The Road to Net Zero

Strategies, Concepts, and Best Practices for Supply Chain Sustainability



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INTRODUCTION

- ALVIN TOFFLER

We're All in This Together



The European Union's goal is to be climate neutral by 2050. This means net-zero emissions of greenhouse gases across all industries. Most sectors are expected to achieve net zero emissions by then. For freight transport, the target is a 90% reduction in emissions.

While many sectors have worked hard to reduce their carbon footprint, emissions from road transport kept growing and will continue doing so. Heavy-duty road vehicles account for 6% of all total CO2 emissions within the EU today and 7% within the US. If left unchecked, road freight is expected to grow by almost 50% by 2050 in the EU. We can agree it's going to be quite a hard sector to decarbonize.

One of the challenges is that road freight is an excessively fragmented market, especially in Europe. According to European Commission sources, there are in excess of half a million small carriers in Europe, with 6 employees on average. "Indeed they [these SMEs] really need to be part of the discussion and new ways of contracting and supporting their value chain are required" said Angie Farrag-Thibault, Project Lead of Clean Trucking at the World Economic Forum.

As representatives of this industry, we have a responsibility to work together to develop and apply new approaches and technologies to get as close as possible to the EU's emission reduction targets. "We don't have the luxury of debating this endlessly", summarized Alan McKinnon, professor of logistics at the Kuehne Logistics University.

Ursula von der Leyen, President of the European Commission, said it best: "The cost of the transition will be big, but the cost of non-action will be bigger."

Only together can we reach Net Zero.



Alan McKinnon
Professor of Logistics
Kuehne Logistics University

METHODOLGY

This report was compiled on the basis of a series of interviews conducted by Professor Alan McKinnon of Kuehne Logistics University in early 2021 with Angie Farrag-Thibault, Project Lead, Clean Trucking at the World Economic Forum, Marcelo Marcal, Director of Purchasing in Logistics at Electrolux, and Pietro d'Arpa, Vice President Supply Chain - Europe Logistics & End to End Strategic Planning at Procter & Gamble, respectively. We thank each of our interviewees for their time and for sharing their expertise with us.

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Decarbonizing Road Freight by 2050

The Green Deal and the Cost of Doing Nothing

Digitalization is going to have a massive role to play in decarbonization potential. Even just in the sense of real-time data it's a game-changer.

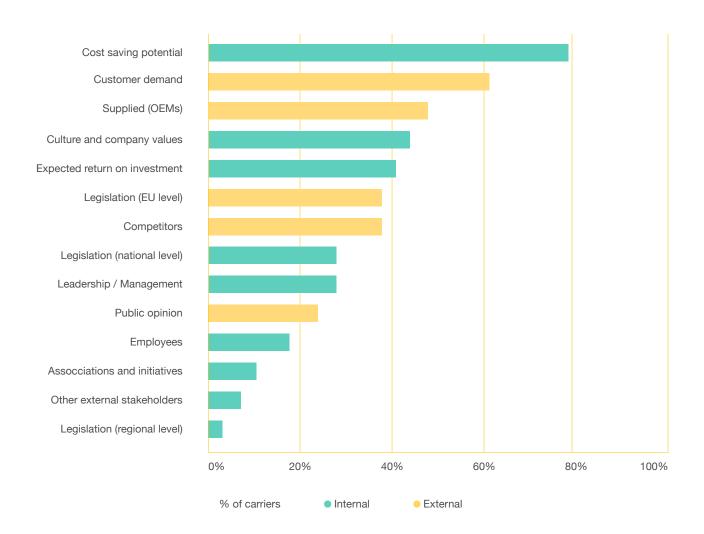


The European Green Deal has been presented by the European Commission to make the EU's economy sustainable and fully decarbonize it. It follows the EU's plan to have no net emissions of greenhouse gases by 2050.

Transforming an entire economy — and all its attendant industries and infrastructures — is, by all accounts, a very expensive undertaking. And yet, the cost of doing nothing remains much higher. The European Commission estimates that the annual losses for a 3°C increase in global average temperature would be €190 billion.

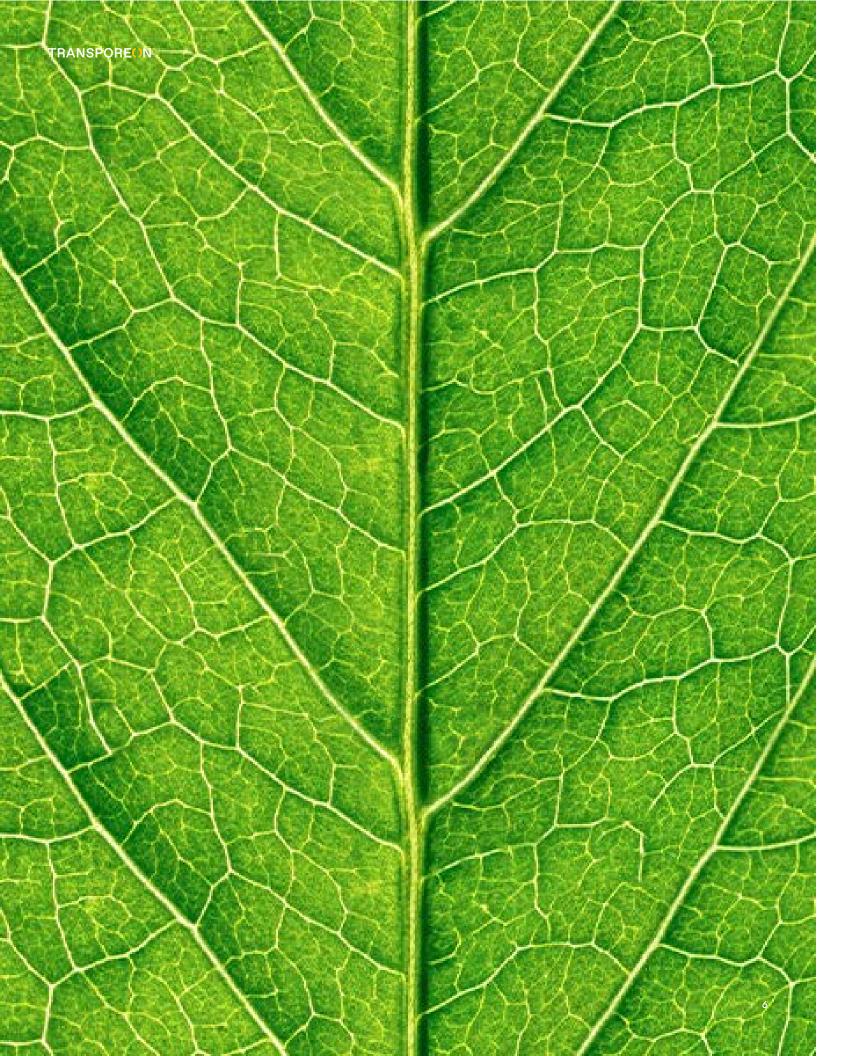
To avert this economic and ecological disaster, a combination of incentives, taxes and regulations will be required to encourage companies to meet sustainability goals and carbon emission targets. Having a price on carbon is going to be a vital factor in the Green Deal. There is, however, still a lot of low-hanging fruit to be exploited, offering cost as well as carbon savings. A sample of over 800 small and medium-sized EU road carriers surveyed by Transporeon, KLU, and SFC actually identified cost saving potential as the most important driver of decarbonization investments.

Driving internal and external factors for decarbonization investments



Source: Decarbonizing the operations of small- and medium-sized road carriers in Europe,
Moritz Tölke and Alan McKinnon, KLU/SFC, 2021

The European Commission's recently published "Sustainable and Smart Mobility Strategy" included a chapter on green logistics, almost entirely devoted to freight modal shift. The goal is to see rail freight traffic increase by 50% by 2030 and double by 2050. Intermodality is indeed an important element in the decarbonisation effort. However, the vast majority of freight is still going to move by road, even if we manage to shift as much freight as possible onto the railways.



End of the ICE Age

The age of the internal combustion engine seems over.

It's finally time to retire this 18th-century technology, in favour of more sustainable alternatives.

Electrification is likely to be the dominant route to decarbonizing road freight, though there is much debate over the best ways of getting low carbon electricity into heavier long-distance trucks. Should it be with batteries, hydrogen fuel cells or overhead cables? All are long-term solutions that most stakeholders cannot implement right away.

When you look at the longer-term cost of hydrogen versus batteries, the sustainability of batteries and the provision of recharging and refuelling infrastructures, solid research can come to very different conclusions.

"The full viability of zero emission technologies as replacements to ICE MDT/HDTs indeed depends on future events that we may only predict today with assumptions— transparency of those is critical, and so is creating the right enabling environment to help these solutions scale up," said Angie Farrag-Thibault.

Road Freight Zero (RFZ)

Accelerating the viability and deployment of zero emission fleets and infrastructure toward a 1.5° trajectory by 2030, through the following activites

While 2050 is the looming date on the far horizon, the World Economic Forum's Mission Possible Platform initiative Road Freight Zero (RFZ) started focusing on what actions (for business, policymakers and finance) we need to accelerate during the 2030s in order to get heavy vehicle trucking on the right pathway to decarbonisation by 2050.





The transition to a decarbonized transport system requires radical transformation.

The RFZ initiative approaches this goal in three mutually reinforcing ways:

1. Setting the Pace:

The first step is to set the full value-chain vision and pathway to zero, and, while showcasing the leadership and ambition of first-movers, to instil market and political confidence in the movement. The initiative has carefully aligned its efforts in setting industry commitments with relevant other efforts, joining forces behind the COP26 Race-to-Zero Campaign and, specifically, RouteZero.

2. Dedicated Financing and Infrastructure:

The second step, and where the majority of this initiatives work lies, is in the practical action and implementation of creating an environment for zero emission vehicles and their associated infrastructure to scale up sufficiently. For the vehicles in their first year, we have taken the approach of exploring through specific fleet-owner use cases, looking at the key barriers to transitioning, determining when TCO parity happens without further intervention, and how we can fast forward that timeframe through various solutions and new partnerships.

But even with this new generation of low carbon vehicles, this requires the rollout of recharging and refuelling infrastructure. For the infrastructure, "we've been working through a de-risking pilot to identify how value-chain partners can come together to create a shared infrastructure model that is replicable". The solutions must of course include recommendations toward policy makers and new opportunities for financiers to support this transition.

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In this regard, the initiative tries to identify the key financial pain points and to matchmake road freight stakeholders with the finance community. New kinds of leasing arrangements, tools, services and mechanisms are needed to kickstart the process, particularly as battery and fuel-cell vehicles will have a significantly higher capital cost then their diesel predecessors. In parallel, investment in new infrastructure is needed on key corridors to be equipped, for example, with e-charging stations.

Also associated with the Mission Possible Partnership, the World Economic Forum (WEF) hosts a working group of banking leaders who are working on transition finance for the net zero economy. These include large institutions such as private banks as well as sovereign wealth funds and institutional investors. Taken together, the amount of investment capital soars into the tens of billions.

Public investment policies are increasingly focused on sustainability. Since 2000, over 500 regulations or other policy instruments have been introduced around the world that either support or require some kind of responsible investment. And that number keeps growing.

"We are also pleased to see the European Commissions Fit for 55 introducing binding targets for the deployment of zero-emission truck infrastructure".

3. Need for Immediate Action:

The third part of the Road Freight Zero programme is planning to address near-term abatement solutions. While setting the scene for a switch to zero emission vehicles, we must ask ourselves what we can be doing today and over the next one to three to five years.

We need to help companies understand how they can really optimize their logistics management throughout the whole value chain and what new technology and systems are available today to do that. In the case of near-term solutions and CO2 emissions reporting, a lot of collaboration is needed.

One of the big learnings from working on this within the maritime industry through the Clean Cargo Working Group is that creating the tools and mechanisms for standardized, benchmarkable information, and sharing that safely between stakeholders, is critical bedrock of ensuring that environmental criteria is recognised in business decision-making. This transparency builds trust and thus allows for more open collaboration that can turn into new collective solutioning... however, the huge fragmentation of the road freight sector makes data aggregation, information sharing and wide adoption of carbon-reducing measures even more challenging!

To cope with this, the RFZ programme is working on a top-down basis to help some of the largest players make the first moves and encourage them to support the smaller players to whom they subcontract much of their haulage. New ways of subcontracting, financing and supporting the value chain will be required to achieve this.

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Near-term Abatement Solutions:

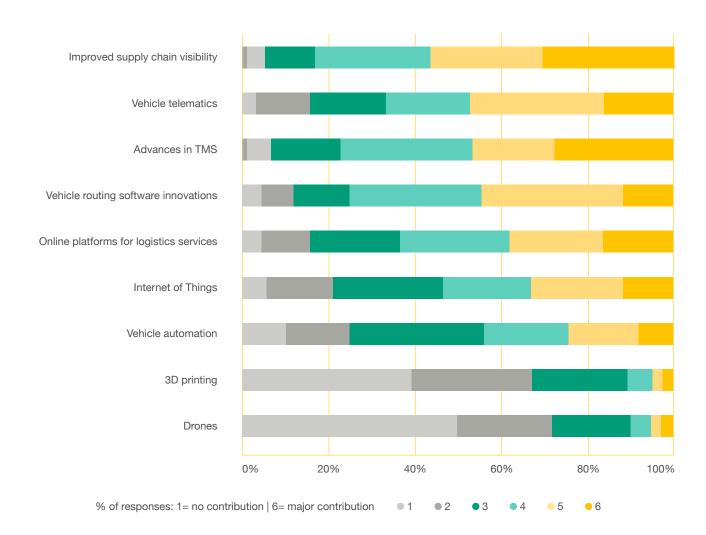
When setting goals for the next three, five, or more years, logistics companies are already deploying a range of both technological and organizational solutions, including:

- Introducing trucks with lower emissions and infrastructural hurdles, such as Liquefied Natural Gas (LNG) or sustainable biofuel powered trucks ("bridging solutions")
- Route-optimization and load-building planning-tools
- Use of real-time visibility to optimize the transport execution, reduce demurrage and empty loads
- Setting lower speed limits for road freight operations
- Operational programs to optimize driver behaviour, tyre pressure, etc.
- Tools supporting horizontal collaboration, such as co-loading, co-tendering, etc.

Also in the near-term, a full account must be taken on the potential contribution of digitalisation to road freight decarbonisation. Most of the 90 European logistics executives surveyed by KLU and F&L last year predicted that digitalisation would have a transformational impact on logistics over the next five years and that this impact would be reinforced by the Covid pandemic.

The role of digitalisation will feature prominently in the next stage of RFZ bringing key topics to the attention of this group. "Digitalization is going to have a massive role to play in decarbonization potential," said Angie Farrag-Thibault. "Even just in the sense of real-time data it's a game-changer."

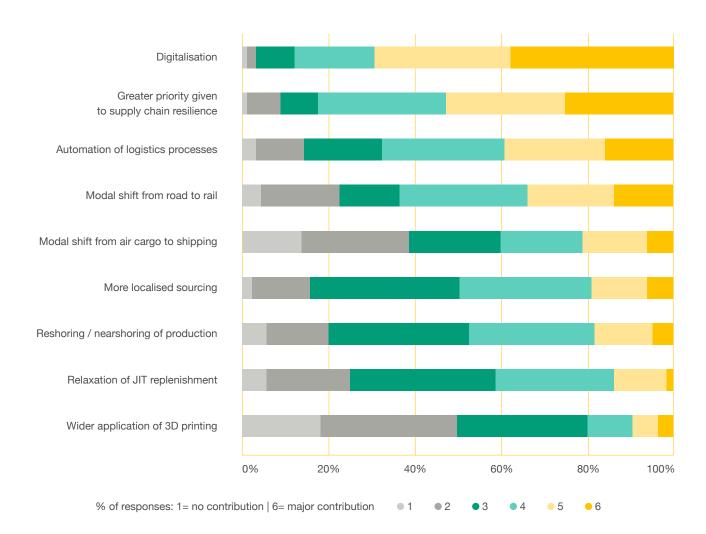
Likely contribution of digital innovations to logistics decarbonisation



Source: Measuring industry's temperature: an environmental progress report on European logistics, Alan McKinnon, KLU/F&L, 2020

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Logistics-related trends likely to be accelerated by Covid-19 crisis



Source: Measuring industry's temperature: an environmental progress report on European logistics,
Alan McKinnon, KLU/F&L, 2020

So what's next?

Angie Farrag-Thibault summed it up like this with a smile:



Best Practices: Procter & Gamble

This is the way I talk to my people, this is what we need to eliminate: Empty space, empty miles and moving to intermodality as fast as humanly possible.

- PIETRO D'ARPA

P&G AT A GLANCE:

P&G is the global leading FMCG product manufacturer. Founded in 1837 in Cincinnati, where it is still headquartered, the company serves today an estimated 5 billions consumers worldwide with household brands like Ariel/Tide, Pampers, Gillette, and many more. In 2020 P&G had sales of 71 billion USD operating in 70 countries and selling its products in more than 180 markets and employed 100,000 people around the world.

PIETRO D'ARPA:

Vice President Supply Chain

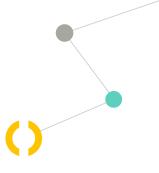
Europe Logistics & End to End Strategic Planning Procter & Gamble

FACT BOX:

- 30 manufacturing sites in Europe producing the vast majority of the products sold in the European market but also exporting overseas.
- 54 warehouses including factory distribution centers and external distribution centers
- 7.5 Billion TonKm moved in Europe across a range of multimodal solutions.

Procter & Gamble, a US-based company that operates in 70 companies around the world, considers that setting 2050 milestones is insufficient. Their goal is to reduce their carbon emissions by 50% by 2030, as outlined in their Ambition 2030 initiative, which uses 2020 as its updated baseline. When compared to the previous base year, 2010 wasn't ambitious enough, since they had already managed to reduce emissions considerably.





Main Pillars

P&G sees many opportunities for decarbonising and has identified a handful of key strategies. First is the need to migrate to intermodal services massively and quickly. "This is the number one of the number one," said Pietro d'Arpa, Vice President of Supply Chain in Europe at P&G.

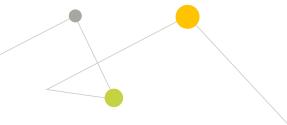
The second opportunity is on the road: "Much transportation will stay on the road for a long while, and there we need to be as efficient as possible. We cannot afford one single yard of empty miles and we cannot afford one cubic foot of empty space in our trucks."

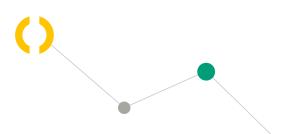
Renewable energy converting step by step from fossil fuel to alternatives is deemed more medium to long-term. And there is a clear acknowledgement that P&G cannot achieve all this in isolation. They need to work with other actors on this playing field.

From Intermodality towards Synchromodality

There is no doubt that the emissions associated with rail transport are much lower than in road transport, hence the move to intermodality with rail as the long haul mode. Today P&G sends around 24% of its European freight by intermodal services, but they want to achieve over 50%. While the aim is to leverage every type of transportation mode, land and water, waterways generally do not meet their service requirements. Rail is therefore the mode whose use they want to expand.

The expression synchromodality still isn't widely known. It means the application of different transport modes in a way that synchronises modal transfers and minimises delays at transfer point. Products don't always have to be moved from A to B at maximum speed. In terms of the trade-off between service and cost, this isn't necessarily the best thing to do. Nor is the fastest transport option the optimum in environmental terms. Going fast is generally more expensive and pollutes more.







The problem is planning the best mix of transport modes for every day and for every lane. This can be a complex exercise that is hard to carry out manually, by traditional means, or with software. Hence P&G is working in partnership with the EU to develop a dynamic real-time based digital network optimizer, the Horizon 2020 ICONET project.

The vision is to achieve synchromodal transport planning every day with the right input. Testing the modelling on a few lanes has allocated a significant amount of transport to intermodal services, without compromising on either cost or service-level.

It must be said, however, that management of the railway system is too fragmented and lacks harmonization. There is a lack of coordination between the many actors involved at national and international levels resulting in an intermodal and regulatory landscape that doesn't exactly facilitate the switch from road to rail.

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Reducing Empty Miles by Connecting the Dots

I hate empty miles because it's a proposition which makes no sense from any point-of-view.

says Pietro d'Arpa.

Despite efforts over the years to reduce empty runs, the average proportion of empty truck-kms in Europe hovers around 20%, higher in domestic transport, and lower in cross-border haulage. After Brexit, the share of vehicles travelling empty between the UK and EU has grown, now approaching 40% in total.

The aim is to eliminate or re-use empty miles and this will require more collaboration. To reduce empty runs you can partner with third parties, whether they are product or logistics suppliers, customers (retailers), or another shipper using a complementary transport service. This gives these parties the opportunity to optimize their loads too, both in terms of emissions and cost reductions.

"If we create a micro-cluster of lanes — not just one lane from A to B but looking from A to B to C to D we can identify new opportunities to reduce empty miles," said Pietro d'Arpa. P&G has already initiated the conversation with some companies on such joint undertakings and found their immediate reactions very promising.

Simplification, integration, coordination and visibility can all make a big difference here, particularly visibility. Though "today when I use ocean freight to import goods from America or Asia into Europe, I click a button on my computer and I know exactly where my containers are, second by second," claims Pietro d'Arpa. "If I want to know where my containers in Europe are, there is no way. I don't know."



The Power of the Smart Network

Digital technologies as well as real-time information are needed to help Shippers and Carriers match their capacities and demands in a scalable way. Identifying suitable loads for Carriers in real time supports both Carriers and Shippers to reduce their empty runs.

The result is greater efficiency and sustainability. But this is only possible if many Shippers and Carriers collaborate within a sufficiently large and well-connected network sharing data, to allow better decision making in real-time.



Product Design, Packaging, and Utilization

When it comes to reducing empty miles, P&G is focusing heavily on the underutilization of vehicle capacity. While many companies define utilization in terms of weight, P&G accounts for the volumetric fill of the vehicles as well.

More radically, P&G is looking at how they design their products to fit pallets in the first place. Traditionally, R&D departments developed new products without consideration of logistics parameters, leading to suboptimal pallet utilization.

"This requires a lot of changes because we have thousands of SKUs (stock keeping units) that have been designed in the old way," said Pietro d'Arpa.

"The good news is that all the new SKUs will be designed with this in mind, so we are working to catch up with the past."

Collaboration in Action: Smartbox

One initiative P&G is exploring is the use of SMARTBox, a reusable, exchangeable plastic box that aims to standardize container usage across the industry, eliminating costly and wasteful packaging.

The added benefit of a service like SMARTBox, which could potentially be managed by a third party in the future, is that trucks could be more optimally loaded and utilized. The beauty of the SMARTBox is that its contents are fully anonymous, thus making it possible to pool consignments, and thereby raise load factors. The more parties in the supply chain using this device the greater its impact on road freight efficiency will be.

In this way, SMARTBox has the potential to help solve multiple challenges at once, reducing both packaging waste and empty miles.

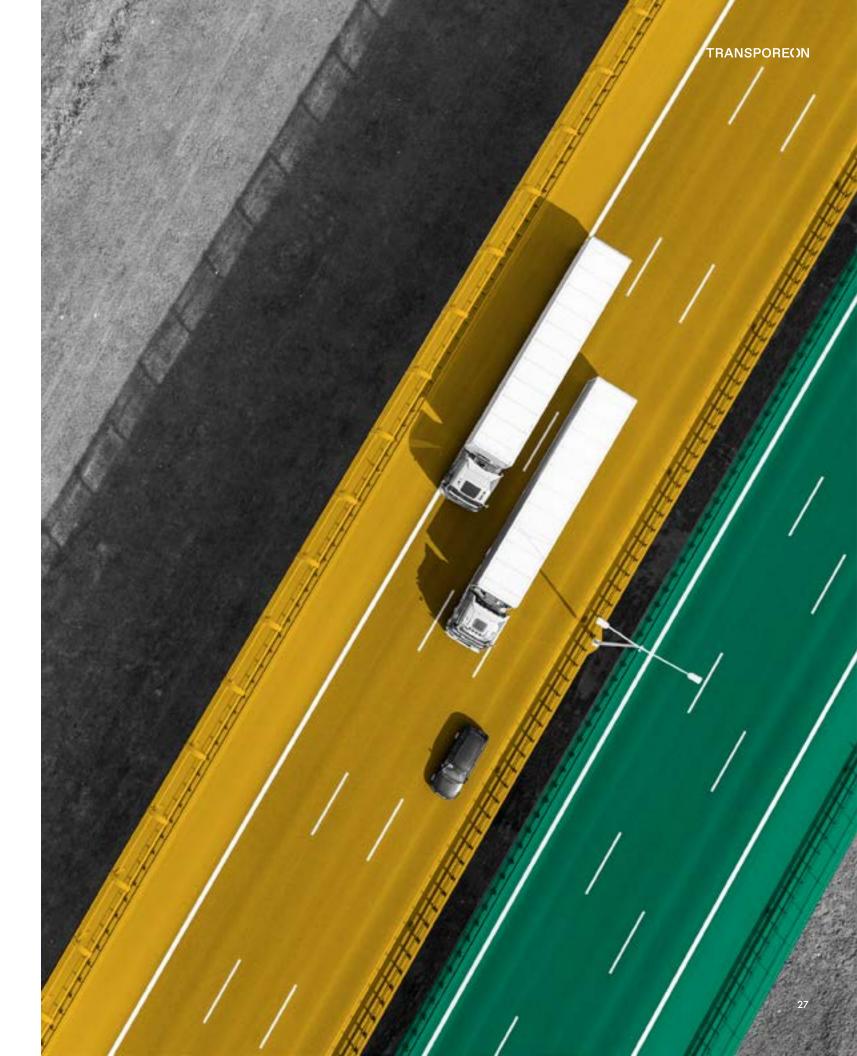


Creative Collaboration and the Agile Approach

As the world's largest consumer goods company, **P&G embraces its** responsibility to set and meet ambitious sustainability goals.

"This is not a battle that can be won by a company on its own," said Pietro d'Arpa. "We need to work with actors across the whole playing field. Also the best solution might be an average of many solutions. This we need to test. The more we test and the faster we do it the more we learn. Talking is fine but it's time we test and learn together."

The key lies in strategic and, perhaps, creative partnerships. And in the age of digital connectivity, these partnerships are able to happen at a scale and pace never seen before. "Everyone who might accelerate this journey is welcome, from the EU, from the industry, from academia — everyone's contribution is necessary."



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Best Practices: Electrolux

It's hard to imagine how you can significantly cut emissions from one year to the next. From one decade to the next. But it always starts with planning and strategy.

- Marcelo Marcal

ELECTROLUX AT A GLANCE

Electrolux is a leading global appliance company that has shaped living for the better for more than 100 years. Headquartered in Stockholm, Sweden, in 2020 Electrolux had sales of 116 billion SEK and employed over 48,000 people around the world. Under its brands including Electrolux, AEG and Frigidaire, Electrolux sells approximately 60 million household products in over 120 markets every year.

MARCELO MARCAL:

Director of Purchasing in Logistics Electrolux Europe

FACT BOX:

- Electrolux purpose: Shape Living for the Better
- Electrolux mission: Reinvent taste, care and wellbeing experiences for more enjoyable and sustainable living around the world
- Key drivers:
 - Act Sustainably inspire and contribute to a change for the better
 - Create Better Experiences design solutions that elevate the everyday
 - Always Improve think new and never settle

Sustainability: Not Just an Environmental Issue

Electrolux has reported a 70% reduction in absolute CO2 emissions from operations since 2015. Most recently the company also made a commitment to become operationally climate neutral by 2030.

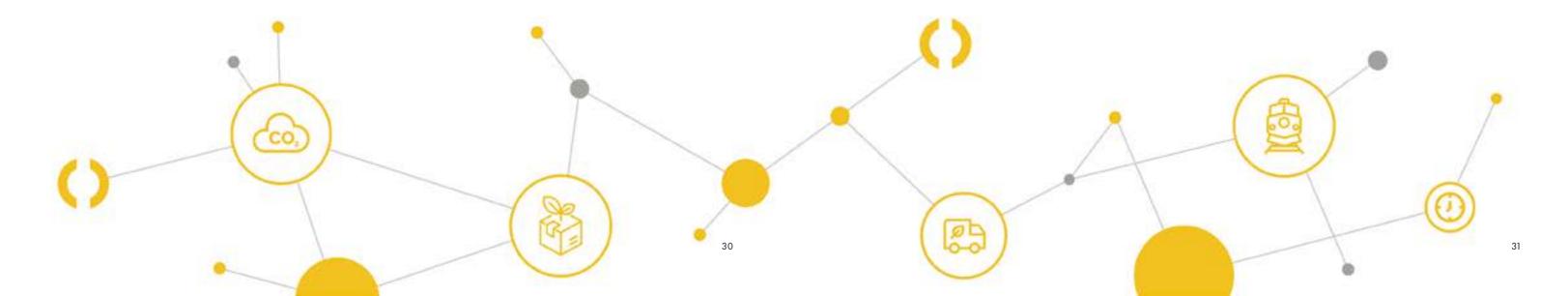
Electrolux has a significant footprint of appliances produced in Europe, and they also import goods from other factories overseas. So having a synchronized Supply Chain is a must.

The group focus on transport sustainability began well before the Green Deal. In recent years an increasing shortage of truck drivers has had a dramatic impact on its European supply chains. "We couldn't rely on road transportation any more, we needed to have other alternatives and sustainable ways," explained Marcelo Marcal, Director of Purchasing in Logistics at Electrolux Europe.

The Ease of Becoming Sustainable: Commitment First

While many companies complain that it's difficult to make logistics operations more sustainable, Electrolux has found the way of doing it. In the words of Marcelo Marcal, the secret lies in having a joint strategy inside the organisation: "It's more of a commitment across the entire team. A true collaboration effort that makes us stronger in the entire supply chain."

Today Electrolux follows a long-term plan to switch to more diverse and sustainable transport methods, incorporating rail and intermodality in particular, as well as alternative fuels. The power shift to replace ICE vehicles is in focus. In the procurement of freight services, the company started to work with carrier self-assessments, which are now complemented by annual scorecards indicating the "sustainability index" for each supplier. In this way, Electrolux has full visibility on its supplier carbon footprint and can plan accordingly the next steps towards a more sustainable supply network.



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In parallel, Electrolux pre-defines lanes to be served by intermodal traffic or rail when tendering for freight services, increasing every year the number of these lanes which need to be served by alternative modes of transportation. In this way, the company promotes the development of intermodal suppliers, undertaking a long-term partnership supporting a mutual business enhancement.

Intermodal Surprises

By the end of 2021, almost 40% of all outbound flows of finished goods in Europe will be performed by intermodal transport or rail. The ambition is to reach 60% by 2025 at the latest. To achieve this ambition, Electrolux has had to re-adapt the stock policy into its supply chain in order to guarantee the right service level to customers.

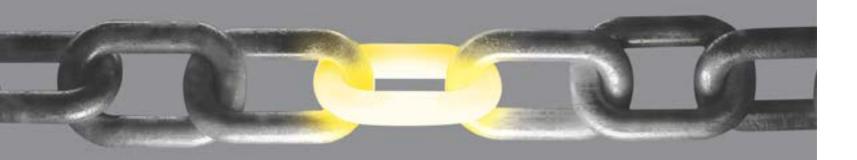
"Sometimes, the weather conditions prevent you from crossing from one region to another, not to mention frequent strikes at the ports and other interruptions on the road that extend the transit time," said Marcelo Marcal. "So often intermodality is even more reliable than road transport."



Decarbonizing the Road End of the Supply Chain

Long run distances are usually covered by rail, but the first and last legs of the intermodal trip will remain on road. Therefore, the development of alternative transportation with lower carbon impact is even more needed.

To meet the decarbonization goals for the remaining road freight operations, the company is looking to its partners and stakeholders to help them meet their targets, especially when looking for ways to upgrade its carrier fleet.



"We are not self-sufficient. We cannot rely only on ourselves to completely decarbonize," explained Marcelo Marcal. Discussions with the OEMs — the vehicle manufacturers — suggest they have already got a good idea of what's going to happen over the next 20 years here in Europe. The equipment manufacturers declared 2040 as the year they will be fossil-free.

For Electrolux the path towards net-zero road transport started with LNG. The company already has over 140 trucks in Europe running on it. Pilots using BIO-LNG have also started which would be much even more sustainable than LNG. In parallel, Electrolux is also using electric vehicles (EVs) in Sweden and Italy — both countries with significant inbound/outbound carbon footprints in Europe. "The so-called e-trucks are working fine, and our customers are very satisfied with the clean transportation approach. **Some lanes are even 100% clean covered by green certificates."**

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A European Issue

In the eyes of Marcelo Marcal, the European Commission is doing a very good job in promoting initiatives in its Green Deal and Mobility Package. On the other hand, the sustainable transport decisions of individual countries are often too slow. **Instead we must work together to support the shift to net zero transportation in Europe.**

Just one example is the use of digitization to work with paperless documents in logistics. "In Asia, for example, most of the logistics companies aren't using paper any more, but here [in Europe] we're expecting to be free from paper in the next 3 to 4 years. So, we must do a better job there as over 95% of cross-border movements for freight in Europe still require one item of paperwork at least."





Moving Past the Pandemic

This past year has impacted every aspect of work, interrupting many planned or ongoing initiatives, and also changing people's habits. Being at home due to the pandemic, consumers changed consumption priorities, choosing to refurbish their homes, which has caused demand for household appliances to peak.

The downside of this sudden increase in demand was that more road transport was needed temporarily. "We had to expedite a lot of materials and also production output," explained Marcelo Marcal. "So we could not wait for the timing of the rail, for instance. Still, within our strategy of decarbonization, the increase of rail transportation is a must."

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CONCLUSION

The Solution is Clear

When it comes to reaching Net Zero, the challenges are clear.

The goals are clear. Even the solutions seem clear:

- Good governance, alignment of corporate and public policy targets,
 fiscal and financial instruments as prerequisites
- Collaboration among all stakeholders in particular shippers
- Transparency, visibility and sharing of standardized data within powerful supply chain networks
- Much greater use of intermodality and wider application of synchromodality combined with rail infrastructure investment and reform of the management of rail and intermodal services
- Replacement of fossil fuels in road transport is a longer-term undertaking which needs to be backed by suitable financing and infrastructure
- Support for SMEs, which collectively dominate the road freight sector,
 to decarbonise their operations
- Near term abatements to cut carbon footprints and increase the efficiency of road transport, exploiting major advances in digitalization

The European Union and the United Nations are providing a common language and framework for stakeholders to build upon. Collaboration between the EU from other regions and governments is sure to follow and will be heartily welcomed.

But change comes down to us — the ones on the road, planning each lane every day. To succeed we need to be transparent about our common issues and share our best practice solutions.

Shippers, carriers, retailers, and more — we are all in this together.



ANNEX - Overview of Initiatives:

European Climate Law

A proposed law that would enforce the European Union's goal to become climate-neutral by 2050.

European 2030 Climate Target Plan

A proposal by the European Commission to cut greenhouse gas emissions by 55% by 2030.

The European Green Deal

The plan put forth by the European Commission to make the EU's economy sustainable. Goal is to have no net emissions of greenhouse gases by 2050.

Paris Agreement

An agreement from the United Nations, ratified by 191 member parties, to limit global warming and reduce global emissions.

Next Generation

A new budget proposal from the European Union aimed to aid economic recovery from the COVID-19 pandemic. It includes a Recovery and Resilience Facility of €560 billion which will offer financial support for investments and reforms, including in relation to green and digital transitions.

Road Freight Zero

A multi-stakeholder coalition under the World Economic Forum aimed at accelerating zero emission road fleets and infrastructure by 2030. Road Freight Zero is a coalition with both corporate and knowledge partners, who each have their own targets and have already begun their decarbonization strategies.

Together they hope to make it past the goal setting phase and start putting these commitments into action.

COP2

The 26th annual United Nations Climate Change conference, scheduled for 1-12 November 2021 in Glasgow.

