

# CLIMATE JOURNAL 3



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# PATHWAYS TO DECARBONIZATION

When it comes to the outlook for climate change, there are trends that might provide hope.

Three years ago, one out of every 20 cars sold was an electric vehicle. Today, it's one in five.

Additions to stationary battery storage, which is essential for greater reliance on solar and wind power, are expected to push capacity well over one terawatt-hour by 2030, with substantial growth in lithium-ion battery storage expected between now and then.

For the first time, a commercial airliner has flown between London and New York powered only by sustainable aviation fuel, made with waste fats.

And, most importantly, annual investment in the energy transition could break through \$2 trillion by 2027, after reaching almost \$1.8 trillion this year. This compares with only \$900 billion in capital expenditures expected to be spent on fossil fuels in 2023.

Those are all signs that industry gets why the global economy must prioritize reducing its reliance on fossil fuels. But even with these advances, 2023 will be another record year for greenhouse gas emissions.

COP28, the 28th United Nations climate summit that just wrapped up in Dubai, recognized the need to enter 2024 with a firm eye on accelerating our plans to cut emissions. To that end, Oliver Wyman has been working closely with the Sustainable Markets Initiative and the World Economic Forum to find workable pathways to lower emissions in the hardest-to-abate industries. Focusing on sectors like steel, aluminum, chemicals, and concrete, which are building-block materials for the global economy, will allow us to reduce emissions across value chains.

Our Climate Journal Volume 3 offers a look at some of our analysis on those hard-to-abate sectors, as well as the various obstacles companies face and opportunities they could capitalize on as they decarbonize. We hope it provides insights that will help with your enterprise's own efforts to cut emissions.

Best wishes,



Nick Studer  
President and CEO  
The Oliver Wyman Group



## **4 Ways To Align Corporate Interests To Scale Climate Action**

Simon Glynn

## **The Business Case For Investing In Biodiversity**

Nick Studer

## **CSOs Define The Levers For Cross-Industry Decarbonization**

Joerg Staeglich, Thomas Fritz, Dennis Manteuffel

## **Europe's Corporate Climate Transition**

Jeroen Schmitz

# LEADERSHIP





# **4 WAYS TO ALIGN CORPORATE INTERESTS TO SCALE CLIMATE ACTION**

—  
Simon Glynn



The step change in corporate climate action in the past few years has been extraordinary. Yet we are more than halfway through the critical period between the 2015 Paris Agreement and 2030, and emissions are still rising. Clearly, the world needs to scale up.

For our research report on [Climate Action At Scale](#), launched at Climate Week NYC, we spoke to climate and sustainability practitioners from some of the world's largest corporations on their experiences in making this shift. They recognize that what needs to come next will be qualitatively different from what we have seen so far. In a survey of 200 climate practitioners, half see decarbonization as being a serious challenge — either an “existential threat” or “highly concerning” — by 2030, while a third already see it that way.

**50%**

of surveyed climate practitioners believe that decarbonization will be a serious challenge by 2030, while a third already see it that way

They also are clear about what is needed, what they can do and where they depend on others. Here are four lessons we learned:

## **1. YOU CAN'T ACT AT SCALE AGAINST YOUR INTERESTS. LEADERS AT SCALING UP ARE CREATING THE CONDITIONS FOR CORPORATE AND CLIMATE INTERESTS TO ALIGN**

Doing something because it is the “right thing” is a recipe for incrementalism. Trying to act at scale on that basis creates justifiable resistance, because the pressure to perform commercially is too strong. This resistance fades when a company's corporate interests and climate interests coincide.

### **Leaders at scaling up are creating the conditions for corporate and climate interests to align**

The strongest examples are in B2B businesses that are finding profitable ways to act as decarbonization service providers for their corporate customers. Interests might align for Ball Corporation, for example, if investment in [building a circular economy](#) in aluminum displaces the use of competing, less recyclable materials in beverage packaging. Interests might align for Maersk if consumer brands concerned about their own carbon footprints pay a premium for shipping powered by biofuels rather than fossil fuels.

## **2. YOU CAN'T ACHIEVE CLIMATE ACTION AT SCALE JUST BY REDUCING. BUT YOU CAN BY BUILDING**

Emission reductions are critical, but reducing to zero means doing something differently, not just emitting less. Scale leaders embrace the creative destruction that typically drives transformation and innovation. It's about renewal: of the business, the industrial sector it operates in, and the broader economy. At the core, it's about new value propositions that companies have developed. These include offerings that grow the share, whether or not at a price premium, of low-carbon solutions at the expense of higher-carbon alternatives, and propositions that save money through operational efficiencies, usually in energy but also in people and materials.

### **Reducing to zero means doing something differently. Scale leaders embrace the creative destruction that typically drives transformation and innovation**

Sodexo, for example, is reducing its Scope 3 emissions by rebalancing the food it serves in clients' offices, schools, and other institutions. It is introducing "low-carbon meals": not plant-based or vegetarian diets, but a shift in the balance of what is on the plate toward less meat and more vegetables. The initiative takes a big investment in the reskilling of its cooks, but it pays for itself in the competitive proposition for corporate clients, and in the shift from animal to vegetable protein, in addition to the decarbonization benefit.

## **3. LEADERS IN CLIMATE ACTION AT SCALE ARE ADOPTING NEW BUSINESS DESIGNS, USING NEW MINDSETS TO EARN NEW REWARDS**

As one practitioner put it: "What we can do a traditional business case for, we've done." To go beyond, leading organizations are open to new ways of thinking — about risk and uncertainty, about what makes a business case and about the capabilities that will matter in the future. We identified a wide range of arguments used to support investments at scale that would not convincingly generate a competitive financial return relative to the baseline of today's business.

Businesses that are moving ahead are instead using arguments based on:

- Competitive differentiation: Positioning to meet new demand from business customers
- Protecting revenue: Investments to preserve the company's license to operate as stakeholder expectations change
- Enabling revenue: Investments without which some of the value-creating visions described earlier would not be viable



- First mover advantage: Investments to learn, demonstrate, and lead
- Anticipating or influencing regulation: Taking action to remain competitive in the face of future regulation or carbon pricing
- Delegating investments: Imposing decarbonization requirements on the supply chain
- Avoiding stranded assets: Moving forward to avoid being left behind
- Filling the return gap: Structuring or funding an investment that gets an innovative solution to a tipping point, making a non-commercial solution commercially viable

#### **4. CLIMATE ACTION AT SCALE DEPENDS ON INVESTORS, POLICYMAKERS, AND OTHER PLAYERS FOR SOLUTIONS AS WELL AS PROFITABILITY. COMPANIES CAN'T DO IT BY THEMSELVES, BUT THEY CAN SHOW THE WAY**

In the absence of much pull from the end consumer, which nobody is expecting, these corporate initiatives are built on two insecure foundations: continuing investor commitment and evolving public policy. “Creating the conditions,” as we described in the first point, may mean bringing about whole ecosystems, regulatory environments, and financing, not just new customer value propositions.

The appetite is strong for a clear policy environment that will make companies’ plans for climate action at scale viable, both practically and commercially. Meanwhile, the leading companies we interviewed are not passively waiting. They are positioning themselves, making the moves they can, and working together with business partners, investors, and policymakers to shape a future in which they can scale up their climate transitions.

Read the original article [here](#)

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*Simon Glynn is a former partner and was a co-lead of Oliver Wyman’s Climate and Sustainability Platform.*

Originally published in the [World Economic Forum](#)



# THE BUSINESS CASE FOR INVESTING IN BIODIVERSITY



Nick Studer



Carbon emissions get much of the attention in the climate discussion, but the planet's biological diversity is shrinking so rapidly that it threatens to undermine the broader climate agenda. Without meaningful change, there will be profound implications not only for the well-being of people around the world but also for the global economy, business, and finance.

However, the decline in [biodiversity is also creating opportunities for companies and investors](#) willing to step up to reverse the tide—and some early movers are beginning to capture them.

## UNRAVELING THE INTERWOVEN SYSTEM OF BIODIVERSITY AND ECONOMY

Biodiversity is simply the variety of life forms in a given area — animals, plants, fungi, and microorganisms among them. When forests are cleared or animals go extinct, the effects ripple not only across ecosystems but also the economy. Coral reefs and mangroves protect against the rise of sea levels and storm surges. Forests and wetlands reduce flood risk.

The decline in these life forms has been massive. In total, [the world has lost 69% of its wildlife populations in the past half century](#), according to the World Wide Fund for Nature's most recent Living Planet report.

Even worse, a vicious cycle is emerging in which biodiversity loss contributes to more global warming. For example, deforestation — cutting down trees with mostly diesel-fueled machines — accounts for 11% of global greenhouse gas emissions, more than aviation and cement production, according to research from the Glasgow Financial Alliance for Net Zero.

Not only does that increase the quantity of carbon in the atmosphere, but it also eliminates natural carbon scrubbers. Terrestrial and marine ecosystems sequester over half of human-caused carbon, according to Natural England. Simply put, there is no hope of reaching the goal of net-zero carbon emissions by 2050 without halting and reversing deforestation.

### **Without swift action, the risk resulting from biodiversity loss could emerge at the company or portfolio level**

Declining biodiversity also could take a toll on wealth creation from nature itself. The World Economic Forum reckons that more than half of the global gross domestic product, about \$44 trillion, relies to some extent on nature. Just three sectors — construction, agriculture, and food and beverages — generate close to \$8 trillion of gross value added, roughly twice the size of the German economy. Yet Asia has lost 55% of its natural capital in the past 50 years, according to the World Wide Fund.

In short, there is a strong business and investing case to reverse the biodiversity decline. I have been struck in our client conversations by the level of engagement by business and finance leaders. Increasingly they realize that without swift action, the risk resulting from biodiversity loss could emerge at the company or portfolio level.

## **EARLY MOVERS SPEARHEADING BIODIVERSITY INVESTMENT**

Perhaps that explains the recent interest in biodiversity funds. We estimate at least \$12 billion was raised in 2022 by funds focused on agriculture, forestry, and biodiversity investment. Just as investors have found opportunities to make money from the net-zero transition, some are now looking at how to benefit from biodiversity spending. We also believe that carbon credits are a market set to boom. What's more, investors are forming coalitions to share best practices and develop frameworks.

### **We need a spirit of urgent experimentation, with a goal of ensuring efforts support climate mitigation and biodiversity at the same time**

We must go further. Spending on biodiversity conservation was between \$124 billion and \$143 billion in 2019, according to the Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability at Cornell University. That left a financing gap of roughly \$700 billion per year, they say. The commitments made at [COP15](#) to mobilize \$200 billion per year by 2030 would be a useful start.

## **THE NEXT STEPS TOWARD BIODIVERSITY INVESTMENT**

Only 3% of global climate investment in 2017-18 was directed toward agriculture, forestry, and other land use and natural resource management, according to the Partnership of Biodiversity and Finance. Part of the issue is that business struggles to put a financial value on it. "Wall Street has realized that it's been pricing natural assets for the last 150 years at zero," argues David Craig, co-chair of the Taskforce on Nature-related Financial Disclosures.

We are still in the early stages —and many of the choices aren't black or white. We need a spirit of urgent experimentation, with a goal of ensuring these efforts are complementary, supporting [climate mitigation](#) and biodiversity at the same time.



## THREE ELEMENTS DRIVING BIODIVERSITY FINANCE

Capturing the potential economic implications of biodiversity loss is challenging. We need better data and tools to measure impact and manage risk. Improving measurement through drones, satellite imaging, soil sensors, and beyond is one growth opportunity.

However, there is no consensus on how to do this or a common set of measures — and given the ongoing debates about relatively simple metrics like corporate earnings, this journey will be a long one. Unified frameworks could help businesses amid a growing range of guidance and regulation.

The great work emerging from the collaboration at the Taskforce on Nature-related Financial Disclosures needs more support. Reporting can and should piggyback on existing climate and carbon initiatives.

Firms should explore innovative mechanisms to unlock financing for conservation and nature-based solutions. Carbon credits could help, especially if they give a higher value for greater biodiversity. Mechanisms like the United Nations High Commissioner for Refugees' new Refugee Environmental Protection Fund, investing in reforestation in climate-vulnerable refugee situations, is one nascent example. Financial institutions also could establish policies on deforestation consistent with the goal of net-zero global emissions by 2050.

[Closing the financing gap](#) requires governments to incentivize investment, in addition to traditional policy actions. Blue bonds — debt instruments used to finance marine projects that provide environmental benefits such as preserving coral — are an excellent start. Governments will be spending more in the years ahead on climate adaptation and mitigation — they should spend more on biodiversity, too.

Biodiversity is the next financial frontier. It's time for business leaders, investors, and governments to boldly go where they haven't gone before.

Read the original article [here](#)

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**Nick Studer** is president and CEO of Oliver Wyman.

Originally published in [Fortune](#)



# CSOS DEFINE THE LEVERS FOR CROSS-INDUSTRY DECARBONIZATION



Joerg Staeglich

Thomas Fritz

Dennis Manteuffel

Proven technologies — energy efficiency, electrification, and renewable energy — are currently seen as the most important levers for decarbonizing the European economy by chief sustainability officers (CSOs). Meanwhile, these executives say the top challenges to decarbonizing are many — from high costs and identifying suitable use cases to the scarcity of appropriate market offerings.

## **Decarbonization will depend on industries finding a balance between financing the transition and keeping their customers happy**

These findings come from a 2023 survey by Oliver Wyman (together with the TUM School of Management) of CSOs at more than 200 European companies. CSOs are typically charged with managing the integration of environmental, social, and governance (ESG) issues into a business's overarching strategy and planning. In this role, they collaborate with other senior leadership, investors, government bodies, and community stakeholders. CSOs also may be charged with ESG-related compliance, monitoring, and reporting, as well as overseeing the sustainability project portfolio. As such, they are in a position to comment specifically on the steps their companies are taking to decarbonize — and what challenges are limiting their efforts.

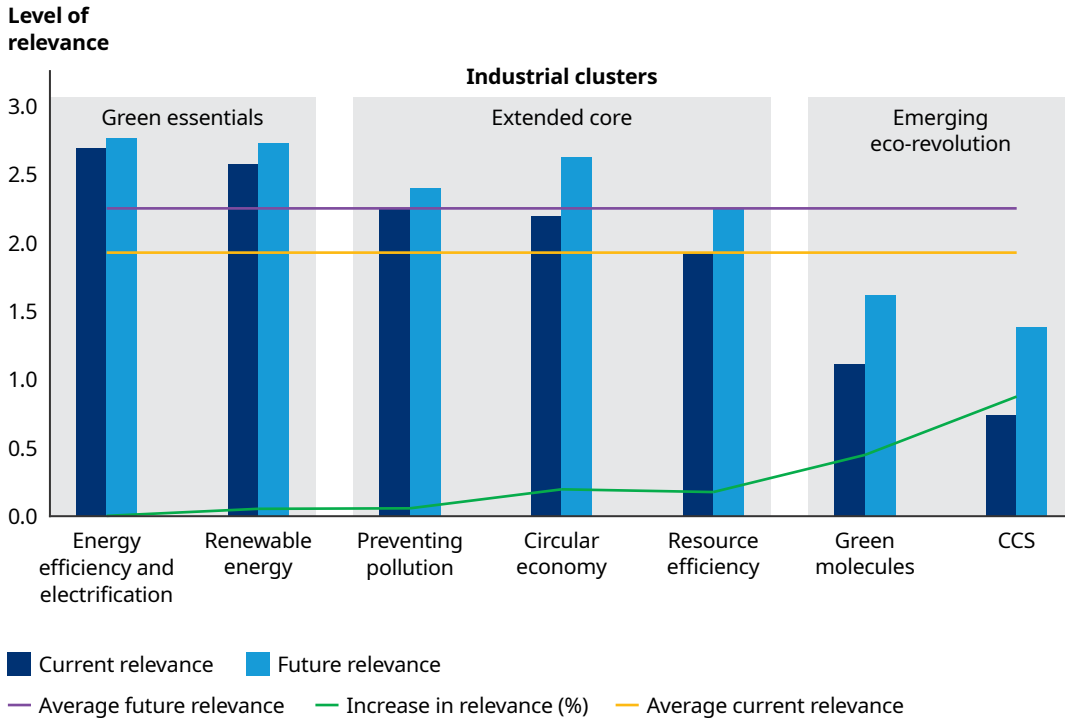
## **Proven technologies — energy efficiency, electrification, and renewable energy — are currently seen as the most important levers for decarbonizing the European economy by chief sustainability officers (CSOs).**

Many CSOs said that their companies are already driving decarbonization using company-specific ESG criteria. The survey surfaced three groups of cross-industry levers that CSOs are systematically addressing or evaluating to push forward on the decarbonization journey.



**Exhibit 1: Relevance of decarbonization levers across all industries, sorted by current relevance**

CSO survey responses on a scale of no relevance (0) to high relevance (3)



Source: Decarbonization Survey 2023, Oliver Wyman/TUM

**CROSS-INDUSTRY DECARBONIZATION LEVELS**

- Green essentials:** Using electricity from wind power or photovoltaics and implementing efficiency measures are seen by CSOs as key “green essentials” for quickly achieving their company climate goals. Nearly all of the CSOs surveyed consider these levers to be highly relevant and practicable right now for their industries. These levers serve as the essential building blocks to make quick, tangible progress today.
- Extended core:** Nearly 70% of European CSOs see practices such as preventing pollution, engaging in the circular economy, and promoting resource efficiency as equally relevant to their companies today. These levers can both directly impact decarbonization and promote wider ESG goals.
- Emerging eco-revolution:** Two emerging decarbonization solutions are carbon capture and storage (CCS) and “green molecules.” CCS refers to capturing carbon dioxide emissions from industrial processes and storing them underground or in materials, so as to prevent their release into the atmosphere. Green molecules (gases) are promising fossil fuel alternatives, such as green hydrogen and green biomass. While CSOs rate these technologies as less relevant today (and more challenging), they are seen as having outsized future potential.

With suitable offerings and the required regulatory frameworks, CCS and green molecules are expected to be particularly important for industries that are carbon intensive and have high energy needs (extractive industries, chemicals, energy, transportation). Targeted funding in the early phases of development will be crucial for accelerating deployment.

## DECARBONIZATION CHALLENGES

All decarbonization levers come with their own challenges, but across the board, potential investment requirements and recurring operating costs are front of mind for nearly all CSOs. Highly competitive and price-sensitive industries, such as consumer goods/retail, raw materials, and transportation, are particularly concerned with how decarbonization will affect costs and pricing to customers. In both the consumer goods and services industries, CSOs report being challenged on multiple fronts, from a lack of decarbonization offerings and technological issues, to difficulty identifying the most suitable levers.

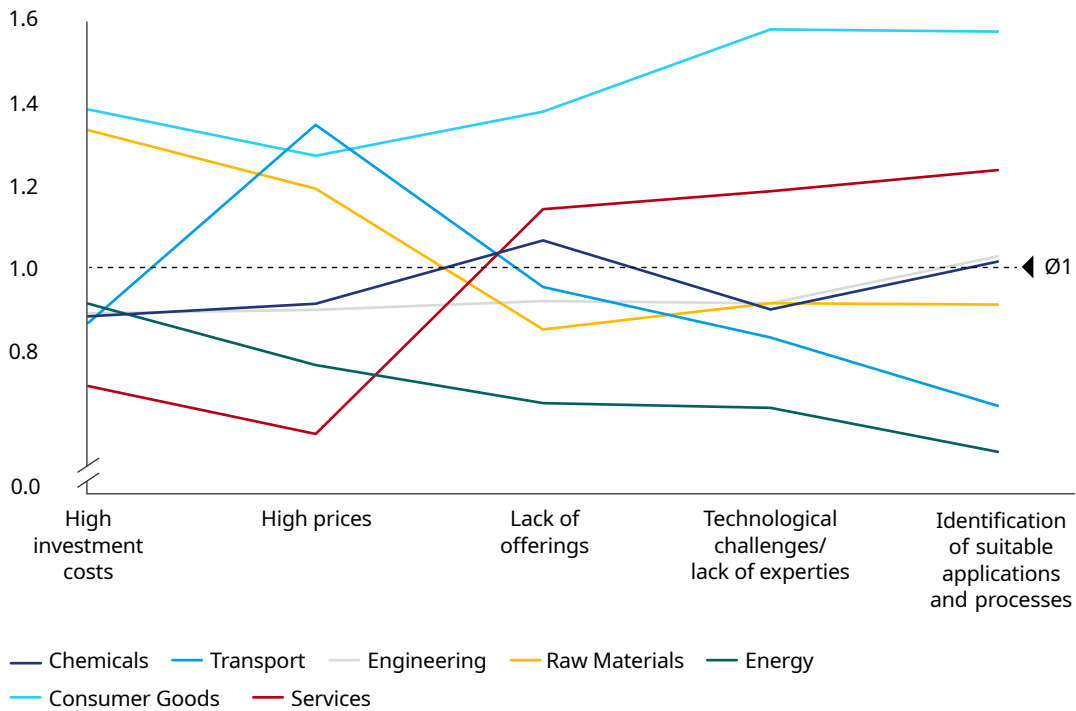
**<5%** of European companies have made much progress in implementing concrete measures to reach net-zero emissions by 2050

These senior leaders see a key role for the energy industry in helping overcome some of the challenges of decarbonization — by partnering with other sectors. Given that renewables and energy efficiency are part of utilities' day-to-day business, they have a unique opportunity to function as transition enablers for other industries. For example, energy company E.ON and steel company Salzgitter AG have partnered on developing green hydrogen for use in steel production. Similarly, building materials company Holcim has partnered with energy company Eni to explore using CCS in raw materials that can then be used to produce "green" cement.

The role governments should play in helping industries overcome decarbonization challenges is less clear, but some combination of regulation and incentives to drive down costs — particularly for nascent technologies — would seem to be in order. Governments also can send important signals to markets and investors based on the technologies they embrace and promote.

**Exhibit 2: Cross-lever comparison of key challenges to decarbonization**

% of respondents who agree/strongly agree per industry relative to all-industry mean



Source: Decarbonization Survey 2023, Oliver Wyman/TUM

To begin building the broadest possible base for decarbonization, companies will want to look first at how they can combine green essentials and extended core levers, as solutions are available today and competitive, as is third-party expertise. Emerging eco-revolution levers, on the other hand, may require some level of government support to accelerate development and reduce costs. Over the long term, decarbonization will depend on industries finding a balance between financing the transition and keeping their customers happy.

Read the original article [here](#)

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This article was also authored by Verena Kleinschmidt.



# EUROPE'S CORPORATE CLIMATE TRANSITION

Transforming business models for a sustainable future

Delivering on a business's net-zero commitment often involves a tremendous transformation of its business model, which can take many years of hard work and commitment. This transformation involves revamping processes, shifting the organization's product portfolio, and potentially building new capabilities from scratch.

Such an impactful transformation can only be delivered with a robust transition plan and a strong commitment from senior leadership. While most climate transition plans are still a work in progress, climate change has become a board-level concern for the vast majority of large European companies.

Last year, virtually all of them indicated they have adopted board-level oversight on climate-related matters, with approximately four out of five having sufficient expertise within their board. Similarly, around 78% have integrated climate as a recurring topic in regular board reporting.

Yet, there are still key differences between leading and lagging companies. Integrating climate-related KPIs within executive compensation is a good example. Approximately half of European companies have yet to make meaningful progress on incentivizing their senior leadership to deliver on their transition commitments. Meanwhile, a well-designed incentive system could help to reinforce strategic focus on the organization's long-term transition by acting as a countervailing force against overly focusing on short-term pressures.

## Exhibit: Linking executive pay to climate progress is a key gap in governance for almost half of all respondents

% of respondents by governance category

Integration of climate-related considerations across key governance aspects

Adopted board-level climate oversight

99%

Presence of board-level climate expertise

79%

Integration of climate-related information in mainstream reporting

78%

Integration of climate-related KPIs in C-level executive remuneration

54%

Source: Oliver Wyman analysis





**A New Generation Of Funds Signals The Evolution Of ESG**

Huw van Steenis, Harriet Roberts, Dennis Zhang

**Financing The Airports Of Tomorrow**

Rana Nawas, Tim Bourne

**\$20 Trillion Needed To Expand Renewable Power Capacity**

Thomas Fritz, Dennis Manteuffel

**The Public Sector's Role In Driving Climate Investment**

Faye Hatoum

**FINANCE**





# **A NEW GENERATION OF FUNDS SIGNALS THE EVOLUTION OF ESG**



Huw van Steenis  
Harriet Roberts  
Dennis Zhang

How can an investor make good returns and avoid pitfalls from the energy transition? This is arguably one of the most important and contentious questions in finance today.

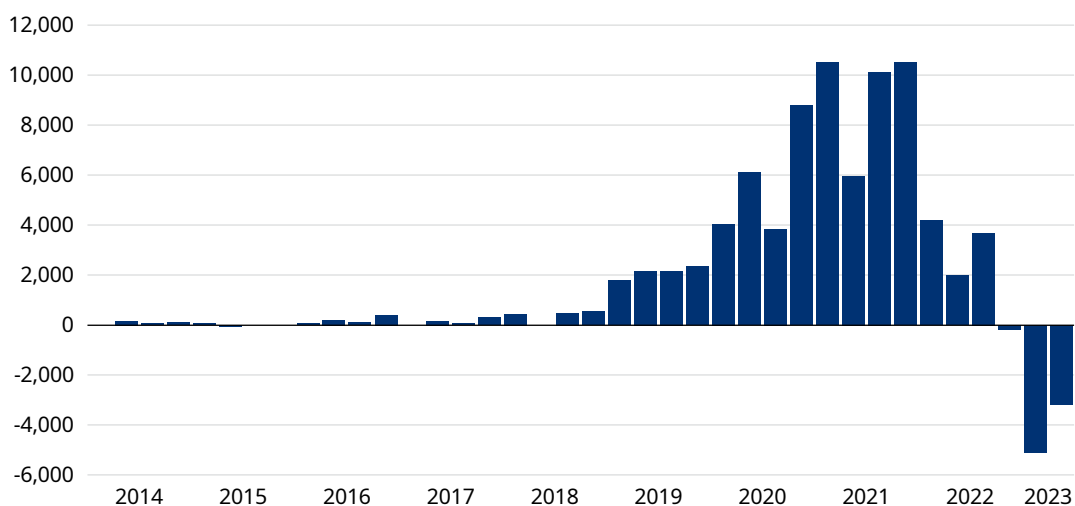
It’s been a rough year for funds that focus on environmental, social, and governance factors, or ESG. Adverse politics, performance, and product design have all weighed on the sector. Once again, investors have learned the hard way that investing by acronym is never an enduring way to allocate capital — as investors in technology, media, and telecom (TMT) funds and Brazil, Russia, India, and China (BRIC) funds found out.

## THE NEXT PHASE OF CLIMATE-AWARE INVESTING

Many ESG funds suffered a roughly three to four percentage point underperformance compared with broad equity markets in 2022, according to Oliver Wyman analysis. The underperformance helped prompt investors to undertake a more fundamental review of the investment attributes of ESG portfolios. Many were found wanting or oversimplistic. The exchange-traded fund suffering the highest redemptions globally this year is a [fund that tracks ESG “leaders” \(ESGU\)](#).

Meanwhile, MSCI downgraded 95% of the AAA ratings it had given ESG ETFs this year as it reassessed funds for new regulations.

**Exhibit 1: ESG ETF inflows peaked in 2021 and have been in redemption for the past year**  
 Quarterly ESG fund flow analysis in US. Active and passive ESG-related ETFs, \$ millions

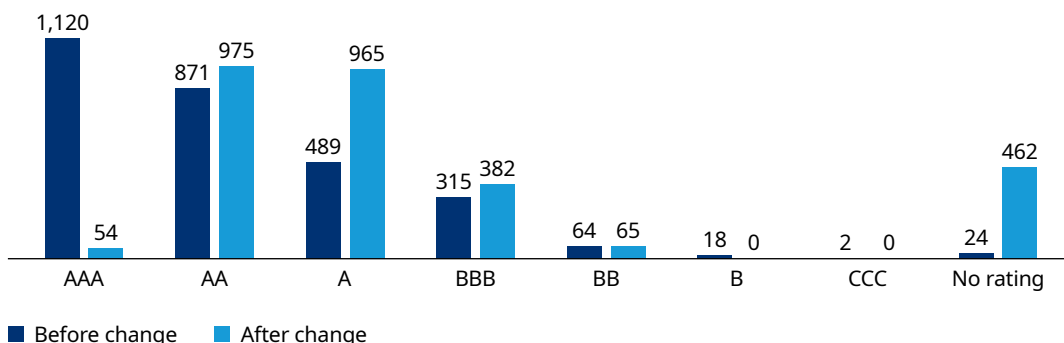


Source: [Morningstar](#): US Sustainable Fund Flows Contract Again in Q2, but Outflows Ease; [Broadridge Global Market Intelligence](#): Responsible investing ETFs include integration/engagement, best-in-class and positive screening, and exclusions

**3-4%**

underperformance by ESG funds in 2022 compared to the broad equity markets has prompted investors to take a deeper dive into the investment attributes of ESG portfolios

**Exhibit 2: ESG ratings from MSCI have been downgraded as a result of new regulations**  
**Number of funds**



Note: MSCI ESG ratings of European-listed ETFs, before and after implementing changes to their ESG rating criteria  
 Source: [Blackrock](#) via ETF Stream

**Any single, overly simplistic static scorecard of how disparate factors might drive superior investment returns fails to reflect the complexities and nuances of markets**

What’s more, many ESG portfolios have found themselves inflexible to respond to changing market dynamics, such as the impact of the Ukrainian war.

Nevertheless, investors remain keen to weave 21<sup>st</sup> century risks and opportunities, such as energy transition and energy security, into their portfolios. Give five master chefs the same ingredients and they will produce five distinctive meals. Any single, overly simplistic static scorecard of how disparate factors might drive superior investment returns fails to reflect the complexities and nuances of markets. The Ukrainian war has profoundly shifted public policies, while the Inflation Reduction Act is starting to reshape the global investor narrative.

A flurry of fund launches offers clues to where investors think the next opportunities may lie.

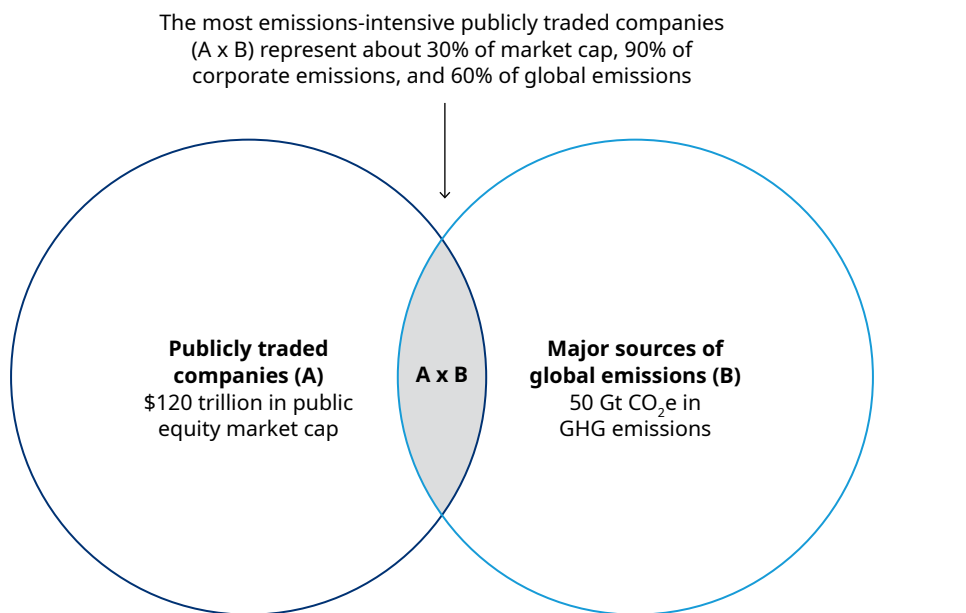
**Greenhouse gas emissions are highly concentrated in a few key equity sectors that make up about a third of the public equity market**



First, investors are increasingly intrigued by “carbon improvers”— firms that are progressively reducing their emissions footprint and generate returns. The first phase of climate-aware investing was to look for firms offering solutions and avoid polluters. But this approach overlooks a key issue.

Greenhouse gas emissions are highly concentrated in a few key equity sectors that make up about a third of the public equity market. These sectors account for about 90% of public company emissions and about 60% of all global emissions, according to [Bridgewater Associates](#). To simply exclude them is self-defeating to real-world decarbonization.

**Exhibit 3: The vast majority of global emissions are concentrated in a select number of industries**



A	A x B	B
Banking	Utilities	Agriculture
Insurance	Oil and gas	Buildings
Investment cos	Mining and metals	Waste
Real estate	Construction	Combustion
Pharmaceuticals	Chemicals	Land use change and forestry
Healthcare	Engines and machinery	
Computer software	Airlines	
Internet services	Transportation	
IT components	Auto and parts	
Semiconductors	Food producers	
Telecom	Forestry and paper	
Personal care		
Retail		
Business services		

Source: [Bridgewater](#)

The next generation of climate-aware indices are leaning into forward-looking measures of decarbonization. Take the new MSCI Climate Action Index, launched late last year, which includes estimates of future reduction in emissions. One Finnish pension fund alone has switched \$17 billion into funds that track this new index.

Second, there is growing interest in capturing value from investing in companies enabling a faster transition. Brookfield, for instance, hopes to raise \$20 billion for its second transition, up from \$15 billion from their its one. Meanwhile BlackRock recently launched a Transition-Enabling Metals ETF. Likewise, General Atlantic and its partners John Browne and Lance Uggla announced an inaugural BeyondNetZero \$3.5 billion fund last December to back companies that provide technology to tackle climate change.

That said, there still appears to be a gap in equity funding for new capital-intensive solutions for sectors with hard-to-abate carbon impact. Venture capital, which has been conditioned by free money and tech moonshots, is not yet well set up for this. Also, some new technologies may require longer terms than the typical 10 years of funds. So a new 15-year \$1.5 billion fund by Just Climate, a Generation Investment Management firm, is an intriguing development to watch.

Fourth, a handful of institutional allocators are dipping their toes into “impact funds,” which seek to measure not only returns but real-world outcomes. Swedish private equity firm EQT is looking to raise €3 billion — which, if successful, would be the largest ever impact fund in Europe.

And fifth — and most profoundly — energy security and energy transition are being woven into core portfolios. But like all investment themes, there is no one way to do this.

Investors appear to be using more bottom-up data to shed light on specific investment issues, with the use of ESG ratings as a primary tool plummeting, according to a new HSBC survey. Since then, S&P has decided to no longer issue separate ESG scores from debt ratings. Meanwhile, index provider MSCI reported a 40% growth in the second quarter in its climate data subscription business.

**Exhibit 4: Use of ratings is plummeting as investors may desire to weigh the key data themselves**



Source: HSBC-Survation ESG Survey (June 2023); MSCI Q2 Earnings Call Transcript (July 2023)  
 Industry use of external ESG ratings from HSBC report is only fixed-income ratings as the primary input

Technology, media, and telecom (TMT) funds dominated inflows in the late 1990s but got washed out when the dotcom bubble burst in 2000. Yet today, tech investing has evolved and is deeply embedded. We are likely to see a similar pattern on energy security and decarbonization. Incorporating 21<sup>st</sup> century risks and opportunities in these areas will become mainstream for investment portfolios.

## **WE ARE ENTERING A NEW PHASE OF CLIMATE-AWARE INVESTING**

Up until now, investors have been guided by several green rules of thumb. But these may be about to change.

The first phase, before firms started making commitments, was largely thematic: think betting on renewables and being underweight — or excluding — fossil fuels in portfolios.

A second phase has been characterized by net-zero commitments, which have become an important proxy for investors that at the margin can inform the cost of capital. A working paper by US think tank [FCLTGlobal](#) suggests that firms issuing green bonds with a net-zero policy enjoyed a 0.08 percentage point “greenium” in terms of better pricing than those that did not. This said, the size of the greenium is much disputed. But “there are no relationships or equations that always work,” as Barton Biggs, the Morgan Stanley strategist, used to say.

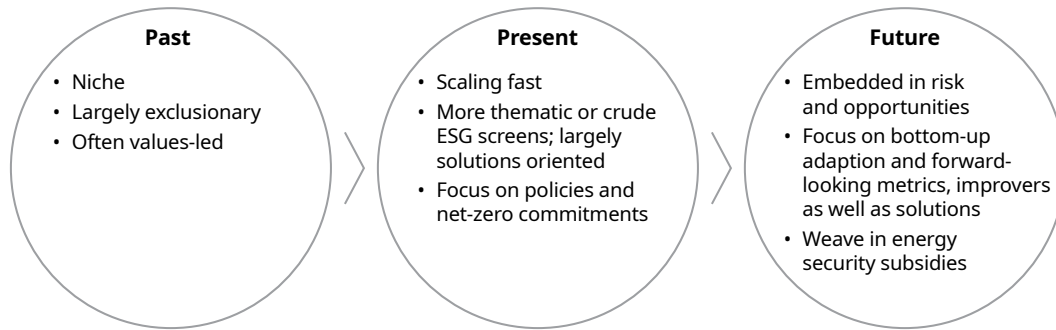
### **Climate change has brought a new level of complexity to the scenarios that investors need to weigh up — and new tools are needed**

Getting it right in this next phase will demand more from investors in terms of data, metrics, risk tolerance, and governance.

Investors will need to shift their focus from a top-down view of the overall sector to a more bottom-up sense of how individual businesses can abate their carbon footprint. This kind of approach will be mirrored by auditors, financial regulators, and customers all seeking more detailed data to hold firms accountable. Part of the new armory will have to be more forward-looking assessments of how well management teams are tackling climate change and which innovations they are relying on. This will allow them to better understand how individual businesses can abate their carbon footprint and accelerate the energy transition. Better data also will enable greater engagement or activism. Some of the most polluting assets are being taken private without any reduction in real-world, actual emissions. This is simply “paper decarbonization.” Investors will need better data and comparable metrics if they are to hold boards accountable. Climate change has brought a new level of complexity to the scenarios that investors need to weigh up — and new tools are needed.



### Exhibit 5: A new phase of climate-aware investing



Source: A New Phase for Green Investing by Huw van Steenis

Read the original article [here](#)

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**Huw van Steenis** is a vice-chair and partner of Oliver Wyman.

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# FINANCING THE AIRPORTS OF TOMORROW



Rana Nawas  
Tim Bourne




Airports around the world are already in the process of modernizing and upgrading infrastructure. In the United States alone, as much as \$150 billion is expected to be spent on airport infrastructure projects between 2023 and 2027. As part of that effort, airports must also begin to decarbonize if they are to help the [aviation industry reach net zero by 2050](#) and, in some regions, be compliant with regulation.

## Addressing Scope 1 and 2 emissions is within airports' reach

Failure to make tangible strides in [decarbonization](#) may ultimately hinder airports' ability to secure conventional financial backing, as more financial institutions and investors begin to insist on credible transition plans from their investments. With the implementation of the Corporate Sustainability Reporting Directive, many in the European Union will be mandated to disclose 2024 Scope 1, 2, and 3 emissions, along with [specific reduction targets](#), starting in 2025.

Addressing Scope 1 and 2 emissions is within airports' reach as they apply to those being generated by airport operations, such as emissions from airport trucks, buses, and cars, and those purchased by airports from power suppliers. [Dealing with significant Scope 3 emissions](#) — which constitute nearly 97% of the overall emissions profile of airports — poses a greater challenge, as they fall outside of an airport's control. The majority represent airlines burning kerosene-based jet fuel during landing and takeoff, and there, airports can only incentivize and facilitate a switch to sustainable aviation fuel.

### Exhibit 1: Airports' Scope 1, 2, and 3 emissions

Scope 1	Scope 2	Scope 3
 <p><b>Direct emissions</b> from owned or controlled resources</p> <p>Includes emissions from owned or operated facilities, including stores, warehouses, and distribution centers, plus emissions from company vehicles</p>	 <p><b>Purchased energy</b> consumed by the company</p> <p>Includes emissions from electricity used in stores, distribution centers and other facilities</p>	 <p><b>Upstream and downstream</b> emissions</p> <p>Covers emissions of suppliers and consumers</p>
<b>% of airport emissions profile</b>		
	<b>~3%</b>	<b>97%+</b>

Source: Oliver Wyman analysis



The path to decarbonization begins with a carefully crafted plan and targets aligned with the [Paris Agreement](#). This is where toolkit report acts as a comprehensive guide.

Developed by the World Economic Forum in partnership with Oliver Wyman, Airport Council International World, and airport infrastructure management company Mundy's, the toolkit outlines short-term, midterm, and long-term actions for airports embarking on their decarbonization journey. It strategically maps out financing options, including commercial loans, development bank loans/grants, and sustainability-linked finance, based on airport size and regional governance policies.

**97%** of airport emissions deal with Scope 3

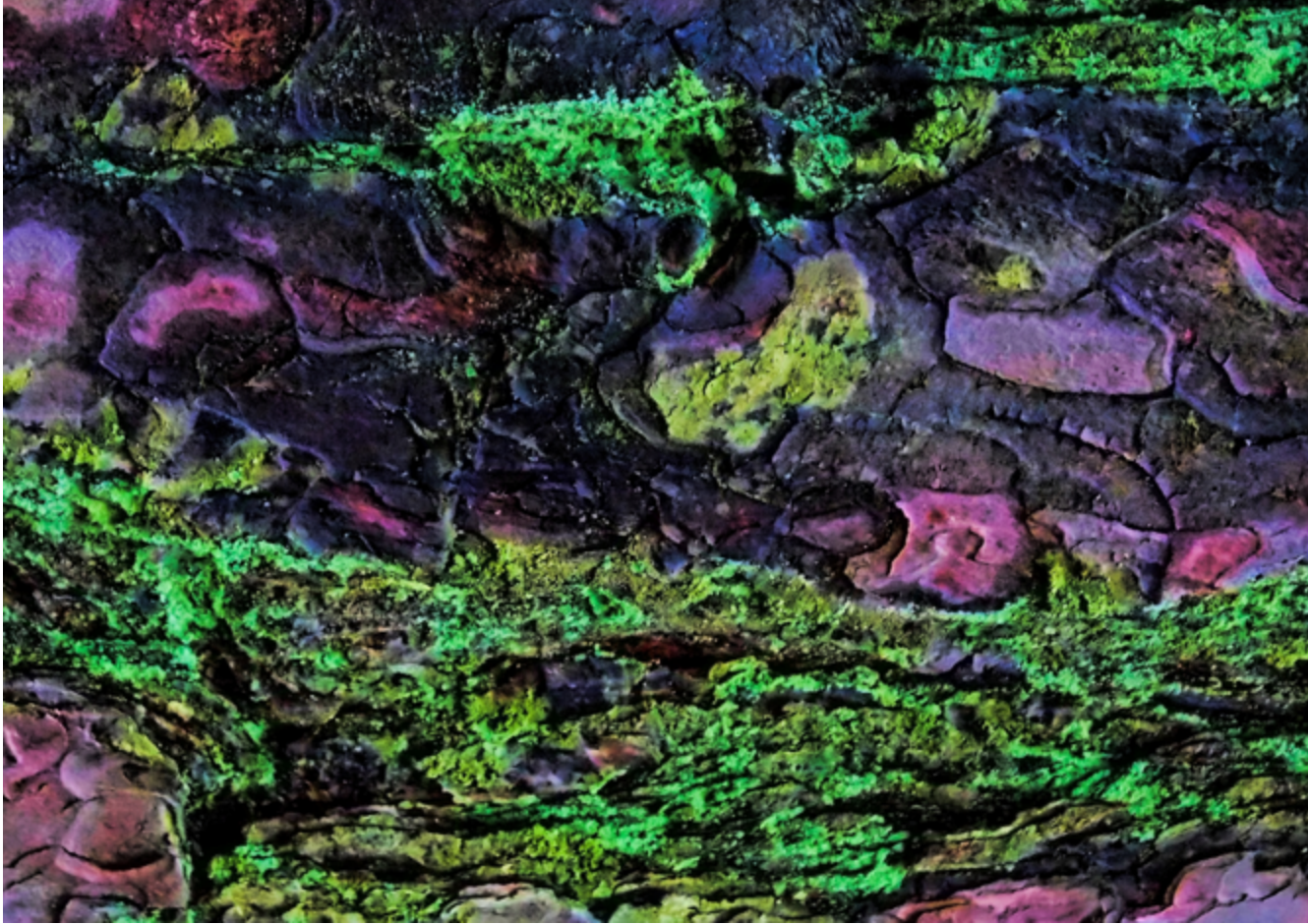
The toolkit also includes case studies of airports successfully utilizing various financing instruments to fund diverse decarbonization projects. These case studies provide valuable insights into what are likely to become best practices for how to mobilize capital for emissions reductions.

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A version of this article was published in the World Economic Forum Agenda [here](#).



# **\$20 TRILLION NEEDED TO EXPAND RENEWABLE POWER CAPACITY**



Thomas Fritz

Dennis Manteuffel

Heavy industries can talk about decarbonizing, but for most of the biggest carbon emitters, insufficient renewable energy capacity — along with outdated electrical grids — stand between them and net zero. That’s because many of the industrial alternatives to fossil fuel, such as [green hydrogen](#), depend on a much more substantial supply of renewable energy to reach commercial scale.

**~\$20 TRILLION** in renewable energy and the electrical grid systems over the next six years is needed to halve emissions by 2030

To halve emissions by 2030 — the first target of the 2015 Paris Agreement — governments and the business community need to invest [around \\$20 trillion](#) in renewable energy and the electrical grid systems over the next six years. That amounts to 20% of the global gross domestic product and would produce enough renewable energy capacity, storage, and extensions to put the world on a path to a temperature rise of below two °C over pre-industrial levels.

But expanding the supply of renewable energy is also what’s necessary to allow the [decarbonization effort](#) to start in earnest. Without this kind of investment, other industry efforts to decarbonize will stall because there is simply not enough renewable energy to satisfy existing demand as well as an increase from industries looking to decarbonize through electrification. A significant buildup of renewable capacity would be necessary to avoid this new demand from industries ironically leading to growth in the use of coal and natural gas to make up the supply shortfall. In a very real way, the lack of renewable energy is holding up decarbonization in a whole host of industries and making it unlikely we will reach net zero by 2050.

## THE CURRENT CLIMATE CRISIS DILEMMA — AND THE NEED FOR SWIFT ACTION

As things stand today, the global economy is not on track to come close to the 2015 Paris Agreement target of keeping the Earth’s temperature rise to about 1.5°C. In fact, current calculations put us on track for an increase of between 4.1 and 4.8°C — global warming that would likely doom millions of people and species.

Even if countries were to live up to their pledges to cut emissions, which they haven’t so far, the best possible outcome would be an increase between 2.5 and 2.7°C. That would significantly amplify the frequency and severity of global warming effects, such as heatwaves, droughts, extensive melting of polar ice, and wildfires already plaguing the planet today at only 1.1°C higher than in pre-industrial times.

Why can’t we solve the problem? The global economy’s lack of progress is in large part because government and industry are demonstrating insufficient urgency and failing to prioritize those solutions that will produce the biggest reduction in emissions the soonest.



They are failing to address climate change the way they took on the COVID-19 pandemic, maybe because the solution is far more complex. Where development of vaccines provided a silver bullet to attack COVID globally, climate change has no one solution applicable to the entire global economy or any region.

But we could prioritize our most productive options, providing both regulation and incentives to ensure adequate capacity is built and commercially sustainable. At the top of that list should be an expansion of renewable energy technologies and the rapid phase out of the biggest polluters — coal and lignite being prime examples — in electricity generation.

## **ELECTRICITY AND HEAT GENERATION TOP EMISSION SOURCES AS RENEWABLE ENERGY STRUGGLES TO KEEP PACE**

In almost every country today, electricity and heat generation are responsible for the largest share of emissions — 43% of the global total. In 2022, just short of 30% of total electricity generated globally is from renewable sources.

While utilities have made progress in recent years incorporating more renewable and clean energy sources, there currently is not enough renewable generation capacity to allow most electricity to be produced from renewable sources. Quite the contrary, more than 40% of global electricity is still produced by burning coal, which is only a few percentage points below what it was in 2010.

Renewables only fill in the gaps to cover higher electricity demand. In places like India, China, and Europe, coal use rose in 2022 in response to rising natural gas prices — with India's use up 10% and Europe's and China's up 5%, [according to the World Bank](#).

## **MAJOR INVESTMENT IN RENEWABLE ENERGY NEEDED TO MEET CLIMATE GOALS**

A \$20 trillion investment would expand low-carbon power generation capacity by 340% by 2030 and phase out coal and lignite that same year. Those changes would mean that the bulk of global power generation would be from green sources. That would include an increase of about 730% in solar capacity, 410% in wind, and 48% in hydro.

**The yearly spend would need to increase six times beyond what we are spending annually today. But without a significant increase in spending on renewables — primarily on wind and solar — there's no hope of reaching net zero or keeping the temperature rise below two degrees.**

Three of the largest emitters would have to make the biggest investments: China would need to invest almost \$6.8 trillion; the United States, \$1.9 trillion; and the European Union, almost \$2 trillion. But the potential savings in GHG emissions from these three regions could amount to a little over 7.4 billion metric tonnes of CO<sub>2</sub> equivalent a year. CO<sub>2</sub> equivalent, or CO<sub>2</sub>e, refers to the number of metric tons of CO<sub>2</sub> emissions with the same global warming potential as one metric ton of another greenhouse gas, such as methane or nitrous oxide.

No doubt, it is a sizable investment: The yearly spend would need to increase six times beyond what we are spending annually today. But without a significant increase in spending on renewables — primarily on wind and solar — there's no hope of reaching net zero or keeping the temperature rise below two degrees.

## LEVERAGING EXISTING CLEAN ENERGY SOLUTIONS CAN HELP

Similarly, [the International Energy Agency \(IEA\) has also called for a tripling](#) of renewable energy capacity recently as well as scaling up clean energy technologies to drive down demand from the global economy for fossil fuels. The intergovernmental organization added that doubling progress on energy efficiency efforts would also be necessary.

The good news: Some of the key technologies to replace fossil fuels are already out there and well-established, such as hydro, wind, nuclear, and solar power. And there are other technologies in the wings, such as green hydrogen, that are still trying to find a workable business model. In 2022, the rise in CO<sub>2</sub> emissions would have been 550 million metric tonnes bigger had it not been for the increased deployment of clean energy technologies, [the IEA noted in 2023](#).

The next seven years will be critical. Governments and industry talk about reaching net zero by 2050, but that work must start today with investment in renewable energy.

Read the original article [here](#)

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Originally published in [Industry Today](#).



# THE PUBLIC SECTOR'S ROLE IN DRIVING CLIMATE INVESTMENT

Catalyzing action, ensuring certainty, and setting standards

First, the public sector can catalyze action from other actors, such as technology producers, solutions buyers, and financial investors. Catalyzing action could take the form of financial incentives on the demand and supply side or mechanisms such as mandates or penalties, to help commit demand for climate solutions and ensure a steady revenue stream for producers. Incentives are most effective when they are accompanied with mandates that effectively commit demand.

Second, the public sector can help ensure certainty for climate investment by pushing for long-term regulatory support and ensuring a predictable and simplified regulatory environment. Regulatory certainty is required to encourage funding from financial institutions and can act as a powerful de-risking mechanism. To the extent possible, public actors should provide certainty through long-term policy commitments; for example, through longer-term tax credits or simplifying red tape (such as through the proposed Net-Zero Industry Act, part of the Green Deal Industrial Plan).

Finally, the public sector can set standards, such as via taxonomies, to help establish credibility for green products and services and so ensure actors are aligning to net-zero goals and avoid greenwashing concerns. Indeed, an increasing amount of regulatory activity surrounding sustainable financing has involved setting definitions and standards around the underlying economic activity being financed.

## Exhibit: The roles and levers for policymakers to finance the transition to a net-zero future

Roles	Levers
<b>Driving action</b>	<b>Incentives and mandates</b> Financial incentives, including financial support (such as capital expenditure support on the supply side or subsidies on the demand side) or innovative mechanisms (such as government-supported auctions) Mandates (for example, the SAF blending mandate) or penalties (such as a carbon tax) that help commit demand toward climate solutions
<b>Ensuring certainty</b>	<b>Regulatory certainty</b> Creating a stable environment through long-term commitments and tenors Simplifying the regulatory environment to ensure predictability and avoid red tape (such as through the Net-Zero Industry Act)
<b>Setting standards</b>	<b>Guidance and support</b> Agreed definitions and standards that help to establish credibility for green products and services (for example, what is “clean hydrogen” and how does a project work) Capability development guidance for financial institutions (such as around identification, assessment, and management of new climate risks)

Source: Oliver Wyman analysis



## **Aviation Can Cut Emissions By 2035 Via SAF And Existing Tech**

Jerome Bouchard, David Kaplan

## **How Steel Can Take The Lead In Decarbonization**

Nils Naujok, Holger Stamm

## **Embracing Nature Into Chemicals, Cement, And Consumer Goods**

Jennifer Tsim, Robert Bailey, Sebastian Gerlach

## **Chemical Industry's Solution To The Plastic Packaging Gap**

Hendrick Flock, Iris Herrmann

# **BUSINESS SYSTEMS**





# **AVIATION CAN CUT EMISSIONS BY 2035 VIA SAF AND EXISTING TECH**

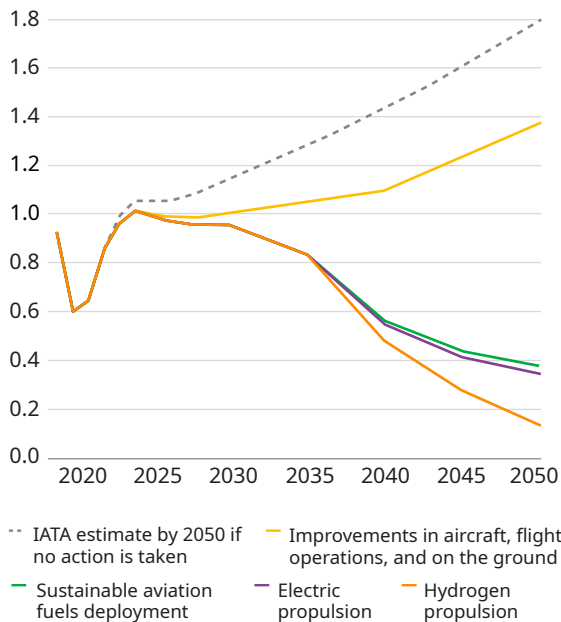


Jérôme Bouchard  
David Kaplan





Aviation needs to address its greenhouse gas emissions problem, yet the conversation and investment around decarbonization too often focuses on the wrong technologies and the wrong date. The industry cannot wait until 2050 to get serious about cutting emissions, which is what will happen if it pins too many of its hopes on hydrogen-propelled and battery-powered aircraft. Neither will be approved for use on medium-haul and long-haul commercial airliners much before 2050 — and that delay matters because aircraft with 100 seats or more are responsible for 96% of aviation’s emissions. It will then take decades to [replace the thousands of older conventional jets in the global fleet](#) — an action constrained by production capacity as well as economics.

**Exhibit 1: Multiple decarbonization levers are needed to get aviation to net zero by 2050**

Breakdown by lever in gigatons of carbon dioxide per year



Primary levers of decarbonization and their corresponding cuts in emissions

-  **Redesigning for engine efficiency**  
Improvements to current jet engines  
**25% by 2050**
-  **SAF: low and no-carbon jet fuels**  
65% SAF adoption by airlines  
**55% by 2050**
-  **Hybrid/electric and full electric technologies**  
Battery electric/electric propulsion  
**2% by 2050**
-  **Alternative propulsion technologies**  
Hydrogen propulsion  
**15%–20% by 2050**

-- IATA estimate by 2050 if no action is taken  
 — Improvements in aircraft, flight operations, and on the ground  
 — Sustainable aviation fuels deployment  
 — Electric propulsion  
 — Hydrogen propulsion

Source: Oliver Wyman analysis, International Air Transport Association (IATA)

**1.4 GIGATONS** of GHG emissions will be generated by aviation in 2040 – 40% more than the industry emits today

While these non-fossil fuel technologies will eventually play a substantial role in making aviation less carbon-intensive, they will do little until 2040 — the early stage of their incorporation into the global fleet of smaller aircraft and short-haul airliners. By then, assuming business as usual and using a trajectory projected by the International Air Transport Association (IATA) in 2021, aircraft would be responsible for roughly 1.4 gigatons of emissions per year — 40% more than the one gigaton aviation emits today.

## Investment in two existing technologies has the potential to shrink aviation’s carbon footprint: SAF and conventional jet engines

The key to cutting emissions over the next two decades is investment in two existing technologies with the potential to shrink aviation’s carbon footprint by as early as 2040 — [sustainable aviation fuel \(SAF\)](#) and conventional kerosene-powered jet engines. By investing in the production capacity for low-carbon SAF and rethinking current jet engines, the industry could cut 80% of its emissions by 2050, moving the needle in the right direction in a substantive way.

### Exhibit 2: Only SAF can be used immediately to reduce aviation emissions

Timing for when decarbonization levers can be pulled and their potential impact

	2020	2025	2030	2035	2040	2045	2050
<b>Commuter</b> 9–19 seats <60-minute flights <1% of industry CO <sub>2</sub>	SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF
<b>Regional</b> 50–100 seats 30–90-minute flights ~3% of industry CO <sub>2</sub>	SAF	SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF	Electric Hydrogen SAF
<b>Short haul</b> 100–150 seats 45–120-minute flights ~24% of industry CO <sub>2</sub>	SAF	SAF	SAF	Hydrogen? SAF	Hydrogen SAF	Hydrogen SAF	Hydrogen SAF
<b>Medium haul</b> 100–250 seats 60–150-minute flights ~43% of industry CO <sub>2</sub>	SAF	SAF	SAF	SAF	Hydrogen? SAF	Hydrogen? SAF	Hydrogen? SAF
<b>Long haul</b> 250+ seats 150-minute+ flights ~30% of industry CO <sub>2</sub>	SAF	SAF	SAF	SAF	SAF	SAF	SAF

Source: Air Transport Action Group, "Waypoint 2050"

Read the original article [here](#)

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# HOW STEEL CAN TAKE THE LEAD IN DECARBONIZATION



Nils Naujok  
Holger Stamm

The recent volatility of the steel markets in pricing and demand, especially after the all-time high set in 2021, offers global producers — particularly in Europe — a window of opportunity to distinguish themselves as leaders in decarbonization. This will require a shift in production to green steel — that is, steel produced without using energy from fossil fuels — and that will take quite a bit of investment, starting now.



## Recent steel market volatility offers global producers a window of opportunity to distinguish themselves as leaders in decarbonization

**Exhibit 1: Expected flat steel production volumes in Europe**

Millions of metric tons



Source: Oliver Wyman analysis

Still, with the strong post-pandemic demand for this building block of the global economy and ever more policies and regulations pushing green technologies, the situation is ripe for steel producers willing to commit the necessary resources to redefine the industry. We anticipate the push for green steel to produce 700% growth in total production between 2025 and 2030.

## CROSS-INDUSTRY PARTNERSHIPS ARE KEY

Steel producers cannot change the industry alone. The key to the transformation in steel will be partnerships, joint ventures, and alliances with other industries, including energy, mining, chemicals, private capital, and end users such as automotive and construction companies. The future leader in steel will be the producer that can create and manage new industrial ecosystems that can build the necessary infrastructure to help the global supply chain transition from carbon-intensive steel to green.

### **Steel producers cannot decarbonize the industry alone; the key to transformation will be aligning with other industries and end users**

While most of the technology needed to produce green steel already exists in pilot form at least, decarbonized steel production still needs the infusion of sizable capital expenditures (capex) in excess of €2 trillion to €3 trillion for capacity to reach commercial scale. That amounts to an average investment of €1,000 to €1,500 per ton of steel produced annually.

It is unlikely that any steel producer or even the entire industry en masse would be willing to supply the magnitude of capex necessary. But by joining forces across industries, steel can pool resources with deep-pocketed industries that also will benefit from steel's conversion.

To facilitate a ramp up in green steel, the industry must also deal with the shortage of renewable energy — probably the biggest immediate obstacle to steel's efforts to decarbonize.

**700%** growth in green steel production is anticipated between 2025 and 2030

The International Energy Agency (IEA) has stressed that the period between now and 2030 must become one of unprecedented clean energy investment, requiring the addition of some 630 gigawatts (GW) of solar photovoltaics and 390 GW of wind by the end of this decade. That would be four times the record levels set in 2020 and would require trillions more investment dollars to build the necessary renewable energy capacity. But this effort will need the support of the global economy, not just one industry.

## URGENT NEED TO ACT

The next seven years will be make-or-break for steel, given how long it will take to build these ecosystems and transition the industry. To be a survivor over the long run, a steel producer will need to be a part of one of these networks. Otherwise, it would likely go out of business or become so peripheral to what will eventually become a global green steel market that it might as well be.

This is not only because the demand will increasingly shift to green steel. Banks and institutional investors — on their own quests to decarbonize portfolios — are already raising the cost of capital to carbon-intensive businesses, meaning growth or even operational improvements may come at a steep price.

There are opportunities available for green steel providers, with a little boldness and willingness to break the industry's mold, to transform steel into a global economic model for decarbonization.

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A version of this article appeared in the [World Economic Forum](#).





# **EMBRACING NATURE INTO CHEMICALS, CEMENT, AND CONSUMER GOODS**



Jennifer Tsim

Robert Bailey

Sebastian Gerlach

Nature is the foundation of the global economy. More than half of the world's GDP is moderately or highly dependent on nature and its services. Despite this dependency, businesses in all sectors and geographies have negative impacts on nature, causing it to degrade faster than it can regenerate. Today, the resources humanity is using are equivalent to that of 1.75 Earths. Humans have exceeded seven out of eight globally quantified safe and just Earth system boundaries, risking crossing irreversible tipping points.

To enact nature-positive action at the scale and speed required, it is crucial for businesses to understand their specific interactions with nature within their sectors.

## **To enact nature-positive action at the scale and speed required, businesses must understand their specific interactions with nature within their sectors**

To help inform these sectoral approaches, Oliver Wyman has partnered with the World Economic Forum to release a report series. These reports detail material impacts and dependencies on nature and outline priority actions within sectors to avoid and reduce negative impacts, mitigate nature-related risks, and unlock opportunities across value chains.

This initiative is a collaboration with Business For Nature and the World Business Council For Sustainable Development, providing sector-specific guidance for 12 global industries.

### **NATURE POSITIVE: CHEMICALS SECTOR**

Global chemicals sales amount to approximately \$4 trillion a year, providing essential materials for 95% of all manufactured goods worldwide. This report outlines five priority actions for the chemicals sector to reduce its impact on nature. These actions focus on reducing water use, pollution, greenhouse gas (GHG) emissions, and land-use change. By implementing these actions, the sector can unlock \$320 billion in annual business opportunities by 2030 in the emerging nature-positive economy.

# **\$320 BILLION**

a year in business opportunities in the nature-positive economy could be unlocked by the chemicals sector by 2030

## NATURE POSITIVE: HOUSEHOLD AND PERSONAL CARE PRODUCTS SECTOR

Household and personal care products are central to our daily lives and generate approximately \$700 billion in annual revenues, but this comes at a cost to nature. This report presents five priority actions for the household and personal care products sector to reduce its impact on nature. These actions focus on reducing water use, pollution, GHG emissions, and land-use change. By adopting these actions, the sector can unlock \$60 billion in annual business opportunities by 2030 in the new nature-positive economy.

# \$60 BILLION

a year in business opportunities in the nature-positive economy could be unlocked by the household/personal care products sector by 2030

## NATURE POSITIVE: ROLE OF THE CEMENT AND CONCRETE SECTOR

After water, concrete is the second most consumed material in the world. With no scalable substitutes currently available, it is a critical construction material for society — with cement being a key input in its production. This report reveals five priority actions for the cement and concrete sector to reduce its impact on nature through water use, land use, and ecosystem disturbance, as well as GHG emissions and air pollution. By implementing these actions, the sector can unlock \$40 billion in annual business opportunities by 2030 in the burgeoning nature-positive economy.

# \$40 BILLION

a year in business opportunities in the nature-positive economy could be unlocked by the cement/concrete sector by 2030

Read the original article [here](#)

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*Additional contributors: Katie Mawdsley*



# CHEMICAL INDUSTRY'S SOLUTION TO THE PLASTIC PACKAGING GAP

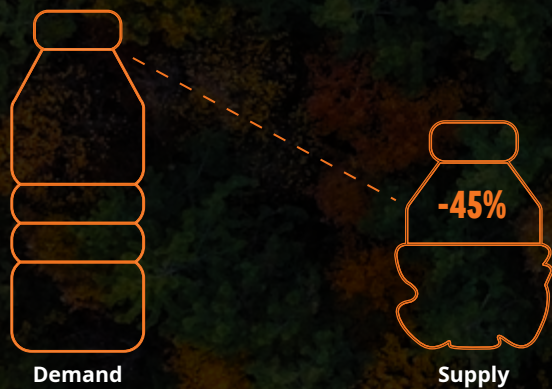
The industry that created plastic may fix its waste problem

Enabling a circular economy around plastic packaging is crucial for addressing the environmental challenges of single-use plastics made from fossil fuel feedstocks. Virgin plastic (newly produced, unused plastic) dominates the packaging market because of its versatility, established production technologies, and abundant feedstock availability.

A significant downside of virgin plastics is their widespread use, which has significant consequences for nature and the environment. To meet the urgent need for sustainable alternatives, consumers and regulators worldwide are advocating a shift from

single-use plastics to recycled ones. Increasing the use of recycled plastics in packaging is a promising solution that could reduce reliance on fossil fuel feedstocks and minimize the environmental impact of plastic waste.

However, transitioning to a circular economy for plastics packaging faces a significant hurdle: Insufficient supply of recycled polymers and monomers. Our projections indicate that by 2040, the demand for recycled plastics in Europe for packaging alone will exceed supply by 4.5 million tons, a shortfall of approximately 45%.



Source: Oliver Wyman analysis

Our projections indicate that **by 2040**, the demand for recycled plastics in Europe for packaging alone will exceed supply by 4.5 million tons, a **shortfall of approximately 45%**

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**Hendrik Flock** is a principal of Oliver Wyman.

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**How To Make Food Sustainable Along The Whole Value Chain**

Julien Hereng

**Why European Rail Freight Must Evolve With Its Customers**

Joris D'Inca, Kirsten König

**Food Retailers Need To Act Now For A Net-Zero Future**

Coen de Vuijst, Julien Hereng, Suzanne van der Meijden

**Understanding The Environmental Impacts Of Online Shopping**

Mehdi El Alami

**CUSTOMERS**





# HOW TO MAKE FOOD SUSTAINABLE ALONG THE WHOLE VALUE CHAIN



Julien Hereng

Much about today's food industry is unrecognizable from 15 years ago. Vegan options are widespread. Shoppers use apps to evaluate the nutritional value of their basket. And plastic has been minimized — in many countries, as a step toward abolishing its single use.

We think this is just the start of a farm-to-fork food revolution that will make food more sustainable in numerous ways. In the future, food production will use less water, generate lower greenhouse gas emissions, and not need to travel so far. It will be healthier, less processed, and lower in calories. Value will be shared more equitably — especially with farmers — while animal welfare will be given greater respect.

The emerging ecosystem is a big departure from the industrialized farming developed from the 1950s. That has a heavy environmental footprint, and one-third of global food production is wasted. Much food is unhealthy too — heavily processed and poor in nutritional value, with large amounts of fat, salt, and sugar. It has become a risk factor in obesity and other conditions, and about 50% of mortality is linked to an unbalanced diet according to the [Global Burden Of Disease report](#).

**15-20%**

of Climate Catalysts are activist shoppers practice frugality, according to a global study of 100,000 consumers by the Oliver Wyman Forum

A major driver of the recent changes is new demands from consumers. In most countries, 50% to 80% say they are prepared to try to reduce their environmental impact. In France, 60% are prepared to reduce their meat consumption and 40% their dairy. Many people have already stopped buying mineral water, while more than 50% buy local and organic products regularly.

Some shoppers have become activist consumers (15-20% are "Climate Catalysts") who practice frugality, according to a global study by the [Oliver Wyman Forum](#) of 100,000 consumers.

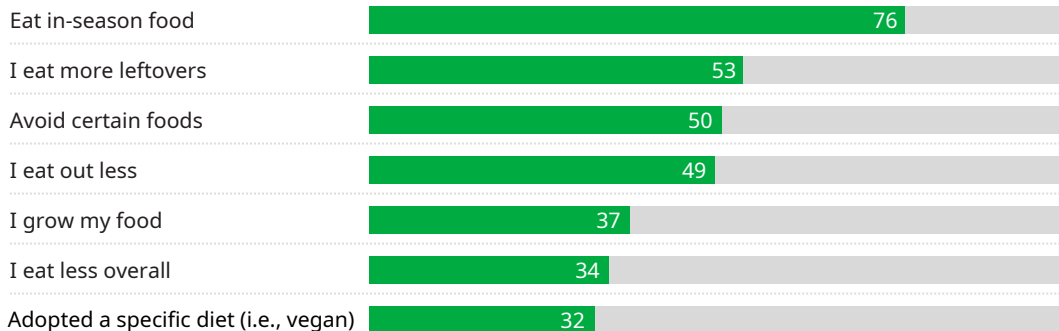
**In the future, food production will use less water, generate lower greenhouse gas emissions, and not need to travel so far**

Of these, 50% shop less frequently, 75% favor seasonal products, and around 60% focus on organic and local products. Globally, such activists could make up 15-20% of the population in 2030, according to our study.

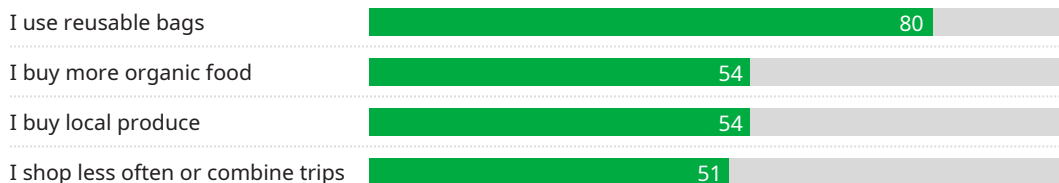
**Exhibit 1: Food consumptions habits of "Climate Catalysts"**

Percent of survey respondents (France)

**Diet**



**Shopping**



Source: Oliver Wyman Forum Global Consumer Sentiment Survey 2021

## HOW FOOD COMPANIES CAN TRANSFORM THEIR INDUSTRY FOR A SUSTAINABLE FUTURE

To keep pace with this revolution, food companies need to involve all actors in the industry — from agriculture to government — and act in the three following areas.

### REDUCE THE IMPACT OF EXISTING ACTIVITIES

Food production currently generates between 25% and 30% of global carbon emissions and uses 70% of water consumed. A first step for food companies is to decarbonize their existing operations, especially by lowering their energy use, including through a reduction in the distances they transport their products.



They also can work with farmers to reduce the amount of soil and water needed for growing crops. The next stage is to set scientific climate goals and define a sustainable path aligned with these. The path should be developed with partners and the community, and it should encompass the environment, health, and equitability. One way to finance the transition is through greater efficiency; for example: by reducing input waste through precision agriculture.

## **OVERHAUL THE VALUE PROPOSITION**

Consumers support greater sustainability in food but are often reluctant to spend more for it: More than half the population is waiting for more affordable prices before they alter their choices. Even among activist consumers, just 30% are ready to pay a premium of over 5% for sustainable food. But food companies also need to pay greater attention to farmers, who currently receive little of the value in the industry and are in many cases struggling economically.

### **In previous industrial revolutions, the winners were the early adopters, and the same will apply to sustainable food**

The challenge for food companies is therefore to organize their ecosystem in a socially responsible way. So far, such efforts have included products that are less processed and packaging that is reduced to the essentials and made from 100% recycled and recyclable materials. Waste can be limited by adapting portions to sustainable consumption. Another step is to develop products through a design-to-values approach that finds a balance between sustainability, profitability, and benefits to consumers and farmers. In the future, alternative sources of protein — based on plants and even insects — have the potential to reduce carbon emissions and water use. Companies also should dare to disinvest from an activity if it is no longer compatible with their goals.

## Exhibit 2: Environmental impact of the food industry

Share of food industry greenhouse gas emissions

### Land use change

8% for human food  
16% for livestock



- Aboveground changes in biomass from deforestation
- Belowground changes in soil carbon

### Crop production

21% for human food  
6% for animal feed



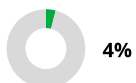
- Methane from rice
- Emissions from fertilizers
- Manure and farm machinery

### Livestock & fish farms



- Methane from cattle digestion
- Emissions from manure and pasture management
- Fuel use from fisheries

### Processing



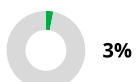
- Emissions from energy use in food processing

### Transport



- Emissions from energy use in the transport of food

### Retail



- Emissions from energy use in refrigeration and other processes

### Packaging



- Emissions from the production of packaging materials, transport, and end-of-life disposal

Source: Our World in Data, Oliver Wyman analysis

## INVEST IN NEW MODELS

Food companies will achieve maximum impact by reinventing their relationships with partners. They can invest in the development of precision agriculture, raising the ratio of output to inputs, as well as in new business models such as aquaponics, a system that feeds nutrient-rich aquaculture water to plants grown hydroponically (in water).

### **Sustainable food could represent up to 40% of volumes in about five years; it will be especially successful if it remains affordable**

Other contributions might come from the diversification of agriculture systems, by relocating growing activities, and from land management that promotes carbon sequestration in soil to mitigate carbon dioxide emissions. A growing number of apps have been launched to help reduce waste. [BeneBono](#) offers customers unusually shaped fruit and vegetables that are normally thrown away. [Phenix](#) and [Too Good to Go](#) aim to connect people and organizations to stores and restaurants with surplus food. Food companies can also work with lawmakers to change standards that lead to waste, such as arbitrary expiry dates and norms for vegetables' size, shape, and color.

## INDUSTRY-WIDE ACTION IS NEEDED FAST

Sustainable food could represent up to 40% of volumes in about five years, and it will be especially successful if it remains affordable, carrying no price premium. Consumers appear to want sustainable food, but their purchasing decisions may not always match their declarations of intention. Achieving these goals needs the whole industry — agriculture, food production, and distribution — to work together. In previous industrial revolutions, the winners were the early adopters, and the same will apply to sustainable food. Currently, industry giants are trailing startups, so it is time to be proactive.

Read the original article [here](#)

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***Julien Hereng** is a partner of Oliver Wyman in the Retail and Consumer Goods practice.*

*The author wishes to thank Laure Charpentier, Salomé Heiob, and Charlotte Aubernon for their contributions to this article.*





# WHY EUROPEAN RAIL FREIGHT MUST EVOLVE WITH ITS CUSTOMERS

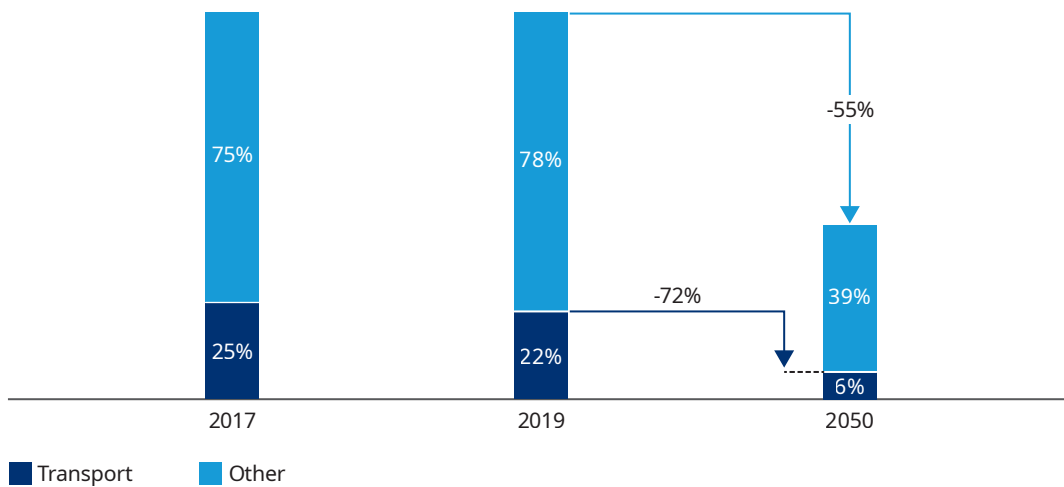


Joris D'Inca  
Kirsten König

Trucking accounts for the majority of freight transportation in the European Union today. But rail is much more fuel efficient than trucking (in terms of tons of goods moved per liter of fuel), meaning that shifting the transport of goods from road to rail would reduce greenhouse gas emissions, a key goal of the European Green Deal (Exhibit 1). And rail offers additional benefits compared to trucking, including more efficient land use, less air and noise pollution, and less congestion and wear and tear on roads. Exploiting these advantages over the next 5 to 10 years is critical, not least to increase rail competitiveness, as trucking is expected to make steady progress in decarbonization (such as through electrification).

**2x** as many companies want to use rail freight as do now, but customers won't switch just for rail's environmental benefits

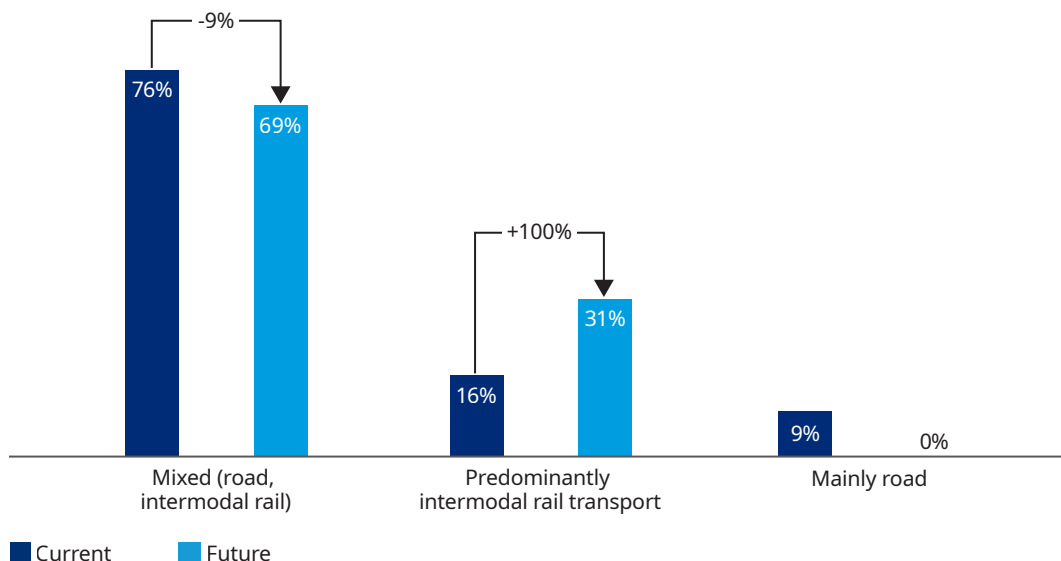
**Exhibit 1: Current CO2 emissions and planned reductions by 2050 set out in the European Green Deal**



Market conditions have never been better to attract more freight to rail. A recent survey by Oliver Wyman of 40 companies in the manufacturing and trade/transport sectors found that twice as many companies want to use rail freight as do now (Exhibit 2). But these customers will not switch because of rail's environmental benefits alone: Service performance and reliability demands for just-in-time supply chains must be met.

**To ensure the competitiveness of rail freight, operators will need to respond to new and different factors driving customer shipping decisions**

**Exhibit 2: Potential current and future transport mix**



Source: Oliver Wyman analysis

## WHAT DO POTENTIAL RAIL CUSTOMERS WANT?

To ensure the competitiveness of rail freight, operators will need to respond to new and different factors driving customer shipping decisions (Exhibit 3). Traditional criteria such as punctuality, cost effectiveness, and reliability are now considered to be “table stakes.” New customer expectations driving mode choice include high performance through solutions expertise and digitalization, easy access to capacity, and complete transparency throughout the transport process. Specific drivers called out by survey respondents included:

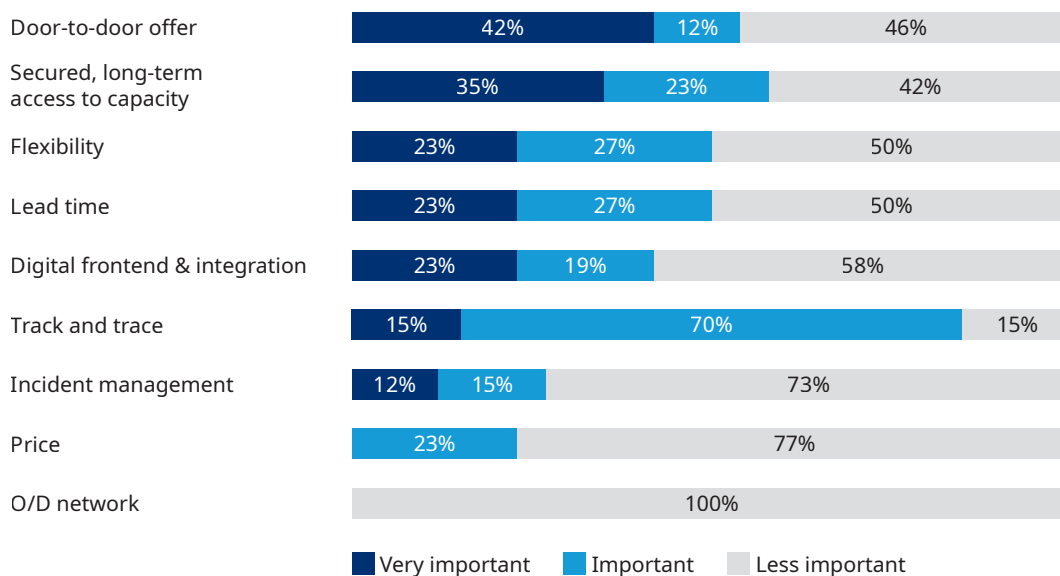
- Transnational and long-term availability of capacity on relevant corridors, to provide stability for today’s high-performance logistics chains
- Simple door-to-door solutions from a single point of contact. In the future, this will require closer cooperation between rail logistics operators and freight forwarders.
- An end-to-end digital offering and digitized customer interfaces that provide convenience and a positive user experience. A customer’s own control towers and system must be easy to integrate.

Generally, both manufacturing and transport customers attach importance to these criteria. For transport customers, however, capacity, lead times, and flexibility are the most critical issues, while manufacturing customers see the complete door-to-door offer as most important, followed by capacity access. The challenge for rail is to develop a more secure, simple, and modern offer that can meet these diverse demands.



**Exhibit 3: Decision criteria for modal selection, manufacturing customers**

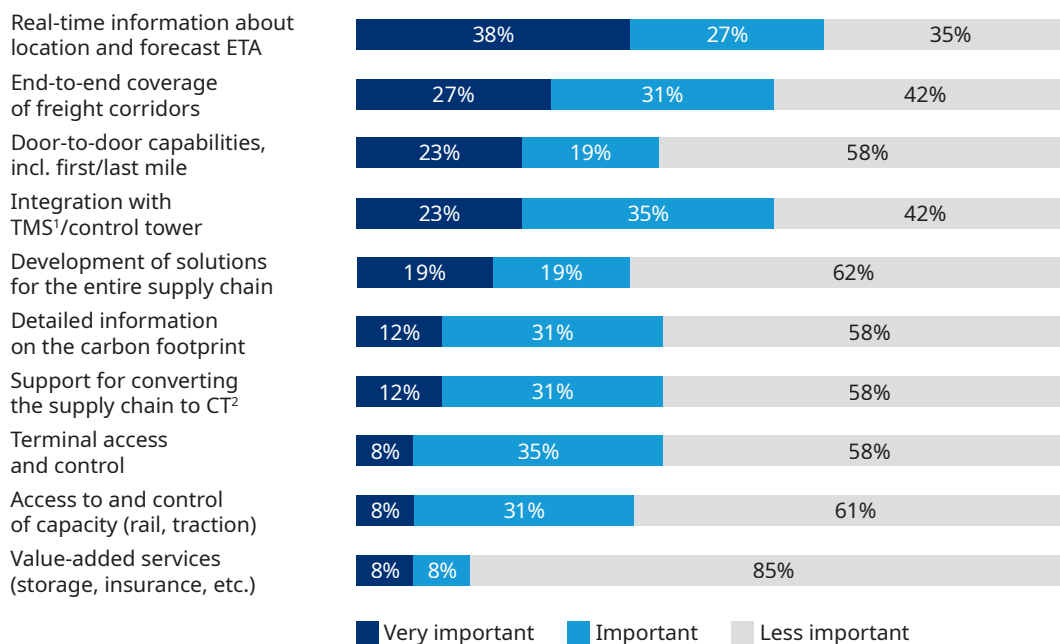
Percent of survey respondents



Source: Oliver Wyman survey

Regarding specific rail operational capabilities that customers are looking for, both transport and manufacturing customers place the most value on the availability of real-time information and end-to-end corridor management (Exhibit 4). About a quarter of transport customers also value carbon footprint information.

**Exhibit 4: Required rail operational capabilities, manufacturing customers**



Note: (1) TMS: Traffic Management System, (2) CT: Combined Transport

Source: Oliver Wyman survey

## KEY RAIL TRANSPORT DEVELOPMENT INITIATIVES

Faced with margin weakness, the difficulty of transforming complex operations, and the need to work with infrastructure limitations, rail operators may see evolving customer requirements as difficult, if not impossible, to meet. But Oliver Wyman believes that many improvements could at least be initiated by leveraging customer goodwill and the exceptional loyalty and enthusiasm of employees.

### **Customers will not switch because of rail's environmental benefits alone: Service performance and reliability demands also must be met**

Even though the focus will vary for each operator, in light of our study findings, six themes for development stand out as critical to ensure rail competitiveness into the future:

### **MODERNIZATION THROUGH AUTOMATION AND DIGITALIZATION**

Digital offerings will play a growing role in optimizing processes and service performance. This extends from the digitalization of customer interfaces for end-to-end control to accelerated offer generation and digital platforms that provide enhanced transparency. Access points and booking processes must be simplified and transport information must be available continuously (including real-time arrival times and delays). One fast-start option for rail operators would be to pursue integration with existing digital providers, such as freight exchanges, e-forwarders, or tendering platforms, for targeted service purchasing pre- and on-carriage. Investments in future technologies, such as artificial intelligence for traffic and incident management, perception-based sensor technology, and a sound information technology basis for automated train operation also will be necessary to ensure long-term competitiveness.

### **INCREASED FLEXIBILITY**

Rail organizations and resources must become more flexible by breaking rigid planning and control processes. Active capacity management is a critical capability here. This includes rolling planning for rail freight and forecasting that is used as a standard to identify and optimize critical bottlenecks within the rail network.

## **LESS COMPLEXITY AND MORE CUSTOMER-CENTRICITY**

The rail organization must be simplified along the value chain and interfaces must be reduced. Closer linkages among planning, information, and control processes, together with a precise understanding of customer requirements, are needed to optimize supply management. To this end, we expect more integrated business models will emerge that can anticipate customer needs and respond to the market more quickly and precisely.

## **SOLUTIONS DESIGN COMPETENCE**

Logistics chains must be designed much more actively, through strong solutions competence and high-frequency offers that evolve out of collaboration between rail operators and customers. Rail freight must position itself as a business developer and offer solution-oriented sales and adapted solutions designs.

## **CORRIDOR AND CONSTRUCTION MANAGEMENT**

End-to-end corridor management that plans train paths from a single source and manages trains along an entire corridor is crucial. Rather than keying in on specific route segments, as has been the case up to now, the full transport run, including pertinent nodes, must be the focus. The goal is to think transnationally and to implement centralized European corridor management. Optimizing construction management (i.e., integrated construction site planning) also will be important; construction must be carried out in a way that reduces its impact on capacity, such as by introducing construction cycles and bundling measures. To guarantee capacity, long-term cooperation models with the construction industry and planning horizons of several years are required.

■  
**Solidarity must be sought in the “ecosystem” of rail freight transport**

## **EVOLVING THE RAIL FREIGHT ECOSYSTEM**

Finally, solidarity must be sought in the “ecosystem” of rail freight transport. Customers and industry participants are willing to engage in a transparent and open process to clear major hurdles. For example, securing capacity in the short and medium term could be addressed through greater cooperation between operators, third-party logistics providers, and shippers.



To reduce potential future constraints, the industry will need forward-looking capacity measures. This will require utilizing more sophisticated and collective demand forecasting to predict baseline traffic demand by industry, as well as the potential traffic that could be shifted from truck by better meeting the needs of customers looking to switch to rail. Changes in industry and demand clusters in Europe, customer requirements, prioritized traffic types, and traffic volatility also must be taken into account. This would allow for the calculation of both present and future capacity on a risk-adjusted basis, resulting in bottlenecks being identified, prioritized, and urgently corrected.

In summary, only by adapting to satisfy evolving customer requirements, reduce complexity, and improve service performance and reliability will rail freight operators be able to win share from trucking and play a larger role in helping combat climate change. Expectations have been defined — the task now is for all rail industry participants to find a collaborative and comprehensive way forward to meet them.

Read the original article [here](#)

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# FOOD RETAILERS NEED TO ACT NOW FOR A NET-ZERO FUTURE



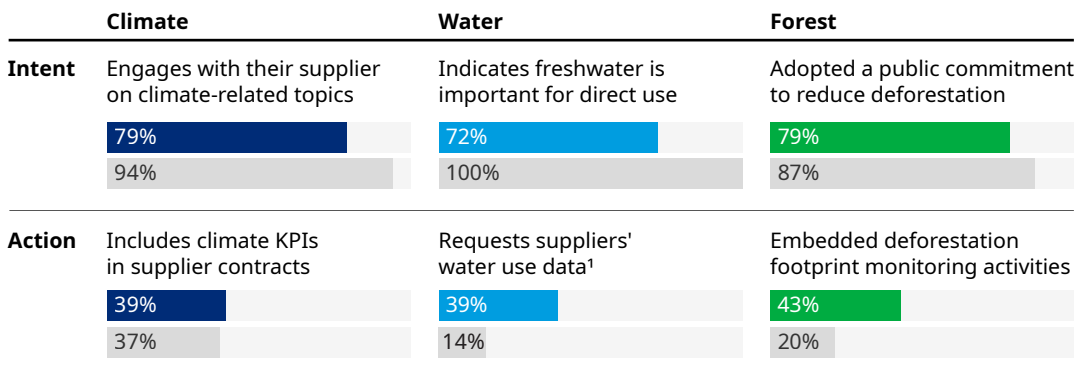
Coen de Vuijst  
Julien Hereng  
Suzanne van der Meijden

Agriculture and food systems are responsible for 31% of human-caused greenhouse gas (GHG) emissions and are also among the biggest drivers of water use, land-use change, habitat destruction, and biodiversity loss. That’s according to the latest [CDP Europe report](#), which surveyed some 1,500 companies, representing around 75% of European market capitalization on corporate efforts to cut emissions. The report is produced by global carbon monitor CDP and consulting firm Oliver Wyman.

While around half of the European companies that filled out the CDP questionnaire reported having 1.5°C climate transition plans, under 5% have demonstrated advanced progress in developing ways to connect their transition plans with business plans. According to the report, the food industry has one of the widest gaps between its ambition to cut emissions and its practices.

This year’s report featured a deep dive on grocery retail, describing the sector as strong on intent, but failing to translate the desire to cut emissions into action. In this deep dive, we will highlight key conclusions of the CDP report and next steps retailers should take.

**Exhibit 1: Grocery retailers are strong on intent, but lacking in action to reduce their environmental footprint**



■ CDP respondent average ■ Grocery retail

1. Respondents indicating that they do not know if they requested their suppliers' water use are marked as no.  
Source: Oliver Wyman analysis; CDP data, retail sector deep dive

**The food industry, including grocery retail, has one of the widest gaps between its ambition to cut emissions and its actual practices**



Grocery retailers are among the most value-chain dependent sectors in the economy, with 97% of their emissions produced upstream in supply chains or downstream with customers. These are referred to as Scope 3 emissions, and for companies, these emissions are among the hardest to quantify and reduce because they are not in the direct control of the manufacturer or retailer.

**31%** of human-caused GHG emissions come from agriculture and food systems, which are also the largest drivers of water use, land-use change, habitat destruction, and biodiversity loss

In practice, most grocers are not yet creating the kind of contractual relationships with suppliers that leverage doing business with them as an incentive to cut emissions and protect nature. More than 70% of grocery emissions are being generated by these suppliers. Downstream, too, grocers could incentivize customers to buy products with smaller carbon footprints through pricing, assortment, and promotion practices.

## THE KEY STEPS GROCERY RETAILERS MUST FOLLOW TO ACHIEVE CLIMATE GOALS

To make meaningful steps toward closing the delivery gap, grocery retailers need to act now, detailing how they will achieve their climate goals. For grocers, the key efforts are likely to be through departments sourcing products and those merchandising them:

### **Develop a sustainable procurement strategy:**

- Screen the assortment of products and determine how to make it more sustainable by finding new products or new sources of old products that will reduce their carbon footprints. This may require bringing new suppliers onboard with more sustainable operations or in areas that regulate impacts on nature. It also may involve relying more on private-label merchandise, where grocers have more control.
- Make demands on suppliers about practices deemed acceptable and set targets for reduction of emissions. Be clear about the consequences if suppliers fail to comply, which could involve cutbacks in business with the supplier or the delisting of the supplier
- Monitor the progress of suppliers through clearly structured, regular data exchanges and help the supplier, if necessary, to develop tools to measure progress

**Transform merchandising and guide consumers in the right direction.** Then leverage the extra efforts in negotiations to encourage suppliers to participate. For instance:

- Provide attractive placement and increase promotion for sustainable products
- Decrease promotions that encourage waste or promote unsustainable products
- Adapt target margins for sustainable products to allow for more of them to be used

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## **Consumers today are more aware than ever of climate change and sustainability issues, and thus primed for sincere outreach efforts on the part of grocery retailers**

### **RETAILERS SHOULD KEEP THE FOLLOWING ELEMENTS IN MIND WHEN CRAFTING TRANSITION PLANS**

- Approach the transformation with both top-down and bottom-up strategies to create a culture of sustainability in which central management and operational staff are all working toward net zero
- Be transparent about the short-term financial implications as well as long-term finance and risk benefits of the transition with stakeholders, including financial institutions, shareholders, employees, and even customers
- Prioritize battles and commit only to achievable and meaningful actions — avoid announcing small, token measures
- Bring consumers on board, and keep in mind that readiness strongly differs per geography
- Anticipate that this is an effort that must be sustained over decades and through successive generations of managers to be successful

As scrutiny of transition plans increases, grocery retailers will begin to feel the heat around emissions and their impact on nature. Being proactive will at least put companies on the right side of the debate.

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**Suzanne van der Meijden** is a principal of Oliver Wyman.



# UNDERSTANDING THE ENVIRONMENTAL IMPACTS OF ONLINE SHOPPING

The majority of EU customers make environmental decisions

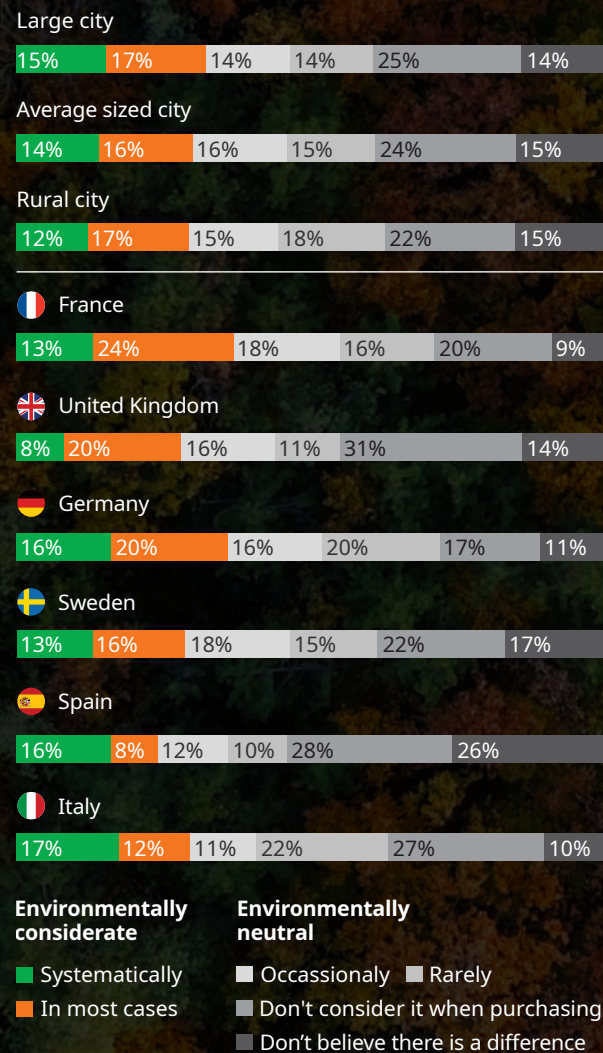
The growing diversity of e-commerce models offers opportunity and choice. But it also makes it increasingly complex for consumers to understand the environmental impact of their online purchases.

In a recent survey by Oliver Wyman, nearly a third of e-shoppers across six European countries said that they do consider the environmental impact of their purchases — either systematically or in most cases. This level of engagement holds true pretty much across the board: Whether buyers are opportunistic or frequent, or live in a city or a rural area. Out of the six countries, shoppers from France and Germany are the most likely to be focused on environmental impacts.

Online shoppers' level of environmental awareness does seem to have increased in recent years; for example, French e-shoppers considering the environment in their purchasing decisions rose from 30% in Oliver Wyman's 2019 survey to 37% in the 2022 survey.

Being aware of the environmental consequences of online shopping appears to have increased customers' willingness to act. A majority of e-shoppers (87%) said that they would be interested in adopting habits to reduce their environmental impact. Changes that customers said they would be willing to make include grouping orders, favoring local shipment, shopping at environmentally friendly merchants/websites, and walking to a pickup point. But the need for speed still prevails — only a minority (13%) would accept delayed delivery if it could reduce delivery emissions.

## Exhibit 1: Environmental considerations when shopping online



Source: Oliver Wyman e-shopper survey October 2022 — 5,264 respondents

This information is based on an independent study led by Oliver Wyman and commissioned by Amazon. [Full report here](#)

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