
SMART ENERGY DECISIONS
RESEARCH
THE STATE OF DECARBONIZATION
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A Note from NRG

Lynda Clemmons
Vice President,
Sustainable Solutions
and Innovation
NRG Energy

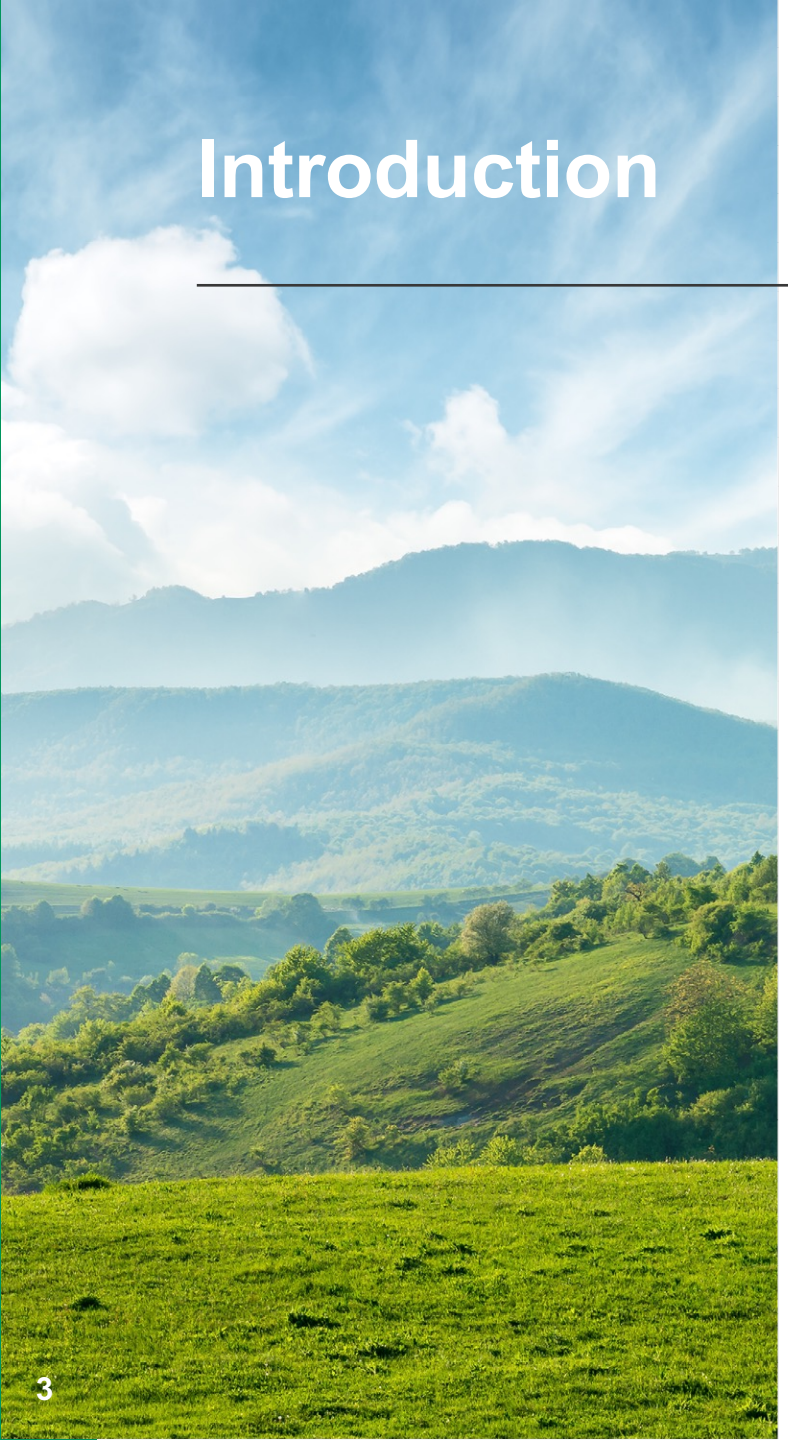
There are a variety of paths possible to make progress toward meeting decarbonization goals and, as highlighted in the 2022 State of Decarbonization Study, organizations have flexibility in how to get started and what solutions to prioritize. Regardless of the path, meeting ambitious goals typically requires a comprehensive approach – one that ensures internal alignment and includes critical thinking about implementing new technologies and procuring renewable energy.

Starting your journey with a focus on seemingly old-school methods may sound simplistic, but I think of it as tried and true. Energy usage and emissions audits will help establish the baseline from which you can set targets and measure success. After quantifying your baseline and targets, you can start implementing energy efficiency strategies that reduce load and integrating technologies into your portfolio that bring you closer to your goals.

Many organizations are weighing the significant impact new technologies and renewable energy can have on emissions reductions. Understanding your appetite for risk and term length will prepare you to assess different possibilities. Working with trusted suppliers can help you evaluate various options and develop a customized solution that ensures the best outcome for your business.

Achieving this best outcome also requires internal alignment with what stakeholders expect and identifying the strategy to achieve those goals. A consistent message will be important in getting the financial, legal, and logistical resources needed to make meaningful progress. This is particularly true for tackling Scope 3 emissions because having C-suite support will be crucial for engaging your supply chain. Getting management on board early in the process will keep everyone moving toward common goals as you continue to build and implement your decarbonization strategy.

There is no doubt that building and executing decarbonization strategies requires commitment and alignment. With tangible goals, corporate buy-in on strategy, and the support of a trusted and experienced partner, your organization can make significant progress in reducing its carbon emissions.



Introduction

The starting line on the road to achieving net zero and other sustainability goals is firmly in place, according to the results of Smart Energy Decisions' 2022 State of Decarbonization Study. Organizations have moved toward establishing programs to reduce emissions and produce quantifiable results that demonstrate progress in the pursuit of decarbonization. A mark of progress is the number of savvy organizations stepping up the evaluation and use of new technologies to meet their ever-expanding sustainability goals. This survey is a barometer showing that large energy customers across all sectors have entered the race and are exploring and implementing new technologies to meet well-defined, publicized targets. Among the key findings of this study:

1. Emissions reduction commitments across all sectors are achieving scale – the race is on. A vast majority of respondents (85%) have some type of emissions reduction goal, with more than half having specific goals for Scopes 1 and 2. This is due in part to the growing importance of mitigating reputational risk, which now rivals cost reductions as a driver of decarbonization and is often seen as a major advantage in maintaining the financial and recruiting strength of organizations.

2. Energy efficiency has become table stakes. Assessing and reporting GHG emissions is a logical first step and has become a standard business practice. This is generally followed by implementing energy efficiency to lower energy loads. These can be considered the beginning of the road to setting decarbonization targets.

3. A broadening array of technologies and solutions are becoming available. In turn, organizations are evaluating and implementing these latest offerings into their strategy to address Scope 1 and 2 emissions.

4. Scope 3 remains the greatest challenge. Few organizations have wrapped their heads – and strategies – around how to best address these emissions, which involves the complex task of working with supply chains and customers.

Defining the Scopes:
Scope 1: Direct emissions from owned or controlled sources.
Scope 2: Indirect emissions from the generation of purchased energy.
Scope 3: All indirect emissions not included in Scope 2 that occur in the value chain of the reporting company, including from activities both upstream and downstream of the company.

Survey Methodology

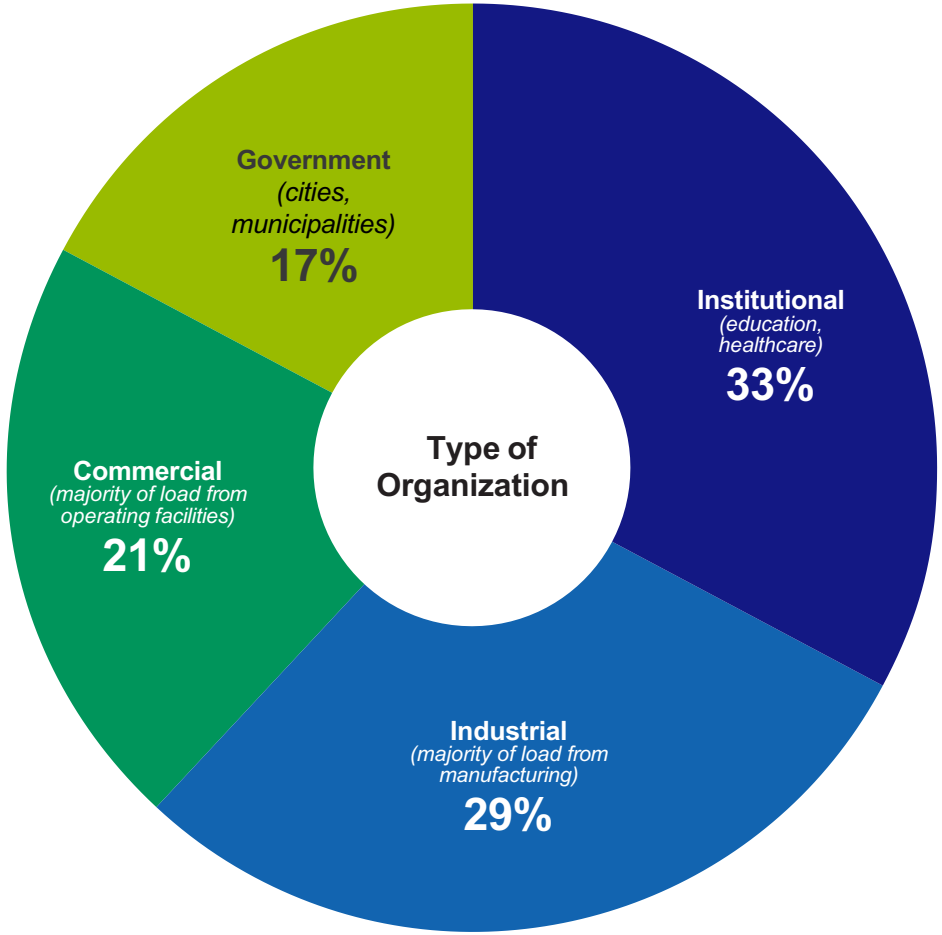
In February 2022, an electronic survey was fielded to executives with energy, sustainability, and facility functions or oversight at large power users.

A total of 178 responses representing unique organizations were included in this report. Respondents must have at least a portion of their operations in North America to be included.

Respondents who indicated no plans or intentions in place to develop a decarbonization strategy were not included.

Institutional organizations, including education and healthcare, represent the largest segment of respondents at one-third (33%). This group is followed by Industrial (29%), Commercial (21%), and Government, including cities and municipalities (17%).

Q. Which of the following best describes your organization?



Respondents: Large energy customers across all sectors

3M Company
7-Eleven, Inc.
Airbus Americas, Inc.
Albertsons Companies
Alcoa
Alectra Utilities Corp.
Amcor Limited
Apical Group
Appalachian State University
Arapahoe Basin Ski
Arcosa, Inc
Arlington County, VA
Army and Air Force Exchange Service
Atrium Health
Auburn University
Avery Dennison
Baltimore County Public Schools
BASF U.S.
Bigelow Tea
Bio-Rad Laboratories
Boeing Co.
Boston Scientific
Boston University
Bristol Myers Squibb
Brown-Forman Corp.
Brushton Moira Central School District
Bucknell University
Bucks County Community College
Bureau of Engraving and Printing
Cabot Corp.
Cadillac Fairview
Calgary Board of Education
Canada Post
Carroll College
CBRE Group, Inc.
CertainTeed Roofing
Chestnut Hill Realty
Cisco
CITGO
City of Arvada, CO
City of Asheville, NC
City of Berkeley, CA
City of Burien, WA
City of Columbia, MO
City of Erie, PA
City of Falls Church, VA
City of Fort Collins, CO
City of Greensboro, NC
City of Irving, TX
City of Kansas City, MO
City of Plano, TX
City of Provo, UT
City of Saint John, NB
City of Santa Barbara, CA
City of Seattle, WA
City of Winston-Salem, NC
Clemson University
College of the Siskiyous
Comcast Corporation
ConAgra Foods, Inc.
Concert Properties
Congebec, Inc.
Cook County, IL
County of San Luis Obispo, CA
CRH Americas, Inc.
Cushman & Wakefield, Inc.
Daimler Trucks NA
Deere & Co.
Diamond Resorts
Duke Realty
DXC Technology
ECOS
Equinix
Federal Realty Investment Trust
Florida Blue
Framingham State University
Georgia Tech
Goldman Sachs
Goodyear
Harris Teeter
Holcim Limited
Holy Cross Energy
Honda
Houston Methodist Hospital
Humber College
Hyatt Hotels Corp.
Illinois State University
Iron Mountain, Inc.
J.M. Huber Corp.
Jasper Group
Johnson & Johnson
Kimberly-Clark Corp.
Kinross Gold Corp.
Lake Forest College
Lewis and Clark Community College
Lifespan Corp.
Local Bounti
Lockheed Martin Aeronautics
Lockheed Martin Corp.
Los Angeles Department of Water and Power
Magna Exterior
Mass General Brigham
Material Sciences Corp.
McCormick & Co.
Medical University of South Carolina
Merck & Co., Inc.
Michigan State University
Microsoft Corp.
Mohawk College
Mohawk Industries
Mubea
National Gallery of Art
NB Power
Newmark Group
Northwestern University
NY Power Authority
NYC Community Board 9
Oakland Unified School District
O-I Glass, Inc.
Orange County Public Schools, VA
Pace University
PepsiCo, Inc.
Pfizer
Philz Coffee
Polaris, Inc.
Port of Seattle
Procter & Gamble
Purchase College
Purdue University
Raley's
Raritan Valley Community College
Renfrew County District School Board
RiverSpring Living
Rochester Institute of Technology
Saint-Gobain Corp.
Salt Lake City School District
San Jose State University
Seattle Children's Hospital
SIDCO Homes, Inc.
Southern California Edison
Sprint
St Johns County Public Works
St. Johnsbury School District
Steelcase
Stony Brook University
Sumitomo Corp. of Americas
SUNY College At Oswego
Sysco
Temple University
Thames Valley District School Board
The Goodyear Tire & Rubber Co.
The Kroger Co.
The Principia
Titan America
Transwestern
Tufts University
Turning Point Brands, Inc.
U.S. General Services Administration
Unico Properties
University of Alberta
University of California, Berkeley
University of California, Davis
University of Central Florida
University of Connecticut
University of Florida
University of Kansas
University of Maryland
University of Nebraska
University of Notre Dame
University of Pittsburgh
University of Rochester
University of Toledo
VA Medical Center
VA Medical Center - Reno
W.W. Grainger, Inc.
Wallenius Wilhelmsen Solutions
Weber State University
Weis Markets

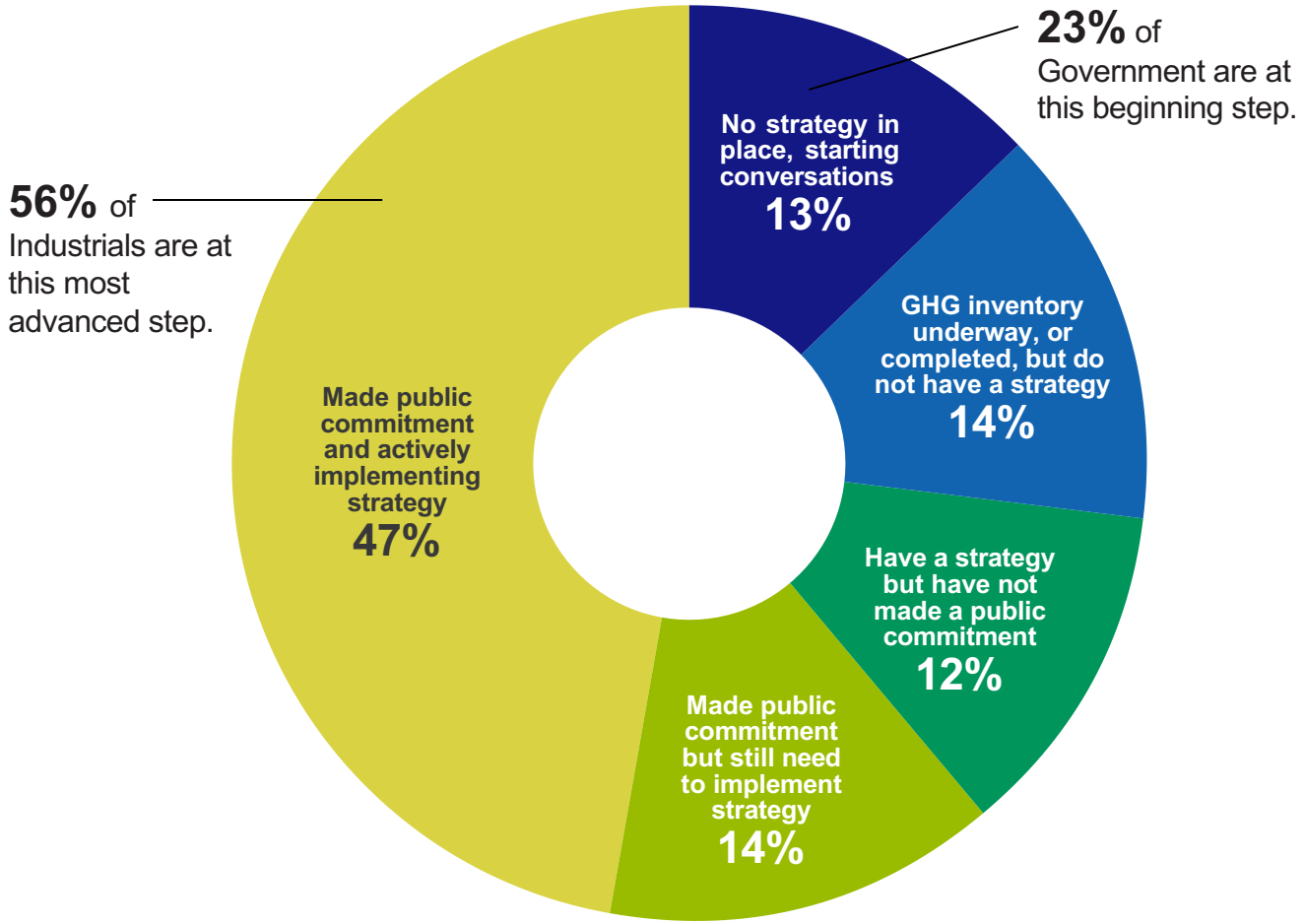
The Race is On: Public commitments achieve scale

Almost two-thirds of respondents (61%) have already publicly declared their commitment to decarbonization, either while implementing strategy (47%) or while still developing a strategy (14%).

A further 12% report having a strategy but no public commitment. A GHG inventory — an early and crucial step to take in the journey to decarbonization — has been completed by 14%, while the remaining 13% are in the earliest stage of the process.

Overall, Industrial operators are furthest along in the process, with the highest percentage with public commitments and strategy. Government entities are the furthest behind, with the highest percentage just starting their conversations.

Q. Which best describes where your organization is on the journey to decarbonization?



The Starting Blocks: Taking inventory, setting goals

An encouraging 85% of respondents have some type of goal to reduce emissions and lower their carbon footprint. More than half have specific goals for Scope 1 and/or Scope 2, and nearly half (46%) have net zero goals.

Scope 3 emissions reduction goals, perhaps the most complex undertaking as it involves coordination with each organization's value chain, have been established by 19% of respondents. Industrial operators lead the pack here with 37% reporting specific and measurable Scope 3 emissions reduction goals.

The15% of respondents who have yet to set any goals are led by Institutional (21%) and Commercial (18%), while Government is at 13%. Only 6% of Industrials report having no emissions reduction goals at the present time.

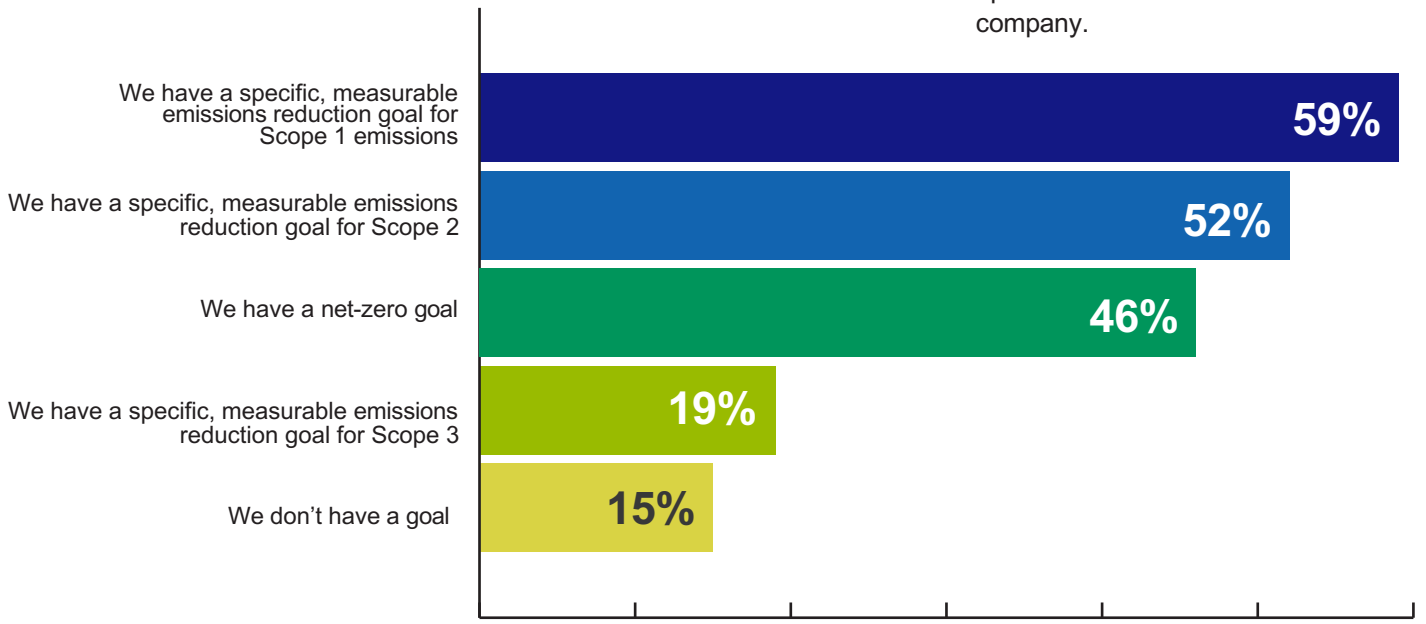
Q. Which best describes your organization's emissions reduction goal? (Select all that apply)

DEFINING THE SCOPES

Scope 1: Direct emissions from owned or controlled sources.

Scope 2: Indirect emissions from the generation of purchased energy.

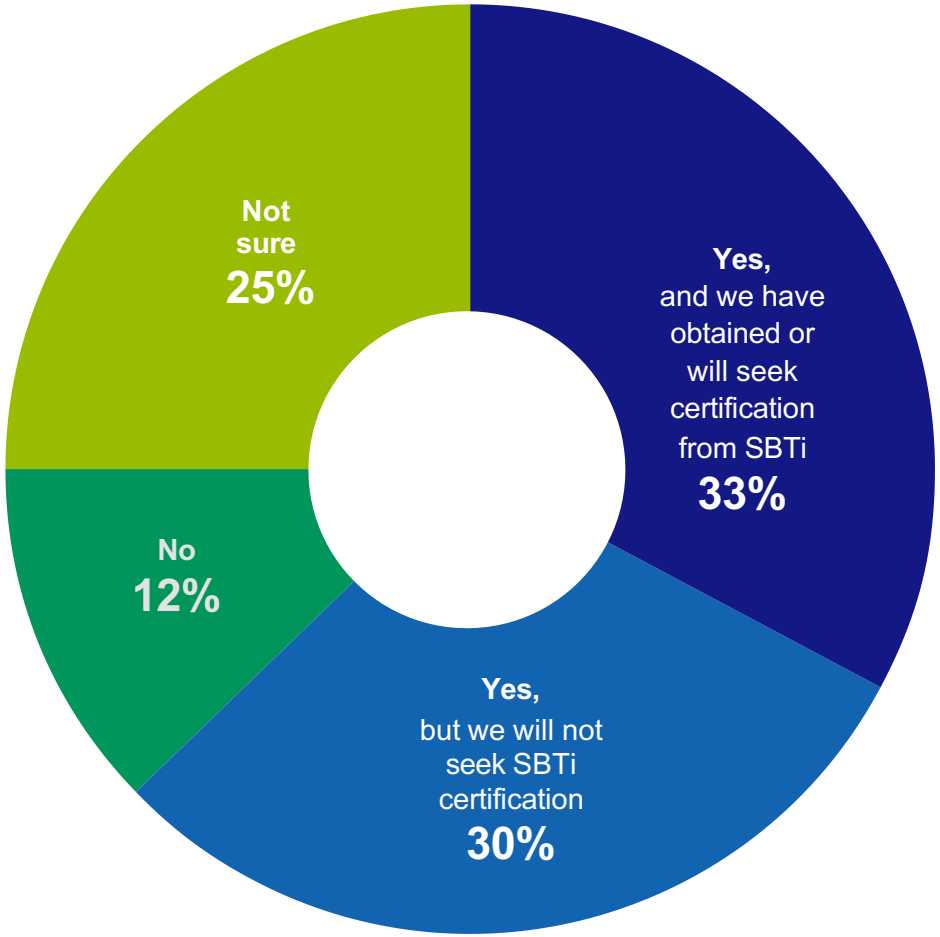
Scope 3: All indirect emissions not included in Scope 2 that occur in the value chain of the reporting company, including activities both upstream and downstream of the company.



Science-based Targets: How important is SBTi?

Among respondents who have emissions reduction goals, almost two-thirds (63%) say their goals are science-based, indicating the value of creating sustainability goals that align with scientific evidence on alleviating environmental impacts. However, within that group only one-third are working with SBTi (Science Based Targets initiative) to certify those goals. The SBTi imprimatur is especially important among Industrials (with 60% obtaining or seeking their endorsement) but barely a consideration among Institutional respondents (at only 5%).

While SBTi's verification may give a public-facing "seal of approval" – especially important considering the need to mitigate reputational risk (see Page 9) – SBTi's rules and concerns about upcoming guideline revisions could make these steps more complex and potentially more expensive and could lead to alternative verification methods being developed.



Q. Is your goal science-based?

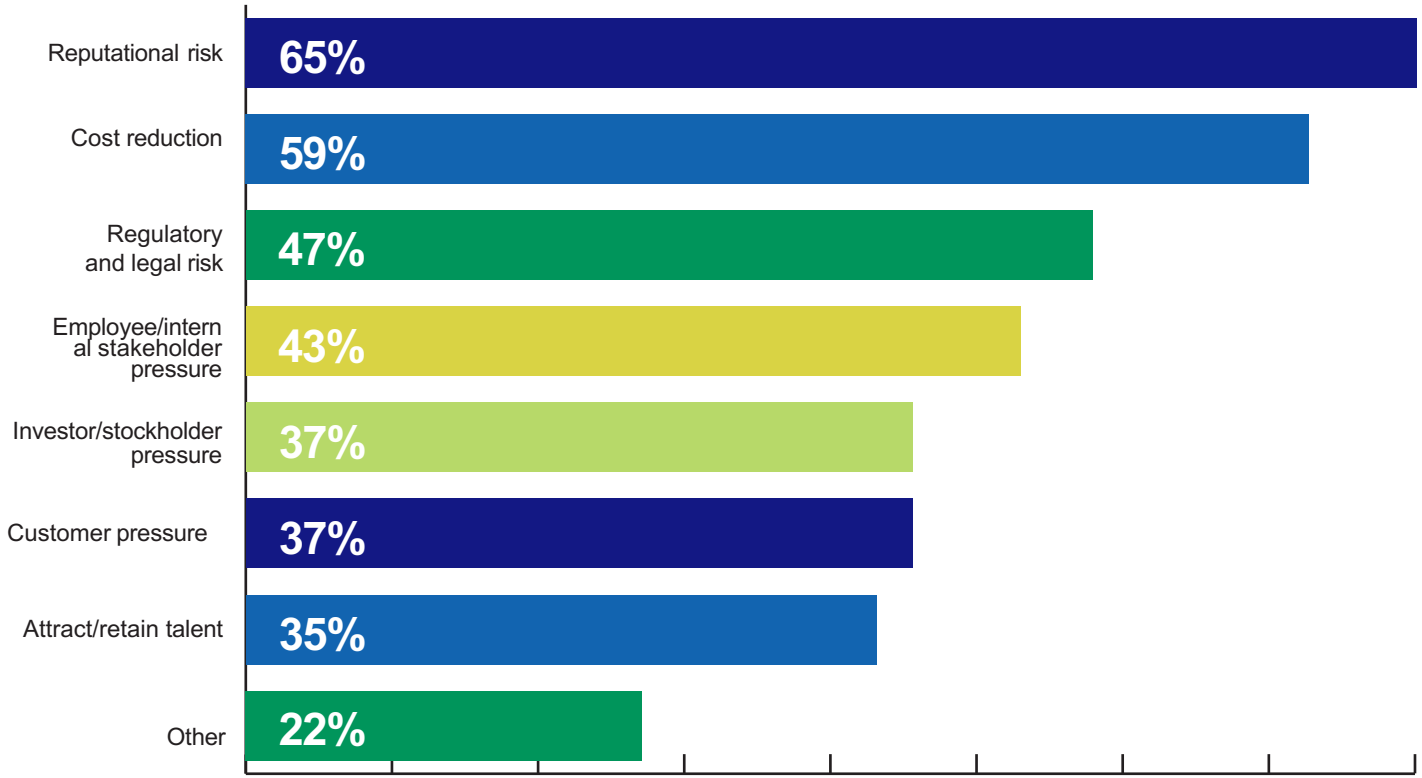
Drivers of Decarbonization – Reputations are at stake

A shift in respondents' priorities comes into view when they were asked to select all factors driving their move to decarbonization. Whereas cost reduction might be expected at the top of the list (and it's close at 59%), reputational risk is most often cited, by 65%. A contributing factor could be the increased focus on ESG reporting in the mainstream and particularly from the financial community.

Regulatory and legal risk is third at 47%, which may in part reflect concern about proposed rules from the SEC that would require climate-related disclosures.

Investor/stakeholder pressure is a driver for 37%, tied in rank at fifth overall. However, Industrials rank it in first place (tied with reputational risk), while Commercials rank it in second place.

Q. Which of the following are the drivers behind your organization's pursuit of decarbonization strategies? (Select all that apply)



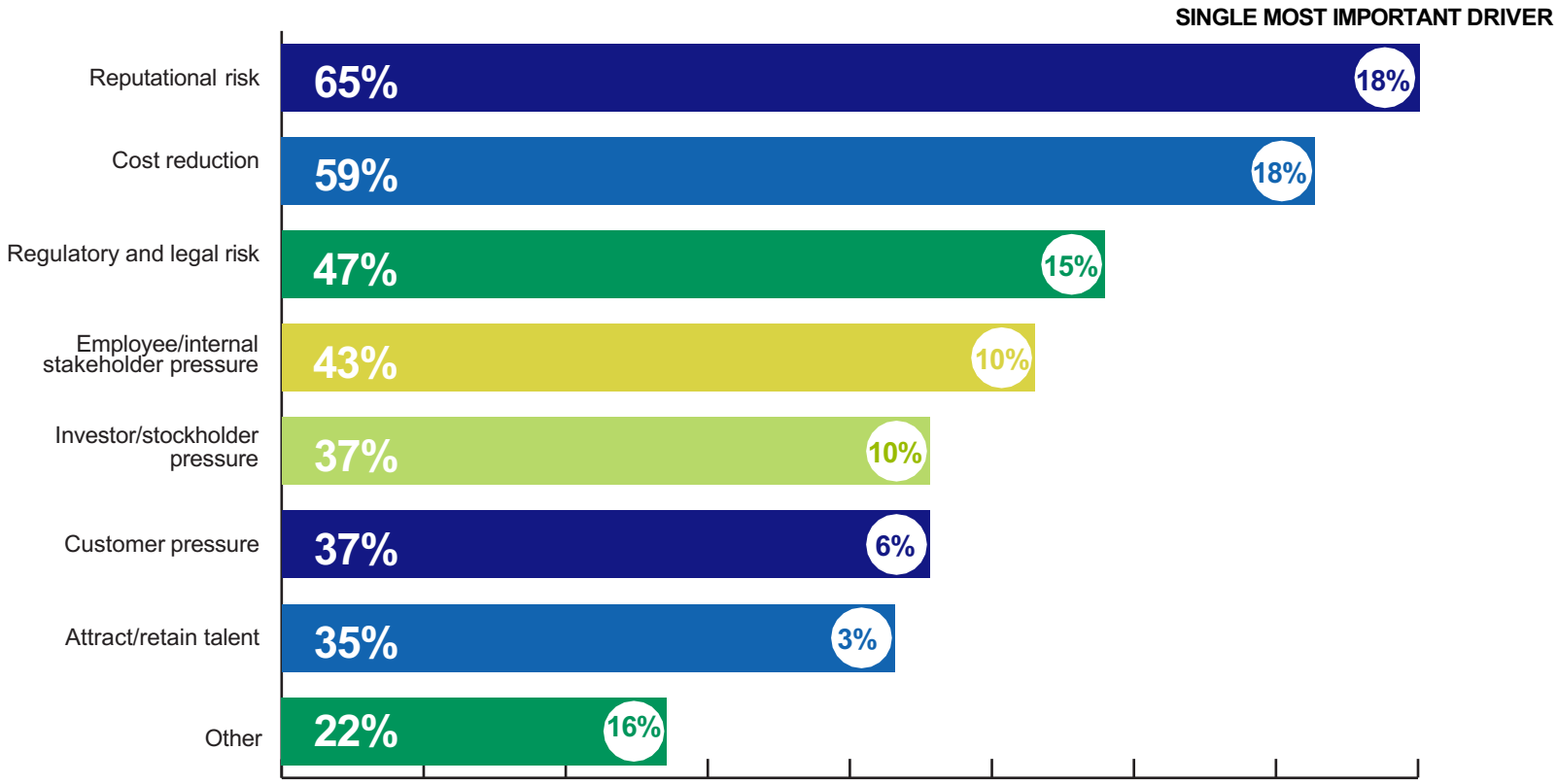
Ultimate Drivers of Decarbonization – Cost and reputation

When asked to name the single most important driver behind decarbonization strategies, it's interesting that no single driver tops 20% in total. Reputational risk and cost reduction tie for the number one spot at 18% each.

This is an area where type of organization is key. For example, pressure from investors and stockholders is the top driver for 10% of the total, a figure that rises to 31% among Industrial and 26% among Commercial, making it the top driver for each of those segments, while Institutional and Government have none of this pressure.

Internal stakeholder pressure is higher among Institutional, where students and faculty are often engaged in support for decarbonization.

Q. Which of the following is the SINGLE MOST IMPORTANT driver behind your organization's pursuit of decarbonization strategies? (Select one only)

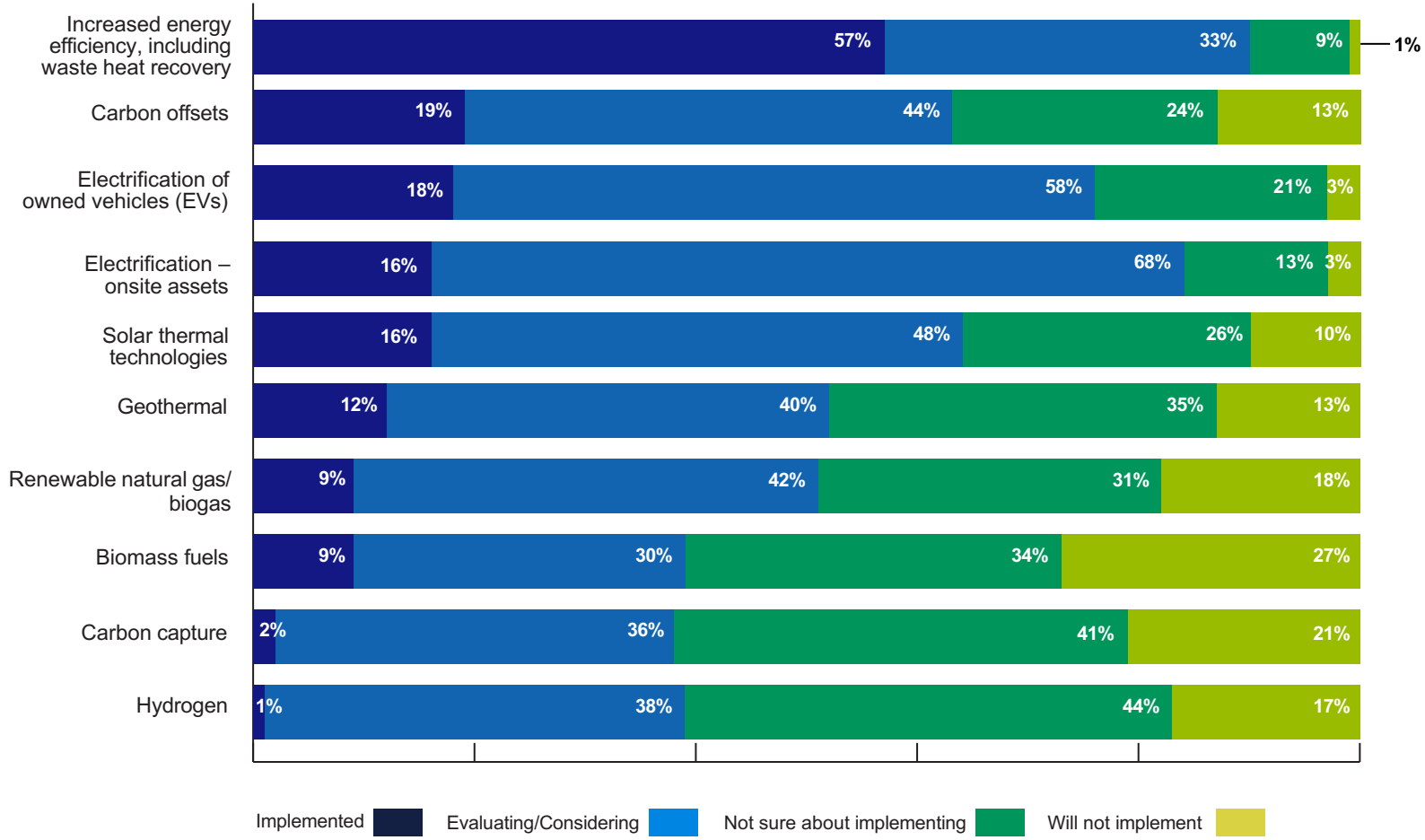


Scope 1 Strategies: Electrification follows efficiency

Energy efficiency programs are a commonsense early step to decarbonization – lower the energy load you directly control as much as possible to lessen what other strategies will need to accomplish. Therefore, it is no surprise that increased energy efficiency is implemented by more than half of respondents (57%) as a way to reduce Scope 1 emissions.

What's next on the horizon? While electrification of onsite assets is currently implemented by only 16%, just over two-thirds (68%) are evaluating or considering this strategy. Other options being considered at a relatively high rate are EVs (58%), solar thermal technologies (48%), carbon offsets (44%), renewable natural gas/biogas (42%) and geothermal (40%).

Q. Which best describes your organization's position on implementing each of the following options for reducing your Scope 1 (direct) emissions?



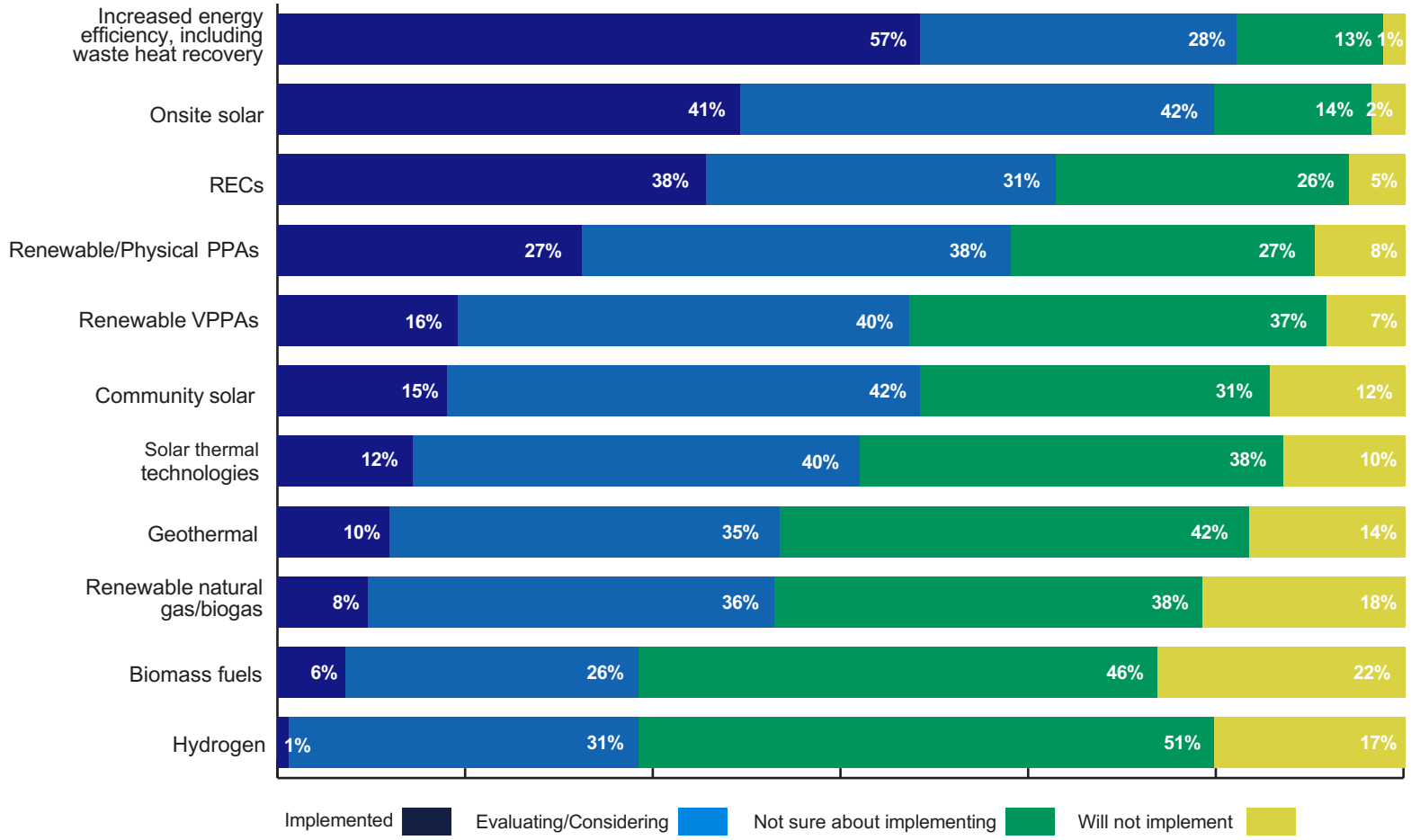
Scope 2 Strategies: Evaluate a range of technologies

As with Scope 1, energy efficiency leads the options to reduce Scope 2 emissions, which includes indirect emissions from the generation of purchased electricity.

Coming on strong is onsite solar, which is currently used by 41% of respondents and being considered by an additional 42%. While use of community solar is still relatively new, cited by only 15%, an additional 42% are evaluating or considering this option as more opportunities become available.

Newer options, including geothermal and hydrogen, are being evaluated or considered by about one-third of respondents, indicating strong interest in "next-level" advanced technologies.

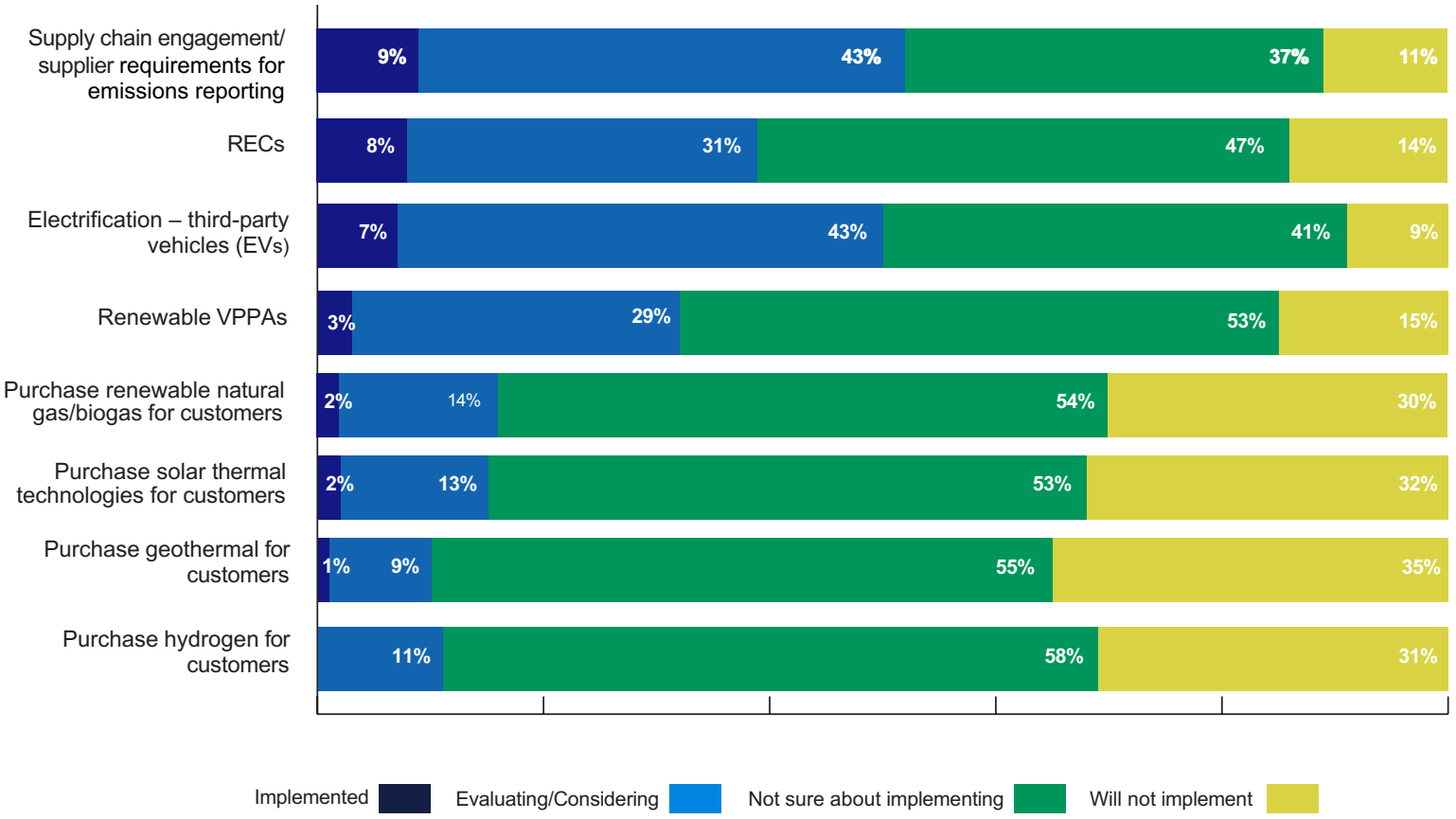
Q. Which best describes your organization's position on implementing each of the following options for reducing your Scope 2 (indirect) emissions?



Scope 3 Strategies: The last leg will be the toughest

Scope 3 is complicated, requiring complex engagement with an organization's supply chain (who, not incidentally, are grappling with their own challenges in reducing emissions) and customers. This complexity is reflected by the small number (9%) who have implemented supply chain engagement or supplier requirements for emissions reporting. However, 43% are currently evaluating/considering this option.

With a range of one-third to more than one-half of respondents indicating they are unsure about implementing each Scope 3 option, the need for more education and understanding of the value of each is clearly indicated.



Q. Which best describes your organization's position on implementing each of the following options for reducing your Scope 3 (supply chain) emissions?

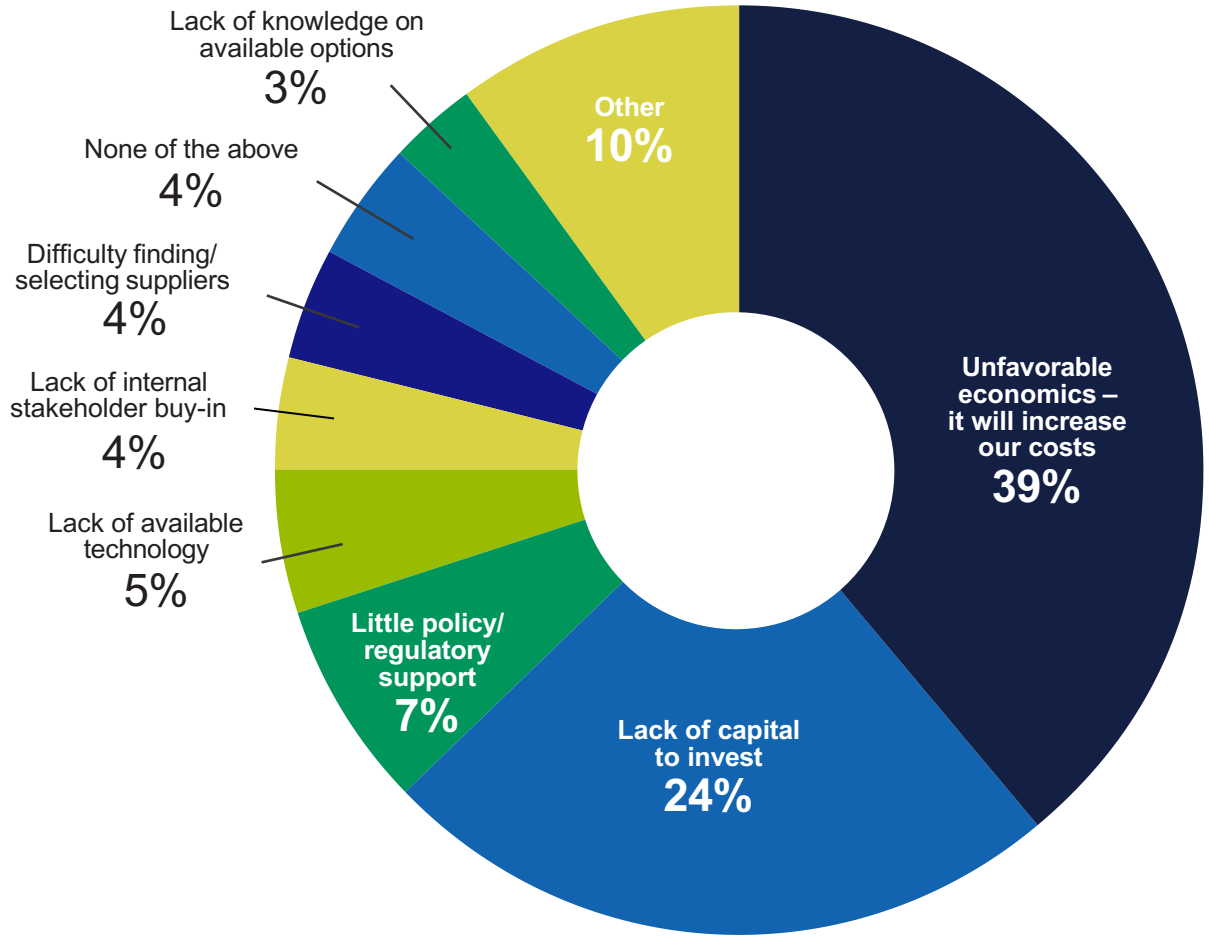
Single Biggest Challenge: Follow the money

When citing the single biggest obstacle across all Scopes, unfavorable economics, including the increased costs associated with implementing plans remains the top concern, cited by 39% of respondents. Following the money, the lack of capital to invest is also a top concern.

These financial concerns seem to dwarf other obstacles, as policy/regulatory support, lack of available technology, lack of internal alignment, and difficulty finding and selecting suppliers are all cited by fewer than 10% of respondents.

Among the differences by organization type, lack of available technology is almost as much of a concern as lack of capital for Industrial operators, while Government cites policy/regulatory support and lack of internal stakeholder buy-in more often than other segments.

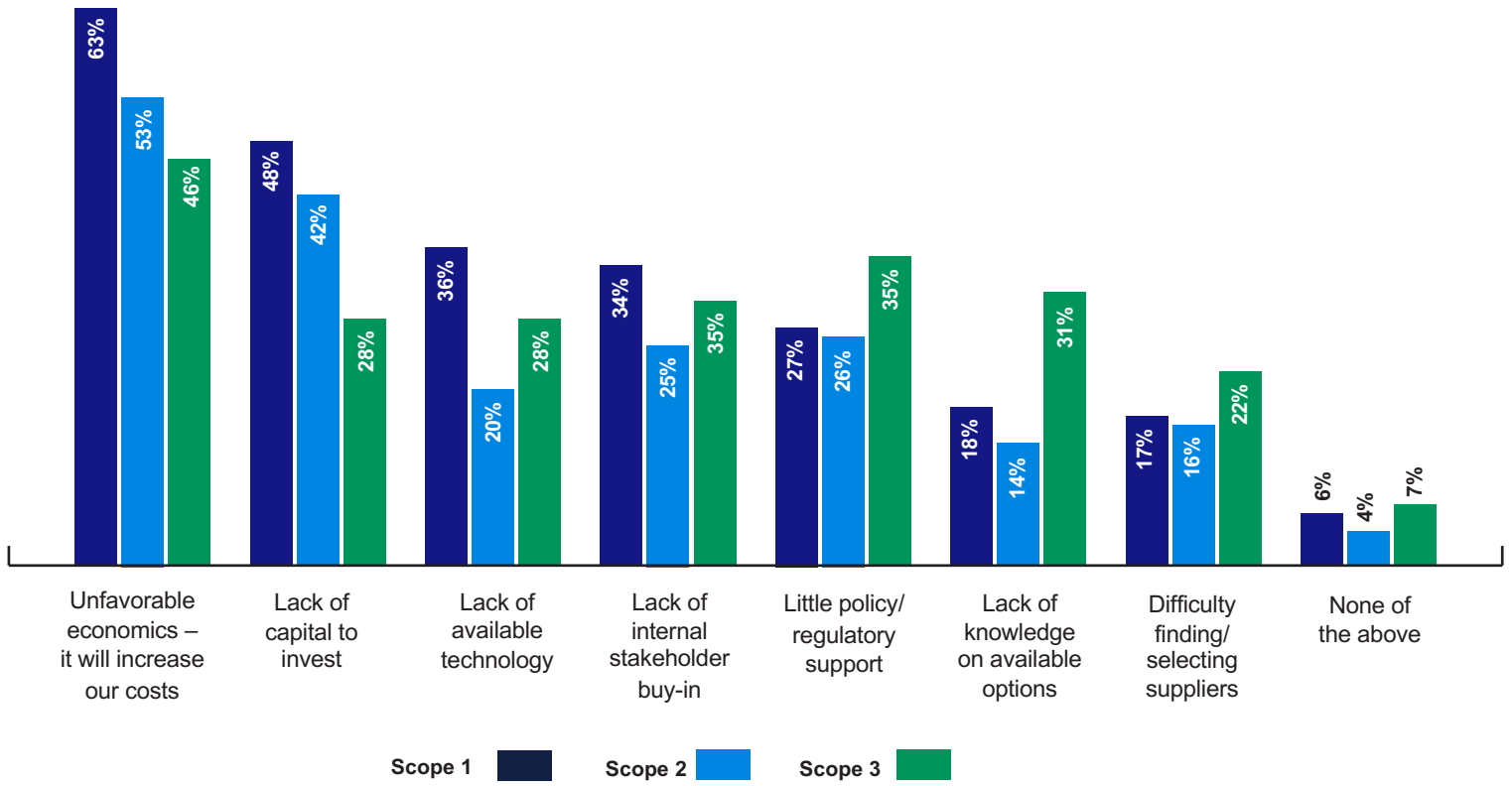
Q. Of all obstacles across all Scopes, what is your single biggest challenge?



Challenges by Scope: Illuminating unique Scope 3 issues

Fear of increasing costs due to the implementation of emissions reduction strategies is the top challenge across all Scopes for all organization types. Lack of investment capital is in second place for Scope 1 and 2, dropping to fifth for Scope 3.

Little policy and regulatory support are more of a challenge for Scope 3, where it ranks second. Lack of knowledge on available options is also more of a concern for Scope 3, indicative of the relatively early stages respondents are at in terms of implementation. Again, the need for education and partners appears to be crucial for these strategies.



Q. Which of the following are challenges to deploying options to reduce emissions? (Select all that apply)

The Role of Carbon Offsets: Uncertain

Purchasing carbon offsets to mitigate residual emissions is a current Scope 1 strategy for 19% of respondents, with a further 44% considering or evaluating its use. (See page 11). Among these respondents, almost half (46%) expect to reach less than a quarter of their emissions reduction through these carbon offsets.

With almost 80% of global GDP now represented by private sector carbon commitments, the role of carbon offsets will continue to evolve as organizations grapple with the need to fulfill goals and reduce hard-to-abate emissions. Concerns about changing requirements for regulation and verification remain a challenge, as does SBTi's ban on using carbon offsets to reach the science-based targets it has validated.

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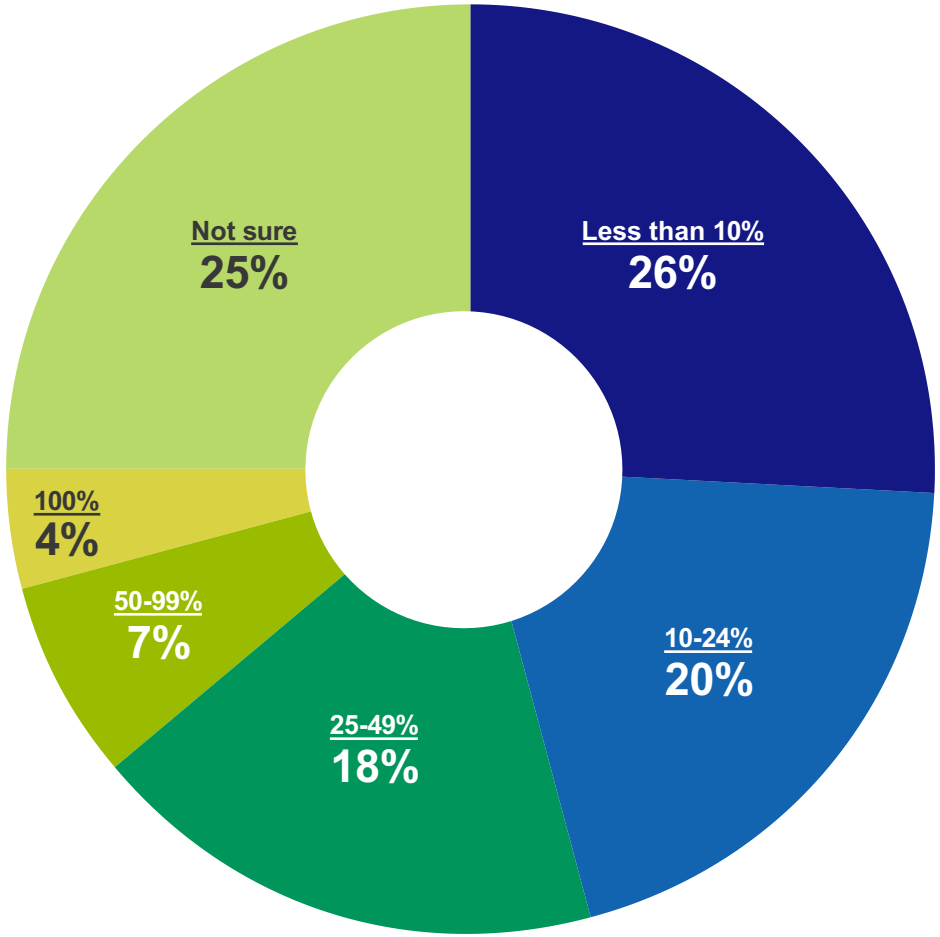
Q. If your organization has implemented, is evaluating implementation, or is considering implementation of carbon offsets, what percentage of your emissions reduction will be attained through these carbon offsets?



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Conclusions

It’s clear that the race is on to achieve net zero emissions as large energy customers across all sectors make public commitments to decarbonize their operations.

- It’s essential to start with a solid understanding of your emissions inventory and a clear plan.
- Energy efficiency assessments and comprehensive plans to reduce energy demand are the critical first phase of the journey. These plans must be customized to your organization’s needs and desired pace.
- Evaluating a wide array of technologies to further reduce Scope 1 and 2 emissions and green your energy supply is the critical next step.
- Tackling Scope 3 is a long haul that will take patience. Engaging supply chain partners and customers with open communication and support to bring them along will be necessary to address this most challenging of tasks.
- Take the time to educate yourself and your organization on industry best practices. New technologies and new regulations will require vigilance and support from your own stakeholders, as well as peers and advisors. Becoming knowledgeable about opportunities brought by new technologies and strategies is key to your organization’s success.

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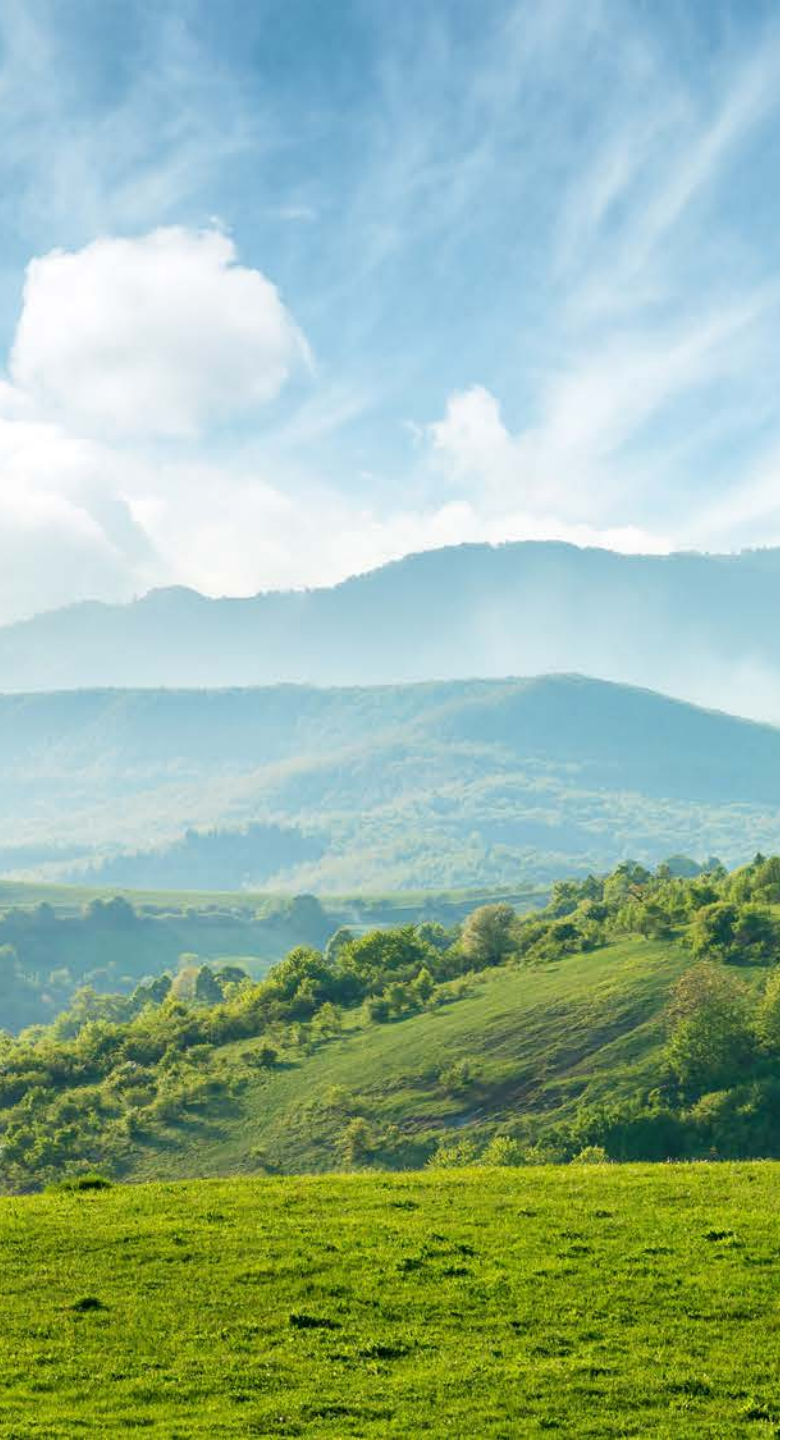
Stronger emissions standards and the push toward decarbonization are shaping a new net-zero paradigm.

As we all strive to reduce our environmental impact, we support your journey with smart energy solutions. Together, we build custom strategies and help measure your progress toward a lower carbon future.

Trust our team to strengthen your energy approach.



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DEBRA CHANIL

Editorial and Research Director
debra@smartenergydecisions.com

JOHN FAILLA

Founder and CEO
john@smartenergydecisions.com