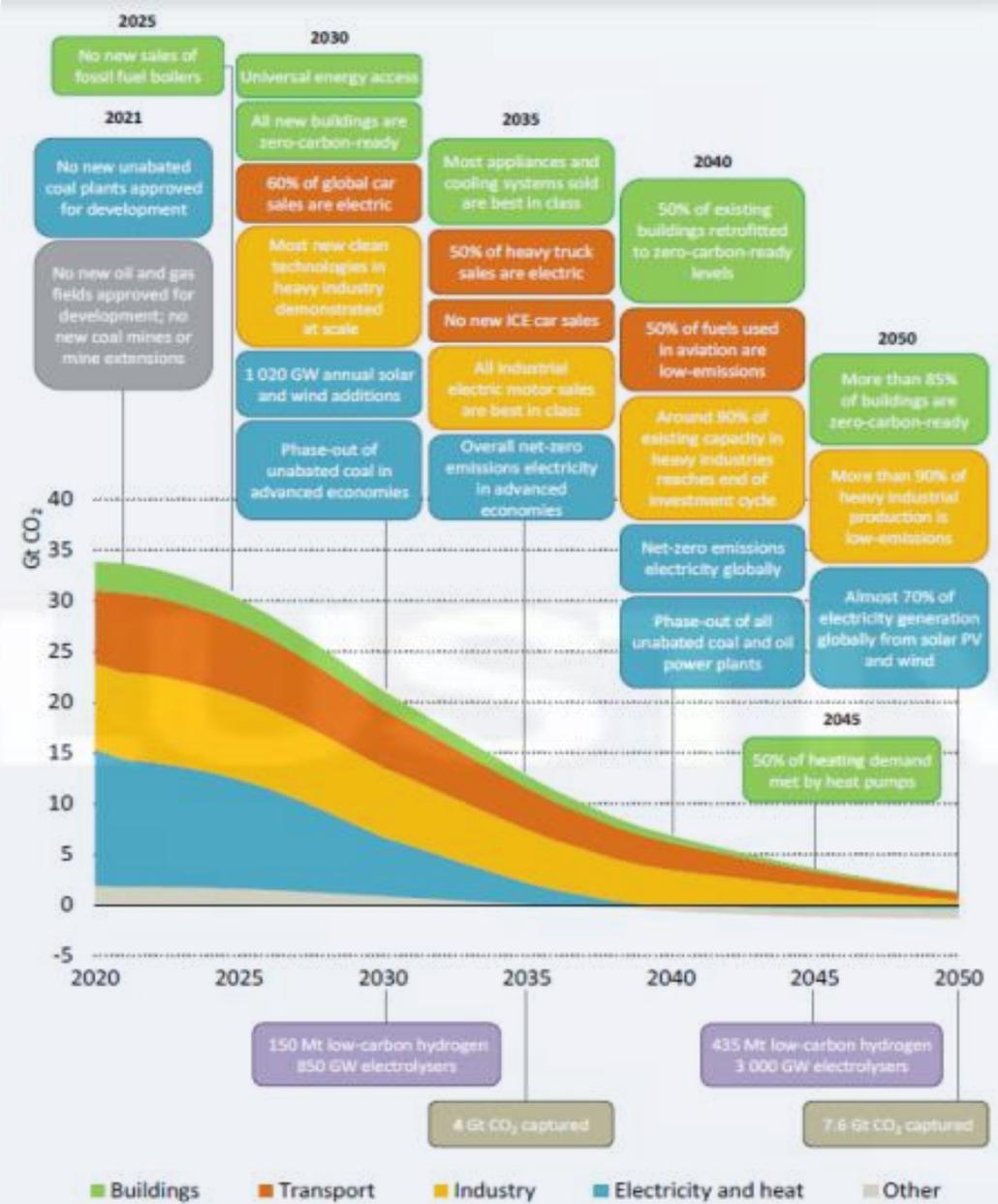
WHAT

Global electricity generation by source in the NZE



IEA. All rights reserved.

Solar and wind power race ahead, raising the share of renewables in total generation from 29% in 2020 to nearly 90% in 2050, complemented by nuclear, hydrogen and CCUS



*<https://www.wbcsd.org/>

“ The global renewable energy market is expected to continue its upward growth over the next years by CAGR 9% where market will reach over 2 trillion U.S. dollars by 2030.”

Renewable energy market size worldwide in 2021, with a forecast for 2022 to 2030 (in billion U.S. dollars)



Drivers: Environmental concerns regarding fossil fuels, rapid urbanization, and economic growth in emerging regions are all major factors that are contributing to the projected market growth.

*Statista 2023

“The global renewable energy market is **fragmented**. The market players compete based on **price, customized services, innovative products**, and ease of integration with current systems.”

Key purchase criteria



Major companies **acquire** smaller players to increase their market presence. Vendors may reduce their product prices due to intense competition, which could **negatively affect their profit margins**. Therefore, to succeed in this competitive environment, vendors should **differentiate their product offerings** through a clear and **unique value proposition** during the forecast period.

Beyond 2030

“Renewable energy is growing rapidly especially in Asia Pacific. According to forecasts, Asia Pacific is expected to invest the most money into renewable energy and driving growth within the sector. Onshore wind had the higher market size in 2020 but the emergence of lithium batteries will drive the renewable energy sector.”

Market size for Renewable Technology By Region



Beyond 2030

“Clean Energy growth would be approx. **3x fold** in this decade. The battery segment is the highest market size for clean energy technologies followed by onshore energy with same fold increase in market size”



Market size for Renewable Technology



Source: iea.org

Market Sectors



SOLAR ENERGY



ONSHORE WIND



OFFSHORE WIND



BATTERIES



FUEL CELLS

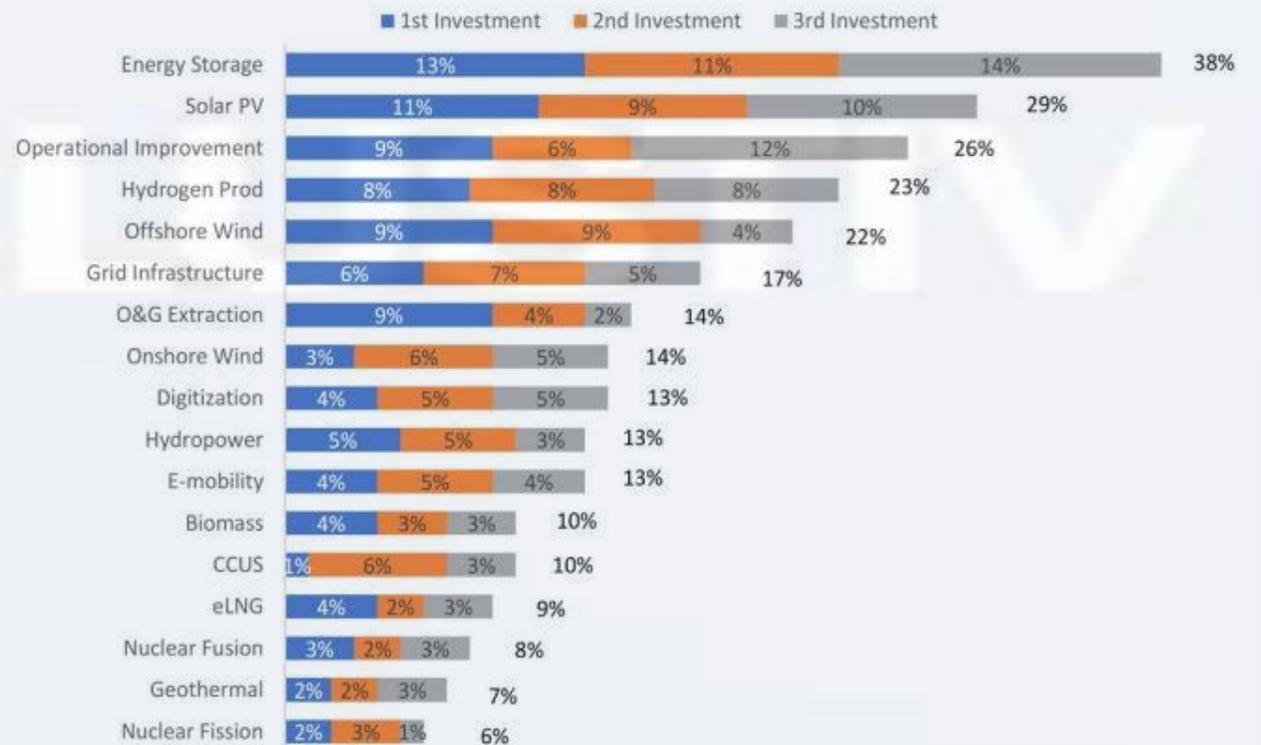
Majority of respondents (**57%**) are at different stages of developing their energy transition strategies but not progressed to the implementation phase.

STAGES OF ENERGY TRANSITION STRATEGY IMPLEMENTATION



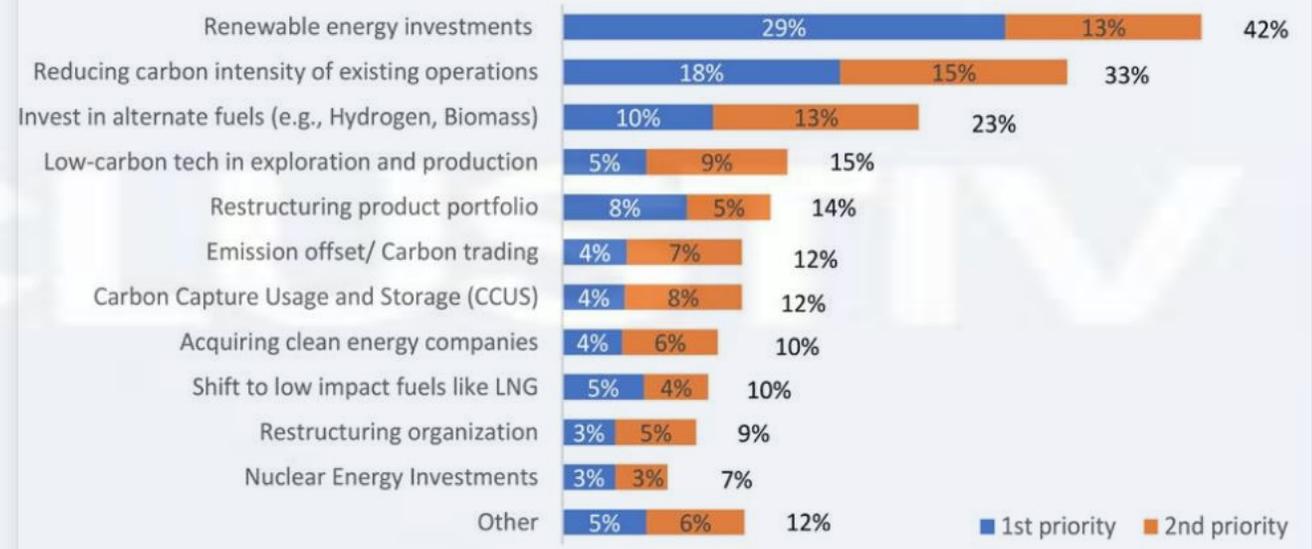
- **Energy storage** to be the leading investment in next 3 years
- There is more investment focus on **off-shore wind sector (22%)** as compared to on-shore (14%) in next 3 years.

TOP THREE AREAS OF INVESTMENT IN THE NEXT 3 YEARS



RENEWABLE ENERGY INVESTMENT AND REDUCING CARBON INTENSITY OF EXISTING OPERATIONS TOP PRIORITIES FOR ENERGY TRANSITION

TOP TWO ENERGY TRANSITION PRIORITIES FOR ORGANIZATIONS

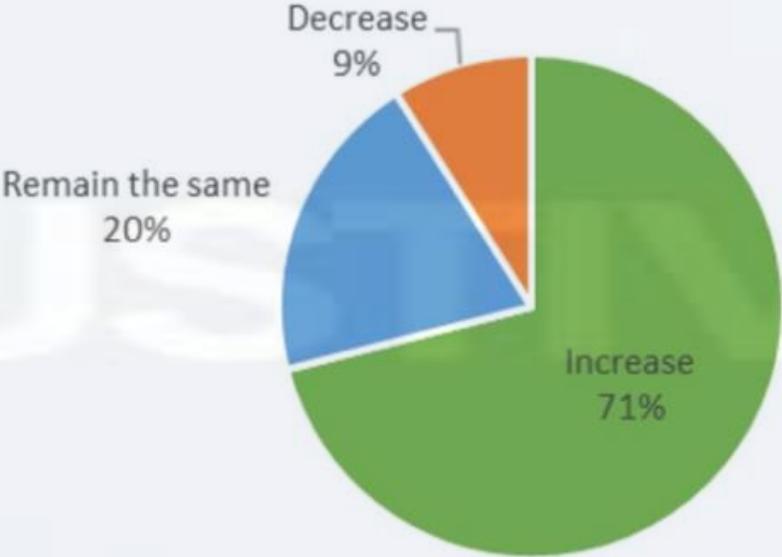


*Reuter



TWO THIRD PEOPLE EXPECT THE SHARE OF NON-FOSSIL CLEAN ENERGY REVENUES TO INCREASE IN NEXT 3 YEARS

SHARE OF NON-FOSSIL/CLEAN ENERGY REVENUES IN THE NEXT 3 YEARS



EASE OF STRATEGY IMPLEMENTATION AND LEGISLATION AND POLICY BOTTLENECKS MAJOR REASON FOR NOT IMPLEMENTING ET STRATEGIES UNIFORMLY ACROSS REGIONS OF OPERATION

REASONS FOR NOT IMPLEMENTING ET STRATEGY UNIFORMLY ACROSS ALL REGIONS OF OPERATION



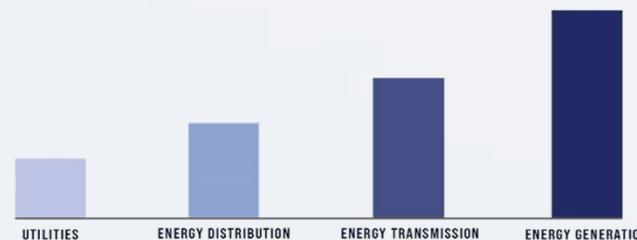
Managing Bidirectional Energy Flows

- Motivation to cut electricity prices and energy wastage.
- Growth reason is transformation or digitalization of energy sector.
- Fastest growing region North America and Asia is dominating market.
- Opportunities in Growing adoption of **micro-grids, smart home, cloud & Edge-based solutions.**
- Company believes that **20% wastage** can be reduced innovative **digitalization.**

Artificial Intelligence (AI) Growth in Renewable Energy



Growth By End Use



Technologies

- Edge
- Cloud
- IoT
- AI

Why the industry is vulnerable

- ◇ Several characteristics of the energy sector heighten the risk and impact of cyberthreats against utilities.
- ◇ Ransomware attack disabled one of the infrastructure facility estimated **\$18.2** million in damages

Electric utilities can be affected by cyberattacks across the whole value chain.

Potential threat impacts



Generation

Disruption of service and ransomware attacks against power plants and clean-energy generators

Root cause: Legacy generation systems and clean-energy infrastructure designed without security in mind



Transmission

Large-scale disruption of power to customers through remotely disconnecting services

Root cause: Physical security weaknesses allow access to grid control systems



Distribution

Disruption of substations that leads to regional loss of service and disruption of service to customers

Root cause: Distributed power systems and limited security built into SCADA¹ systems



Network

Theft of customer information, fraud, and disruption of services

Root cause: Large attack surface of IoT devices, including smart meters and electric vehicles

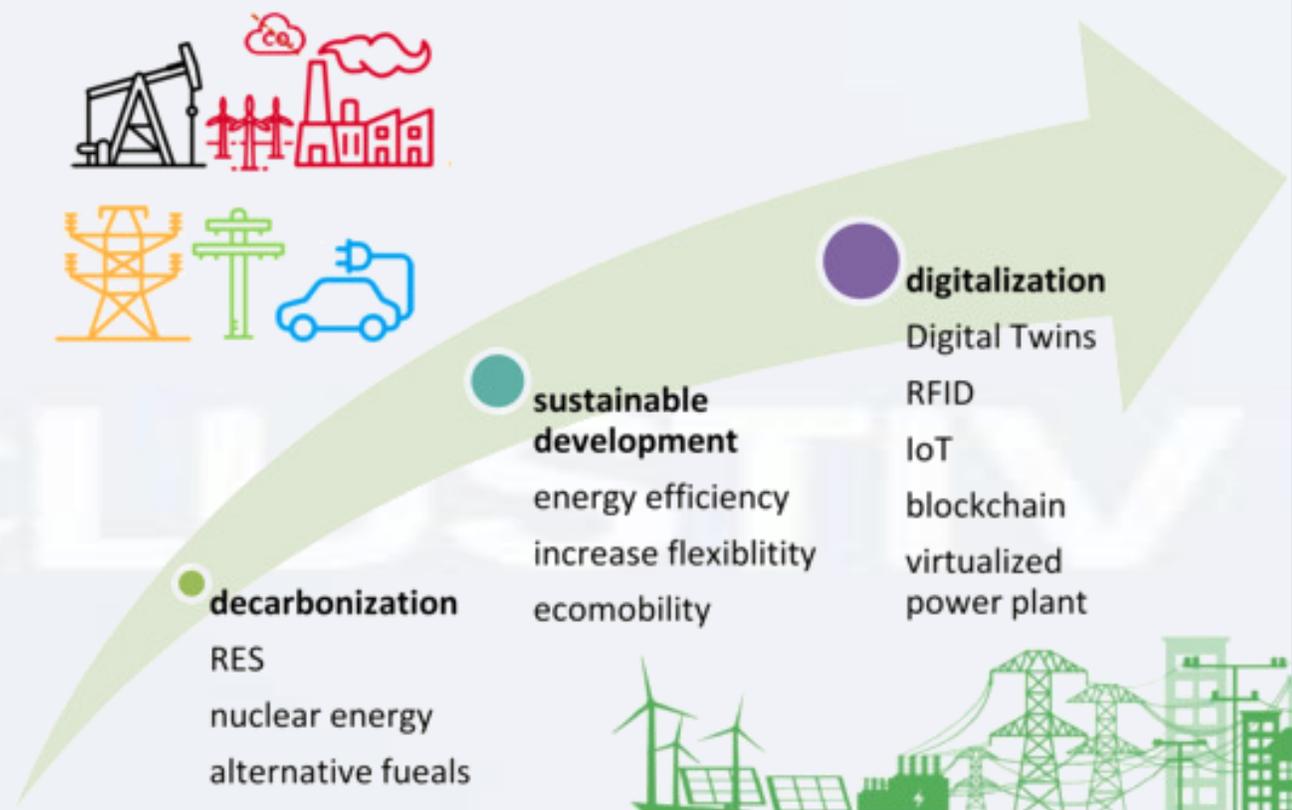
¹Supervisory control and data acquisition.

McKinsey
& Company

Enterprises

The ability to adapt to the requirements of the legal, ecological, or technological environment allows enterprises to implement new solutions operating on the market in a short time. If the enterprise can react in advance (the so-called anticipatory adaptation) and use various flexible processes and integration with high-tech systems, it has the potential to create a digital enterprise. Such an enterprise would be based on virtual reality and integrated solutions from the world of automation and robotization.

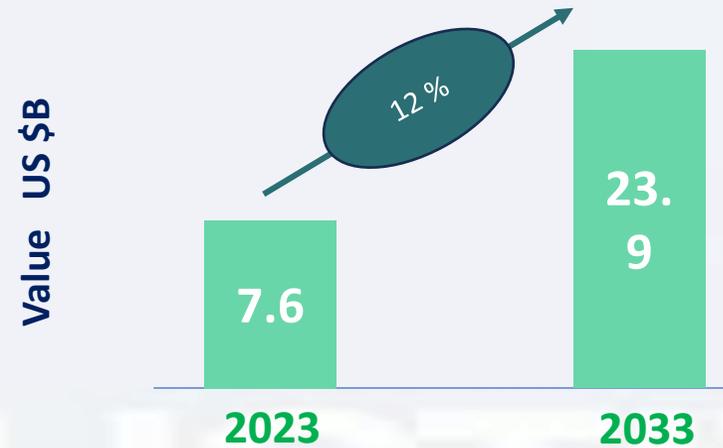
Direction of energy sector development



Global Smart Grid Cyber Security Market

Drivers of Energy Security Market

- ◇ Adoption of smart grid technologies
- ◇ Growing Need for Secure and Reliable Power Delivery Systems
- ◇ Complexity of Cyber Threats
- ◇ Government Regulations
- ◇ Investments in smart grid infrastructure
- ◇ Requires range of solutions such as security software, hardware, and services to detect, prevent, and address cyber threats affecting the smart grid.



Leading Market



North America

Major Market



Europe

Main Customers



End-user



Government



Sustainability and Strategy

Corporate & Business
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July 10



Setting the Tone at the Top

- Implementation of SASB Standards may be more likely to succeed when a company views use of the standards as being well-aligned with its strategic objectives.
- Company leadership can facilitate such an approach by signaling its support for embedding the consideration of financially material sustainability factors into the company's strategy, business model, and corporate culture. This includes embedding consideration of financially material sustainability factors into governance, strategy, risk management, and performance management processes.
- Strong leadership buy-in should ensure that the necessary resources are made available to enable robust SASB implementation. In a world of limited resources, clear and consistent leadership support enables the effective execution of the steps in this guidance. The following questions and considerations may help a company assess—and, if necessary, establish—buy-in among the board of directors and executive leadership team.

Questions for Boards of Directors

- Is the company's approach to sustainability well-aligned with its business strategy?
- Have the board and management identified the sustainability issues that are most relevant to the company's long-term financial performance?
- Is the risk committee satisfied that the company's approach to risk management incorporates business-relevant sustainability matters?
- Is the nominating committee satisfied that the board's competencies include sufficient fluency in the sustainability issues most likely to impact the company's financial condition or operating performance?
- Has the company engaged with its investors to better understand their sustainability-related areas of concern and information needs?
- Does the board or its key committees regularly review KPIs tracking the company's performance on financially material sustainability issues? Are these KPI's integrated into executive compensation plans?
- Has the audit committee reviewed the effectiveness of the company's internal control over sustainability information gathering and reporting to ensure it is comfortable with the quality and reliability of the data?

Questions for Executive Leadership Team

- Is the company's approach to sustainability well-aligned with its business strategy?
- Have the board and management identified the sustainability issues that are most relevant to the company's long-term financial performance?
- Has the company identified key audiences for sustainability information, and has it developed a communication strategy to meet the needs of those audiences?
- Has the company allocated sufficient resources to ensure its sustainability reporting objectives are met?
- Who owns sustainability disclosure at the company? Is that person's work integrated with other relevant business functions?
- How does the company currently disclose financially material sustainability information to investors?
- Are business-critical sustainability matters reflected in the company's risk inventory and sufficiently assessed by the company's risk management team? Are they considered in setting the company's risk appetite?
- Does senior management regularly review KPIs tracking the company's performance on financially material sustainability issues?
- Has the company conducted a thorough review of sustainability disclosure among peer companies?
- Has the company established appropriate controls and procedures to ensure financially material sustainability information is effectively captured, summarized, and reported?

Do large company board establish formal board mandates sustainability?

Most large companies state that they oversee sustainability at the board level in some way, though only a minority demonstrate robust oversight

FORMAL MANDATE



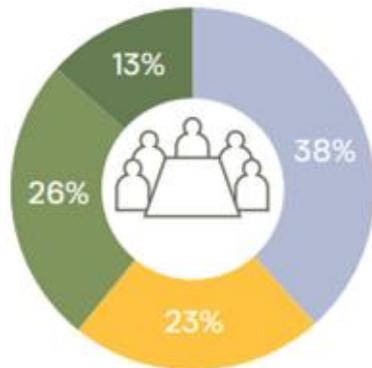
- Responsibility for sustainability issues at the board level
- Review sustainability issues at board meetings

Sixty-two percent of the companies we analyzed state that they have some form of oversight of sustainability at the board level. However, only 13 percent show truly robust oversight practices, meaning there is both a formal board mandate for sustainability (either through a dedicated sustainability committee or through the inclusion of sustainability in another board committee's charter) **and** the board receives regular reports on sustainability from management. This combination of both a formal board mandate with evidence of board-management engagement is important to demonstrate that sustainability oversight exists in more than name only, and is part of board discussions.

On the other hand, 38 percent of companies still have no discernable board practices in place for sustainability oversight.

Percentage of companies with responsibility for sustainability at the board level

- No responsibility at board level, or no disclosure of this information
- No committee with formal responsibility, but the board receives regular reports on sustainability
- Yes, has a dedicated committee for sustainability oversight or sustainability is included in the charter of another committee
- Yes, has a dedicated committee for sustainability oversight or sustainability is included in the charter of another committee, and the board receives regular management reports on sustainability



Questions you can ask management to understand where your company stands on ESG and how to chart a path forward:

Questions you can ask management to understand where your company stands on ESG and how to chart a path forward:



1. **Are ESG risks included in our ERM program?** What are our key ESG risks that the business faces? How are we addressing them? How do they evolve under different time horizons?



2. **Is ESG being baked into our long-term strategy?** How are we looking at ESG to innovate and effectively add value or cost savings to our business? Are ESG risks dealt with separately, or are they fully included in our overall strategy? Are we keeping an eye on what our competitors are doing?



3. **When investors want to talk about our long-term sustainable value, should we ask the sustainability or corporate responsibility team to step in?** If our corporate responsibility leader or sustainability officer has oversight of our ESG efforts, is that team working closely with finance, investor relations and risk management? Are members of those other teams fully versed on our ESG efforts? Or is it a siloed effort?



4. **Do we have the information we need to oversee our ESG strategies and risks?** Is the board getting the right metrics to monitor these risks effectively?



5. **Have we considered using a framework to assess/report ESG metrics at our company?** Have we taken a look at the SASB framework, or other available models?



6. **Can we improve the transparency of our ESG disclosures considering investors' expectations?** How can we improve our ESG disclosures and increase trust in this area? How do we benchmark against others?



7. **Are we effectively telling our ESG story to investors?** Have we included the key ESG-related risks and opportunities in our broader shareholder disclosures—rather than simply including them in a separate report? Have we clearly conveyed to investors how ESG is part of our company's strategy? Are directors who are meeting with shareholders prepared to answer those questions?

A company may wish to solicit input on the following:

- Does the investor prefer a specific framework or combination of frameworks?
- Which sustainability topics are most important to the investor? Why?
- What associated performance metrics are most relevant to and useful for the investor's decision making?
- How frequently is the information needed or desired?
- In which reporting channel(s) would the information be most useful?
- Does the investor rely on a third-party ESG ratings agency, and if so, which one?

Engaging with investors to better understand their information needs may be particularly helpful to companies just beginning their sustainability reporting journeys. Many investors have published policy statements, proxy voting guidelines, or other ESG disclosure guidance for their portfolio companies. Such documents are a useful resource for identifying the preferences of your key shareholders.

What board governance practices are most critical to move the needle on sustainability?

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- Identify the person who will lead the SASB implementation effort
- Identify the skills and knowledge needed to produce high-quality disclosure
- Form a cross-functional team, or leverage an existing team
- Review available SASB resources

While corporate boards can affect corporate sustainability performance in a number of ways, this report focuses on the following systems, which have been the focus of investor attention in recent years:



Formal board mandates for sustainability

What we examined: Whether 1) boards embed sustainability oversight at the board committee level through charter incorporation and/or 2) companies disclose whether boards and management discuss sustainability during board meetings.

Why this is important: When sustainability issues are material to a company, making sustainability a formal and explicit board priority within a board committee charter ensures that key issues are discussed systematically and in depth. With risk oversight becoming an increasingly prominent issue for the board,² material sustainability risks must be among the key business risks that boards regularly consider. It is particularly important as such risks can potentially impact a company's profitability, success and sometimes survival.



Board expertise for sustainability

What we examined: If director biographies demonstrate background in or exposure to sustainability issues.

Why this is important: Corporate boards with the relevant skills and experience to oversee sustainability issues will be more effective at identifying and responding to risks and opportunities. The expertise of the board should correspond to the sustainability issues that are relevant to the company.



Executive compensation linked to sustainability

What we examined: If companies disclose linkages between executive compensation and sustainability priorities.

Why this is important: Compensation is one of the most potent levers the board can use to incentivize management to act on sustainability. By aligning executive incentives toward sustainability priorities and goals, boards are able to reward the right behavior and spur performance.

why should boards oversee sustainability?

→ **Sustainability risks affect the world economy.** In 2018, the World Economic Forum’s list of the top 10 global risks impacting countries and industries included extreme weather events, natural disasters and failure of climate-change mitigation and adaptation.

→ **Sustainability is linked to financial performance.** Wall Street research, university studies, market indices and other reports overwhelmingly show that sustainability impacts corporate financial performance. In fact, in most cases, companies that are strong performers on sustainability typically outperform their peers on a range of financial metrics.

→ **Shareholders expect action on sustainability.** The world’s largest institutional investors and pension funds are increasing the pressure on businesses to integrate sustainability into their corporate governance systems. In 2017, shareholders in the U.S. filed far more resolutions about environmental and social issues than in the previous year (430 compared to 360).⁶ In 2018, Larry Fink, chief executive of BlackRock—the world’s biggest institutional investor— issued a landmark letter to CEOs stating that BlackRock expects corporations to manage environmental, social and governance issues and that the role of the board is critical to achieving sustainable growth.

→ **Regulatory pressures require companies to evolve or be left behind.** Global regulators are tackling sustainability challenges by introducing more stringent requirements to address environmental and social issues. For instance, between 1997 and 2017, the number of climate change relevant laws worldwide increased by a factor of 20.8 We are seeing similar trends on regulations covering issues from biodiversity protections to human rights.

→ **Sustainability belongs on the board’s agenda.** A key part of the board’s fiduciary responsibility is the “duty of care” that requires directors to be adequately informed of issues that are material, or relevant, to the business prior to making decisions. Where sustainability is material, boards have a fiduciary duty to act.

Audience Needs

“ Even within a given audience type, variability is likely to exist. For companies seeking to communicate sustainability information to investors, different investors may have unique information needs. For example, investors’ interests often vary by region, sector, and investment strategy. A company is therefore likely to benefit from considering a diversity of perspectives and specific use cases from among its key shareholders. By engaging with these investors to better understand their sustainability-related priorities, a company can more readily determine how to incorporate relevant information into its investor communications. ”

On average, only 40% of directors on ESG committees are ESG conscious. Most of that consciousness derives from board experience or having been actively involved in sustainability strategy or governance.

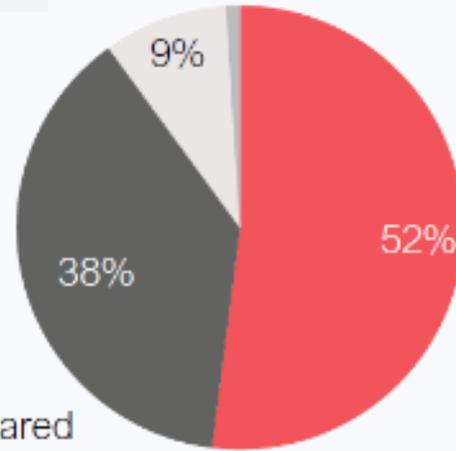
Half of the surveyed boards have a dedicated sustainability, ESG or CSR committee with most of the remaining having sustainability policy as part of another committee.

40%
of directors on relevant committees are ESG conscious



Public Affairs/Policy Committee

Other

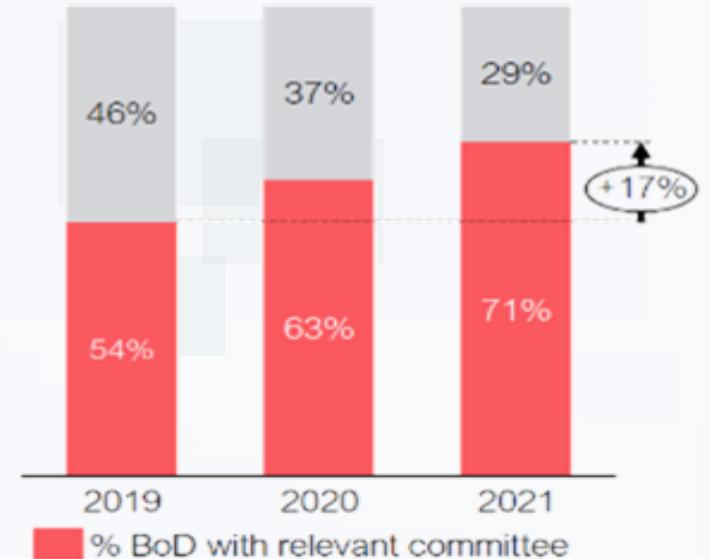
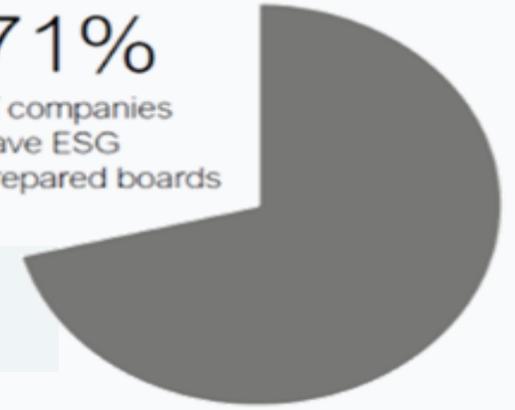


Dedicated Sustainability/ESG Committee

Shared Committees

Board of directors ESG Preparedness

71%
of companies have ESG prepared boards



ESG drivers and diversity in Board

Gender & Director ESG Consciousness

52%

of women on relevant committees are ESG conscious



36%

of men on relevant committees are ESG conscious

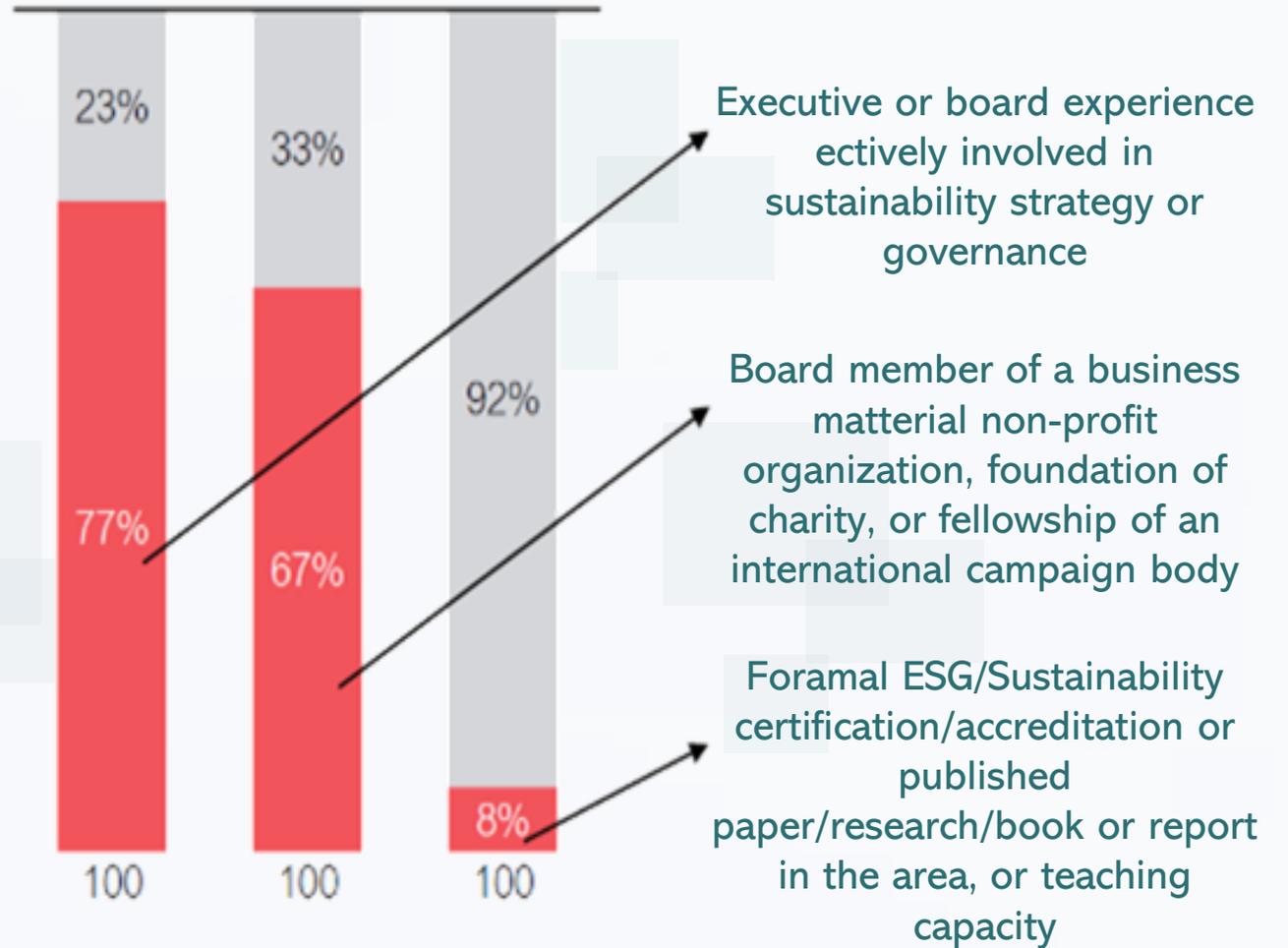


1
Women are driving the board-level conversation on sustainability

2
BoD without sustainability corporate governance (CG) policy are at risk of losing touch with ESG best practice

3
Overall sustainability preparedness and consciousness has increased materially in 2021, however, ESG CG policy too often remains vague and lacklustre

ESG Consciousness Drivers



EU CHIP ACT GAMBIT

Opportunities

Engaged Viable Partnership AREA

Partnership between government, research and industry

Design of the pilot lines

Skilled workers

Intervention in the event of a crisis: defense case - economic crisis

Practicability of order commitments

Stabilization of the supply chains

Relations with third countries - implementation of export licenses

Energy costs

Combined Strategic Objective RECOMMENDATIONS



Direct industry involvement in the EU Semiconductor Board



Adapt the design of the pilot lines to the needs of the industry



Concretely initiate stronger action to combat the shortage of skilled workers. ❖ **276,000 STEM experts/96,000 are IT specialists**



No institutional intervention due to an economic crisis in the semiconductor industry



Adapt order commitments to the production realities of the industry, incentivize crisis funding to re-prioritize production in time of crisis



Establish a new approach to supply chain stabilization - Create a clean division of tasks between the state and the economy. European Commission provides financial incentives for companies to build up strategic contingency reserves and storage capacity, making them less vulnerable to supply chain problems



Defining actions to retain technological supremacy in time of crisis. Only, Intervening in supply chains is the wrong approach.



Tax relief, compensation payments or financial subsidies by the state must be provided for companies in the semiconductor sector with location factor to reach 20% target.

SUSTAINABILITY & STRATEGY



Enterprise risk management (ERM) process fully integrates the assessment and management of climate-related risks into overall risk management. **CSO** & relevant committees would be responsible for strategic climate-related issues, such as the Sustainability Council and the Risk Committee. Strategy head serves as the interface to other central functions and units as well as to processes related to climate risk management. The Sustainability team is responsible for monitoring progress.



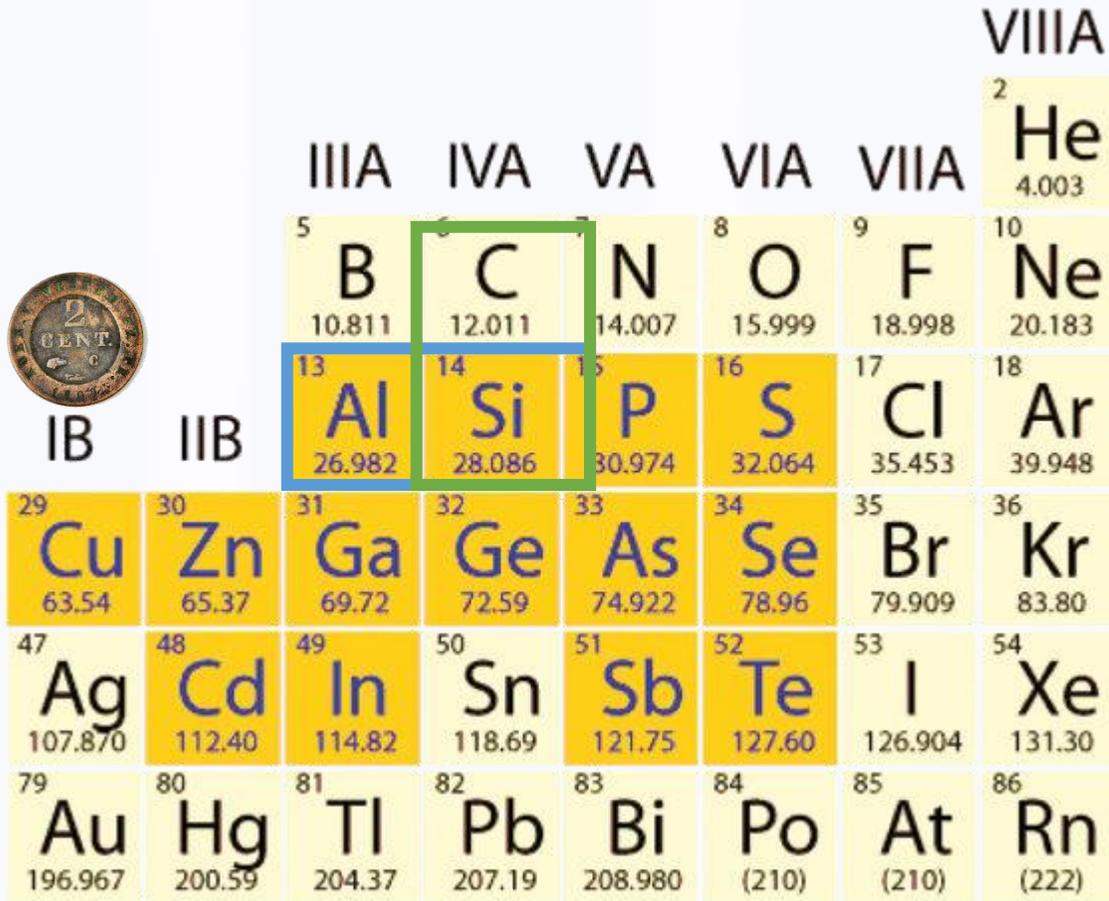
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Semiconductors and Renewables

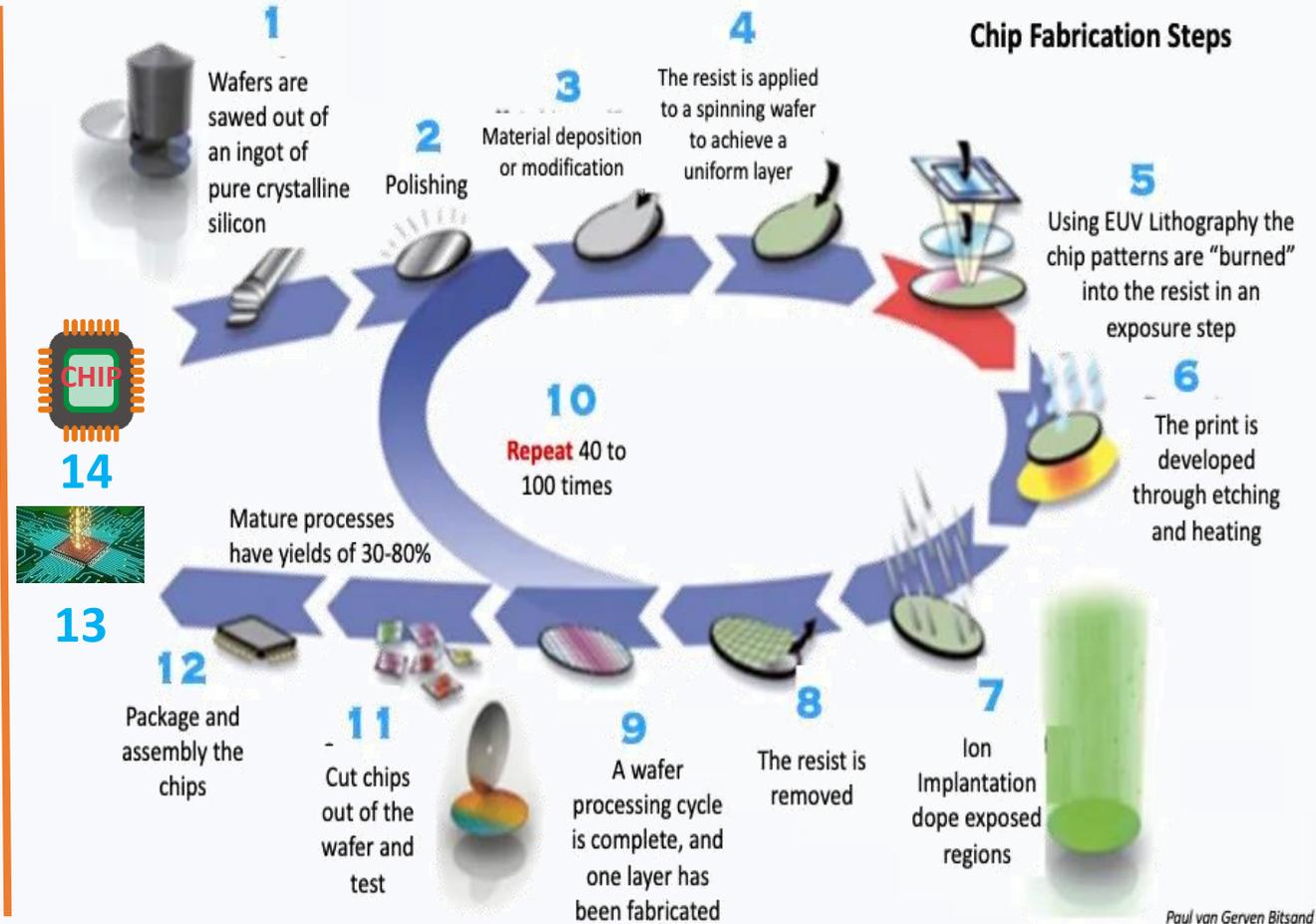
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Semiconductors empower, enable & energize the planet



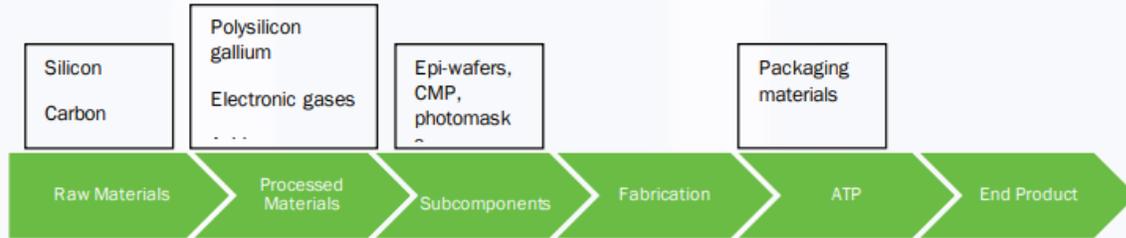
							VIIIA
		IIIA	IVA	VA	VIA	VIIA	2 He 4.003
		5 B 10.811	6 C 12.011	7 N 14.007	8 O 15.999	9 F 18.998	10 Ne 20.183
		13 Al 26.982	14 Si 28.086	15 P 30.974	16 S 32.064	17 Cl 35.453	18 Ar 39.948
IB	IIB						
29 Cu 63.54	30 Zn 65.37	31 Ga 69.72	32 Ge 72.59	33 As 74.922	34 Se 78.96	35 Br 79.909	36 Kr 83.80
47 Ag 107.870	48 Cd 112.40	49 In 114.82	50 Sn 118.69	51 Sb 121.75	52 Te 127.60	53 I 126.904	54 Xe 131.30
79 Au 196.967	80 Hg 200.59	81 Tl 204.37	82 Pb 207.19	83 Bi 208.980	84 Po (210)	85 At (210)	86 Rn (222)



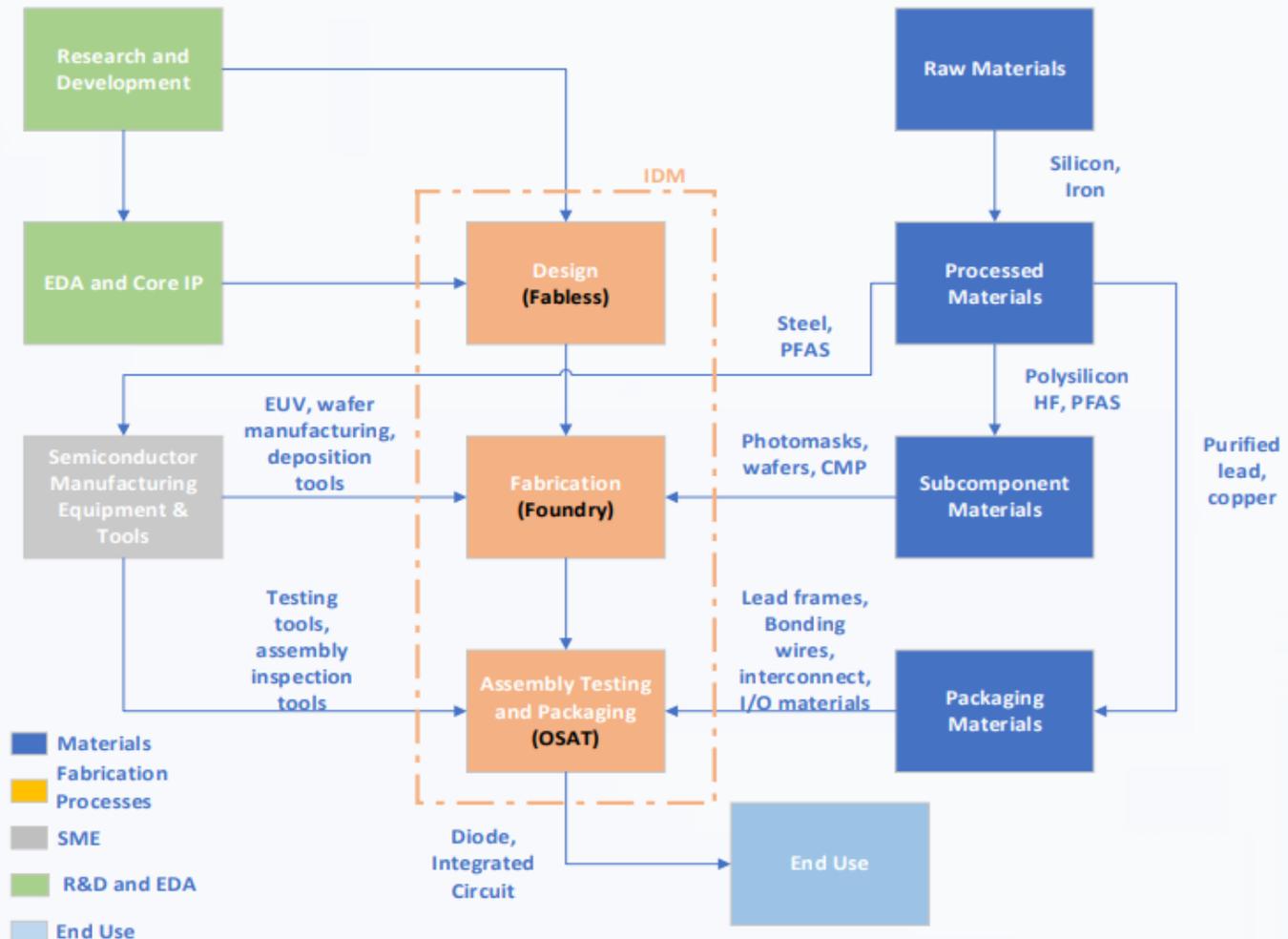
Paul van Gerven Bitsand Chips

Simiconductors Supply Chain

Wide Band Gap Semiconductor Supply Chain



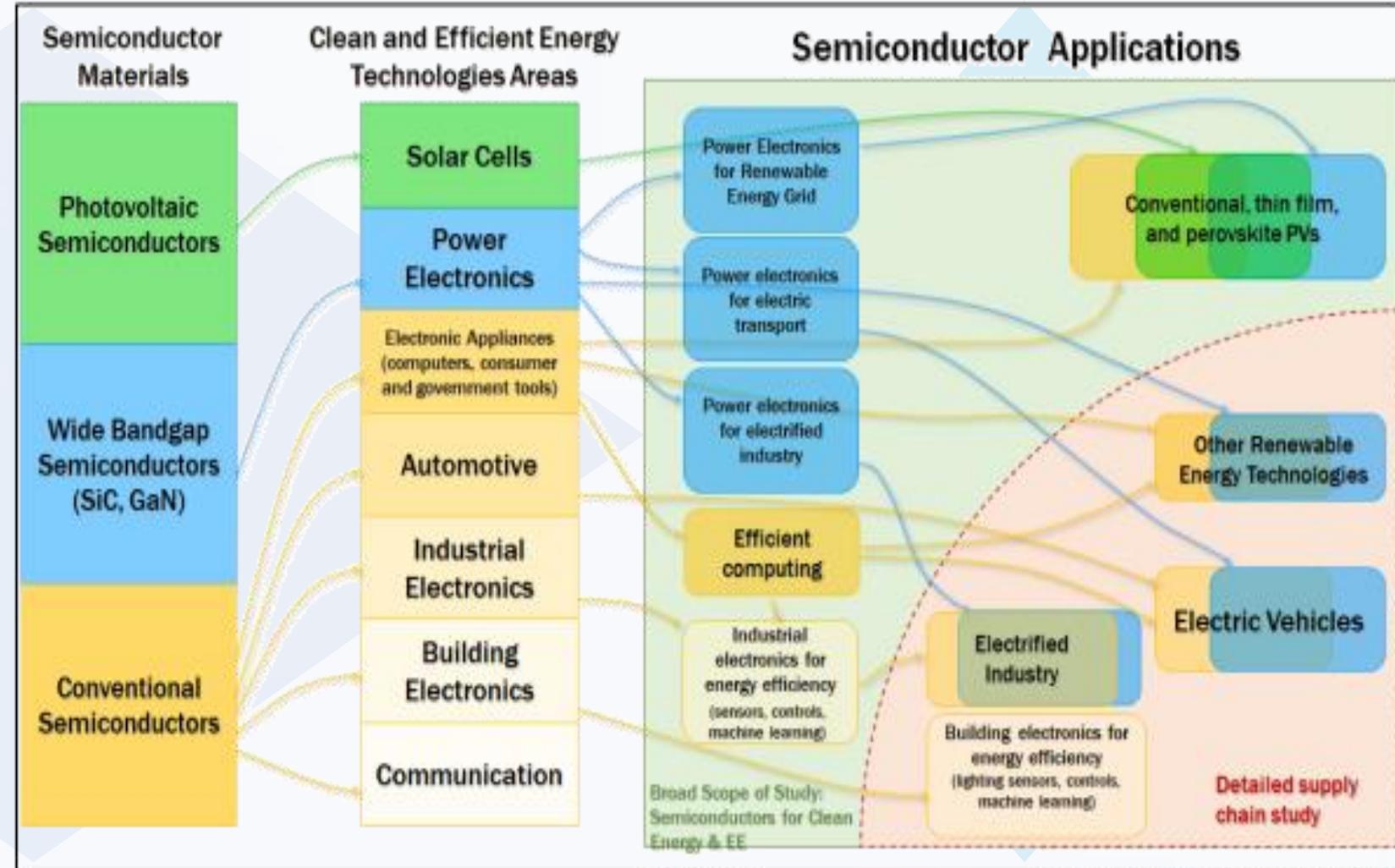
The basic supply chain segments for WBG semiconductor-based power electronics are the same as those for conventional semiconductors. The differences lie in the products and processes within those segments. For example, much of the manufacturing equipment for (older node) conventional semiconductors can be used for WBG power electronics manufacturing. The most significant differences are in the raw materials, subcomponents, end products, and packaging.



*Semiconductor Supply Chain Report

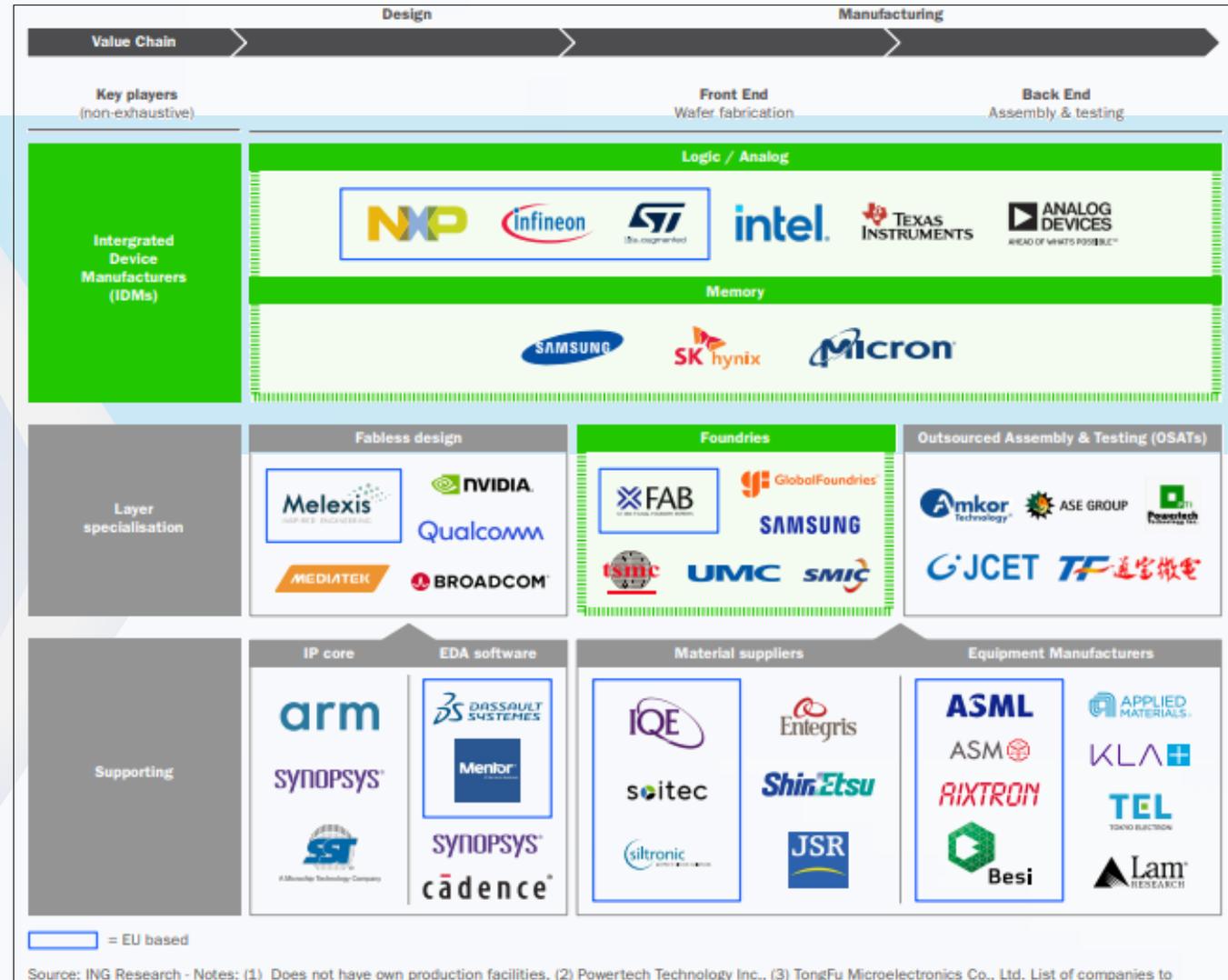
Supply Chain Map

- WBG semiconductors (e.g., SiC and gallium nitride (GaN)) that control, convert, and condition power flow for electric vehicles (EVs), electrified industrial technologies (such as industrial heat pumps), and other renewable energy applications such as wind and solar generators.
- Conventional semiconductors (e.g., silicon-based) that control data flow for energy efficiency and renewable energy applications, including EVs, integrated wireless sensor systems for energy-efficient manufacturing, energy efficiency in buildings, and other renewable energy technologies.



Semiconductor Value Chain

Semiconductor industry design and production value chain, from **front-end wafer fabrication** and **back-end assembly and testing**. Focus is on companies in wafer fabrication, which includes both integrated device manufacturers (IDMs) and foundries.



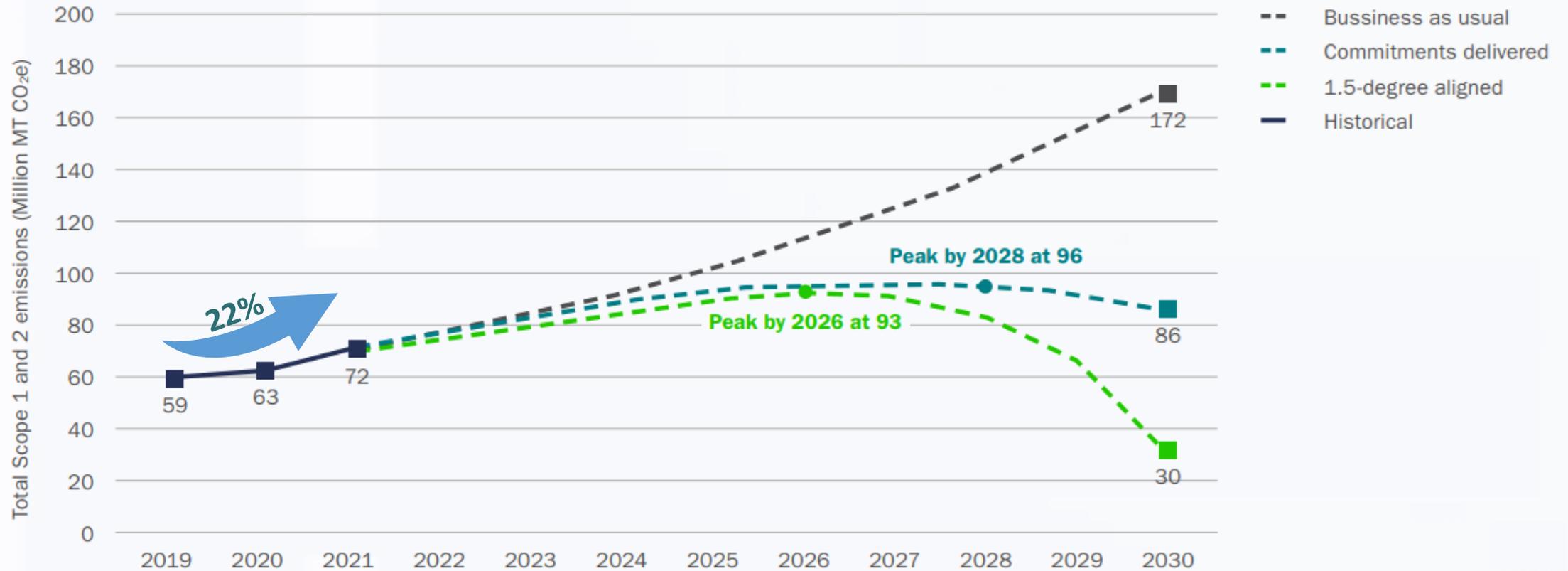
Emissions pathways of the global semiconductor manufacturing sector

Samsung Electronics, TSMC, and SK Hynix collectively emitted **52%** of all emissions.

Companies need to **halve** their emissions by 2030 compared with a 2019 baseline. It needs a significant reduction of **56 million metric tons of CO₂e**. **TSMC, Samsung Electronics and SK Hynix** must reduce another **34 million metric tons of CO₂** on top of their current commitments to meet the **1.5 degrees target**.



Global semiconductor manufacturing sector GHG emissions and projections



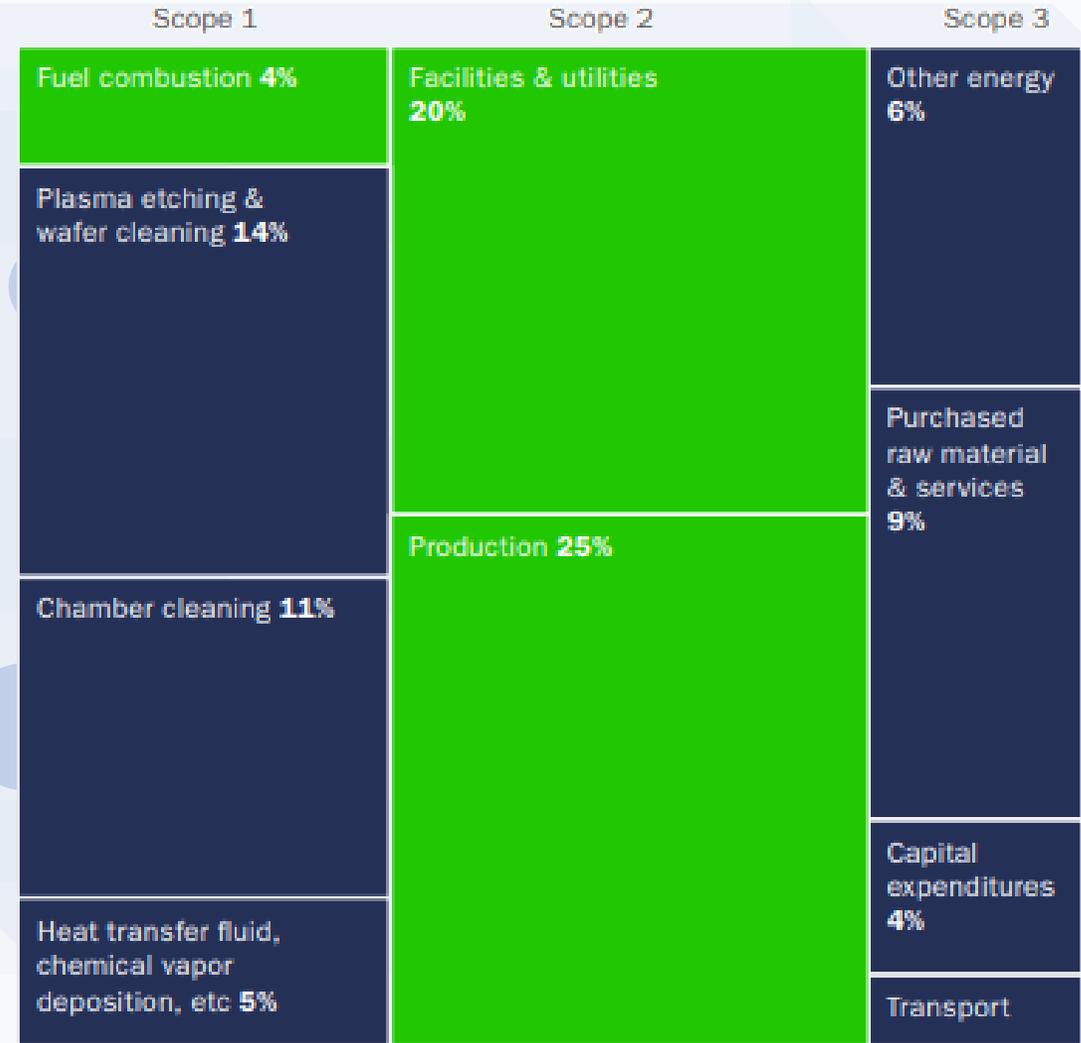
Notes: Data for 2019, 2020, and 2021 are aggregations of actual emissions reported by companies; Data for 2022 and onwards are projections.

Source: Authors' analysis.

Carbon emissions breakdown by source for a typical fab

About 50% of a fab's total emissions can be reduced by transitioning from fossil fuels to **renewable energy** to source electricity

45% of total emissions that come from scope 2 emissions, are indirect emissions from **the generation of purchased energy** and the 4% of total emissions that come from scope 1 stationary combustion



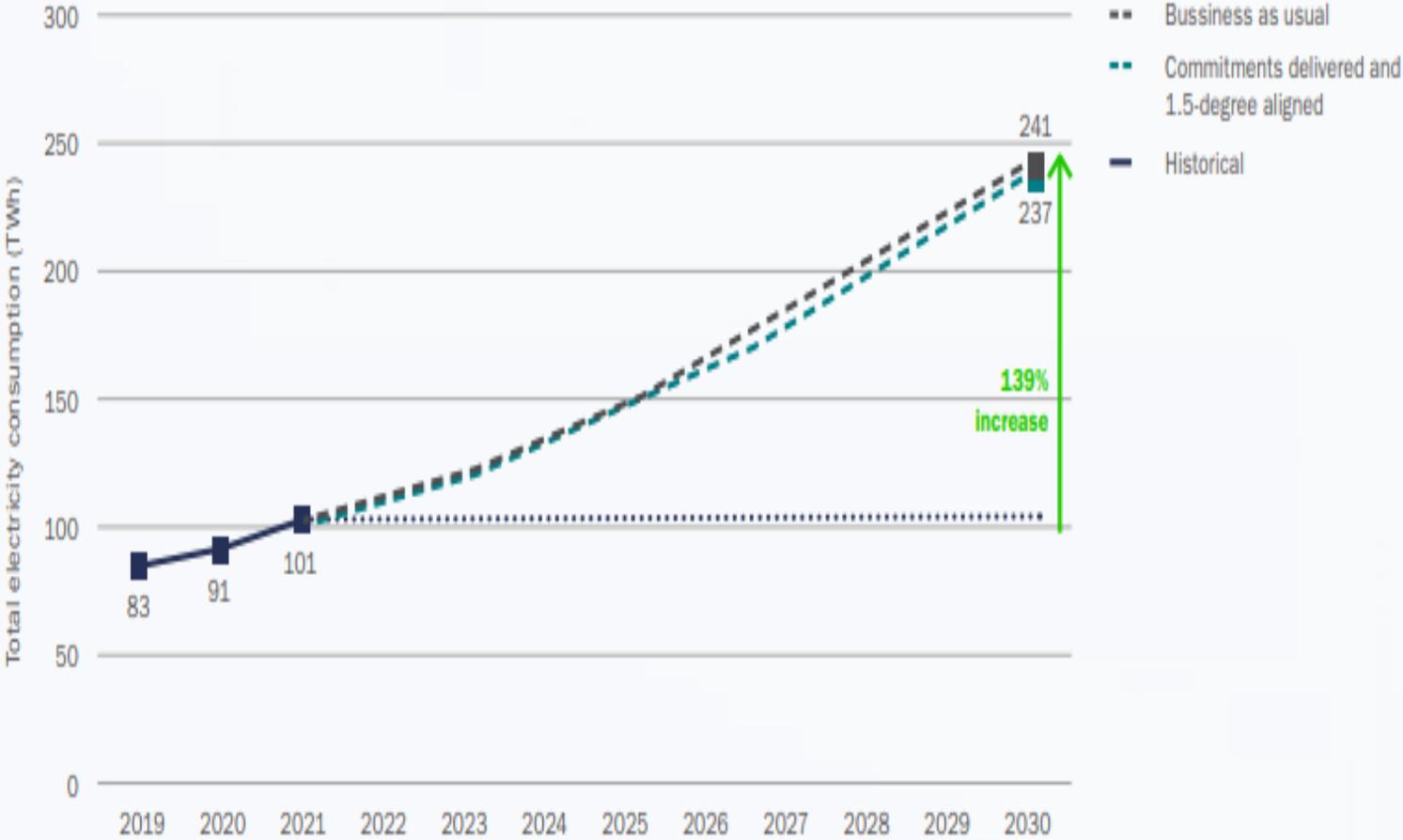
Notes: 1. Green indicates areas where most emissions are CO₂ and can be reduced by switching to renewable energy; 2. Scope 3 downstream are excluded.

Sources: Authors' analysis aggregating data from a) McKinsey 2022, and b) US EPA GHGRP.

Global Semiconductor Manufacturing Sector Electricity Consumption Projections

companies must adopt **100% renewable energy** by 2030

To achieve 100% renewable energy, companies must adopt high impact sourcing methods, such as onsite generation, renewable energy power station investment and PPAs(Power Purchase Agreements) can add additional renewables to the grid to contribute to the overall development of renewable energy



*greenpeace

Two Sides Of The Same Coin



HEAD

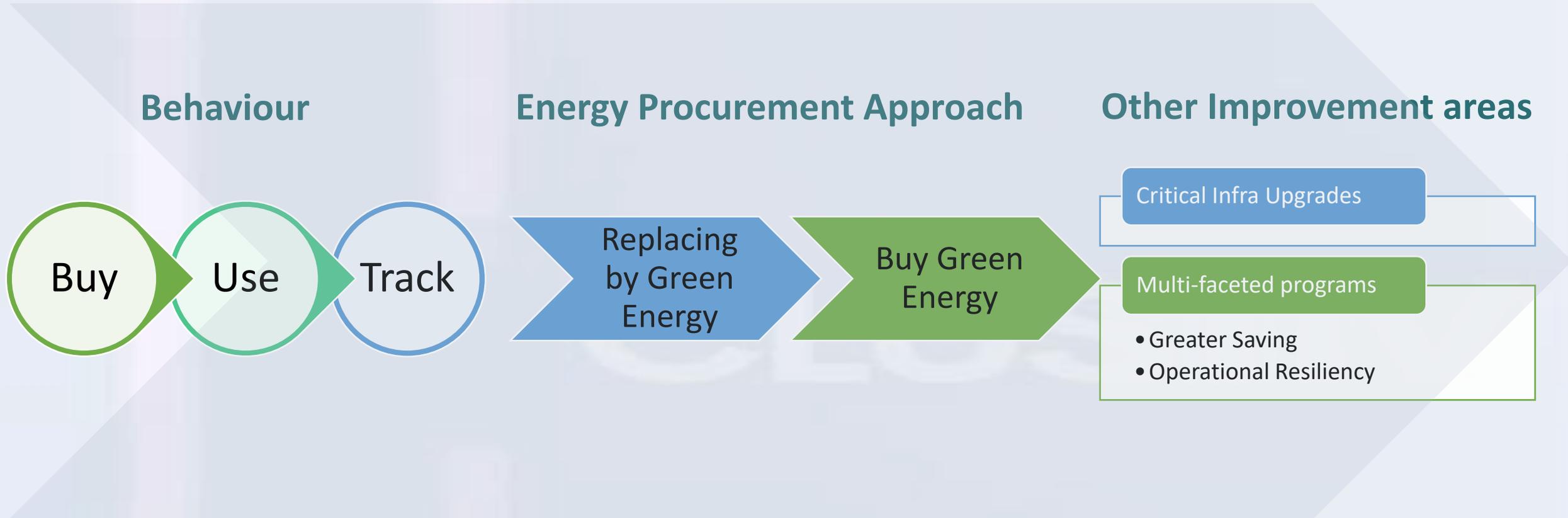
Achieving 100%
renewable electricity
use by specific target
date



TAIL

Achieving net-zero
greenhouse gas
emissions by certain
target date

Scenario/Method -NZE target setting date by Semiconductor Manufacturers



 Fabricating a single 2g chip requires **32kg of water**, **1.6kg of petroleum** and **72g of chemicals** – and billions of chips are produced every year.

Most recent climate commitments announced by companies

By 2030, the global semiconductor manufacturing sector's total scope 1 and scope 2 emissions are projected to reach 172 million metric tons of CO2e under the "business as usual" scenario, 86 million metric tons under the "commitments delivered" scenario and 30 million metric tons under the "consistent with 1.5 degrees" scenario.

Company	Scope 1 commitment	Scope 2 commitment
Analog Devices	Carbon neutral in 2030	Carbon neutral in 2030
Global Foundries	Reduce 25% from 2020 to 2030	No near- or medium-term targets
Infineon	Net zero in 2030 through purchasing renewable energy	Net zero in 2030 through purchasing renewable energy
Intel	10% absolute reduction from 2020 to 2030	10% absolute reduction from 2020 to 2030
Kioxia	No near- or medium-term targets	10% reduction by 2030 from 2020 through energy saving activities
Micron Technology	Net zero in 2050, with 42% reduction by 2030 from 2020;	Net zero in 2050, with 100% renewable energy in US by 2027
NXP	Net zero in 2035, 2027 medium-term goals 35% reduction from 2021	Net zero in 2035, 2027 medium-term goals 35% reduction from 2021
Renesas Electronics	38% reduction by 2030 from 2021	38% reduction by 2030 from 2021
Samsung Electronics	Net zero in 2050 without any near- or medium-term targets	Net zero in 2050, 100% renewable energy in 2027 for facilities outside Korea.
SK Hynix	Net zero in 2050, with 2030 emissions maintained at 2020 level	Net zero in 2050, with 2030 emissions maintained at 2020 level
SMIC	No near- or medium-term targets	No near- or medium-term targets
STMicroelectronics	Net zero in 2027	Net zero in 2027
Texas Instruments	8% reduction by 2025 from 2021	8% reduction by 2025 from 2021
TSMC	Net zero in 2050, with 2030 emissions maintained at 2020 level	Net zero in 2050, with 2030 emissions maintained at 2020 level
UMC	No overall absolute reduction targets, only efficiency-related ones (reducing 45% per unit production by 2030 from 2010)	No overall absolute reduction targets, only efficiency-related ones (reducing 45% per unit production by 2030 from 2010)
Western Digital	42% reduction by 2030 from 2020	42% reduction by 2030 from 2020

“The use of power semiconductors in the global renewable energy market is expected to grow with a CAGR of 8% to 10% from 2022 to 2027.”

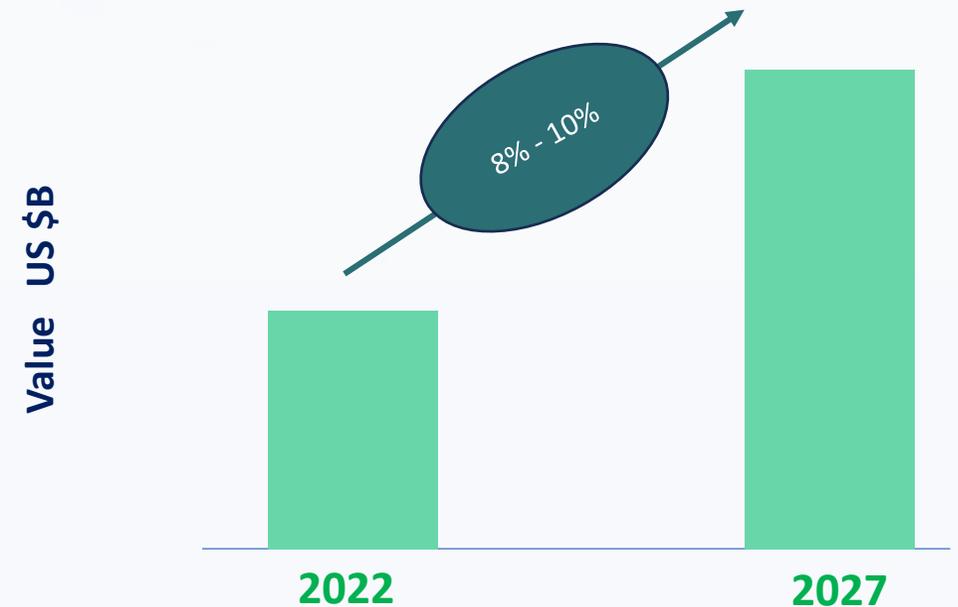
The future of power semiconductors in the global renewable energy market looks promising with opportunities in –

- * power generation
- * storage
- * Transmission

Market drivers:

- * Solar Energy
- * Wind Energy
- * Other Renewables

power semiconductors in the global renewable energy market



Highest Growing market



Highest Growing Demand



Major Players





CLUSTIV

ABOUT US

Clustiv Team

July 2023

Who we are*

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2

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Innovation Partners

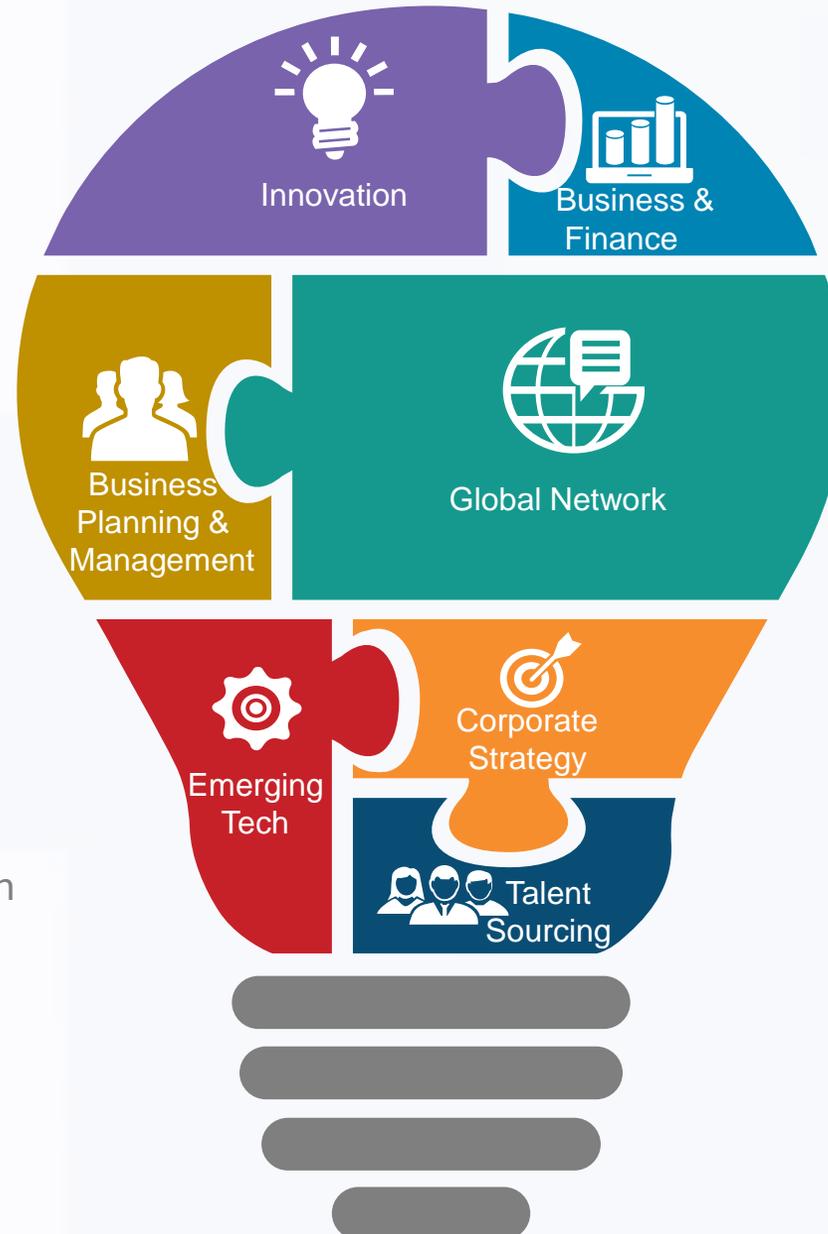
Exploring innovation together using tested innovation tools

Business Planning & Management

Bringing experienced partners to support your business in a holistic way for design thinking & lean startup

Emerging Technologies

Consult you in selecting emerging technologies best suited for your business (HW, SW & Apps/System/Products in AI)



Finance

Experienced Finance advisors & experts

Global Network

Global network of partners

Corporate Strategy

World-Class strategy innovators, educators, partners and C-level executives .

Talent Sourcing & Training

Onboarding best trained talents for your business by differentiating skills

*SharePa – Share your Passion

Our offerings

Finance

- Accounting Outsourcing
- Bookkeeping
- Financial Reporting
- Payroll Processing
- Tax Compliance
- Forecasts
- Modeling

Technologies & Programs

- Emerging technologies
- Enterprise architect
- Strategic Programs
- ROI and tech transformations

Corporate Strategy

- Tech M&A
- GTM Strategy
- Strategic planning
- Wargaming
- Scenario planning
- Portfolio Strategy
- Organic Growth
- Pricing &
- Profitability
- Shareholder Value Strategy
- Scale UP & Scale Down Strategy
- Exit strategy

Business Transformation

- Benchmarking
- Business Valuations
- Cost Studies
- Equipment Analysis
- Capital Budgeting
- Risk Management (Prediction using AI/ML)
- Business continuity Plan (BCP)

Strategy & Innovation

- Strategy Tools
- Business model innovation
- Competitive strategy
- Blue ocean strategy
- Exploring adjacency
- Digital Supply Chain
- Product and Process



Talent Sourcing & Training

- Performance Management
- Change Management
- HR and Management
- Reporting
- Talent Sourcing

Digital Academy

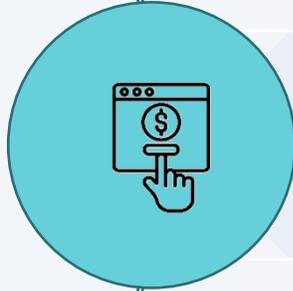
- Digital Platforms
- Learning & Development
- Leadership Programs
- Master trainer Program

Our Business Model

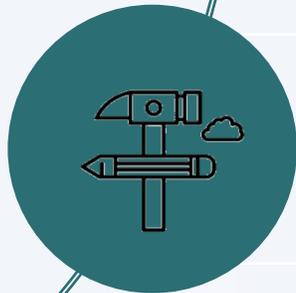
BUSINESS MODELS



Co-Invest in our Growth by partnering



Subscribe our Services

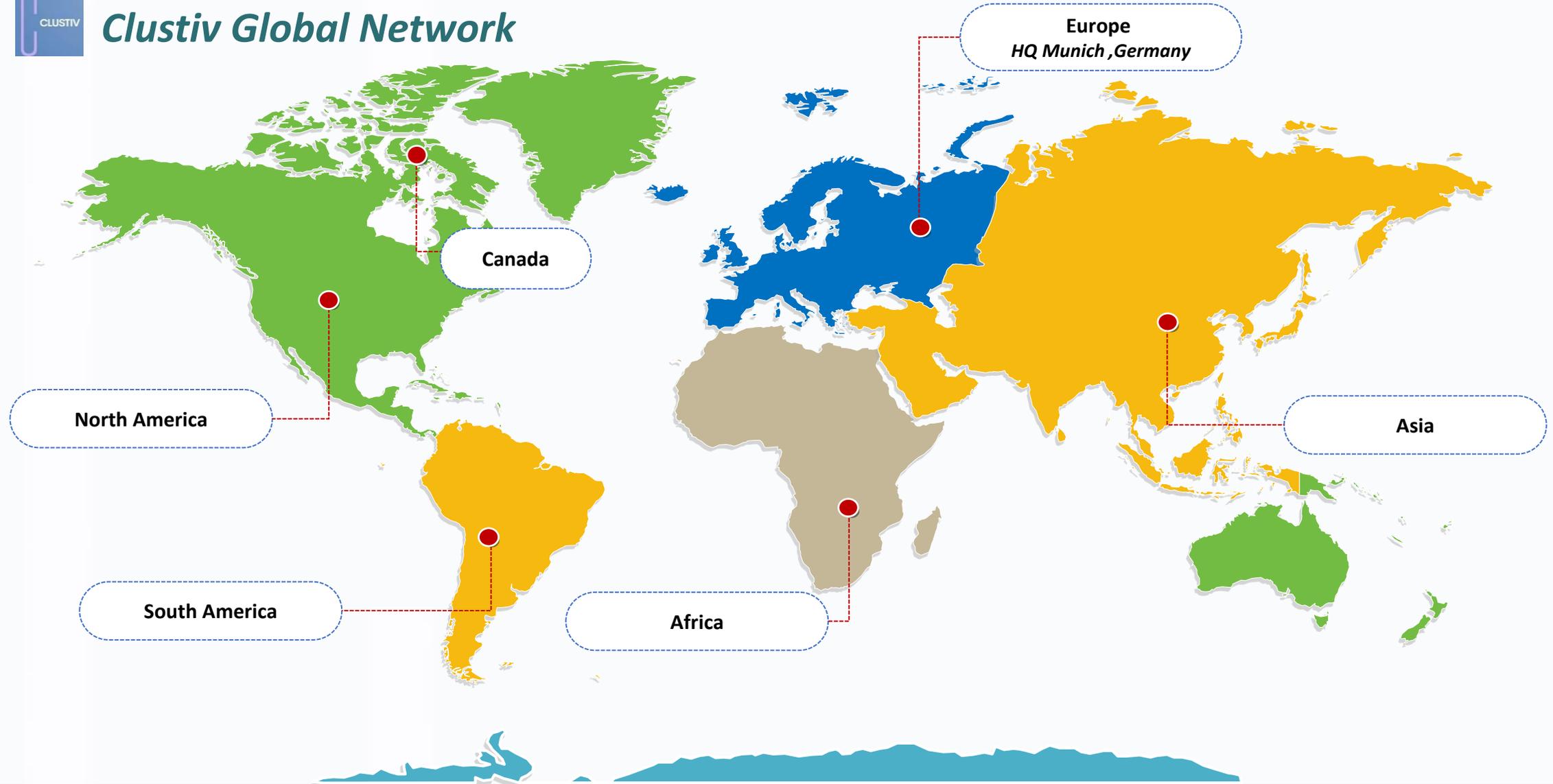


Innovate, Build & Co-create together

Partners



Clustiv Global Network





CLUSTIV



THANK YOU