



SOLVAY Higher circularity, better business

BUSINESS MODEL: **Multiple**

SITUATION

- The business case for reducing the consumption of non-renewable resources is well established.
- Restorative and regenerative economy by design is becoming the norm: use less, use longer, use smarter.
- The chemicals industry mainly serves upstream value chains, and through innovation, chemistry holds the sustainable solutions for the future and can take the lead in the circular economy revolution.

CHALLENGE

- A key element is to ensure that problems are not just displaced. For example, recycled materials requiring ten times more energy for processing than virgin materials, won't be a sustainable solution.
- A challenge for industries is to take robust, longer-term strategic decisions while integrating early sustainability trends from the market.

SOLUTION

- Solvay is building on its proprietary Sustainable Portfolio Management (SPM) tool to steer its product portfolio to meet social and environmental needs in value chains, including circular economy loops. The principle of the SPM tool is to integrate sustainable development and the circular economy into its strategic choices. The tool is used to review and upgrade the portfolio of activities, investment choices and priorities for the research and innovation program to achieve higher social and environmental standards.
- SPM maps sustainability concerns and opportunities in the marketplace along the entire value chain (cradle-to-grave). It enables the anticipation of impact and the development of the right answers in a timely way, and delivers through innovation while balancing economic, social and environmental values.

- Among the sustainability patterns that are considered in the SPM tool, some are strongly correlated to circular economy: energy efficiency, climate change, renewable-based materials, food and the food supply chain, scarce materials, renewable energy, fresh water production, fresh water demand, recyclability, biodegradability, waste reduction, waste supply chain, fresh water supply chain.
- Two examples were developed to illustrate:
 - Resource efficiency in aeronautics
 - Most recent primary structural aeronautic parts are made of pre-impregnated composite fibers, substituting aluminum.
 - The weight reduction enables a decrease in fuel consumption and subsequently lower emissions in plane use phase.
 - Composites also enable significant lifetime extension of primary structural parts, and therefore, the lifetime of the airplanes. This will eventually save non-renewable resources.
 - Composites expand product lifetime by about 30% (extent lifetime from 35 to 45 years, in average), which reduces the need for materials in building new airplanes by 30%.
 - Renewable-based materials in mobile devices
 - Kalix® 3000 series is the industry's first bio-based amorphous High-Performance Polyamide (HPPA). Two grades were developed and marketed, both compounded with 50% glass fibers. Both consist of 16% renewable content derived from non-food competing and GMO-free castor oil.
 - Kalix® HPPAs were developed and are marketed to substitute petroleum based polymers in highly demanding applications

such as structural components for smart devices and other mobile electronics.

- Kalix® high-performance polyamides are highly glass-filled compounds. They provide high strength, rigidity and a high-quality surface finish along with improved processability.

Link: <https://www.enel.it/en/futur-e/>

KEY BENEFITS

- Reduce product manufacturing footprint.
- 100% Group revenue is future-proofed (risks have been systematically identified).
- 30% Group revenue matches circular economy unmet needs (renewables and finite materials).
- Higher growth rate: SPM category solutions (unmet needs to achieve higher social or environmental standards) shows an annual growth rate of +9%, year to year, compared to 3% for “usual” business.
- The application of the SPM tool is workable in the timeframe of decision making process.
- Portfolio management decisions and differentiation strategy.
- The SPM tool combines pragmatism, adaptability, scientific justification and process reliability and leads to more value creation.