



# Driving the change: reducing material emissions

Accelerating sustainability in the automotive industry through renewable and recycled polymers and chemicals

**NESTE**

# On the road to net zero

The automotive industry is an engine of the global economy, and pivotal to human mobility. On the other hand, road transportation has also been among the biggest contributors to global greenhouse gas emissions.

In order to cut those emissions, the sector has embarked on its greatest challenge, such as phasing out internal combustion engines, improving fuel efficiency, and embracing electrification.

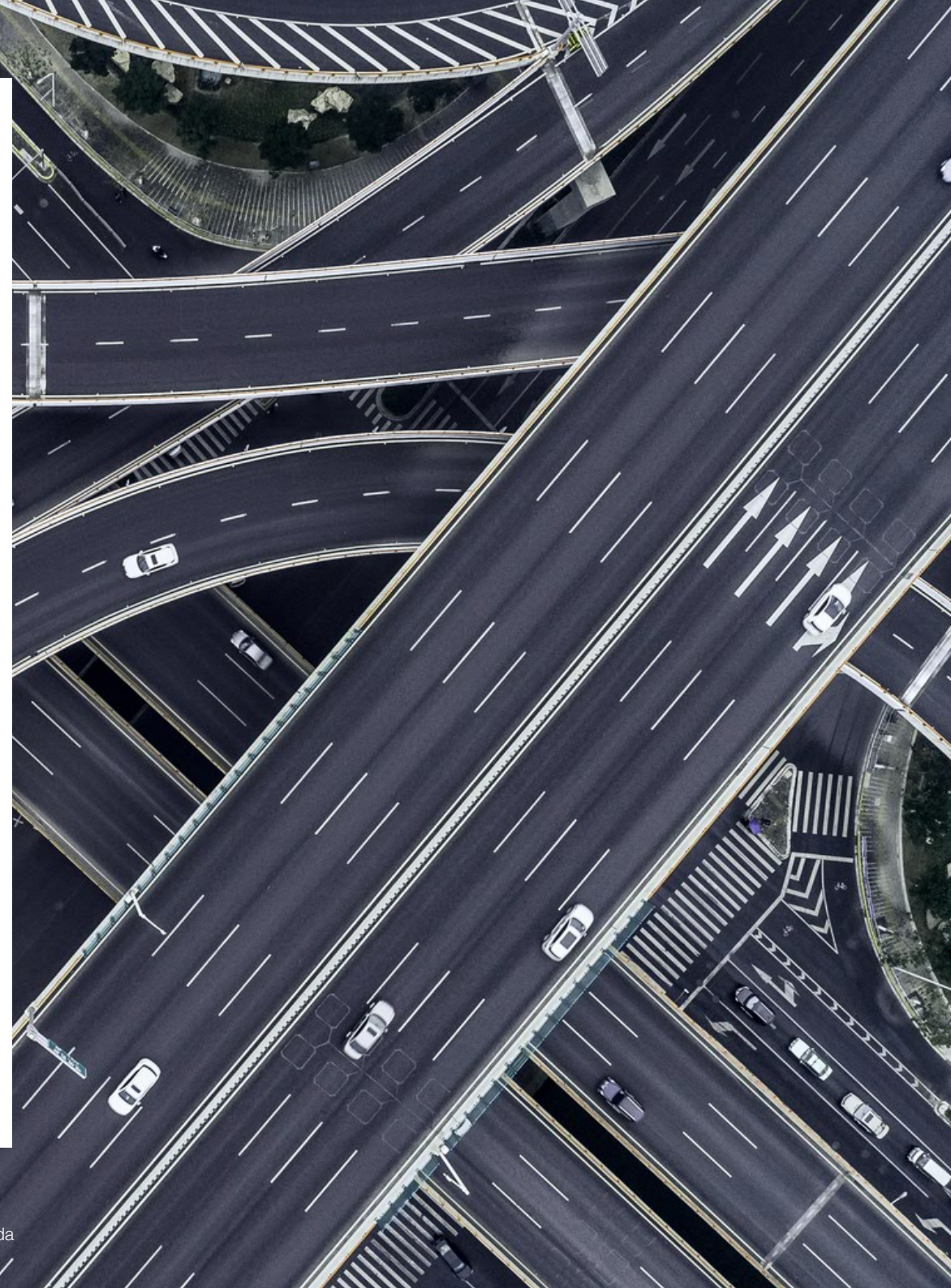
Sustainability can also be boosted by shifting towards alternative materials and designs. Additional steps beyond addressing fuel supply and tailpipe emissions are required to reach the ambitious goal of net-zero global emissions.

## Beyond electrification: Addressing material emissions is next on the agenda

About 65 to 80 percent of the emissions of internal combustion engine vehicles are generated from the tailpipe emissions<sup>1</sup>. Further potential reductions lie in the materials used to make vehicles, which account for around a fifth of the industry's total carbon footprint. Aside from looking at what powers the vehicle, manufacturers also need to focus on what goes into the vehicle during production.



Reducing material emissions will be crucial to achieving net-zero goals. Early adopters who transition to low-carbon material technologies today will reap the greatest benefits.





## Lane change to more sustainable and low-carbon polymers

Today, plastics can be found in every part of the vehicle, in the interior fittings, in the exterior paint, under the hood in engine components, and in safety features such as airbags and seatbelts.

This has helped to significantly reduce the weight of vehicles, improving efficiency and being tougher, more durable and resistant to corrosion than traditional materials.

First used in vehicles in the 1950s, it is now hard to imagine a car without plastic. It is one sixth the weight of steel and composes between 12-15% of the average modern car<sup>2</sup>. That's around 2,000 plastics parts per vehicle<sup>3</sup>.

### Tackling emissions in plastic materials

Traditional polymers, widely used in car manufacturing, are primarily derived from fossil resources such as oil and gas. This not only exacerbates the industry's dependence on virgin fossil resources but also contributes significantly to greenhouse gas emissions.



Manufacturers who want to reduce material emissions need to look beyond current sources of plastic and explore renewable and recycled solutions which offer a lower carbon emissions and a reduction of fossil resources as an alternative.

2. Plastics Europe. 2018. Automotive: The world moves with plastics.

3. VCI (Verband der Chemischen Industrie) Fact Book brochure 02.

# Shift up the gear and reduce fossil dependency with Neste RE™

Neste RE™ is a raw material for polymers and chemicals made from 100% bio-based and recycled materials, which is ideal for a wide range of uses and components in the automotive industry. A drop-in solution that can be used as a straight swap replacement for current raw materials, it performs exactly the same as materials produced from virgin fossil resources, without sacrificing safety, quality and durability.

Automotive manufacturers and suppliers can minimize their material emissions and reduce their carbon footprint by using Neste RE in a wide variety of vehicle fittings, components, adhesives, sealants, coatings and paints.



## About Neste RE



Renewable and recycled raw materials



Combating climate change



Drop in solution, no new infrastructure needed



Proven technology



Large-scale production



Available now

### Ready to use straight away

Neste RE is a drop-in feedstock which can provide an immediate alternative to the use of fossil resources in the manufacturing of materials at minimum investment. The switch to Neste RE, on its own or in a blend, can be done at low infrastructure costs, as they are fully compatible with existing infrastructures.

Plastics produced using Neste RE have the same functionality as traditional plastics. And they are fully recyclable at the end of life. These factors remove barriers to adoption, enabling automotive manufacturers to start using more sustainable materials quickly and with confidence.

### Fewer emissions, more circularity

A life cycle assessment (LCA) of Neste RE shows switching from carbon intensive fossil-based feedstock to Neste RE can help to achieve your goals to reduce emissions.

**>85%**

Life cycle assessment shows that Neste RE 100% renewable feedstock reduces greenhouse gas (GHG) emissions by more than 85% over fossil feedstocks<sup>4</sup>.

**ca.40%**

A life cycle study of chemically recycled Neste RE feedstock showed almost 40% fewer emissions over fossil-based raw materials - on top of turning plastic waste into a valuable resource<sup>5</sup>.



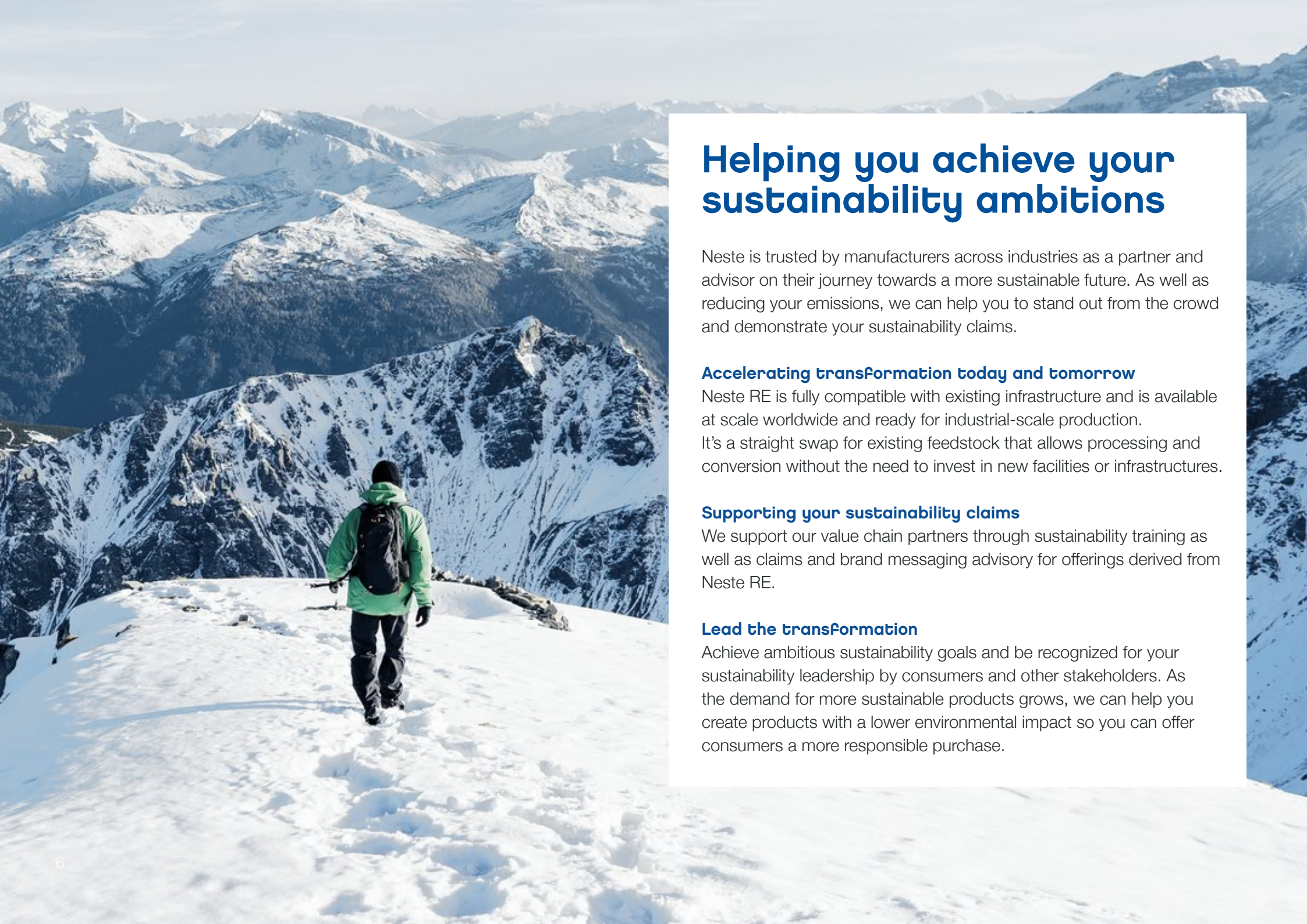
### Transparently and verifiably sustainable

The need for sustainable materials is often seen as a challenge due to a great requirement for transparency and complex supplier management. This means full mobilization of industry is required, and all industrial value chains will have a key role to play. Neste accelerates the transition towards more sustainable solutions by collaborating with players involved in the value chain.

To ensure that sustainability claims are credible and verifiable, we link specific volumes of materials to specific suppliers in our value chain, with clear chain-of-custody traceability and third-party certification schemes, such as ISCC Plus certification.

4. Life Cycle Assessment on Environmental Impacts of Neste Renewable Polymers and Chemicals (30 June 2021)

5. Life Cycle Assessment on Environmental Impacts of Chemical recycling of waste plastic - Case Neste (October 2022)



## Helping you achieve your sustainability ambitions

Neste is trusted by manufacturers across industries as a partner and advisor on their journey towards a more sustainable future. As well as reducing your emissions, we can help you to stand out from the crowd and demonstrate your sustainability claims.

### **Accelerating transformation today and tomorrow**

Neste RE is fully compatible with existing infrastructure and is available at scale worldwide and ready for industrial-scale production. It's a straight swap for existing feedstock that allows processing and conversion without the need to invest in new facilities or infrastructures.

### **Supporting your sustainability claims**

We support our value chain partners through sustainability training as well as claims and brand messaging advisory for offerings derived from Neste RE.

### **Lead the transformation**

Achieve ambitious sustainability goals and be recognized for your sustainability leadership by consumers and other stakeholders. As the demand for more sustainable products grows, we can help you create products with a lower environmental impact so you can offer consumers a more responsible purchase.

## About Neste: change runs on renewables

Our purpose is to create a healthier planet for our children. We provide our customers and partners with low-emission solutions to the world's most pressing sustainability challenges. We build partnerships across the value chain so together we can create a future where all plastics and chemicals are made of renewable and recycled materials. Together with our partners we are aiming at a carbon neutral and nature positive value chain by 2040.

## Neste in numbers

1<sup>st</sup>

world's leading provider of renewable diesel and sustainable aviation fuels as well as a frontrunner in renewable and circular feedstocks for polymers and chemicals

3.3 mt

production capacity for renewable products, set to grow to 6.8 Mt by end of 2026

5,200+

dedicated professionals committed to our purpose


11.1 mt

reduction in greenhouse gas emissions for our customers through our renewable products (in 2022)




### Neste in brief

Neste (NESTE, Nasdaq Helsinki) creates solutions for combating climate change and accelerating a shift to a circular economy. We refine waste, residues and innovative raw materials into renewable fuels and sustainable feedstock for plastics and other materials. We are the world's leading producer of sustainable aviation fuel and renewable diesel and developing chemical recycling to combat the plastic waste challenge. We aim at helping customers to reduce their greenhouse gas emissions with our renewable and circular solutions by at least 20 million tons annually by 2030. Our ambition is to make the Porvoo oil refinery in Finland the most sustainable refinery in Europe by 2030. We are introducing renewable and recycled raw materials such as liquefied waste plastic as refinery raw materials. We have committed to reaching carbon-neutral production by 2035, and we will reduce the carbon emission intensity of sold products by 50% by 2040. We also have set high standards for biodiversity, human rights and supply chain. We have consistently been included in the Dow Jones Sustainability Indices and the Global 100 list of the world's most sustainable companies. In 2022, Neste's revenue stood at EUR 25.7 billion.

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