



Research School for Operations
Management and Logistics

Supply Chain Analytics for Sustainability

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In this project, we use data analytics tools to study different aspects of the effect of sustainability-driven decisions on the operational aspects of supply chain management. Typically, such decisions are made to comply with external regulations (e.g., maximum CO₂ emissions) or to pursue self-imposed goals (e.g., firms pledging to power all their plants with renewable energy by a certain deadline). This project aims to fill the gap in three key application areas. First, we study investment-timing decisions: What is the optimal investment strategy for a decision maker with a self-imposed sustainability goal? Is it optimal to wait for innovations in technology (and the associated decrease in costs) before investing, or is it optimal to invest as soon as possible and regularly update the technology when innovations appear? With this project we attempt to describe the drivers for said decisions. Second, we study the physical footprint of companies: What is the expected effect of sourcing (or producing) from 'environmentally risky' countries? How can firms prepare for changing risk profiles? Are inventory slacks or dual sourcing strategies beneficial? This issue is particularly relevant in the developing world, where significant production hubs (and ever-growing demand) are located in areas with climate concerns (e.g., water scarcity and flooding risks). Finally, we explore the dynamic operational impact of investing in sustainability. Using empirical methodologies, we attempt to describe the benefits (if any) and consequent advantages for firms to invest in sustainability.