

# THE REPORT

## A RETROSPECTIVE ON THE ERA OF SUSTAINABLE LOGISTICS

**In collaboration with onepoint5**







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## SHARE. SHAPE. DELIVER.

I am thrilled to share with you the remarkable insights and knowledge gathered during the Era of Sustainable Logistics Global Summit hosted by DHL in beautiful Valencia, Spain. Over 1,000 stakeholders came together – all connected to DHL in one way or another – to share knowledge in order to shape the solutions that will deliver a sustainable future. As Ambassador Patricia Espinosa Cantellano put it so eloquently in her keynote address, our task involves “rethinking and reshaping the way people around the world meet their everyday needs.”

At this point, you may be asking yourself: why DHL? There are two reasons: First, logistics and supply chains are key to a sustainable future; second, there are still more questions than answers, and collaboration is the only way forward. We feel it is our responsibility as a leading logistics provider to bring our customers and suppliers together to facilitate the action all people and our planet so urgently need.

As a global logistics company, we're well aware that our operations consume enormous amounts of energy, from our worldwide fleet of vehicles, to our offices and warehouses in over 220 countries and territories. But sustainable logistics is not just crucial to reducing our own environmental footprint, it is central to the responsible practices of nearly every business in the modern era.

Until recently, logistics had been treated like a commodity with the sole purpose of moving goods from A to B as efficiently as possible. Thankfully, this has changed. With the rise of globalization, the importance of logistics has gradually increased and this modern era is also the era of logistics – the time when our industry will play a key role in enabling a sustainable future.

We only have to go back one year to be reminded of the central role logistics plays in the global economy. Surrounded by uncertainty and ever-increasing volatility, the industry successfully coped with supply and demand imbalances not seen in recent history. Today, business and government leaders, as well as the general public, recognize the fundamental importance of logistics to our lives.

When the COVID-19 pandemic hit, some people predicted the end of globalization. How wrong they were. Cross-border trade growth has increased every single month, except for March and April 2020, when the entire world nearly came to a standstill. Since 1970, globalization has reduced severe poverty by 56% while the planet's population has increased by 50%. Huge imbalances remain, but the bottom line is that global trade improves lives.

The solution for making supply chains greener is not less globalization or trade. It's more collaboration and innovation. By prioritizing cleaner, greener logistics and working together, we can drive meaningful progress. And we owe it to future generations to take bold action and make commitments to protect our planet now. That's what we started in Valencia and what we're sharing in this publication. But it's up to everyone to shape their businesses and help deliver a sustainable future!



*Sustainable logistics is not just crucial to reducing our own environmental footprint, it is central to the responsible practices of nearly every business in the modern era.*



**Katja Busch**

Chief Commercial Officer and Head  
Customer Solutions & Innovation  
DHL Group



## AN IMPERATIVE FOR COLLECTIVE ACTION

The climate crisis is worsening right before our eyes. The devastating impact on lives and livelihoods, not to mention the unrelenting loss of ecosystems and biodiversity, makes headlines every day. We are at a turning point in human history. Our action – or inaction – in the coming years will shape the world that future generations will inherit.

Thankfully, there is still hope. The Intergovernmental Panel on Climate Change – the ultimate authority on climate science – recently confirmed that preventing the Earth's temperature from rising above 1.5°C and avoiding the worst effects of climate change is still possible. But the window of opportunity is closing rapidly, which means our challenge is to take bold action before it closes forever.

That is why The Era of Sustainable Logistics – the sector-wide global summit facilitated by DHL – was such a timely and important event. Logistics plays an essential role in every society worldwide. And everyone involved in this global industry, serving billions of people, has a major responsibility and a key role to play in addressing the existential threat posed by climate change.

The summit was a call to action – an appeal to people everywhere in government, business, or civil society to accelerate the transition to sustainable principles and practices and bring about change in every sphere of life and every area of business.

We have achieved so much over the past decades, culminating in the UN Framework Convention on Climate Change and the Paris Agreement, which nearly 200 countries have agreed to implement. But our efforts didn't end when those documents were signed. Our journey has only just begun.

Despite incredible odds, I sincerely believe we can meet this challenge. I have witnessed the incredible ingenuity of people, experienced the passion for saving our planet, and felt the comfort of enduring hope. And today I'm pleased to see climate change deeply embedded in government policies, corporate strategies, and the minds of millions worldwide.

In my view, our most pressing task is to help governments, companies, and communities unlock climate ambition and act at the scale and speed that is needed to meet the goals we set in Paris. And logistics holds a special key. Our world desperately needs resolute commitment and strong leadership from the industry and all stakeholders to promote more sustainable business practices and leverage its central role to help build a more sustainable future.

Collective action is imperative. Shaping our future must be placed at the heart of every business. It must, in effect, be your business.

In the following pages, you will get a glimpse of what the future could look like if we all work together. My hope is that it serves as an inspiration to all of us seeking to protect that future for the generations to come.

*Patricia Espinosa*



*We are at a turning point in human history. Our action – or inaction – over the next years and decades will shape the world that future generations will inherit.*



**Patricia Espinosa Cantellano**  
CEO of onepoint5 and former UNFCCC  
Executive Secretary



*“Our blind assault on the planet is changing the very fundamentals of the living world.”*

**Sir David Attenborough**  
Biologist, environmentalist

## INTRODUCTION CLEANER AND GREENER CLIMATES AND THE ROLE OF LOGISTICS

Climate change is already causing dangerous and widespread disruption worldwide at current warming levels, estimated to be about 1.1°C above the pre-industrial average. Billions of people live in highly vulnerable areas, but no country will be immune to the effects.

Despite a brief downturn in the wake of the COVID-19 pandemic, global greenhouse gas (GHG) emissions have continued to rise. In 2022, the Potsdam Institute for Climate Impact Research published a sobering study showing that the world is already at risk of passing five dangerous climate tipping points. Once we pass them, there’s no turning back – the change becomes self-sustaining. Even if global warming stops.

We must turn the tide. The world’s foremost authority on the climate crisis, the Intergovernmental Panel on Climate Change, concluded that GHG emissions must drop by 43% vis-à-vis the 2019 level by 2030 to prevent global warming from exceeding 1.5°C and avoid the worst impacts of climate change. However, current commitments put us on a trajectory toward a nearly three-degree rise. This would destroy ecosystems, devastate lives and livelihoods, and reverse decades of economic prosperity and social progress across the globe.

### BUILDING THE FUTURE

Here’s the good news: we have the blueprint for a brighter future – we just need to get busy building it! All organizations, whether public or private, must honestly assess their current plans to reduce GHG emissions and make them stronger.

This could be the moment when we tip the balance and shape a sustainable future. After all, sustainability is the point where the world’s interests come together. Nearly 200 countries have joined the Paris Agreement, which provides a roadmap for governments to address the climate crisis.

National governments are driving change through forward-looking legislation and policy. Businesses, civil society organizations, and local governments are embracing sustainable practices and building coalitions to accelerate the much-needed transition. At COP26, over 450 firms across 45 countries committed to financing the estimated \$100 trillion needed for net zero over the next three decades.

## THE ERA OF SUSTAINABLE LOGISTICS

At the Era of Sustainable Logistics Global Summit, DHL brought stakeholders together to share their vision, best practices, and real-world experiences – to show that the current crisis is an opportunity to unlock new and better forms of business growth, economic development, and well-being for all. And that cleaner, greener logistics play an essential role.

In a sense, the summit provided a cross-sector roadmap for businesses of all sizes to navigate the current challenges and progress toward their sustainability goals. This report reviews some of the event’s main themes, starting with strategy and governance – the rethinking every business needs to build a solid foundation for sustainable operations. Chapter two dives into decarbonization and circularity – the challenges and opportunities to reduce emissions across supply chains, and enable a circular economy. Chapter three focuses on a vision for clean energy and mobility backed by digitalization that offers the hope of prosperity for all people.

Transitioning to a circular economy running on cleaner, greener logistics is as urgent as it is unstoppable. Our challenge is accelerating it at the speed and scale the climate crisis demands and delivering a revolutionary business culture with a radical motto: “The world is better off because our business is in it.”

But we can only do this if we work together. So, let’s embrace the Era of Sustainable Logistics, reshape our approach, and do our part to deliver a sustainable world to future generations.



*“We are the first generation to feel the effect of climate change and the last generation who can do something about it.”*

**Barack Obama**  
Former US President





# CHAPTER 1

# STRATEGY & GOVERNANCE

## GETTING THE FOUNDATIONS RIGHT

## HOW ADVANCED IS YOUR SUSTAINABILITY STRATEGY?

There are many steps to planning and building a sustainability strategy, and governance plays a role in all of them. It starts with defining a strategic ambition and accounting for current norms and regulations, and ends with choosing concrete targets and initiatives. Business leaders must honestly assess their business practices and build bold, purposeful strategies to leave behind the unsustainable habits of the past. In short: *if you want to build a sustainable business, you have to get your foundations right.*

A sound strategy, however, will not deliver the desired results without a solid *governance framework*. This has emerged as a critical area of business today, but regulatory frameworks are changing fast, and expectations are increasing. The right foundation includes a comprehensive understanding of the rules and what compliance means. Companies need to see good governance as a competitive edge and act accordingly.

Below we share a blueprint for building a sustainability strategy and map out the key steps for navigating the highly complex and changing governance landscape, including some key points to take with you on your journey.



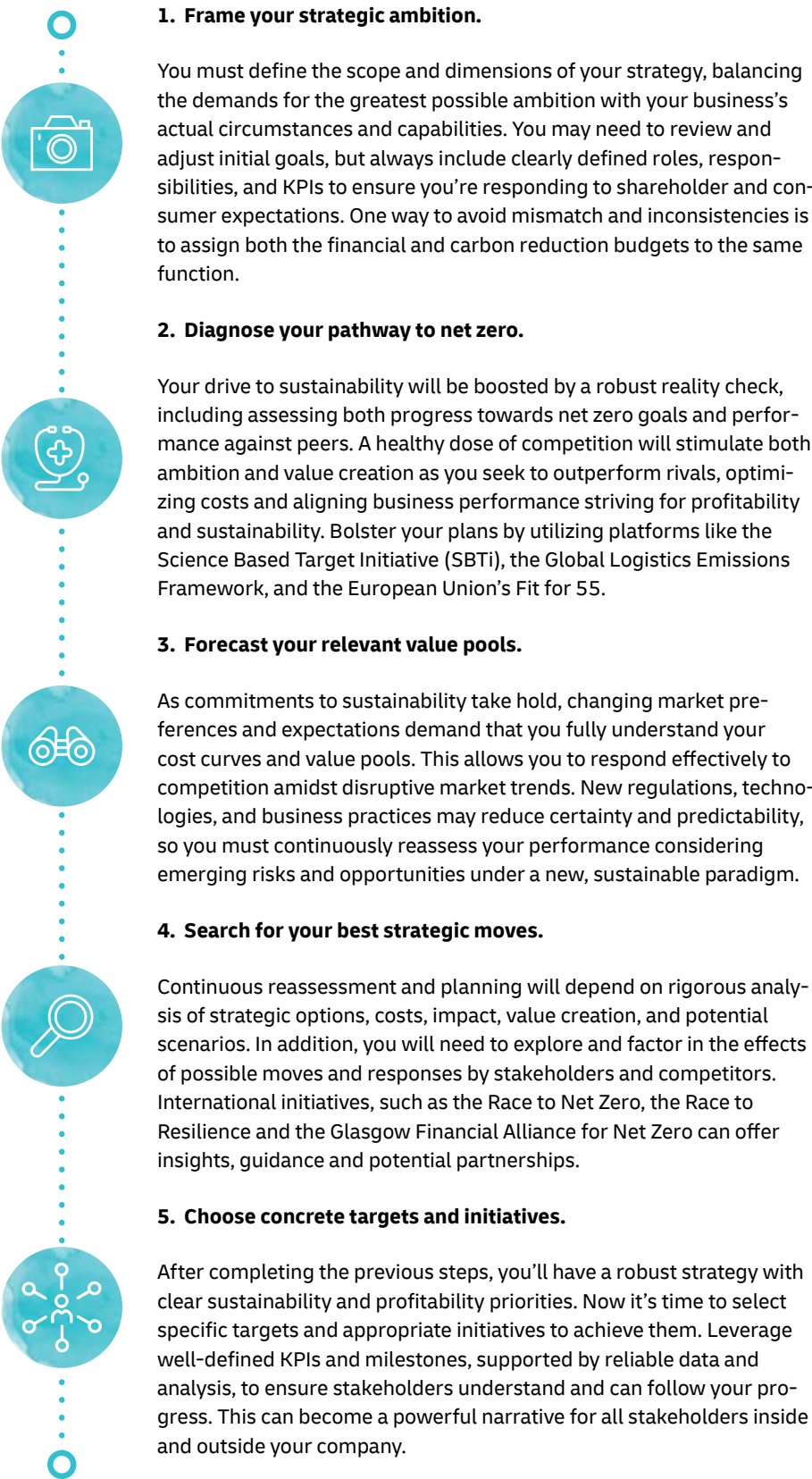


“The greatest threat to our planet is the belief that someone else will save it.”

**Robert Swan, OBE.**  
Explorer and environmentalist

## FIVE STEPS TO A SUSTAINABILITY STRATEGY

A successful sustainability strategy must address a variety of key issues and become an integral part of your overall business strategy. Follow these five steps to ensure that you get there.



## STRATEGY: KEY TAKEAWAYS



## GOVERNANCE: FROM PURE COMPLIANCE TO COMPETITIVE EDGE

If a strategy charts the way forward, corporate governance keeps a company on course. But to manage it successfully and leverage it to add value, you must understand it well. And that's no easy task in today's highly complex and changing regulatory landscape – one in which consumers and investors are now joining governments to scrutinize business practices.

Sustainability governance centers on reporting, investing, and compliance. Ultimately, it's about creating transparency and enabling stakeholders to evaluate a company's goals and the progress toward achieving them.

“If we act now, we can still secure a livable sustainable future for all.”

**Hoesung Lee.**  
Chair of the IPCC







**Reporting: You are what you measure**

How do you know whether a company is sustainable or not? By going beyond financial returns and taking stock of environmental and social impacts. Companies must systematically measure and monitor their environmental, social, and corporate governance (ESG) commitments and performance. This is the only way to clearly understand their achievements and challenges in this area and the basis for adequate disclosure to clients, partners, company personnel, and even the general public.

In the highly complex and changing landscape of sustainable corporate governance, you are what you measure. And tracking real progress toward sustainability goals is becoming ever more demanding, with regulations continuously evolving. ESG reporting now covers a wide range of issues, including waste, emissions, energy efficiency, and environmental impact, as well as social inclusion, diversity, and the protection of human rights both within an organization and throughout the supply chain. These are the standards against which authorities, consumers, and investors are increasingly measuring companies. Misalignment with those standards will likely adversely affect both reputation and revenue.

**Investing: Make your company a sustainable investment**

Sustainable investing has become mainstream. Investors today balance the goals and interests of various stakeholders and consider both financial and non-financial performance when making investment decisions. They want to see economic, environmental, and social returns. Therefore, a sustainable investment must generate environmental, social, and corporate governance benefits alongside financial gains.

The real challenge is to look at all financial decisions through the lens of sustainability. That means always considering the environmental dimension, such as carbon footprint, waste management, water use, and, in some cases, the potential impact on biodiversity and ecosystems. In addition, each decision must account for the firm’s social responsibilities, such as protecting human rights, promoting diversity, and fostering inclusion, in addition to long-established workplace health and safety obligations. Finally, business practices, the way a company is actually run, must be considered. This means thinking about transparency, workplace diversity, management ethics, and even the appropriateness of political engagement.

In terms of climate action, investors need to do two things at the same time. On the one hand, significantly increase funding of new projects aligned with the international climate targets, such as reducing greenhouse gas emissions and enhancing resilience. On the other hand, they need to withdraw funding deliberately and quickly from companies not actively working to achieve carbon neutrality. Both aspects are equally important and need to be pursued in tandem.

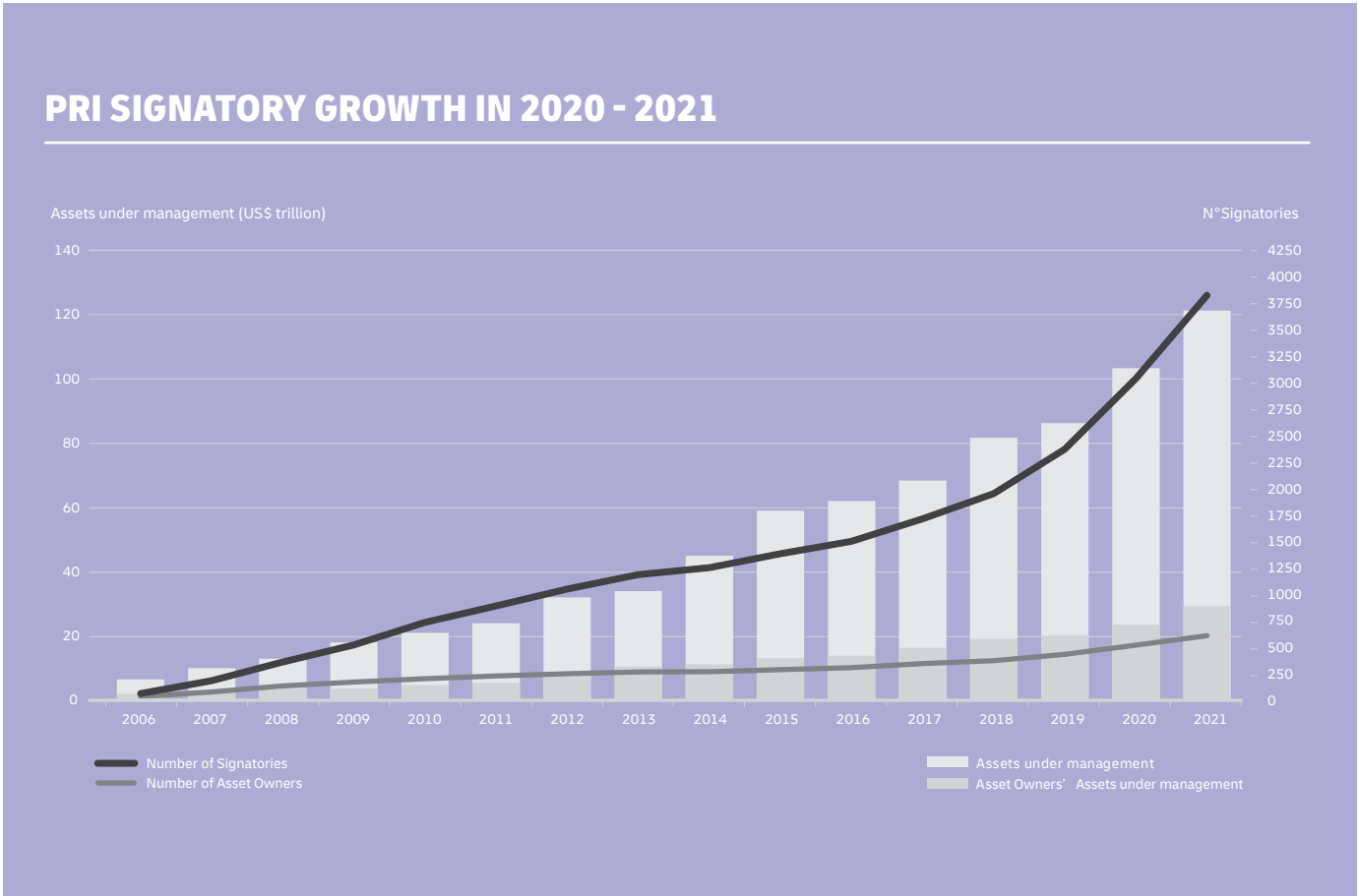
**Compliance: Adopt a sustainability mindset**

The regulatory landscape is vast, increasingly complex, and changing very quickly. This makes compliance complex and challenging, but it’s essential to get it right. Taking a robust and comprehensive approach to compliance is important – a solid sustainability mindset that starts at the top and is spread across your entire organization.

Full compliance with ESG regulations depends on several critical factors. First, top management’s active, visible, and consistent commitment is necessary to develop a culture of compliance. This will confirm to all stakeholders that environmental, social, and governance principles are firmly entrenched in the company’s culture. Second, it is necessary to have clearly defined goals and tasks, and to set up procedures (compliance management system) to ensure that those critical objectives are monitored. Third, all relevant risks must be identified and assessed, with results duly incorporated in the relevant reports. Fourth, policies, guidelines, and risk-mitigating measures will be needed to limit exposure and avoid non-compliance. And fifth, it will be necessary to implement appropriate organizational structures, with clear roles and responsibilities, supported by proper resources as well as adequate training and capacity building.

By embracing a sustainability mindset, companies will internalize the need to constantly track performance and ensure adequate compliance management procedures are in place, which, in turn, will allow them to identify risks and potential shortfalls early, as well as to improve internal controls and efficiency continuously.





▲ **Figure 1**  
Source: Principles for Responsible Investment Annual Report 2021



*“Real momentum is growing for faster, bolder action on climate, unprecedented collaboration across industries, collective courage from leading companies, an unbending commitment to evidence-based policymaking, and a shared vision of a global economy that is both green and just. Now the pressure is on for climate action at speed and with scale.”*

**Paul Polman.**  
Business leader and co-author of *Net Positive: How Courageous Companies thrive by giving more than they take.*

#### The emerging sustainability ethos

The transition to sustainability is clearly underway, as evidenced by the growing number of companies joining global initiatives that track commitments and compliance with ESG principles (see Figure 1). For example, the Principles of Responsible Investing (PRI) has more than 5,000 signatories, with assets under management estimated at more than \$121 trillion. The signatory base increased 28% between 2021 and 2022.

## GOVERNANCE: KEY TAKEAWAYS

**Adherence to standards builds trust**  
Sustainability data and reporting must meet the latest and most stringent standards to ensure stakeholder confidence and drive credible improvements.



**Look ahead and stay ahead**  
Sustainability legislation is changing rapidly. Understanding upcoming changes is essential to anticipating impacts and accessing new opportunities.



**You are only as strong as your weakest link**  
Compliance extends beyond internal operations and across the entire supply chain.



**ESG standards influence decision-making**  
ESG investing is on the rise, making compliance with ESG guidelines an increasingly critical factor for attracting investors. It's crucial to invest in ways to achieve business and ESG targets simultaneously.

## EMBRACING SUSTAINABILITY AS THE RIGHT BUSINESS DECISION

Good intentions and vague promises are not enough. Companies need to develop, publish, and adhere to clear plans to achieve net zero, subject to verification and assessment. This requires making the necessary financial investments in sustainable practices that align with the urgency of the climate challenge we all face.

It is imperative to look beyond short-term profits to long-term impact and realize that profitability alone will not make a business sustainable. Simply put: protecting our planet's future is the right business decision. With a comprehensive sustainability strategy and robust governance, you'll lay the foundations for a new, sustainable business model and ensure your business is a part of that future.



## CHAPTER 2

# DECARBONIZATION & CIRCULARITY

RESHAPING YOUR BUSINESS

## DIVING DEEP AND BENDING THE MODEL

You've mapped out your strategy, made clear commitments, and set up your governance infrastructure. Now it's time to act – to reshape your business into a model of sustainability others will follow.

Since supply chains are at the heart of decarbonization, no industry can reach net zero without sustainable logistics. About 80–90% of a product's emissions are generated in the supply chain, which is the source of some 60% of all carbon emissions globally. By optimizing your supply chain, switching to sustainable fuels wherever possible, and adopting the latest technologies, you can make a real impact right now.

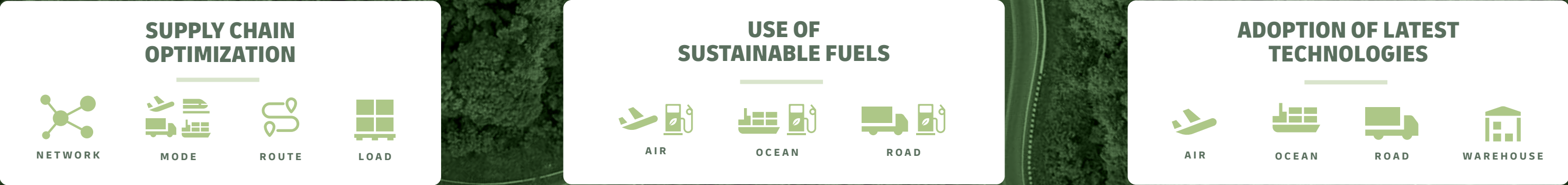
As only 8.5% of material produced globally is recycled into the economy, the transition to a circular economy requires nothing short of a dramatic transformation. Your business can help lead the way by embracing circular design, switching to green packaging, and unlocking the power of reverse logistics.

*“Decarbonization is not just about cutting emissions, it's about investing in a cleaner, healthier, and more prosperous future for all.”*

**Ban Ki-moon**  
Former Secretary-General of  
the United Nations







# THE ROAD TO DECARBONIZATION

The scientific community has warned that emissions must all but be eliminated in the coming years if we are to avoid the worst impacts of climate change. The world must achieve a swift and sweeping transition to sustainable practices – deep decarbonization across all areas of economic activity. Your supply chains harbor huge potential to shrink your carbon footprint, which means the first stop on the road to carbon neutrality is logistics. It’s likely that some two-thirds of your Scope 3 emissions – the indirect emissions generated during upstream and downstream activities – are related to your supply chains. Today’s technologies cannot cut all emissions. However, there are three essential steps you should take now

## Optimize your supply chain

Optimization helps to decarbonize your transport routes. On the one hand, large scale, network, and route optimization can benefit your decarbonization goals. While on the other hand, mode optimization helps by shifting your transport modes from air to ocean or rail. However, there are limitations to this. Optimization can only go so far when it comes to reaching your decarbonization targets.



“Decarbonization is not a cost, but a benefit.”

**Genevieve Guenther**  
Climate activist, founder of End Climate Silence

## Switch to sustainable fuels

The most critical and most effective lever to decarbonize supply chains is using sustainable fuels. There are two types of sustainable fuels, bio-fuels and synthetic fuels. Their environmental impact varies depending on their source, the production process, and where they are used, e.g. for aviation, ocean freight or road freight.

To produce sustainable fuels, CO<sub>2</sub> is absorbed from the air, the previously absorbed CO<sub>2</sub> is then released when they are used, making the feedstock CO<sub>2</sub>e neutral.

Now that sustainable fuels are commercially available, sustainability leaders have an opportunity to invest in decarbonization projects that directly impact the sectors where the emissions originate. This process is known as carbon “insetting,” which physically replaces fossil fuels in supply chain networks.

Some early adopters are already insetting their emissions by switching to sustainable fuels in logistics using the ‘book and claim’ system. This means that, although biofuels won’t necessarily be used to carry your specific shipments, you receive an externally verified emission reduction certificate that you can immediately apply to your business and reduce your carbon footprint.

Today, bio-fuels can reduce air freight emissions by 80% and beyond. With alternative solutions not yet available, the deployment of Sustainable Aviation Fuels (SAF’s) is the primary option in this mode of transport in the short- and mid-term. To date, sustainable fuels are scarce and production sites are about to ramp up, so switching from fossil fuels as soon as possible will help to ensure you meet your upcoming decarbonization targets.

## Adopt the latest technology

Adopting the latest technology available for all modes of transport throughout your supply chain is crucial for reaching decarbonization targets. Electric and hydrogen powered planes are still in the development phase, but that doesn’t mean you can’t decarbonize your air transport. SAFs are available and in use across global air transport networks, and can reduce close to all of your air freight emissions.

In ocean freight, the latest vessel technology helps to reduce carbon emissions by up to 30%\*. If used in combination with sustainable marine fuels, there is huge potential to cut ocean freight emissions. But there is still a while to go until the whole marine industry gets on board with alternative technologies.

In road freight, electric vehicles are the future. They are already being deployed across all networks for first and last mile transport routes. For longer distances and larger trucks, a range of sustainable technologies is available for green line-haul, ranging from the use of bio-diesel, bio-gas, and the first hydrogen fuel cell powered and battery electric heavy-duty trucks are also on the road. The DHL route planning system for heavy-duty battery trucks does not just select the most emission-efficient route for drivers to take, it also takes into account the charging infrastructure to avoid potential disruptions.

There is also potential for decarbonization in new warehousing technologies, like switching to energy lighting, smart building management systems, electricity generated from solar panels, and sustainable heating. Implementing green solutions into pre-existing warehouses is a great way to decrease a site’s carbon footprint in the short term. In the future, carbon-neutral buildings producing their own energy on site will become the new standard – in fact, many have already been built. Efforts should be made to increase the use of sustainable and reusable building materials in the coming years. It won’t be long before warehouse floors are made from recycled products.



# DECARBONIZATION: KEY TAKEAWAYS

**Foundation**  
Know your **carbon footprint**  
Set up **reduction targets & budget**



**Supply Chain Optimization**  
Optimize your supply chain network **locations**  
Select optimal **mode & routes**  
Fully utilize **container/parcel space**

**Transport**  
Switch to **sustainable fuels**  
Adapt to **green technologies** as they become feasible (e.g. EVs for final-mile)



**Warehousing**  
**Retro-fit existing facilities** with key technologies (e.g. solar PV, LED)  
Build every **new facility fully carbon-neutral**

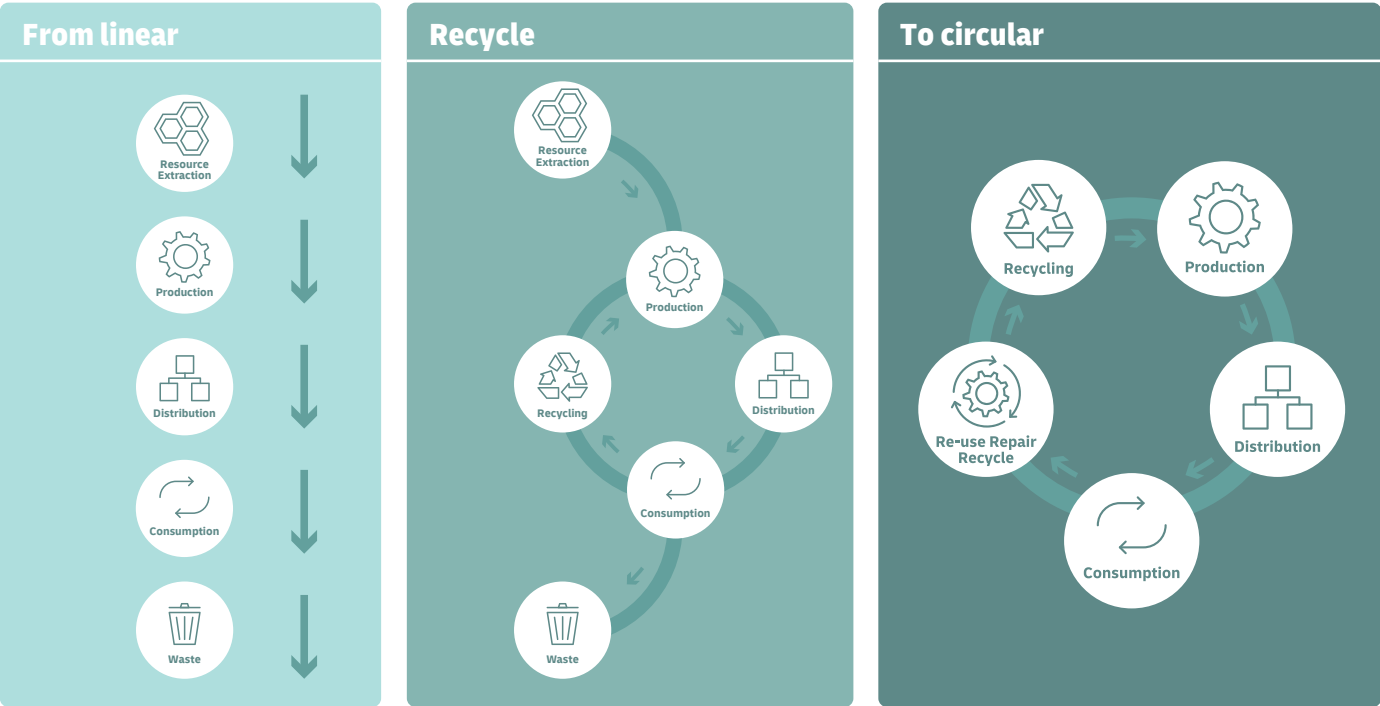


## FROM LINEAR TO CIRCULAR: FLEXING TODAY FOR A BETTER TOMORROW

After nearly two centuries of relentless extraction of raw materials and production of goods that eventually end up as waste, the environmental crisis we face today demands a new economic model.

“There is no such thing as “away”. When we throw anything away it must go somewhere”.

**Anni Leonard**  
Executive Director of  
Greenpeace USA



# CIRCULARITY: KEY TAKEAWAYS

**Make circularity your core.**  
Embed circular economy principles into your business model, from procurement and product design to packaging and material use.



**Embrace circular design**  
Design out waste from the very beginning, focusing on reusable, recyclable, and low-carbon materials and processes.



**Rethink packaging**  
Switch to green packaging solutions and eliminate single-use packaging wherever possible.



**Leverage reverse logistics**  
Reverse logistics is significantly more complex than forward logistics but can unlock new business models and opportunities.



# THE CIRCULAR ECONOMY IN ACTION

Much like decarbonization, transitioning to the circular economy involves decoupling economic activity from the consumption of natural resources.

The following provides a small look at the unlimited possibilities:

### Procurement plays an essential role

Define procurement processes designed to minimize your carbon footprint, reduce waste, and optimize commercial benefits.

### Sustainability by design

Reducing complexity and material use and switching to recycled materials can reduce your costs and carbon footprint.

### Green packaging

Increase resource efficiency, minimize material consumption, and maximize carbon impact.

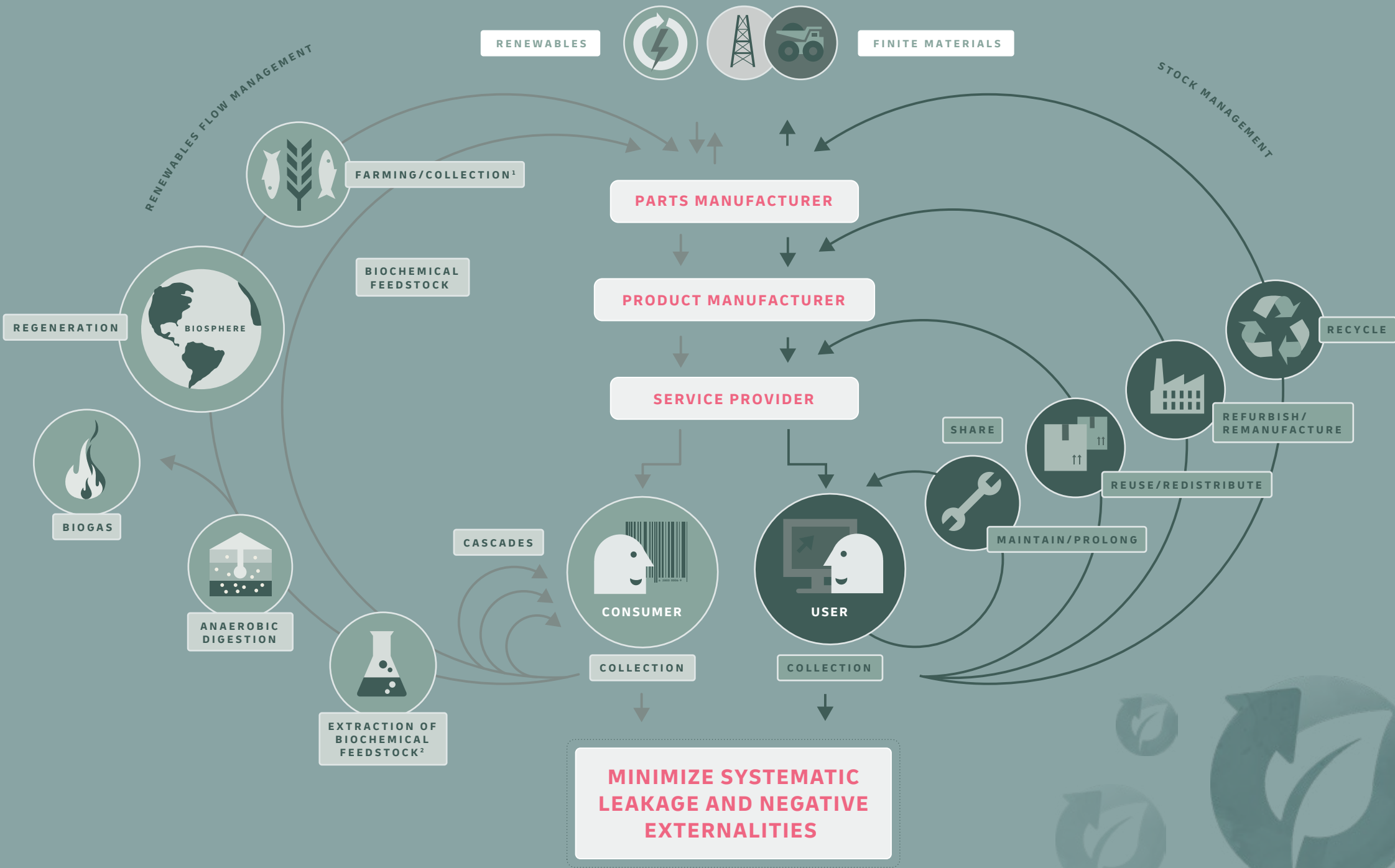
### Circular logistics

Also known as reverse logistics, this is the process of returning goods up the supply chain to recapture value (reuse, recycling, etc.).



“If it can’t be reduced, repaired, rebuilt, refurbished, refinished, resold, recycled or composted, then it should be restricted, redesigned or removed from production.”

**Peter Seeger**  
Musician and social activist



The circular economy system diagram, known as the butterfly diagram, illustrates the continuous flow of materials in a circular economy. There are two main cycles – the technical cycle and the biological cycle.

In the technical cycle, products and materials are kept in circulation through processes such as reuse, repair, remanufacture and recycling. In the biological cycle, the nutrients from biodegradable materials are returned to the Earth to regenerate nature.



## CHAPTER 3

# DIGITALIZATION & CLEAN TECHNOLOGY

ENABLING THE ERA OF SUSTAINABILITY

## A WORLD POWERED BY CLEAN ENERGY AND MOBILITY

Technological innovation has had little regard for the environment for much of the past two hundred years. The products of human ingenuity met people's needs with greater convenience, comfort, and speed than ever before. But they also left unintended consequences, such as the pollution and emissions causing climate change today.

Innovation remains the most critical tool to enable a new era of sustainable business. We must transform the energy supply chain from fossil to renewable fuels and make enormous efficiency gains to reduce consumption. In addition to a radical increase in renewable energy, we need to leverage the power of digital technologies and adapt the logistics landscape.

Backed by a wave of advances in digital technologies, such as artificial intelligence (AI) and the internet of things (IoT), as well as clean technologies, such as renewable energy and electric mobility, we can meet the goals of the Paris Agreement. We must invest in innovation across the board like never before to deliver a green future while keeping the global economy mobile.

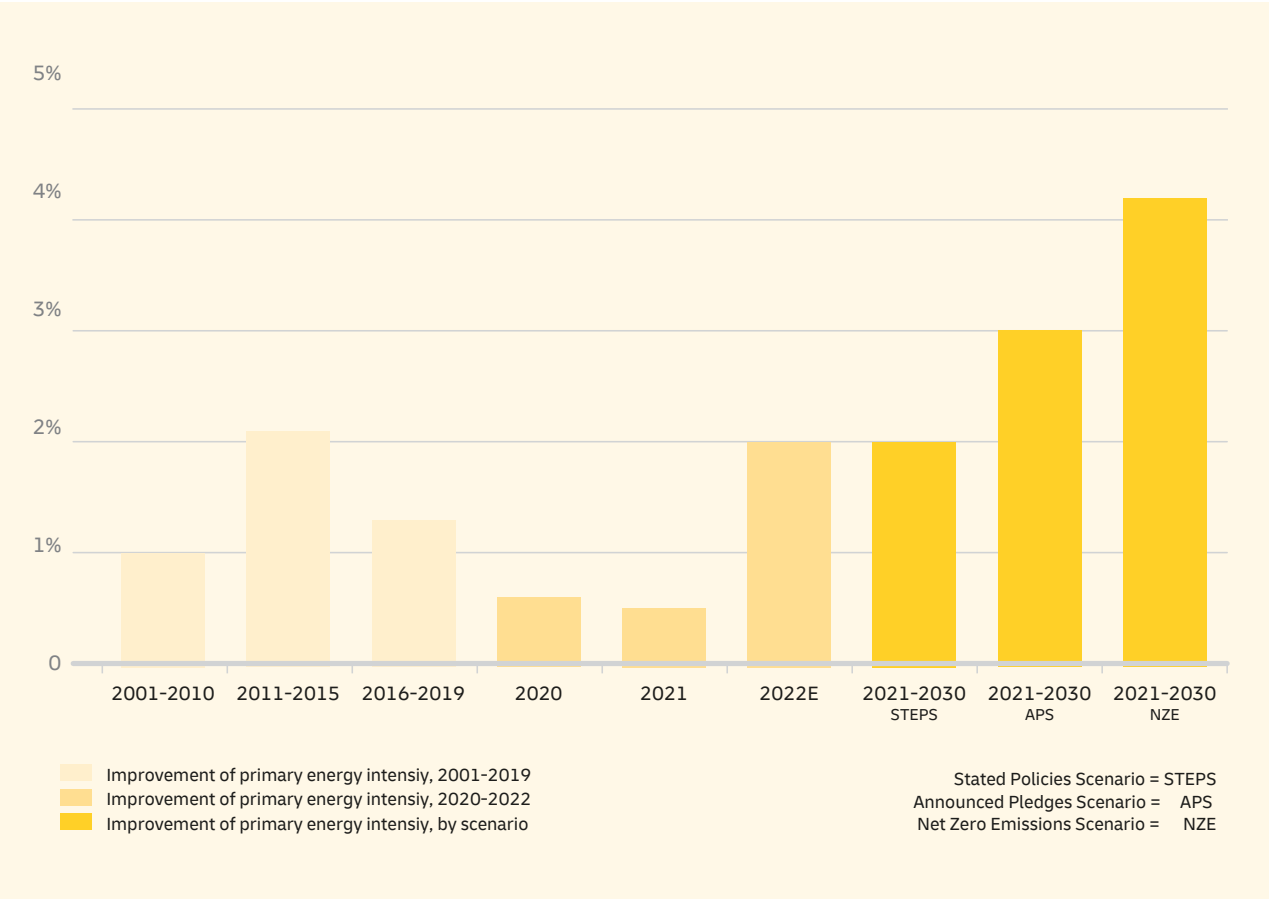
*“The internet has helped move the world to more freedom, transparency, and democracy. It's only natural that it moves to a clean energy revolution that will last for generations to come.”*

**Kumi Naidoo**  
former Executive Director of  
Greenpeace International



# DIGITALIZATION: DATA + CONNECTIVITY = CLIMATE ACTION

According to the International Energy Agency (IEA), the world needs to increase efficiency by 4% each year to be on track to achieve net zero by 2050 (see Figure 2 below). Right now, the world is not on track, but digital technology can help close the gap.



▲ Figure 2  
IEA Annual global primary energy intensity improvement by scenario, 2001-2030

The World Economic Forum (WEF) estimates that digital technology could deliver one-fifth of the emission cuts needed to achieve net zero by 2050 in the three highest-emitting sectors: energy, materials, and mobility. That’s because digitalization holds the key to optimization. The data, software, and connectivity that make up digital networks can unlock efficiency gains in any sector, allowing companies to save resources, lower costs, and improve profitability. Digital tools will enable us to create smart workplaces and supply chains that minimize energy consumption, emissions, and waste.

It all starts with visibility. And visibility requires data. For example, sensors can monitor and measure operations at critical points in the value chain, while connected software can track and analyze the data collected. That’s IoT at work, and it’s transforming warehousing and supply chain management. Add AI, and today’s digital supply chains go well beyond analysis and diagnostics to predictive and even prescriptive - meaning they can mine historical data to make forecasts or generate “lessons learned” to assist strategic decision-making.

# DATA HELPS DELIVER DECARBONIZATION

You cannot manage what you cannot measure. Across all sectors, digital technology allows us to track progress so we can implement change.

In the energy sector, for example, next-generation digital networks can monitor the performance of individual wind turbines and solar panels in real time and predict maintenance requirements, improve productivity, and optimize energy delivery based on need. In agriculture, leveraging data can increase yields by determining the optimal use of water and fertilizers while factoring in weather forecasts and current soil conditions.

Four main clusters of digital technologies harbor enormous potential to cut emissions substantially (see graphic below):



Numerous ways exist to apply these technologies along the value chain to unlock sustainability solutions. Here are a few examples:

Procurement	Supply chain	Manufacturing	Marketing & sales
<ul style="list-style-type: none"><li>• Transparency and traceability</li><li>• Demand forecasting</li><li>• Paperless contracting with digital data exchange, low impact</li><li>• ESG: Transparency on human rights</li></ul>	<ul style="list-style-type: none"><li>• Route &amp; loading optimization</li><li>• Delivery schedule optimization</li><li>• Carbon tracking for mode of transport</li><li>• Anomaly detection</li><li>• Fleet-Management and fleet sharing</li><li>• Disaster prediction and prevention</li></ul>	<ul style="list-style-type: none"><li>• Predictive maintenance</li><li>• Remote plant simulation via a digital twin solution</li><li>• Geographical dispersal of production</li><li>• Quality &amp; Value assurance for materials and assembly</li><li>• Energy management and smart brokerage</li></ul>	<ul style="list-style-type: none"><li>• Dynamic pricing factoring in sustainable variables</li><li>• Transparency on supply chain</li><li>• Responsible and secure customer data use</li></ul>



# DIGITALIZATION: KEY TAKEAWAYS

## You cannot manage what you cannot measure

It's impossible to optimize, improve, or make any meaningful progress without a clear picture of your current impact.



## Your data is a rich untapped resource

State-of-the-art data collection and analysis yield invaluable insights and actionable optimization strategies.



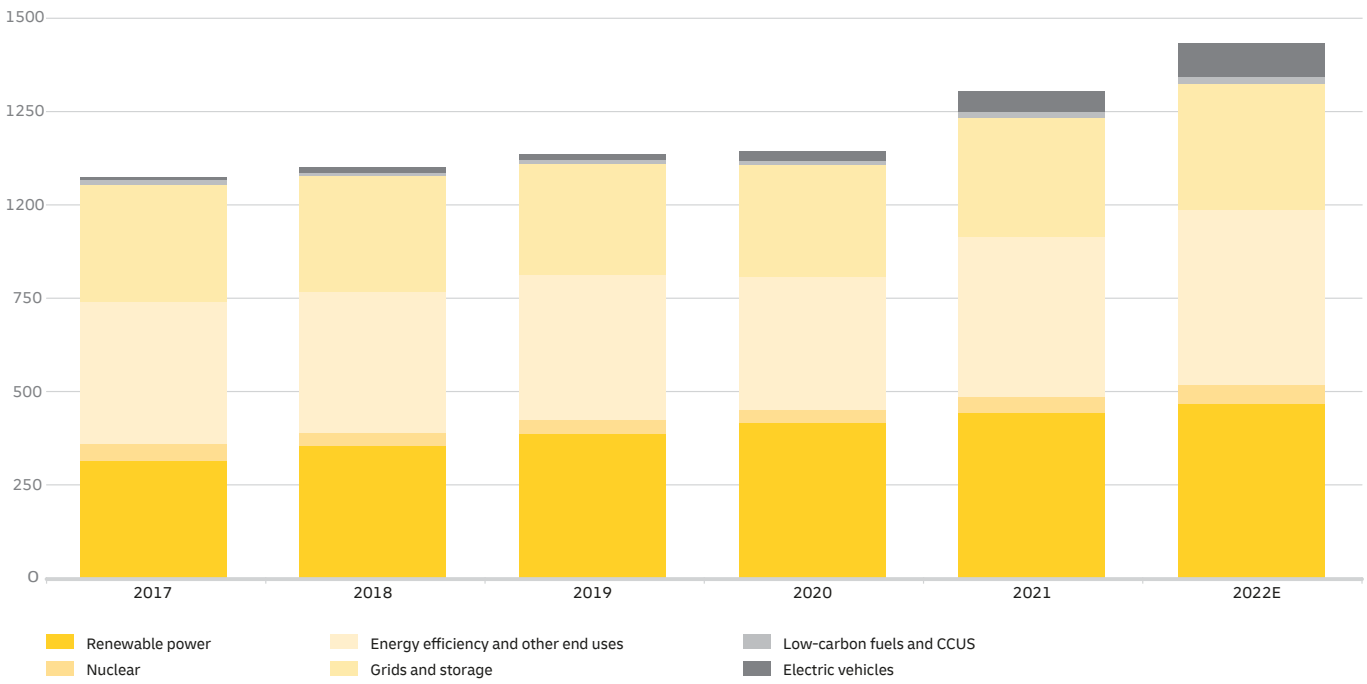
## Digitalization has a direct impact

Digital technologies can translate directly into efficiency gains that benefit your bottom line.

# CLEAN TECHNOLOGY: ENABLING OUR SUSTAINABLE FUTURE

According to the IEA, half the technologies we need to achieve net-zero emissions do not yet exist. But the speed of innovation is accelerating, as is global investment in clean technologies (see figure 3). We have already seen profound changes in the public and private spheres. Nearly every country has pledged to embrace sustainability and achieve net zero by 2050 or shortly thereafter. Companies of all sizes have also made commitments, recognizing that sustainable solutions are not simply a cost factor but rather an investment in profitability and value creation.

Clean technology is the central component of a sustainable future. It is imperative to accelerate the development and deployment of new technologies even more and ensure that adapted logistics solutions are in place to support them.



▲ Figure 3  
IEA, Annual clean energy investment, 2017-2022

# CLEAN ENERGY AND MOBILITY

There will be no Era of Sustainability Logistics without clean energy and mobility. It's that simple. We will need green electricity to power the rapid growth of digital technology and enable the electrification of mobility. Data centers and transmission networks account for 1-1.5% of global electricity use, but emerging tech, such as streaming and blockchain, are poised to boost demand for data services. The electric vehicles and automated systems in state-of-the-art supply chains will also drive up electricity demand. Meeting these needs requires nothing less than transforming the energy supply from fossil to sustainable fuels, not to mention a massive increase in energy efficiency.

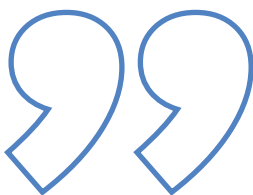
## Working toward a clean energy value chain

The International Renewable Energy Agency (IRENA) stresses the need for a radical shift in current energy usage across all sectors, driven by electrification and efficiency and supported by renewables, hydrogen, and sustainable biomass. IRENA estimates these measures could cut global carbon emissions by almost 37 gigatons annually by 2050. The IEA estimates we'll need a 20-fold increase in solar power and an 11-fold increase in wind power between now and 2050.

An entirely new energy value chain must emerge – from generation to storage and distribution to usage. Producing clean energy will turn today's mostly centralized power grid of large power plants to a decentralized system of wind and solar farms. The increased use of battery and hydrogen technologies will change how we store and distribute energy, adding complexity and requiring smart and agile solutions. More electric vehicles and charging stations will alter how we use energy while driving demand for more.

*"Instead of always evolving the automobile, we should be looking at how we design mobility differently in the future."*

**Hans Peter Dürr**  
physicist and advocate for scientific and energy responsibility

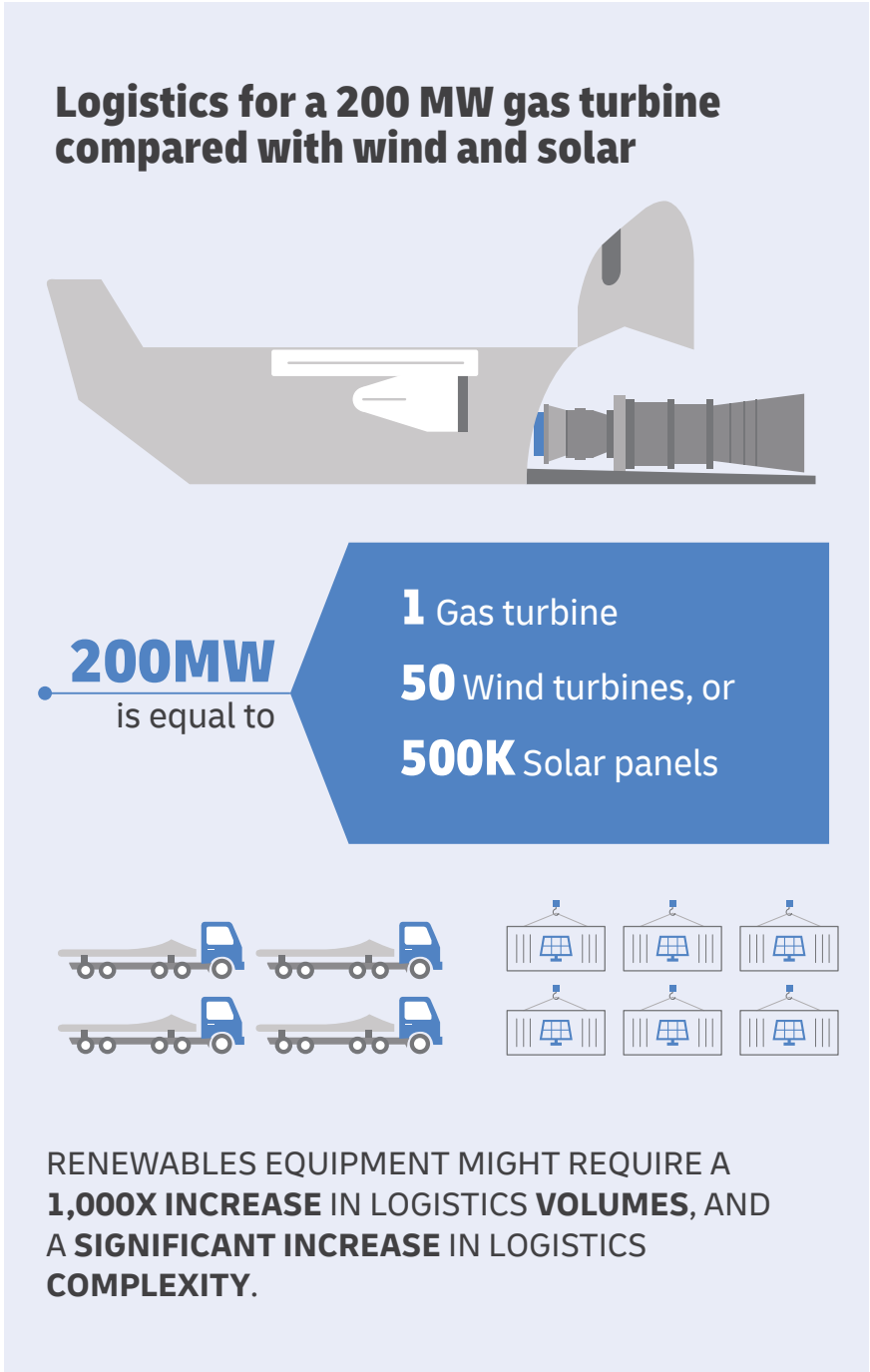




Each new link in the clean energy value chain has significant implications for logistics. For example, more wind turbines require more ships and oversized trucks to transport the massive towers and rotors. The decentralized system will also require more touchpoints and individual shipments. Supplying the equipment needed for renewables could mean a 1,000-fold increase in logistics volumes.

The logistics of storing and distributing energy will grow equally complex. We're already experiencing this in today's electric car battery supply chains. The expansion of hydrogen technology will require other adapted logistics solutions. And as last-mile and even long-haul transitions to electric, logistics hubs like warehouses and distribution centers could become local power distribution hubs.

Supply chains will also need to adapt to the requirements of moving the raw materials and components needed for electric and hydrogen vehicles, such as proper temperature control and compliance with dangerous goods regulations. We will need more regionalized sources, multi-modal and low-carbon transportation, and carbon-neutral warehouses and distribution centers. Interestingly enough, digital tech and smart IoT solutions will help deliver those solutions.

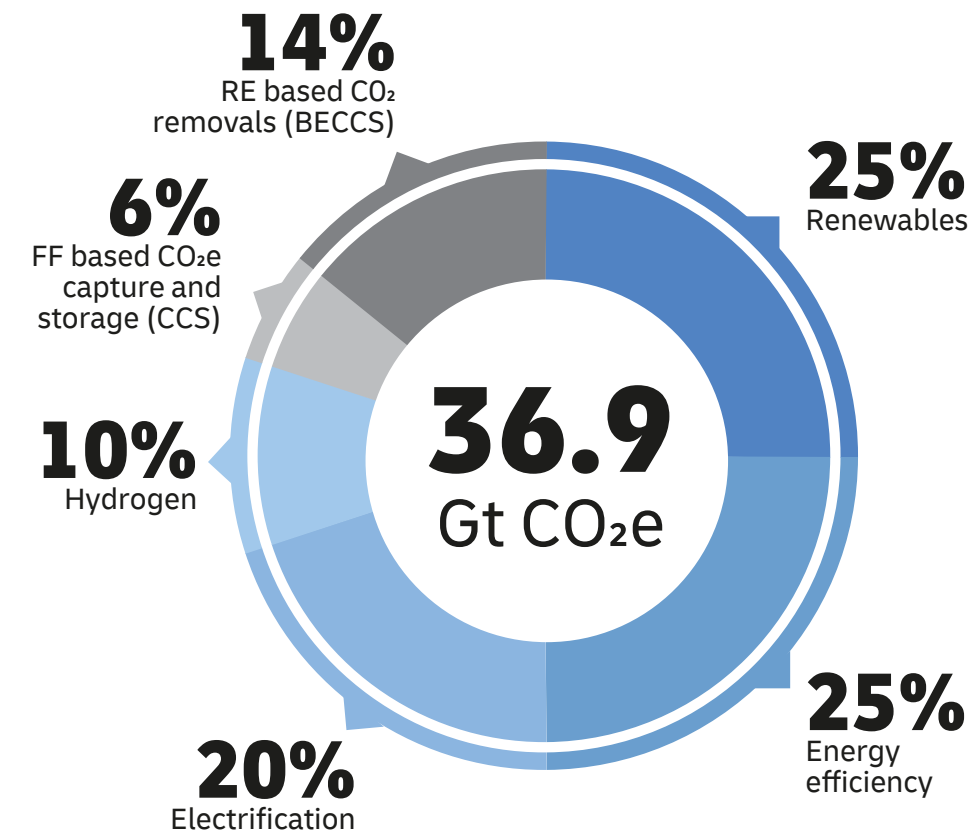


### Sustainable mobility is a two-fold challenge

A sustainable world must remain a mobile one. That's because mobility is the lifeblood of the global economy. We need to keep moving goods and people from point A to B but with a much lighter footprint. It won't be easy. The transport sector currently accounts for around one-fifth of global carbon emissions.

But the answer is not reducing economic activity and trade. Instead, it involves ending the unintended outcomes of our need for mobility – the two-fold challenge of driving economic growth and prosperity while reducing emissions and protecting our planet.

According to IRENA, we can only achieve net-zero emissions by working simultaneously along six areas.



▲ Figure 4  
Reducing emissions by 2050 through six technological avenues





**Massive increase in renewables-based electricity**

Significant cost reductions observed over the past decade in solar and wind power generation mean that renewables-based electricity is now the cheapest alternative in most regions. In many places, solar and wind have already become the default options for new installations – and this approach must steadily expand worldwide. The logistics sector must embrace this change and develop the required supply chain solutions.

**Substantial improvements in energy efficiency**

Optimizing the use of resources and improving energy intensity – using less energy for the same result – can significantly reduce GHG emissions and mitigate energy consumption needs. The side benefits are reduced costs and energy security. This is the first step everyone can take now, beginning with understanding the carbon footprint, as discussed in Chapter 2.

**Electrification of end-use sectors, such as EVs**

The continued electrification of end uses, such as transport vehicles, will be the next key development. Overland transport must rely almost entirely on renewable energy by 2050. This will require major investments in charging infrastructure and battery supply chains to make this happen.

**Adoption of clean hydrogen and its derivatives**

Clean hydrogen production and consumption must become scalable. The technology is available, but it has to move quickly from pilot status to a significant energy source for mobility within this decade. This will require a sharp expansion in production capacity and vehicles and a substantial cost reduction.

**Appropriate use of bioenergy and carbon capture**

Bioenergy with carbon capture and storage (BECCS) along with last-mile use of carbon capture and storage represent final areas where innovation is essential. The IEA considers carbon removal in the transition to net zero, and we are already witnessing significant market investments. Biofuels will play a key role in decarbonizing heavy-duty trucks, ships, and aircraft, especially in the short term. Many experts see biofuels as a bridge technology to cleaner options – and the only way to achieve the world’s 2030 targets. The IEA estimates biofuel production must meet 15% of global transport energy demand by 2030.

Sustainable mobility will only be possible by combining careful planning, deliberate investments, and new technologies to meet all needs most effectively, efficiently, and economically. The good news is that the logistics and transport sector recognizes what needs to be done and has begun taking steps to adapt its approach.



**CLEAN TECHNOLOGY: KEY TAKEAWAYS**

**Technological innovation is the most powerful driver of change**

Investment in research and development in clean energies and mobility is essential to accelerate the transition to sustainability.



**Supply chains and logistics are the key enablers**

While businesses rely on logistics companies to reduce their Scope 3 emissions, the energy sector will need adapted logistics and supply chain solutions to enable the energy transition.



**Sustainable mobility is not an obstacle but a pathway to growth**

Turning sustainability challenges into business opportunities can boost economic performance while fostering sustainable business practices. Sustainable mobility leads to growth, profitability, and success in the new corporate landscape.



**STAYING MOBILE WHILE GOING GREEN**

According to the IEA, commitments and climate action worldwide are on the rise, but they still fall well short of what is needed to limit global warming and avert the worst effects of climate change. However, many of the technologies needed to cut the required emissions by 2030 already exist. We just need to massively expand their deployment.

Digital technologies are available and maturing rapidly, with early adopters making notable progress toward their commitments. This is one tool everyone can leverage to improve efficiency and cut emissions. The shift to clean energy is also well underway, but we must see the transition accelerate exponentially in the coming years. By understanding the pivotal role of logistics in the entire process, we can leverage state-of-the-art supply chain solutions to enable it.





# IN CONCLUSION

SHAPING SOLUTIONS. DELIVERING CHANGE.

## SUSTAINABILITY IS THE RIGHT BUSINESS DECISION

The overarching theme of the Era of Sustainable Logistics Global Summit was that supply chains play an essential role in the transition to a sustainable future. Two clear messages emerged: the transformation our planet so urgently needs presents more opportunities than risks – and change can happen. Sustainability has the potential to unlock new and better forms of business growth, economic development, and prosperity for all.

Although 90% of business leaders acknowledge the importance of sustainability, only 60% of companies have a sustainability strategy. The remaining 40% may come to regret placing their priorities elsewhere. That's because the business case for climate action is compelling for two complementary reasons. First, a significant share of economic value depends on supply chains in sectors and regions highly vulnerable to climate risks. In other words, climate change destroys value. Global GDP could shrink by 18% by 2050 if no action is taken to mitigate global warming. Second, as forward-looking businesses divest from unsustainable activities, they will invest in green technologies and circular economy models. The medium and long-term gains will more than compensate for the short-term costs. Those who move faster are likely to reap the highest rewards.

*"I think calling it climate change is rather limiting. I would rather call it the everything change."*

**Margaret Attwood**  
Poet, novelist, and environmental activist.





The summit and this paper are much more than a wake-up call. They are a collective call to action – to the decision-makers, thought leaders, and other stakeholders DHL brought together in Valencia and beyond. The magnitude of the challenge ahead is unmistakable, but it is not insurmountable if we work together. More than 1,000 delegates used this unique forum to share their visions, best practices, and real-world experiences so that we can collaboratively shape the future of sustainable business – and carefully consider the way forward.

In Valencia, we reflected on some of the most critical issues of our time. We learned how the logistics sector is reinventing its entire approach to adapt to the current reality and keep global supply chains moving in a sustainable way. The main takeaways are outlined in this paper and offer a cross-sector roadmap to help businesses navigate the current challenges and make progress toward their sustainability goals:



If you want to build a sustainable business, you have to get your foundations right. But that foundation won't support the desired results without a solid governance framework made of integrity and transparency.

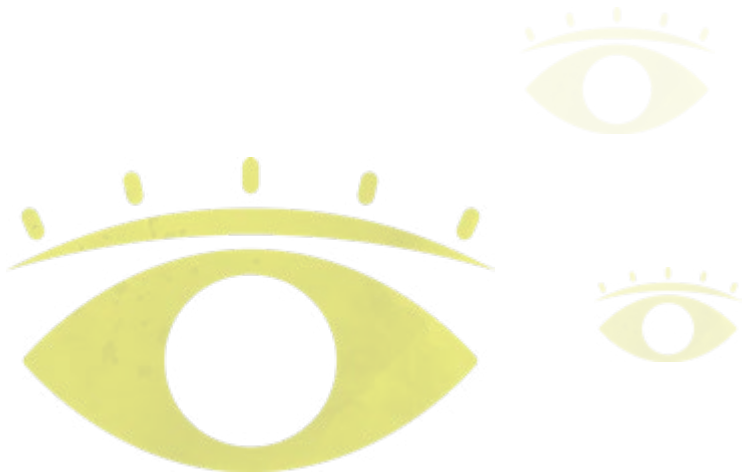


Reshaping your business model to reach net-zero requires a deep dive into decarbonization and the circular economy. Only then will you learn how to decouple economic growth from carbon emissions.



Don't underestimate the power of innovation. It is the single most important tool to enable the era of sustainability. But we must leverage it by investing in digital and clean technology like never before.

Recovering and reusing materials in a circular system requires circular logistics – also known as reverse logistics. This is the process of returning goods up the supply chain to recapture value (reuse, recycling, etc.). For B2C businesses, this starts with returns, which are increasing alongside the growth in online sales. The process may seem simple, but it is a complex logistics operation. Every part of the cycle – return, reuse, repair, refurbish, resell, and recycle – depends on logistics processes like returns management and fulfillment back into the economy. The best companies regard reverse logistics as a core competency, integral to their brand marketing.



The dialogue must continue. The Global Summit reminded us that our goals are not in opposition but fundamentally the same. Sustainability is the point where the interests of everyone in our global village comes together – from governments and international organizations to producers and consumers, to partners and competitors.

But our challenge is not to collectively agree on the urgency of change. It is to collectively act on our knowledge and accelerate the transition to a new business culture at the speed and scale the climate crisis demands. We've shared our experiences and expertise. We know that sustainability is the right business decision. Now it's time to shape the solutions that deliver change.

For more information about the DHL Era of sustainability [visit our website](#)





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## Sources

- 1. World Bank**  
Poverty and Inequality Platform  
<https://www.ipcc.ch/sr15/>
- 2. The Intergovernmental Panel on Climate Change**  
<https://www.pik-potsdam.de/en/news/latest-news/risk-of-passing-multiple-climate-tipping-points-escalates-above-1-5degc-global-warming>
- 3. The Potsdam Institute**  
<https://www.pik-potsdam.de/en/news/latest-news/risk-of-passing-multiple-climate-tipping-points-escalates-above-1-5degc-global-warming>
- 4. IPCC Working Group III report, Climate Change 2022: Mitigation of climate change. Summary for Policymakers.**  
Press release (ipcc.ch)
- 5. Andrew Winston,**  
a leading writer on sustainability strategy and co-author, along with Paul Polman, of Net Positive.
- 6. DHL Logistics Trend Radar**  
<https://www.dhl.com/global-en/home/insights-and-innovation/thought-leadership/trend-reports/supply-chain-decarbonization.html>
- 7. The Circular Gap Report 2022**  
[https://circulars.iclei.org/wp-content/uploads/2022/02/1.-Report\\_CGR-Global-2022.pdf](https://circulars.iclei.org/wp-content/uploads/2022/02/1.-Report_CGR-Global-2022.pdf)
- 8. Ellen MacArthur Foundation**  
<https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>
- 9. Ellen MacArthur Foundation**  
<https://ellenmacarthurfoundation.org/circular-economy-diagram>
- 10. IEA. Energy Efficiency 2022**  
<https://www.iea.org/topics/energyefficiency>
- 11. World Economic Forum**  
<https://www.weforum.org/press/2022/05/digital-tech-can-reduce-emissions-by-up-to-20-in-high-emitting-industries>
- 12. World Economic Forum**  
<https://initiatives.weforum.org/digital-transformation/climate-scenarios>
- 13. IEA, Net Zero by 2050**  
<https://www.iea.org/reports/net-zero-by-2050>
- 14. IEA, Data Centers and Data Transmission Networks**  
<https://www.iea.org/reports/data-centres-and-data-transmission-networks>
- 15. IRENA, World Energy Transitions Outlook 2022**  
<https://www.irena.org/Digital-Report/World-Energy-Transitions-Outlook-2022>
- 16. IEA, Net Zero by 2050**  
<https://www.iea.org/reports/net-zero-by-2050>
- 17. Our World in Data**  
<https://ourworldindata.org/co2-emissions-from-transport>
- 18. IEA, Biofuels**  
<https://www.iea.org/reports/biofuels>
- 19. ISO, (International Organization for Standardization)**  
<https://www.iso.org/contents/news/2023/01/a-net-zero-logistics-sector.html>
- 20. IEA, Energy Technology Perspectives 2023**  
<https://www.iea.org/reports/energy-technology-perspectives-2023>



