



SUSTAINABILITY: HOW MUCH IS THE SEMICONDUCTOR SUPPLY CHAIN CHIPPING IN?

As the Earth heats up, semiconductor companies have a crucial responsibility in protecting the environment. These organizations are working to reduce waste, utilize raw materials more wisely to avoid shortages, and improve energy use while cutting emissions, especially when making computer chips.

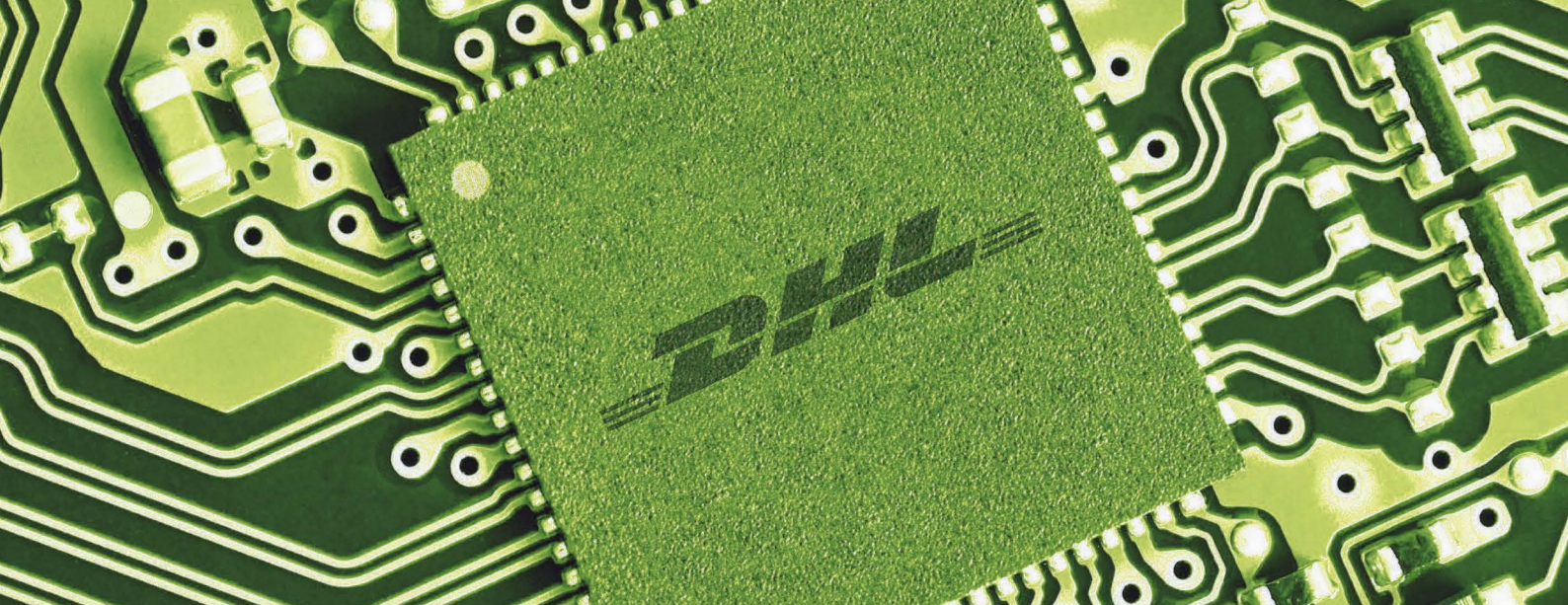
Many in the industry are not just fighting climate change but also protecting business interests. Emissions reduction has become essential as customers, including Apple, Google, and Microsoft, seek full value chain cooperation to achieve net zero within aggressive timeframes. And governments – most notably the Taiwanese government – are subjecting industry players to increasing scrutiny to meet tough environmental, social, and governance (ESG) targets.

Addressing environmental impact

With the industry's rapid growth comes the obligation to address its environmental impact, particularly Scope 1 emissions from fab operations and Scope 2 emissions from purchased utilities. Together these represent approximately 80% of all emissions in the semiconductor industry, according to McKinsey, and this leaves around 20% of emissions as indirect or Scope 3, typically generated by suppliers, including logistics service providers. Clearly, the semiconductor supply chain must contribute (or chip in!) to this urgent requirement for sustainability.

Reducing the carbon footprint

Manufacturers can use several decarbonization levers, including reducing energy consumption, optimizing energy supply, and cutting process-gas emissions, and many have set deadlines that are just a handful of years away. Infineon has committed to 70% greenhouse gas (GHG) emissions reduction by 2025 (from a 2019 baseline) and intends to become carbon neutral for controlled emissions by 2030. Intel is aiming to use 100% renewable electricity by 2030 and achieve net-zero GHG emissions by 2040. Alongside these examples, many other semiconductor companies have made and continue to make ambitious commitments to science-based targets.



Crafting a targeted logistics strategy

To effectively reduce the carbon footprint, semiconductor companies need a logistics strategy that aligns with overall sustainability goals and encompasses the entire supply chain, from raw materials to end-users. As evidenced during DHL's flagship conference – The Era of Sustainable Logistics – it's essential to get the foundations of the logistics strategy right. Companies must understand their sustainability risk exposure and assess their own maturity to identify the right strategy building blocks.

Navigating regulations and reporting

Semiconductor companies must navigate the complex landscape of environmental regulations and reporting requirements. Staying compliant and transparent in the supply chain is critical to building trust with stakeholders and demonstrating a commitment to sustainability. Compliance must extend across the entire supply chain and is becoming critical to preserving the license to operate and preventing major incidences.

Companies must look ahead and stay ahead, as sustainability legislation is changing rapidly, and a thorough understanding of upcoming changes helps anticipate impact and gives access to valuable opportunities as they arise.

Furthermore, compliance with ESG guidelines is rapidly becoming a critical factor in investor decision making. Investors are looking for accountability, including responsible environmental stewardship, good corporate citizenship, and competent managers who monitor all the near-term targets that, once achieved, enable the long-term sustainability goal. This is something that's particularly significant in an industry with one of the highest levels of investment in R&D and capital expenditure.

Decarbonizing the supply chain

Achieving a sustainable semiconductor supply chain requires concerted effort to reduce emissions at every stage. Companies should start with a clear idea of the current carbon footprint and then set up their reduction target and budget, building a strong foundation for future decarbonization efforts. Already today it is possible to switch to sustainable fuels for air, ocean, and road transportation, either directly or through carbon insetting (which means investing in carbon reduction projects within the company's own supply chain). Making the supply chain more digital also helps to advance sustainability goals and allows organizations to adopt additional green technologies as these become available.

Some great news is that warehousing and final-mile operations are on track to achieving net zero emissions in the near future. Meanwhile, the right supply chain network locations enable transportation mode optimization to minimize emissions as well as route efficiency to reduce travel distance – essential when you consider the global character of the semiconductor industry, with a single chip typically travelling 25,000 miles with 70 or more border crossings involving around 12 countries.



Making steady progress towards a greener future

If you'd like to explore more ways the supply chain can contribute to sustainability in the semiconductor industry, I recommend a selection of **summary videos and key takeaways** from our global conference on sustainable logistics.

Here at DHL, we are playing a very active role in global initiatives to reduce emissions in the supply chains of all industries. We warmly welcome the increasing contributions of several leading associations, most recently the Schneider Electric, Intel, and Applied Materials collaboration with the new **Catalyze program**.

Despite the sense of urgency as global temperatures rise, it is important to remember that – for all industries – decarbonization is a marathon not a sprint to the finish. What's important is that semiconductor companies start today and plan the next steps to decarbonize the entire journey. The path to a greener future is clear, and the supply chain is ready to support the semiconductor industry every step of the way.



About the author

- Boris Finselberg is Vice President
- Global Sector Technology at DHL
- Customer Solutions & Innovation.
- He is also the Global Lead for
- Semiconductor Logistics at DHL
- Contact Boris at info.technology@dhl.com