



Peter Saling

The BASF Eco-Efficiency Analysis

A 20-year success story

 **BASF**
We create chemistry

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1. Introduction

Sustainability has become increasingly important in the past years as global businesses incorporate it into their strategies and values. Nearly half of the companies in the 2014 McKinsey Global Survey name sustainability as one of the main drivers of their industry – be it for reputation, cost-cutting or other reasons (McKinsey 2014). Nevertheless, there are still many challenges to implementing sustainability in industry.

BASF works constantly on the improvement of their products, services and solutions. We fulfil our purpose “We create chemistry for a sustainable future,” by pursuing ambitious goals along our entire value chain. In this way, we aim to achieve profitable growth and take on social and environmental responsibility, focusing on issues through which we as a company can make a significant contribution. We updated and revamped our goals to this effect in 2015.

One necessary component of any sustainability program is the assessment of products and processes. A validated and quantitative sustainability evaluation method is essential for the development of new products and processes. Sustainability assessments are also a key element in industry for optimization of existing products and for providing science-based arguments for strategic and policy discussions. Product sustainability assessments are vital for steering company product portfolios towards more sustainable solutions (BASF 2014). Industry experience has shown that the implementation of more sustainability evaluation in decision-making processes leads to more sustainable solutions (Gardner 2015, Agarwal 2012, Norris 2001). Different tools have been developed to assess the sustainability impacts and benefits occurring across a product’s life cycle, from cradle-to-grave. One of these tools, the Eco-Efficiency Analysis, incorporates both economic and environmental aspects. The Eco-Efficiency Analysis tool facilitates strategic decision making along the entire value chain. It enables companies to drive innovative product development focused on bringing more sustainable products to the marketplace. The methodology clearly identifies the factors whose optimization will directly translate into improvements in its sustainability profile, even during the early stages of product development. It facilitates clear understanding of trade-offs and helps in preventing the inadvertent shifting of environmental impacts from one area to another or between the economic and environmental pillars. By measuring the impacts on a system level and including a comprehensive

approach to environmental impact assessment, it also safeguards against potentially reaching false conclusions that could result when only single metrics were considered (e.g. option 1 has a smaller carbon footprint than option 2 but after performing the Eco-Efficiency Analysis (EEA) scores worse in overall environmental impact) (BASF 2010a). Finally, when applied as a complement to our Sustainable Solution Steering® approach we can not only align our solutions to our customers' needs but specifically quantify the differentiation potential.

Eco-Efficiency Analysis is also an effective market communication tool. Since the entire life cycle of a product is analyzed, the effects on customers along the supply chain can be quantified and evaluated, leading to the development of a more strategic value proposition. Communication can also go beyond direct customers with the results being used to support engagement and education amongst government agencies, regulatory bodies and NGOs. Results from eco-efficiency assessments studies can support our customers' efforts to obtain or produce eco-certifications such as eco-labels or EPDs (Environmental Product Declarations). Ultimately, it is about creating opportunities to differentiate our products in the marketplace, add value to our customers' solutions, and help drive our sales.

BASF established this holistic method 20 years ago in 1996 and was one of the first companies in the chemical industry to integrate information based on life cycle assessments into business decision making. To honor the 20th anniversary of our Eco-Efficiency Analysis, this book will provide a retrospective on this groundbreaking methodology, showing and explaining how the method was developed and used to answer hundreds of questions around sustainability. As of today, more than 600 Eco-Efficiency Analyses have been conducted globally on behalf of our business and customers. Regional Applied Sustainability Centers in Germany, USA, Brazil and China have been established in order to leverage this tool both internally as well as with our customers and other external stakeholders.

The Eco-Efficiency Analysis has evolved over the last 20 years to meet changing methodological, market and customer needs. Examples of this include the expansion of the methodology into different tools and applications, e.g. the Eco-efficiency

Internet Manager and the EEA6 and EEA10. These developments will be described in this book, as well the development of labels for Eco-Efficiency Analysis and the developments of three pillar socio-Eco-Efficiency Analysis tools known as SEEBALANCE® and AgBalance™.

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The Eco-Efficiency Analysis is now 20 years old. When BASF started with the first conceptual work together with Roland Berger consultants, it was unclear how successful this approach was going to become in the future. LCA studies were calculated in increasing amounts at this time. Ecological assessments in combination with economic aspects were difficult to find. Bold decisions to implement this approach, which was also associated with significant costs, helped to develop the starting point of the Eco-Efficiency Analysis. This foundation of the Eco-Efficiency Analysis group allowed BASF to direct employees to focus their energy and expertise on this topic.

Today, the Eco-Efficiency Analysis has contributed significantly to more than 600 studies. These studies have helped BASF, together with our customers, to make better informed decisions, encourage strategic thinking, deploy effective marketing activities and develop more sustainable products and solutions.

The Eco-Efficiency Analysis has created new value in a variety of areas for BASF's many businesses. These include the economy and the environment, as well as building trust and understanding for us and our operators. As BASF works together with different stakeholders, we can show that through scientific analysis of results, modern chemistry contributes positively to the development of our global societies.

Being open for new developments and requirements, searching for new opportunities, generating interesting and important information to support the businesses and setting up modern and powerful assessment systems will be key aspects of the future. The experiences and developments of the past will be used in the development and direction of our growing family of sustainability assessment tools. When this is done successfully, the Eco-Efficiency Analysis will be a success story for another 20 years.

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