



## SUMMARY

### Environmental Footprint Guidelines for the Automotive Sector

Every vehicle has a story. It begins with raw material extraction, continues through manufacturing and global supply chains, and ends with reuse, recycling, or disposal. Along this journey, energy is consumed, emissions are released, water is used, and ecosystems are affected. When we step back, we see something bigger: a system under pressure. Furthermore, major transformations in the automotive industry, such as electrification, circularity, and new regulations, are reshaping how vehicles are designed, produced, and used. To understand why these changes are necessary, we first need to understand the bigger environmental picture.

Science describes this through the concept of *planetary boundaries* — the limits that help keep our planet stable. As we speak, several of these boundaries have already been exceeded, and the automotive sector contributes to these pressures through emissions, resource use, water consumption, and chemicals.

But is there a way for us to measure and reduce this impact?

This is where *Environmental Footprint* comes in. At its core are two key concepts. The first, *Life Cycle Thinking*, considers the entire life of a product, from raw materials to end-of-life, helping us avoid solving one problem while creating another. The other, *Life Cycle Assessment*, provides the data and methodology needed to measure impacts and identify where improvements matter most. But measuring impact is only part of the solution. Frameworks such as the *Sustainable Development Goals* and the *Circular Economy* help turn scientific understanding into action. They guide industries towards using resources more efficiently, extending product life, and reducing environmental pressures across the value chain. In the automotive sector, this means making better decisions about materials, manufacturing, use, reuse, and recycling.

By the end of this chapter, you will understand the environmental pressures shaping the industry, how impacts are measured across the life cycle, and how global frameworks support sustainable decision-making. Because Environmental Footprint is not just about data. It is about understanding the story of a product—and learning how to rewrite it for a more sustainable future.

So, let's begin our journey toward a more sustainable automotive future.