



GLOBAL GOALS **YEARBOOK**

2024



**Transforming
Tomorrow:**

Building Sustainable Product Portfolios

macondo
foundation



IMPACT PARTNERS & CONTRIBUTORS



The Global Goals Yearbook is a publication in support of the Sustainable Development Goals (SDGs) and the advancement of corporate sustainability globally. As an independent grassroots publication it offers proactive and in-depth information on key sustainability issues and promotes unique and comprehensive knowledge-exchange and learning in the spirit of the SDGs and the Ten Principles of the Global Compact.

PATRON



EDITORIAL BOARD



The Global Goals Yearbook is a product of macondo publishing GmbH in support of the Sustainable Development Goals, and the advancement of corporate sustainability globally. This publication is intended strictly for learning purposes. The inclusion of company names and/or examples does not constitute an endorsement of the individual companies by the United Nations.

Jorge Laguna-Celis
Head of One Planet Network, UNEP



Today, 30 years after the “triple bottom line” business concept was conceived as an effort to value a company’s performance – not only in economic terms but also in social and environmental ones – the world faces the same problem. There still exists a large imbalance that favors linear “take–make–waste” and “grow now, clean-up later” modes of production and consumption that have thrived at the expense of our relationship with nature and communities’ well-being.

The severity of this problem is characterized by a significant rise in resource and material usage. According to the Global Resources Outlook 2024, average global demand per capita has gone from 8.4 metric tons in 1970 to 12.2 metric tons per capita in 2020.¹ This surge in resource extraction and consumption has led to greater pressures on ecosystems, increased greenhouse gas emissions, and accelerated biodiversity loss. It is nevertheless possible to reduce resource use while promoting sustainable development, reducing inequality, and improving well-being. However, this requires the adoption of system-based approaches by private-sector actors across sectors.

Making this shift a reality necessitates changing the way we think, act, and inspire businesses about circularity. This theme lies at the heart of the mission of the One Planet Network of the United Nations Environment Programme. To this end, we recently launched – together with the World Business Council for Sustainable Development – an impact analysis for a Global Circularity Protocol (GCP) for business. The potential benefits of circularity presented in the 2024 GCP Impact Analysis report are very compelling. A transition toward >>



harmonized methodologies and accounting metrics for reporting and disclosure by businesses on circular economy can unlock \$4.5 trillion in economic growth and create 6 million jobs through activities such as recycling, repair, renting, and remanufacturing. Additionally, it could reduce greenhouse gas emissions by 6 to 7 percent, translating into cumulative savings of 67 to 76 gigatons of CO₂ equivalent between 2026 and 2050, according to the GCP Impact Analysis report.

It is within this context then that we consider the focus of the 2024 Global Goals Yearbook, which is oriented around the theme of sustainable portfolio management. As a tool, it can provide useful insights for an organization to embrace, mainstream, and disclose efforts for sustainability as a means to develop greener, more circular, and lower-impact alternatives, whereby waste is minimized, resources are used efficiently, and product lifespans are extended.

In the pages that follow, I hope this year’s edition may serve as both an inspiration and a practical guide, illustrating the potential for tangible change when sustainability is integrated into organizational decision-making and patterns of consumption and production. I encourage you to consider the findings, insights, and information housed within the examples highlighted here, and take steps to explore how your organization may seek to harness its findings, move beyond “business as usual,” and contribute to achieving the global goals.

[1] Bend the trend: Pathways to a liveable planet as resource use spikes

.....
Catherine McKenna,
 Member of the UN Secretary-General’s High-Level
 Expert Group on Net-Zero Commitments



It is really the message on climate change that we all need to think about, that the Paris Agreement was about countries, but everyone needs to act together so we can make sure that we have a safe planet.

So if you are a company and you say, “Hey world, I’m net zero by 2050,” people need to believe in that. The one thing that the Secretary-General is worried about is what is called “greenwashing.” Folks are making announcements about commitments, and they sound really great. But if you look closely, there is no action being taken, and in particular there is no action being taken immediately.

The good news on climate change is that we know a lot of the solutions, but we need to make sure we are adopting them. Take renewable energy – we need to make a choice. And right now, it is very challenging with the war in Ukraine. As countries move away from Russian gas, they have to make other choices, but we do not want to lock in fossil fuel infrastructure. That is going to have the consequence of making it impossible to tackle climate change and impossible to meet the scientific goals and what it requires.

We can tackle climate change, we just have to change how we look at things. We have to stop looking at it as a 2050 problem. And we can do this. It is not just about me, it is not just about our taskforce, it is not just about the Secretary-General, it is about everyone recognizing that we are all in this together.

Source: United Nations Climate Action

QUOTE

- 3 Jorge Laguna-Celis
Head of One Planet Network,
UNEP
- 5 Catherine McKenna
Member of the UN Secretary-
General's High-Level
Expert Group on Net-Zero
Commitments

TOPIC

- 10 Zero Emissions
- 12 Zero Waste
- 14 Zero Inequality

SPOTLIGHT

- 16 It's the Portfolio, Stupid!
Dr. Elmer Lenzen
- 21 Conceptual Background:
Sustainable Product Portfolio
Management
- 22 What Should a Portfolio Strategy
Contain?
- 24 Quote: H.E. António Guterres
United Nations
Secretary-General
- 26 Balancing Innovation and
Transparency: Experts Weigh In
on Sustainable Product
Panel Discussion with
Dr. Wibke Lölsberg,
Dr. Eva-Kathrin Schillinger,
Dr. Bettina Siggelkow

BACKGROUND

- 34 Tools and Rules
- 36 THE LAW
Safe and Sustainable-by-Design:
A New Era for the Chemical
Industry
- 42 Quote: Maroš Šefčovič,
European Commission Executive
Vice-President European
Green Deal
- 48 THE FRAMEWORK
The PSA Framework
- 54 THE METHOD
Life Cycle Assessment (LCA)
Explained
- 58 THE THREAD
Greenwashing – More than Just
a Minor Offense



36
A New Era for the
Chemical Industry



48
The PSA Framework



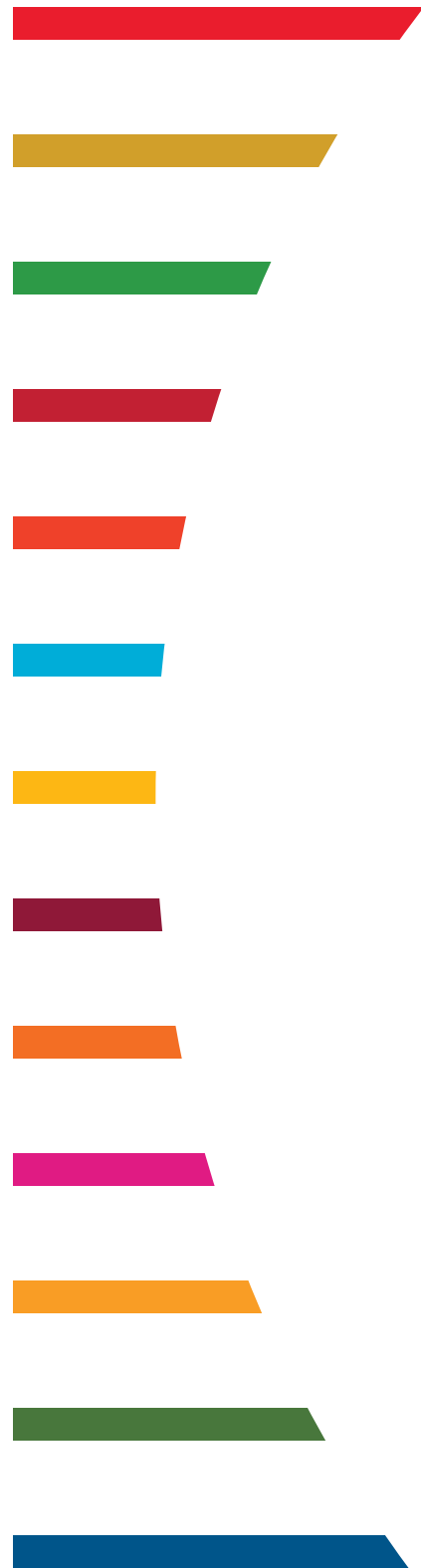
90
The Stella Effort

ZOOMING IN

In alphabetical order and sorted according to the ESG subject areas



- 62 Prof. Dr. Paul Shrivastava,
Co-president of The Club of Rome
- 64 How Do You Make a Large Portfolio
Sustainable?
BASF
- 68 Evolving EVOLVE 2030:
Circularity as a New Evaluation Criterion
Chemours
- 72 Clariant's Dynamic Portfolio Value Program:
Innovating for a Sustainable Future
Clariant
- 76 Impact Intelligence: Integrating
Sustainability and Compliance for Industry
Transformation
iPoint
- 80 From Idea to Sustainable Product: Syensqo's
Innovation Process
Syensqo
- 84 The Future Is Circular and Green
Symrise
- 88 How to Make Textile and Garment Production
Sustainable?
The Stella Effort
Textil
- ANNEX**
- 94 Editorial Board
- 98 Imprint



**OUR
WORLD
IS
CHANGING,
AND SO
ARE OUR
VALUES,**

**OUR
PRODUCTS,
AND THE
WAYS,
THEY
ARE
CREATED.**



ZERO EMISSIONS



The latest findings of climate research are clear: limiting global warming to 1.5 degrees Celsius is still possible. However, to avoid the worst effects on the climate, global greenhouse gas emissions must fall by almost half by 2030 and ultimately to zero.

According to current scientific evidence, limiting warming to 1.5 degrees Celsius depends on CO₂ emissions reaching net zero between 2050 and 2060. Net zero emissions, or “net zero”, are achieved when all emissions released by human activities are offset by the removal of carbon from the atmosphere in a process known as carbon removal.

Achieving net zero requires a two-part approach: first, man-made emissions (such as those from fossil-fueled vehicles and factories) must be reduced to zero as much as possible. Any remaining emissions must then be offset by an equivalent amount of carbon removal, which can be done through natural approaches such as reforestation or through technologies such as direct air capture and storage (DACs), which filters carbon directly from the atmosphere. ■

Source: WRI





ZERO WASTE

wildly dumped packaging waste, nano- or microplastic particles: Plastic has now been detected in the most remote places in the world and even in the food chain.

Incidentally, a positive side effect of this change is not only noticeable in climate and resource protection, but also in economic development: According to a study by the Global Anti-Incineration Alliance (GAIA), zero-waste approaches have the potential to create over 200 times more jobs than conventional waste management strategies. For example, the EU aims to create around 700,000 new jobs by 2030 with its Circular Economy Action Plan. ■

Source: Zero Waste Germany

The best waste is waste that is not produced in the first place. The comprehensive approach propagated by the zero-waste philosophy is an effective circular economy. In contrast to our current linear economic system, which is primarily based on the one-time use of products, the circular economy aims to keep all goods and materials in circulation for as long as possible. This can be achieved through reuse, upcycling and recycling, repair or composting, for example. The focus is placed on the beginning of the manufacturing process and considers the entire life cycle of a product.

According to the Circularity Gap Report 2021, the handling of materials of all kinds — which sooner or later become waste — is responsible for around 70 percent of all greenhouse gas emissions worldwide. Added to this is the current third major environmental crisis alongside climate change and species extinction: The global flood of plastic and the associated pollution of water, soil and air. Whether in the form of fishing nets,





What is Zero Inequality? Zero inequality means the absence of differences in income, wealth, and opportunities between people and groups. Inequality negatively impacts economic growth, social stability, and political systems globally.

The Current Situation: At present, the wealthiest 10 percent of the global population earns more than half of the world's income and possesses almost all of the world's wealth. Most of the world's population resides in developing nations, each facing its own distinct social, political, and environmental challenges.

Challenges of Economic Development: Economic development is often the aim of these countries, but this pursuit frequently leads to negative social and environmental consequences. These include the use of child labor, low or unpaid wages, unequal job opportunities, workplace health and safety issues, and heightened pollution.

The Role of Businesses: Ilham Kadri, CEO of Solvay, stated in a recent World Business Council article: "Today, we are clearly witnessing the consequences of inequality unfold around the world. But inequality is not a natural phenomenon; it is a result of our systems and practices, which we have the power to change."

ZERO INEQUALITY

To generate genuine social impact, businesses need to operate equitably and ethically. This involves upholding human rights within their organizations and supply chains, promoting inclusion in the workplace and broader community, and prioritizing health and safety practices as fundamental aspects of their operations. ■





It's the Portfolio, Stupid!

By Dr. Elmer Lenzen, Chair of macondo foundation

In an era when humanity is overstepping several of the nine planetary boundaries that define our safe operational space on Earth, the escalating production of manufactured goods is amplifying our sustainability challenges. This article delves into how businesses can strategically adapt their product portfolios to mitigate risks and capitalize on opportunities in markets that are increasingly driven by sustainability concerns.

The unsustainable development paradox

Human activities rely on a vast array of products and services that, while fueling our economic system and enhancing well-being, simultaneously contribute to the systematic degradation of ecological and social systems. This degradation manifests in the excessive consumption of natural resources, the release of harmful substances into our environment, and questionable labor practices within supply chains, all of which pose a risk to the well-being of human society. The Guiding Principles on Business and Human Rights, which is the first UN-regulated international legal framework, highlights the growing concern over these issues.

These transformations pose significant risks for product development and manufacturing companies, whose practices and activities perpetuate unsustainable development, resulting in increasing threats to their business models, including stricter legislation, reputational damage, and decreasing demand.

A case in point: The chemical industry's pivotal role

The chemical industry, for instance, plays a pivotal role in manufacturing, with more than 90 percent of all manufactured goods utilizing chemicals for their production. This positions the industry as a key influencer in the transition toward sustainability, aligning it with initiatives such as the European Green Deal, which aims to foster innovation for new, safe, and more sustainable chemical products while restricting or banning existing hazardous substances in certain applications.

Balancing risks and opportunities

The shift toward sustainability presents a dual-edged sword for businesses. Companies clinging to unsustainable practices face mounting risks, including stricter regulations, reputational damage, and dwindling demand. Conversely, those embracing sustainability can un-



lock new markets, attract top talent, and achieve cost reductions through increased efficiency and reduced waste.

Consumers, investors, and employees are increasingly gravitating toward companies offering sustainable and socially responsible products. This has prompted businesses to scrutinize the carbon footprints of their products, their water usage, and the labor practices involved in their production.

Integrating sustainability into the core

Although many companies acknowledge the importance of sustainable innovation, translating strategies into action remains a challenge. Integrating sustainability into product portfolios can be a powerful tool for communicating sustainability performance, both internally and externally, accelerating the development of more sustainable solutions.

Business leaders must evaluate the potential impact of sustainability factors across the product life cycle – from concept to end-of-life disposal – but many consider those factors only in the later stages of the product development life cycle (e.g., production and distribution). Integrating sustainability early in the product development process allows for greater flexibility in creating and adapting sustainable solutions.

Balancing proactivity and pragmatism

Companies must strike a strategic balance between proactive and passive approaches to sustainability. Being too passive means risking falling behind competitors and losing market share, while being overly proactive might lead to premature investments in technologies or markets that are not yet mature.

The product portfolio process is crucial for positioning a company in this “smart zone.” It involves planning the company’s current and future of >>

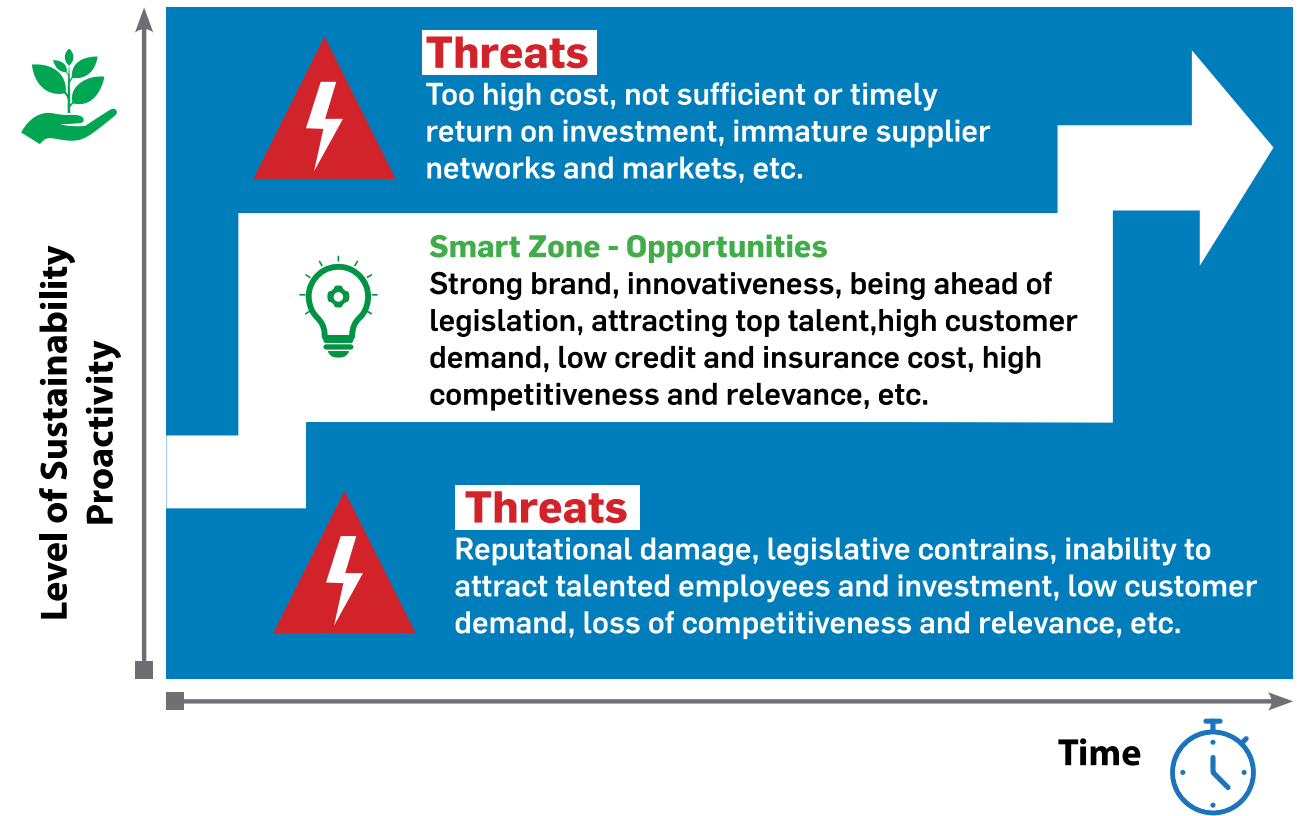


ferings, determining resource allocation for research and development, and managing the transition toward a more sustainable portfolio.

Sustainable portfolio analysis and management

Sustainable Portfolio Management (SPM) empowers companies to gain a deep understanding of their product portfolios and continuously improve them. SPM enhances transparency for customers and stakeholders, enabling companies to define and communicate their contributions to sustainability goals, such as those outlined in the European Green Deal for a climate-neutral Europe.

The transition toward sustainability is a profound systemic change with far-reaching consequences for businesses. Companies that contribute significantly to unsustainable development face increasing threats, while those that pro-



"The transition toward sustainability is a profound systemic change with far-reaching consequences for businesses."

vide sustainable solutions can tap into growing demand. To ensure society's well-being in the long term, markets will inevitably become more sustainability-driven.

Peter Milson, Director of the Certification Board IPMA-USA, remembers the change: "Not so long ago, the approach was rather controversial: A few years ago in Ottawa [Canada's national capital], the term 'portfolio management' was regarded as one of the three dirty words in consulting, the other two being 'enterprise architecture' and 'big data.' No one seemed to be able to agree about what portfolio management meant. Portfolio management is now recognized as a critical method required by organizations to manage their change initiatives in a sustainable manner; still, it is a term that is often misunderstood."

Companies that proactively embrace sustainability can navigate the risks and seize the opportunities presented by this shift. By strategically managing their product portfolios, companies can ensure

long-term success in an increasingly sustainability-driven market.

The smart zone: Balancing sustainability and profitability

The purpose of a sustainability-focused product portfolio is not to make every product perfectly sustainable overnight. Instead, it is about strategically positioning the company in the "smart zone," where sustainability and profitability intersect.

This means that a company might choose to keep some less sustainable but highly profitable products in its portfolio in the short term, while simultaneously investing in the development of more sustainable products that may have less initial profitability but hold the promise of long-term growth and competitiveness.

In this context, strategic sustainability risk management is crucial. It involves assessing the threats and opportunities associated with the transition to sustainability and understanding how these >>



Conceptual Background: Sustainable Product Portfolio Management

What is a portfolio?

In a business context, a portfolio is a collection of programs and projects strategically designed to develop products or services in alignment with the company's overarching goals. The approach to product development has shifted from being purely technical to becoming socio-technical, encompassing a broader range of social, environmental, and economic factors.

The growing importance of sustainability

Sustainability has become a crucial consideration in how we view and manage product portfolios. Consumers are increasingly making purchasing decisions based on the potential environmental impacts of products. In this context, collaboration with stakeholders plays a pivotal role in developing sustainable solutions.

Challenges and opportunities

Developing a sustainable product portfolio presents challenges. Without a strategic sustainability perspective, even solutions that appear better than those currently being offered might turn out to be unsustainable in the long run. Balancing a product portfolio requires considering numerous dynamic variables, such as changing legislation and evolving customer preferences.

Modeling the future

Modeling the future scenarios of a product portfolio can be instrumental in identifying optimal solutions and assessing the variability in environmental impacts, costs, and market dynamics. Some companies have adopted systems-thinking approaches to integrate and implement sustainability measures, focusing on assessing the overall impact of their products and operations.

Key takeaways

- **Holistic approach:** Product development now considers socio-technical factors, not just technical ones.
- **Sustainability as a driver:** Consumer demand for sustainable products is shaping portfolios.
- **Stakeholder collaboration:** Essential for developing effective sustainable solutions
- **Strategic planning:** Crucial for avoiding short-sighted decisions and ensuring long-term sustainability
- **Modeling and assessment:** Tools for understanding potential impacts and optimizing portfolios
- **Systems thinking:** A valuable approach for integrating sustainability into business practices

factors will affect the market success of a product over time, depending on its sustainability performance.

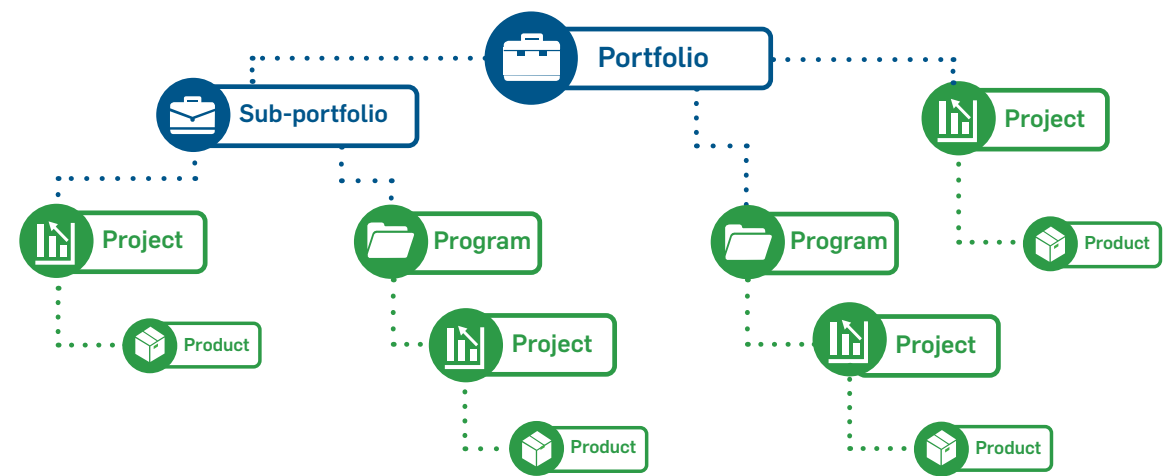
A simplified example: The automotive industry

A simplified example from the automotive industry illustrates this concept. Companies that traditionally focused on internal combustion engine (ICE) vehicles have begun developing and selling electric vehicles (EVs). Although EVs may not be as profitable initially, they boast superior sustainability performance. Over time, as stricter legislation and shifting consumer preferences drive market changes, the revenue from ICE vehicles is expected to decline, while the revenue from EVs is projected to rise. The

challenge for companies lies in finding the optimal pace for shifting their focus and investment from ICE vehicles to EVs to mitigate risks and capitalize on opportunities in the evolving market.

In conclusion

The transition toward sustainability is not merely a trend but a fundamental shift that will reshape the business landscape. Companies that proactively embrace sustainability and strategically manage their product portfolios are poised to thrive in this new era. By understanding the dynamics of this systemic change and finding their "smart zone," companies can ensure long-term success while contributing to a more sustainable future for all. ■





What Should a Portfolio Strategy Contain?



Product portfolio, product family, product line – companies generally have a wide range of goods or services. Each one must be developed further, because standing still means going backwards. Some developments lead to the end of a product, others to new heights. Success depends on a clever strategy. What are the elements of a product portfolio strategy?

The article “Everything You Need to Know about Product Portfolio Strategy” by Roman Pichler¹ provides a comprehensive overview of the importance and elements of a product portfolio strategy.

● HERE IS A DETAILED SUMMARY:

● 1. DEFINITION AND IMPORTANCE OF A PRODUCT PORTFOLIO STRATEGY:

A product portfolio strategy is a high-level plan aimed at maximizing the value of a group of products. It sets overarching goals for the entire portfolio and aligns the strategies of individual products with these goals. An example of this is the Microsoft Office Suite, in which products such as Word, Excel, and PowerPoint follow a common strategy.

● 2. DIFFERENCES BETWEEN A PRODUCT PORTFOLIO, A PRODUCT FAMILY, AND A PRODUCT LINE:

- **Product portfolio:** A collection of interconnected products that create value together.
- **Product family:** A group of related products with similar value propositions or business goals, such as Adobe Creative Cloud.
- **Product line:** A series of product variants, such as different versions of Microsoft Visio.

● 3. KEY COMPONENTS OF A PRODUCT PORTFOLIO STRATEGY:

- **Vision:** The overarching vision describes the purpose and positive change the portfolio aims to achieve.
- **Market segments:** Defines the markets and segments the portfolio serves.
- **Value for customers:** The benefits the portfolio provides to users and customers.
- **Business benefits:** The advantages the portfolio brings to the company
- **Product types:** The types of products in the portfolio and their unique capabilities that set them apart from competitors.

● 4. DIFFERENCES BETWEEN PRODUCT AND PORTFOLIO STRATEGIES:

Whereas a product strategy focuses on a single product, a portfolio strategy covers multiple products. Therefore, target groups, needs, key features, and business goals are generally broader in a portfolio strategy.

● 5. PORTFOLIO MANAGEMENT PROCESS:

Includes analyzing the portfolio, developing and adjusting the strategy, and harmonizing the strategies and roadmaps of individual products. Regular reviews of the strategy are necessary to respond to changes in the competitive landscape and business strategy.

● 6. ROLES AND RESPONSIBILITIES:

- **Product portfolio manager:** Responsible for managing and further developing the portfolio strategy.
- **Team collaboration:** A collaborative approach involving product managers, development representatives, and key stakeholders such as sales, marketing, and customer support to make decisions and regularly review the strategy.

● 7. IMPLEMENTATION RECOMMENDATIONS:

It is recommended to first develop an effective strategy for a single product before working at the portfolio level. This ensures that learning processes and experiences can be transferred to a larger scale. The Pichler article emphasizes the importance of continuous adaptation and a collaborative approach in managing a product portfolio to create maximum value and strategically respond to market changes.



**TOGETHER, WE MUST
RESTORE HARMONY
WITH NATURE,
EMBRACE SUSTAINABLE
PRODUCTION AND
CONSUMPTION, AND
PROTECT OURSELVES
FROM HARM —
CREATING JOBS,
REDUCING POVERTY AND
DRIVING SUSTAINABLE
DEVELOPMENT AS WE DO SO.**



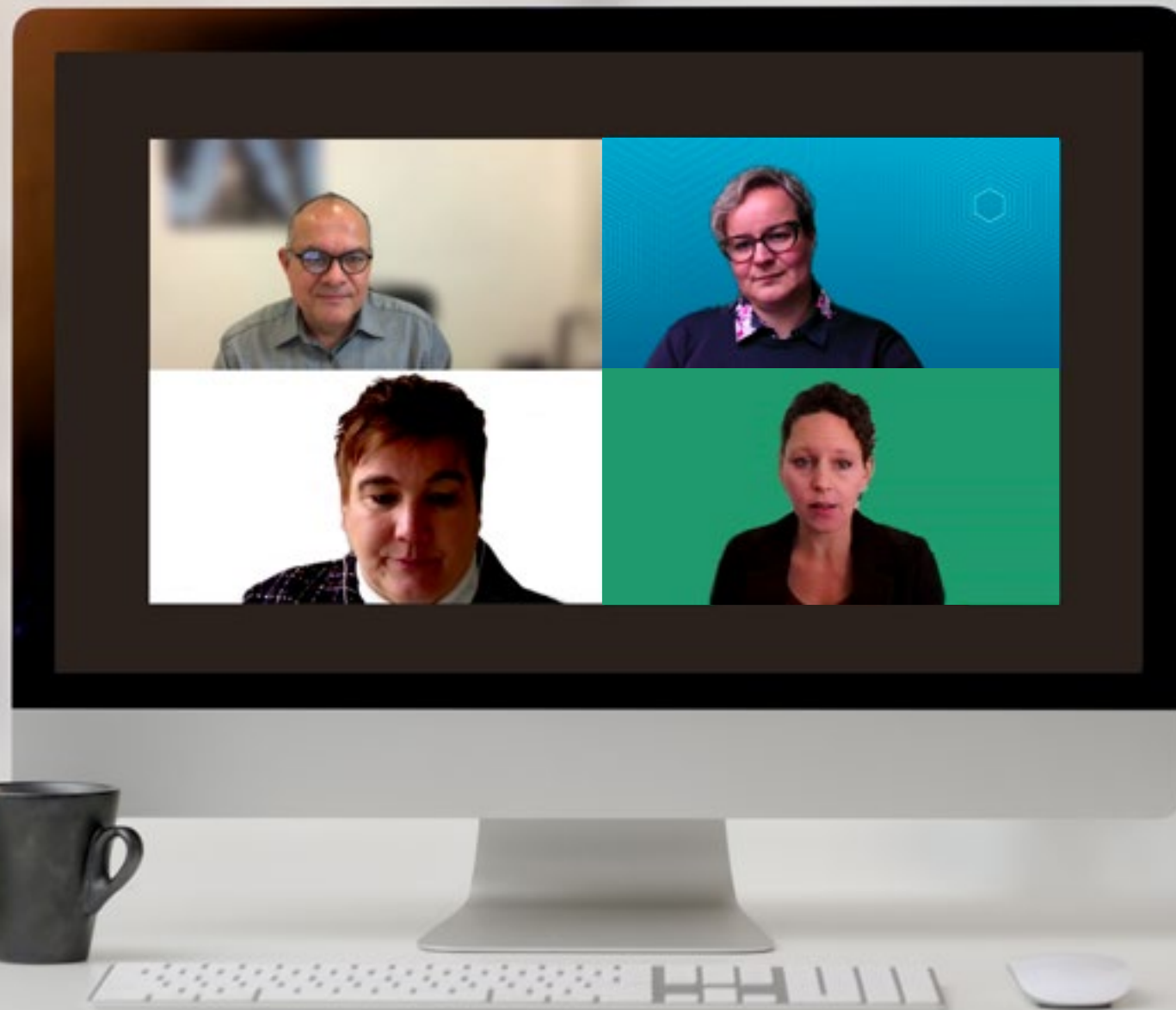
That means slamming the brakes on biodiversity loss, putting a stop to pollution, and slashing greenhouse gas emissions globally. It means supporting Indigenous Peoples, local communities and others being hit hardest by the pollution, climate and biodiversity crises. It means delivering climate justice to countries on the frontline of climate chaos, and swiftly mobilizing the finance and support countries need to act on climate, protect nature and promote sustainable development.

UN Secretary-General António Guterres, April 2024



BALANCING INNOVATION AND TRANSPARENCY: EXPERTS WEIGH IN ON SUSTAINABLE PRODUCT PORTFOLIO MANAGEMENT

Defining and achieving sustainability in product management is complex. Besides the known environmental, sociological, and economic dimensions, sustainable product development also requires innovation, transparency, and rigorous Life Cycle Assessments (LCA). Challenges include balancing costs, data generation, and regulatory compliance. This provides plenty of topics for discussion with our experts from the field.

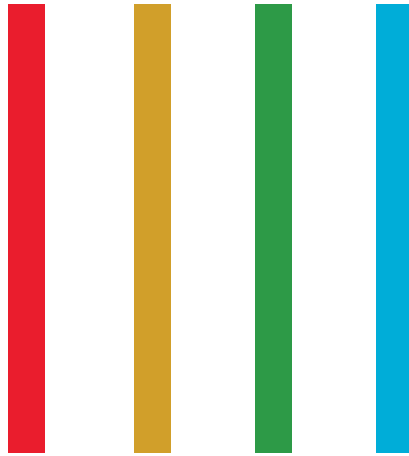


Interview
by Dr. Elmer Lenzen,
Chair of macondo
foundation

Dr. Eva-Kathrin Schillinger,
Senior Innovation Manager, Cefic

Dr. Wibke Lölsberg,
Corporate Sustainability Strategy, BASF

Dr. Bettina Siggelkow,
Head of Corporate Sustainability Affairs, Clariant



Let us start with a definition: What makes a product sustainable?

Dr. Eva-Kathrin Schillinger:

I'm afraid that a simple textbook definition is impossible because sustainability is complex. You have to look into environmental sustainability but also sociological and economic sustainability. Sustainability involves several subcategories, each with their own subdimensions. For example, the environmental subdimensions, among

to understand that creating sustainable products, or creating more sustainable products, is always about drawing a solid baseline. This involves looking at where we are right now, what our products deliver in terms of sustainability with respect to different aspects, and identifying improvements in one or more of these dimensions.

I have a strong background in innovation, and I believe that the idea of sustainable products is a very good fit for the chemical industry. They invest

bunch of detailed questions that arise: What is the life cycle of a product? What impact does the product have on the environment and on the supply chain, et cetera. What's your recommendation to manage this?

Dr. Wibke Lölsberg:

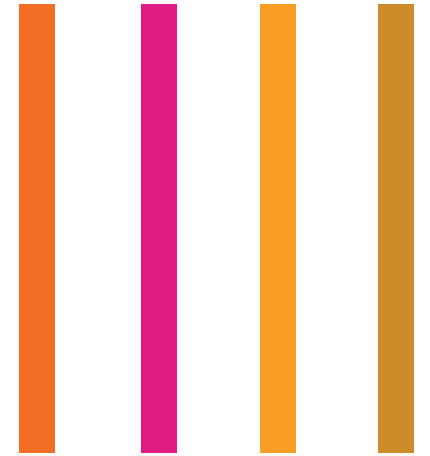
Transparency is the key here. Transparency on a company level, on its product portfolio, and the respective value chains. A product, for example, may go into different value chains. So you need to consider differences of a product in

already mentioned, through targeted innovation, it is possible to address those risks and over time shift an existing portfolio towards more sustainability.

Bettina, I learned now that innovation is an important ingredient, and transparency is the other one. Is this what makes a product sustainable?

Dr. Bettina Siggelkow:

I would agree that the value chains of products are crucial. You really need



"It's important to understand that creating sustainable products, or creating more sustainable products, is always about drawing a solid baseline".

Dr. Eva-Kathrin Schillinger, Senior Innovation Manager, Cefic

others, include air pollution, water use, land use, and more.

I'm not even trying to make it more complex than it is, but we're dealing with a multi-factor assessment. It's important

a lot in innovation as they are improving technical and sustainable features.

To pass this question to you, Wibke, I learned that the question might be simple, but the answer is not. Why? Because there are a whole



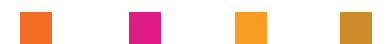
"It needs to be analyzed region by region and application by application, meeting the demands of the customers".



Dr. Wibke Lölsberg, Corporate Sustainability Strategy, BASF

its application, in the region where it's being sold and used, and also which end-of-life situation likely becomes relevant. This allows for identifying opportunities as well as risks within that existing product. And then, as Eva

to know all the risks and impacts of a product, starting from the raw materials' own production as well as the use phase. A simple example: If I have a product which allows my customer to save a lot of energy, then this, >>





of course, also needs to be taken into consideration when talking about the product and its state of sustainability. All this can be analyzed by a systematic assessment.

What is the difference between sustainable product portfolio management and "normal" portfolio management?

Siggelkow:
.....

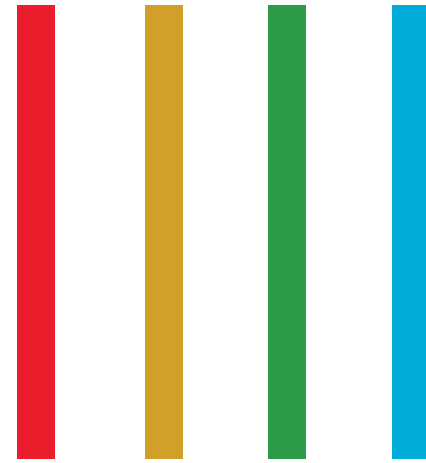
A sustainable portfolio is based on an assessment that identifies products and

processes, and strategic discussions and to implement them within your business activities.

My impression is that only a few companies manage their portfolios systematically and based on data. Why is that? Are the methods too complicated?

Schillinger:
.....

I believe there is the need for a differentiated answer here. As an association, we also talk to our members,



So, clearly, for those companies, this is not only something that they are obliged to do, but this is something that they are proactively driving. Then again, we have to clearly also consider the size of the industrial players in the market, meaning the resources that they will have at hand in order to be able to actually assess their portfolios.

To bring it down to the point of data: If you do not have the data, you need to generate it, which is both time-

difference in terms of the resources that you actually need.

Staff costs are high and the benefits – both ecological and economic – are sometimes difficult to identify. How do you solve this at BASF?

Lölsberg:
.....

Let me start with the costs versus benefits in general. I think what is really important is to identify the right levers to address our customers' sustainability demands. Sustainability, as Eva mentioned, has many different aspects. Some are relevant for some stakeholder groups, and others are relevant for other stakeholder groups. So you really need to thoroughly analyze what are the sustainability demands of a certain customer group.

In addition, this requires that your customers have the willingness to pay for those products. Therefore, market knowledge is of high relevance to then design tailored products. Of course, it needs to be ensured that the products still perform on the same performance level as they did before, or as the incumbent solutions did before. And then, adding the sustainability benefits or attributes is crucial to make those products ecologically and economically attractive to the customer base. This, again, needs to be analyzed region by region and application by application, meeting the demands of the customers. So therefore, it's quite a tedious task to go through.

Sounds like an immense amount of work. Isn't there a danger that all human resources will end up flowing into LCA analyses and reporting, leaving insufficient time for the necessary transformation measures?

Schillinger:
.....

I go back to what Wibke mentioned at the beginning: Besides seeing that the matter at hand overall is complex, there is also the creation of transparency. So, it would be wrong to say that >>

■ ■ ■ ■
"Regulations can help to create the same language and the same level playing field".
■ ■ ■ ■



Dr. Bettina Siggelkow,
Head of Corporate Sustainability Affairs,
Clariant



their potential risks and opportunities. So you can trigger innovations to create a product portfolio that is more sustainable than the one you had before. It is important to combine sustainability dimensions, innovation

but go much further. Many of our members not only apply techniques like the sustainability assessment methods we briefly mentioned, but they are also actively involved in developing them.



Dr. Elmer Lenzen



consuming and resource-intensive. Therefore, we also really have to consider, what is the data need? Is the data essential, or just nice to have? Which sometimes is a very thin line to walk, but which can make a huge



reporting is a complete waste of time, because, of course, to create transparency, you need data to base all of your assessments on.

That is absolutely clear. With all of these reporting aspects, however, the golden rule – especially when you look at small and medium-sized enterprises – is that these sustainability aspects should be put into a format, the application of which is also possible for non-sustainability experts or non-toxicological experts.

For this, you need the right balance between the must-have data – the real scoping of what this product will be used for or what the customer requirement is – versus all of the data that you possibly could generate for the project. But this, of course, is killing any kind of efficiency behind it. This is a very fine line that I believe must be clearly and carefully defined early on.

In the sustainability investment market, we have the concept of so-called sin stocks. You simply exclude alcohol, weapons, and some other problematic aspects, and then your portfolio is sustainable. Is this similar in portfolio management? And isn't there a danger that such a restricted portfolio is less resilient to a rapidly changing world?

Lölsberg:
.....

The fundamental question is how we define “problematic” in that context and how we measure this. In our sustainability assessment, we indeed check whether products go into controversial value chains that we do not want to promote – the weapons industry for example – and that would lead to a downgrading of those products.

You also mentioned the resilience of a portfolio: Here we need to look at how chemicals can be assessed, and typically chemicals are, first of all, assessed by their intrinsic hazard potential. That's something that comes through legislative procedures as to how this needs to be done, followed by the assignment of what is the hazard potential.

So it is meaningful to look at how a certain substance is applied and what the level of exposure, for example to the environment, would be. That allows a risk assessment for a particular chemical combined with certain mitigation measures. This can be protective measures for the user, but this can also be measures such as certain substances not being sold in certain regions or applications. All that needs to be balanced to make sure that the chemicals – which in the end are building blocks to develop new products – are available as much as possible for innovators to design new and more sustainable products.

So, it is really important to not just conclude from the hazard potential that a substance may be problematic, but also to take a closer look into what is the actual application, what is the exposure level, what can I do to minimize this and – only if nothing else helps – then restrictions are a fair way to prevent this.

From the outside, it appears that the issue of portfolio management is only in the spotlight because politicians in Europe and the US are tightening the

rules: the keywords for the EU being “extended producer responsibility” vs. those for the US, which are “producer responsibility laws.” Is all we are talking about just a reaction, or are there also proactive aspects?

Siggelkow:
.....

We at Clariant do that because we think that's the right thing to do. And on the other hand, we also see that there's an increasing expectation of all the stakeholders we are dealing with. It's the expectation of our employees, of customers and investors. So I think it's not only the regulations which are pushing us. I think there's an alignment within the industry to produce fewer emissions, less pollution, and to transform towards more nature-positive chemicals. But regulations can help to create the same language and the same level playing field.

How do the regulatory, clearly defined standards of “Safe and Sustainable by Design” (SSbD), which companies in the EU must adhere to, differ from the more flexible standards of the PSA (Portfolio Sustainability Assessment) framework, which supports companies on their sustainability journey without strict regulatory requirements?

Lölsberg:
.....

First of all, “Safe and Sustainable by Design” is still under development, and it is said that it will not become mandatory. But what we do see is that this actually may feed into regulations such as the Ecodesign for Sustainable Products Regulation (ESPR). Hence, it has at least some linkage to regulation. The goal of SSbD is to give guidance on how to assess and develop more sustainable and safer chemicals and materials.

The PSA, on the other hand, is a framework that was developed by the industry itself and has been harmonized by the World Business

Council for Sustainable Development (WBCSD). It was even updated by the WBCSD last year in the regulatory background in Europe and within other regional and global regulatory developments. Furthermore, a chapter has been added on research and development that now gives guidance on how to improve the level of sustainability and safety for new products.

That means when looking at the goals, there is quite an overlap between SSbD and the PSA framework. Together with Cefic, the European Chemical Industry Council, we have developed an industry guidance, which is based on the PSA approach and provides more freedom to focus on the key aspects for assessment. **So, basically, run** a hotspot analysis and then develop with innovation better and more sustainable solutions for the most important aspects.

What could a bridge between the two frameworks look like?

Schillinger:
.....

As said before, I come from an innovation background. So what I would wish for – and what I believe would also be of great benefit for small and medium-sized enterprises – is an approach that is flexible enough to accommodate the essential aspects of innovation projects, but still has a kind of checklist. So, it could be applied by skilled innovators.

Let us have a look into the crystal ball! How will we be discussing these topics 20 or 30 years from now?

Siggelkow:
.....

I think we will still have the same discussion, but compared with today, from a different starting point. We would see an industry with products that are way more advanced, create less pollution, fewer emissions, and fewer impacts on nature.

Lölsberg:
.....

To come back to the beginning, sustainability is not an absolute term. That means we will definitely see different product portfolios from what we see today. But they will be based mostly on the same chemical building blocks. The difference will be the raw materials used, how those have been produced, and the end-of-life scenarios likely will have changed dramatically. And what will stay the same, I think, is much of the assessment process.

Schillinger:
.....

Perhaps with one additional point: The change in mindset will have advanced further.

I thank the three of you very much for the conversation.





Tools & Rules



Sustainable Portfolio Assessment (SPA) is a methodological framework for evaluating the sustainability performance of a company's product portfolio. It encompasses a holistic analysis of environmental, social, and economic dimensions, considering both upstream (raw material extraction) and downstream (consumer impact) factors. SPA serves as a strategic instrument for establishing comprehensive, future-oriented Sustainable Portfolio Management practices within an organization.

(e.g., suppliers, customers, local communities). However, implementation barriers arise due to the lack of strategic planning, insufficient expertise in eco-design and life cycle assessment methodologies, and inadequate evaluation of social sustainability dimensions. Furthermore, many existing tools lack a comprehensive systemic approach and strategic vision, failing to incorporate long-term planning for a future characterized by both social and ecological sustainability.

The integration of sustainability principles into the product lineup presents multifaceted challenges. These include limited stakeholder engagement; the lack of awareness and prioritization of sustainability among top-level management; an insufficient consideration of social sustainability aspects; the absence of a clearly defined strategic sustainability framework; inadequate availability of early-stage data on product sustainability performance; limited knowledge regarding sustainability in relation to the product portfolio; and a deficiency of tools specifically designed to facilitate the integration of sustainability considerations. Notably, the social dimension frequently focuses predominantly on internal stakeholders (company employees), neglecting other stakeholders involved throughout the product life cycle, such as the communities adversely affected by raw material extraction activities. ■

Despite the availability of more than 600 sustainable design methodologies and tools, corporations face significant challenges in their implementation, resulting in low industry adoption rates. This stems from the absence of a strategic sustainability perspective embedded within these tools, impeding their capacity to simultaneously enhance profitability and foster sustainability. The successful integration of sustainability into product portfolios necessitates the active engagement of both internal stakeholders (e.g., employees, management) and external stakeholders



Safe and Sustainable-by-Design:

A New Era for the Chemical Industry



In recent years, the global focus on sustainability has intensified, driven by international agreements and regional commitments. As the foundation of nearly all industrial systems, the chemical industry is at the forefront of this transformation. The European Union (EU) is leading the charge with its innovative Safe and Sustainable-by-Design (SSbD) concept, aiming to revolutionize the production and use of chemicals and materials.

The rise of SSbD

The SSbD concept is a cornerstone of the EU's Chemicals Strategy for Sustainability (CSS), a key component of the European Green Deal. The CSS seeks to mitigate the adverse effects of chemicals on human health and the environment by eliminating the most hazardous substances and substituting or reducing the use of others. SSbD aligns with existing strategies such as eco-design and sustainable finance, and it complements the Ecodesign for Sustainable Products Regulation (ESPR) and the Digital Product Passport (DPP) in promoting transparency and information-sharing.

Cefic, the European Chemical Industry Council, states: "Yet, a holistic approach is needed that captures all ongoing initiatives and policy objectives into a single framework and withgoing criteria. It should indeed 'become a guiding principle along the entire development chain in key sectors of the economy, accelerating the transition towards safe and sustainable chemicals, products, materials, and technologies.'"

What is the SSbD concept about?

The European Commission has established a comprehensive roadmap for SSbD chemicals and materials, comprising two phases: (re)design and safety and sustainability assessment. This frame- >>



work guides the development of safer chemicals and materials and ensures their rigorous evaluation throughout their life cycle. The goal is to drive innovation toward a more environmentally friendly industrial transition.

The substitution of “substances of concern” is a facet of the CSS, which aims to mitigate the adverse effects of chemicals on human health and the environment through a series of targeted measures. The overarching goal is to eliminate the most hazardous substances and substitute all other concerning substances whenever possible, or at the very least reduce and monitor their usage. The initiative is in line with several established strategies such as eco-design, the World Business Council for Sustainable Development, Sustainable Finance, ISO 14067, and others.

Does SSbD give industry a competitive advantage?

Considering that chemicals are present in more than 90 percent of all products, the chemical industry plays a crucial role in influencing various value chains and supporting the goals of the European Green Deal. This requires a significant commitment from the industry and its value chains. However, the increasing adoption of mandatory due diligence regulations for social and environmental issues presents an opportunity to align environmental and social governance, thereby driving long-lasting change.

To encourage the adoption of safe and sustainable chemicals, it is crucial to consider market-pull mechanisms, financial incentives, and reduced regulations. The EU, as a global standard-setter, must lead on a global scale to ensure fair competition and robust enforcement mechanisms. Since more sustainable products may initially cost more or require additional technical and administrative processes for downstream users, market incentive mechanisms and financial incentives should be considered to promote their acceptance. Reducing excessive regulations and introducing a

supportive stance toward safe and environmentally friendly alternatives, such as implementing fast-track procedures, should also be considered.

SSbD and PSA – the best mix?

At this level, a robust enforcement mechanism is needed that is based on generally accepted definitions, criteria, methods, and tools for testing and assessing conformity, particularly with regard to imports. Linking the SSbD

"SSbD has the potential to transform the way chemicals and materials are produced and used."

concept with the Portfolio Sustainability Assessment (PSA) framework can lead to the development of safer and more sustainable products through a process of continuous improvement. PSA is a methodology that is currently being used actively by more than 20 chemical companies worldwide. The assessment results from the current portfolio – focusing on product-application pairings – are summarized in sustainability clusters, allowing companies to prioritize the most important impacts.

Boundaries and criticisms

Although SSbD holds great promise, it has faced criticism for its narrow focus on ecological sustainability while neglecting social and economic aspects. Some stakeholders argue that the concept's hazard-based approach, which proposes excluding certain substances without risk assessment, could hinder innovation and long-term sustainable solutions. There are also concerns about the potential for increased costs and administrative burdens for downstream users of more sustainable products. According to Cefic, the framework also needs to consider the high level of uncertainty due to the limited availability of information, especially during the early innovation stages.

The German Chemical Industry Association (VCI) emphasizes the importance of maintaining the established risk assessment approach for all substances. The organization is critical of the hazard-based SSbD concept, which proposes excluding certain substances (except those essential for innovation) from risk assessment. By excluding chemicals at the research stage, there is a risk of compromising long-term sustainable solutions and hindering the achievement of the European Green Deal's objectives. It is crucial to recognize that hazardous chemicals and sustainability are not inherently incompatible. Instead, a comprehensive perspective and a thorough risk-benefit analysis should be prioritized in all material evaluations.

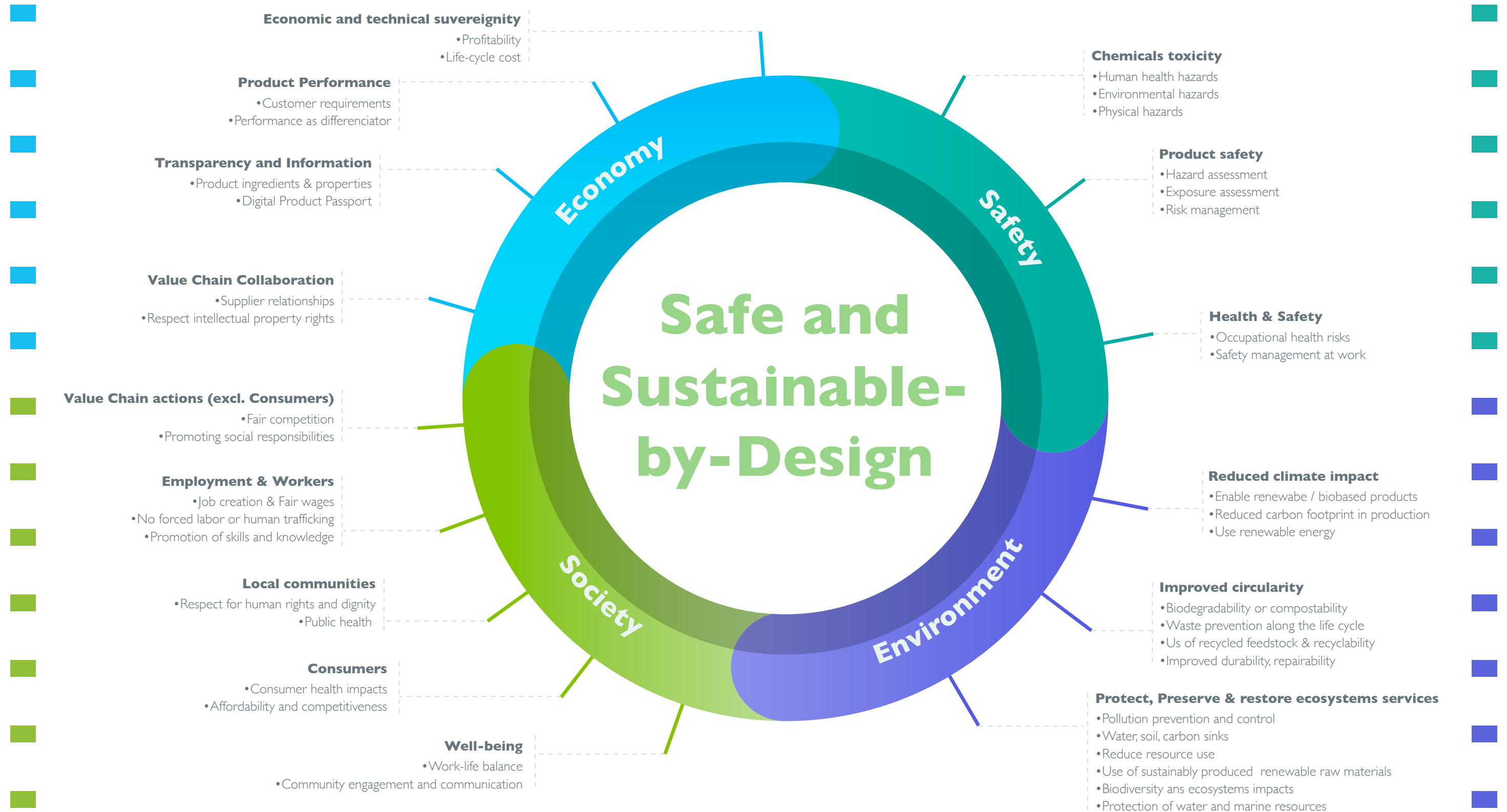
The path forward

Despite these challenges, the SSbD concept represents a significant step toward a more sustainable chemical industry. By fostering innovation, promoting transparency, and aligning with global sustainability goals, SSbD has the potential to transform the way chemicals and materials are produced and used. The EU's leadership in this area sets a precedent for other regions to follow, paving the way for a safer and more sustainable future. ■



Sustainable products become standard throughout the EU

The EU member states adopted the new Ecodesign for Sustainable Products Regulation (ESPR) at the end of December 2023. In future, only products that have been manufactured in a resource-saving manner, are durable, repairable, and energy-efficient will be placed on the internal market. With this regulation, the EU primarily wants to stop the destruction of usable consumer goods such as textiles and shoes. The previous Ecodesign Directive only applied to energy-related products. The scope of the new ESPR now covers almost all products but does not set any requirements for individual products itself. However, it does formulate basic performance requirements, which are to be defined in future in subordinate regulations for specific product groups (delegated acts). The performance requirements cover the entire life cycle of a product. They lay down specifications for aspects of material, energy, and resource efficiency, such as durability, reparability, reusability, ecological footprint or water, soil, or air pollution. Once the regulation comes into force, the European Commission will launch the product regulations, starting with furniture, textiles and footwear, iron, steel, aluminum, cleaning products, and chemicals. Transitional periods of 18 months are planned, and the needs of small and medium-sized companies will be given special consideration. Consumers will benefit from the rules of the new ESPR because they save costs through lower energy consumption as well as the durability and reparability of their products. At the same time, consumers will be provided with tools for their purchasing decisions, such as a digital product passport, an eco-design label, and a reparability index. The Digital Product Passport enables both consumers as well as market surveillance authorities, waste management companies, and other stakeholders to access relevant information, such as the circularity and recyclability of a product or, in the future, information on substances of concern. Following the decision by the Permanent Representations of the EU member states, the ESPR must be formally adopted by the European Parliament. Following the final decision by the European Council, the regulation can enter into force at the end of 2024.



Source: Cefic



Maroš Šefčovič - European Commission
Executive Vice-President European
Green Deal (2023-2024)

“We set the bar higher to ensure that resource and energy-efficient products become the norm on the EU market. The Ecodesign for Sustainable Products Regulation is a world-leading initiative. Having products that are repairable, recyclable and increasingly made of recycled materials provides new business opportunities, creates innovative jobs and offers more value for consumers. We will now swiftly roll out Ecodesign product rules – starting with the products that have the biggest environmental impact and the biggest potential for energy savings and circularity.”





The legislative Tsunami

AN OVERVIEW OF EU EUROPEAN GREEN DEAL POLICIES & REGULATIONS

Click on the text to access the legal documents

CLIMATE CHANGE



[Emissions Trading Directive \(EN\)](#)
[Renewable Energy Directive \(EN\)](#)

CIRCULAR ECONOMY AND WASTE MANAGEMENT



[Batteries Directive](#)
[Proposal for a new Batteries Regulation \(2020\)](#)
[End of life vehicles](#)
[Landfill Directive](#)
[Mining waste – Extractive Waste Directive](#)
[Packaging Directive](#)
[Plastic Carrier Bags Directive](#)
[Directive on the disposal of PCBs/PCTs](#)
[RoHS Directive](#)
[Sewage Sludge Directive](#)
[Regulation on persistent organic pollutants \(POPs\)](#)
[Waste Shipments Regulation](#)
[Delegated regulation on plastic waste shipments](#)
[WEEE Directive](#)

SUSTAINABLE FINANCE



[Non-Financial Reporting Directive \(Directive 2014/95/EU\)](#)
[Taxonomy, framework to facilitate sustainable investment Regulation 2020/852/EU](#)

TRANSPORT



[Directive relating to the quality of petrol and diesel fuels \(EN\)](#)
[Vehicle Labelling Directive \(EN\)](#)
[Euro 5 and 6 Regulation 715/2007/EC](#)
[Regulation 692/2008/EC on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles \(Euro 5 and Euro 6\) and on access to vehicle repair and maintenance information](#)

[Regulations 2017/1151 \(Worldwide Harmonised Light Vehicle Test Procedure\) and 2018/1832 \(Real-Driving Emissions 4\)](#)
[Regulation 595/2009/EC and \(EU\) 582/2011 on heavy duty vehicles.](#)

PRODUCT POLICY



[Ecodesign Directive](#)
[Energy Labelling Regulation](#)
[EU Ecolabel Regulation on various products \(detergents, cosmetics, textile products etc.\)](#)
[Directive 2014/24/EU on public procurement \(Green Public Procurement criteria\)](#)
[Sustainable Products Initiative \(expected\)](#)

INDUSTRY



[Industrial Emissions Directive \(EN\)](#)
[Directive on medium combustion plants \(MCPD\)](#)
[Directive 1994/63/EC and Directive 2009/126/EC on petrol storage & distribution](#)
[Seveso Directive \(EN\)](#)
[PRTR Regulation \(EN\)](#)



AIR QUALITY



[Directive on arsenic, cadmium, mercury, nickel and PAH in ambient air \(EN\)](#)
[NEC Directive \(EN\)](#)
[Air Quality Directive \(EN\)](#)
[Medium Combustion Plants \(MCP\) Directive \(EN\)](#)

CHEMICALS



[REACH Regulation \(EN\)](#)
[CLP Regulation \(EN\)](#)
[RoHS 2 directive \(EN\)](#)
[PCB/PCT directive \(EN\)](#)
[Regulation on biocidal product marking](#)
[Plant Protection Products Regulation](#)
[Scientific criteria for the determination of endocrine-disrupting properties pursuant to Regulation 528/2012](#)
[Regulation 1223/2009 on cosmetic products](#)

AGRICULTURE



[Directive on Sustainable Use of Pesticides \(EN\)](#)
[Nitrates Directive \(EN\)](#)
[Guidelines on best practice to limit, mitigate or compensate soil sealing](#)
[Organic production and labelling of organic products \(valid until 31 December 2021\)](#)
[Birds Directive \(2009/147/EC\)](#)
[Habitats Directive \(92/43/EEC\)](#)

MARINE AND COASTAL ENVIRONMENT



[Marine Strategy Framework Directive \(EN\)](#)
[Water Framework Directive \(WDF\)](#)
[Marine Spatial Planning \(MSP\) Directive](#)
[Common fisheries policy \(CFP\)](#)

NATURE AND BIODIVERSITY



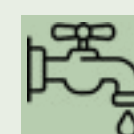
[Birds Directive 2009/147/EC](#)
[Habitats Directive 92/43/EEC](#)
[Regulation No 1143/2014 on Invasive Alien Species](#)
[EU Wildlife Trade Regulations No 338/97](#)
[Zoos Directive 1999/22/EC](#)
[Leghold Traps Regulation No 3254/91/EEC](#)
[Trade in Seal Products Regulation No 1007/2009/EC](#)

NOISE



[Environmental Noise Directive \(EN\)](#)

WATER



[Water Framework Directive \(2000/60/\) as the main directive on water policy](#)
[Groundwater Directive \(2006/118/EC\)](#)
[Environmental Quality Standards Directives \(2008/105/EC\)](#)
[Revised Drinking Water Directive \(2020/2184\)](#)
[Water Reuse Regulation \(2020/741\)](#)
[EU Floods Directive \(2007/60/EC\)](#)
[Urban Waste Water Treatment Directive \(91/271/EEC\)](#)
[Nitrate Directive \(91/676/EEC\)](#)
[Sewage Sludge Directive \(86/278/EEC\)](#)
[Bathing Water Directive \(2006/7/EC\)](#)

HORIZONTAL LEGISLATION



[Directive to protect the environment through criminal law \(EN\)](#)
[SEA Directive \(EN\)](#)
[Environmental Liability Directive \(EN\)](#)
[Directive on the Use of Animals for Research \(EN\)](#)
[EIA Directive \(EN\)](#)
[Directive on Access to Environmental Information \(EN\)](#)
[Environmental Reporting \(EN\)](#)
[EMAS Regulation \(EN\)](#)



The PSA Framework

The goal of the Portfolio Sustainability Assessment (PSA) framework is to assist businesses across industries in creating and implementing consistent, high-quality PSA approaches that will lead to more sustainable product portfolios.

Portfolio management should help companies assess the impacts of their products on sustainability. Whether you buy body lotion in a supermarket labeled as natural or drink water from a plastic bottle that is supposedly 100 percent recycled, companies from various industries are increasingly offering consumers environmental labels. So where does it all start? Well, actually, at the beginning of the value chain with chemical companies. Although these partners in the chemical industry do not reach consumers directly, they play a major role in offering their customers sustainable performance in their portfolios.

This has also brought government authorities and regulations onto the scene: The Chemical Strategy for Sustainability (CSS) is an example of a regulatory development that is part of the European Green Deal and has the potential to >>



influence regulatory developments globally. The European Union (EU) has updated the chemical hazards and exposure guidance as well as the early warning function for future expectations – covering innovation processes and existing portfolios – to reflect these developments.

The solution lies in measuring and verifying performance: The PSA framework was developed by companies within the World Business Council for Sustainable Development (WBCSD). It will be rebranded in 2024 as iPSA (integrated Portfolio Sustainability Performance Assessment) with the aim of improving harmonization approaches and developing a common framework for portfolio management and their values. The initiative argues: “A common framework will significantly increase robustness and

credibility of company efforts, because such a framework would be built on leading best-practices. In addition, it would also reduce complexity for external stakeholders, as a common framework enables more consistency in communicating results. It also would help to create shared language on sustainability-related benefits and concerns throughout value chains and industries.”

Origins

Pruno van Parys from Syensqo, formerly Solvay, recalls in the Sustainability Shift podcast: “In 2008, I asked myself the following question: How does sustainability affect product management? At that time, there was no tool. So we had to develop our own tool called Solvay Sustainable Portfolio Management. At the

same time, other chemical companies like Clariant were developing similar tools to tackle the same challenge.”

As a result, in 2016, on the initiative of the WBCSD, a number of companies joined forces to share their experiences and best practices and create a common framework for the chemical sector. This resulted in the first PSA framework in 2018. A comprehensive update followed at the end of 2023 as “Portfolio Sustainability Assessment v2.0.” The next step is to consider an application used across the chemical sector. Specifically, it could be used as a method for the Safe and Sustainable-by-Design (SSbD) principle, for example. But it will be up to the newly elected European Commission and Parliament to decide. Let us first look at the contents of the framework.

until the PARC size becomes too small to meet a company’s materiality thresholds. “You often don’t have all the answers to possible difficulties in the early project phase,” says Thierry Delplanche, who is responsible for sustainability in the R&I division at Syensqo. “But the [Sustainable Portfolio Management] raises awareness of sustainability risks. This allows the project team to think about alternatives at an early stage, for example whether there are different suppliers for a required raw material. And the Sustainable Portfolio Management shows which issues should be resolved first.”

STEP III: Detecting market signals

Having defined the unit of analysis – the PARCs – companies proceed to

scan for “signals” on the sustainability performance of the respective PARC. A signal is a fact-based assessment of the material sustainability attributes and actions performed and documented internally. In addition, companies may assess some signals based on external stakeholder actions. These can include legislation, purchasing decisions, and ecolabel requirements, among others. Companies identify signals based on the available public information and stakeholder dialogues.

Evonik, for example, has divided its portfolio into 326 PARCs. A PARC describes the differentiated consideration of a product group in its respective application and region. Sustainability performance determined in this way is therefore

considered along three axes (product, region, application). The question of how the respective product performs in the three dimensions is assessed on the basis of at least five “market signals.” In addition to environmental and social aspects, regulatory trends and the sustainability ambitions of stakeholders along the value chain also play a role. In an interview with UmweltDialog, Aur lie Wojciechowski explains on behalf of the Evonik team involved: “For each PARC, we also record product use effects, so-called handprints, which we will gradually quantify more in the future. The handprints are not just about ‘climate,’ but also about other dimensions such as ‘ecotoxicity,’ ‘health,’ or ‘circular economy,’ which can be more relevant depending on the materiality in >>

Overall process for a PSA



Source: WBCSD / Portfolio Sustainability Assessment 2.0

STEP I: Defining objectives, scope, and processes

It is necessary to include business topics relating to controversial sustainability performance. Before deciding on the scope of business activities to include in the PSA, companies should conduct a high-level screening of their complete portfolio. Reporting shall present a clear justification and rationale for the activities included in and excluded from the primary scope. Experience has shown that the gradual implementation of PSA

is a practical approach that combines the above approaches and implements a roadmap laying out successive upgrades in scope and granularity, with further expansions of business coverage.

STEP II: Defining the unit of analysis

Companies should base product groups as much as possible on existing product segmentations. Products in a well-defined segmentation will have a similar sustainability profile. Companies may further subdivide product application

combinations to bring granularity to the assessment in order to reflect the specific context of a specific region. This “regionalization” can help companies increase the relevance and representativeness of results by reflecting differences in legislative frameworks, alternative solutions available in the market, and variations in relevant ecolabels.

Start defining Product Application Region Combinations (PARCs) with the largest applications – they will continue defining applications using the previous two steps

Guidance on the significance of the contribution	
Significance of the contribution	Relationship between chemical product and end-use solution
FUNDAMENTAL	The product* is the key component that enables the GHG emission avoiding effect of the solution.
EXTENSIVE	The product is part of the key component and its properties and functions are essential for enabling the GHG emission avoiding effect of the solution.
SUBSTANTIAL	The product does not contribute directly to the avoided GHG emissions but the company cannot substitute it easily without changing the GHG emission avoiding effect of the solution.
MINOR	The product does not contribute directly to the avoided GHG emissions but the company uses it in the manufacturing process of a fundamentally or extensively contributing product.
TOO SMALL TO COMMUNICATE	The company can substitute the product without changing the GHG avoiding effect of the solution.

The product* means THE PARC in the context of PSA. Based on International Council of Chemical Associations (ICCA)-WBCSD (2017). Avoiding Greenhouse Gas Emissions: The Essential Role of Chemicals.



the value chain.” Collecting this data is a major challenge and one of the first tasks in the reassessment: “Data availability is a constant challenge we work to overcome. One of our mantras is that we do the best analysis with the best available data.” Data quality is therefore tracked and evaluated. “Thanks to this we can understand the uncertainty and reliability of our conclusions. This helps us to prioritize data improvement,” says Ashley Pelura, PAC evaluations manager from Chemours.

STEP IV: Categorizing the portfolio

The categorization of PARCs enables companies to aggregate results and evaluate performance at the portfolio level. When categorizing results, com-

panies shall make use of at least three performance categories. Best practices use five categories.

STEP V: Using and reporting PSA results

As previously indicated, participating companies experienced in using the methodology employ PSAs in their strategic decision-making processes to develop a holistic approach in order to improve performance across the portfolio; to develop plans to capitalize on the positive sustainability indicators identified during the assessment and promote sustainable development along the value chain; and to integrate the sustainability perspective in relevant business processes and functions, such as strategy or risk man-

agement. Evonik’s current sustainability report contains an evaluation of all PARCs recorded. This reveals that a third of sales are already attributable to products and solutions with sustainability profiles that are above, or even significantly above, market level. In terms of the PSA, these are “leaders” and “drivers.” Evonik has grouped these pioneers in sustainability under the term “Next Generation Solutions.”

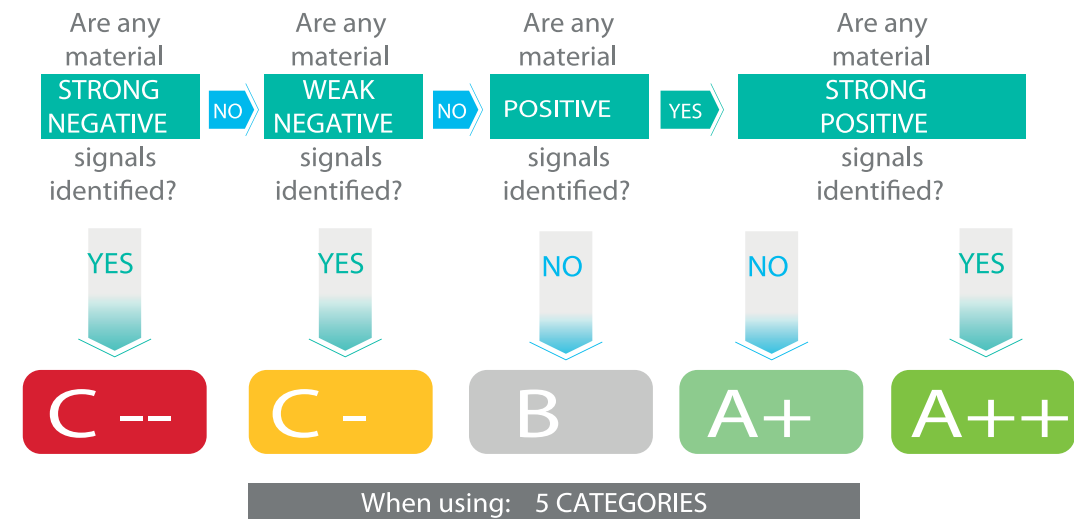
If the next category of “performers” is also included, Evonik already generates a total of 90 percent of its sales with solutions that are at least at market level. From a sustainability perspective, the Essen-based company has already come a long way in its ecological and social transformation. ■

Guidelines related to the regionalization of PSA methodologies

The figure below lists the eight signal categories identified for the PSA framework.

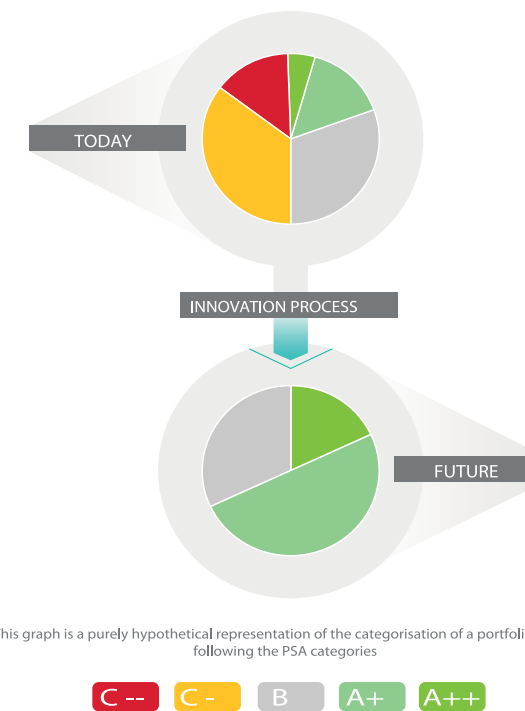
Signal category	May companies apply regionalization?	Relevance for innovation assessment
1 Chemical hazard and exposure associated with a chemical product	NO	Shall
2 Anticipated regulatory developments and global conventions	NO	Shall
3 Sustainability ambitions along the value chain	YES	Shall
4 Recognized ecolabels, sustainability related certification and standards	YES	Should
5 Environmental and social performance compared to alternative solutions from cradle to cradle.	YES	Shall
6 Economic value creation vs the use of natural capital	YES	May
7 Contribution to the Sustainable Development Goals	YES	May
8 Company internal guidelines & objectives	NO	May

WBCSD Decision Tree



WBCSD Decision tree towards sustainability performance categories on a "Product-Application-Region-Combination" (PARC) basis (in this example 5 categories).

Evolution of portfolio composition over time



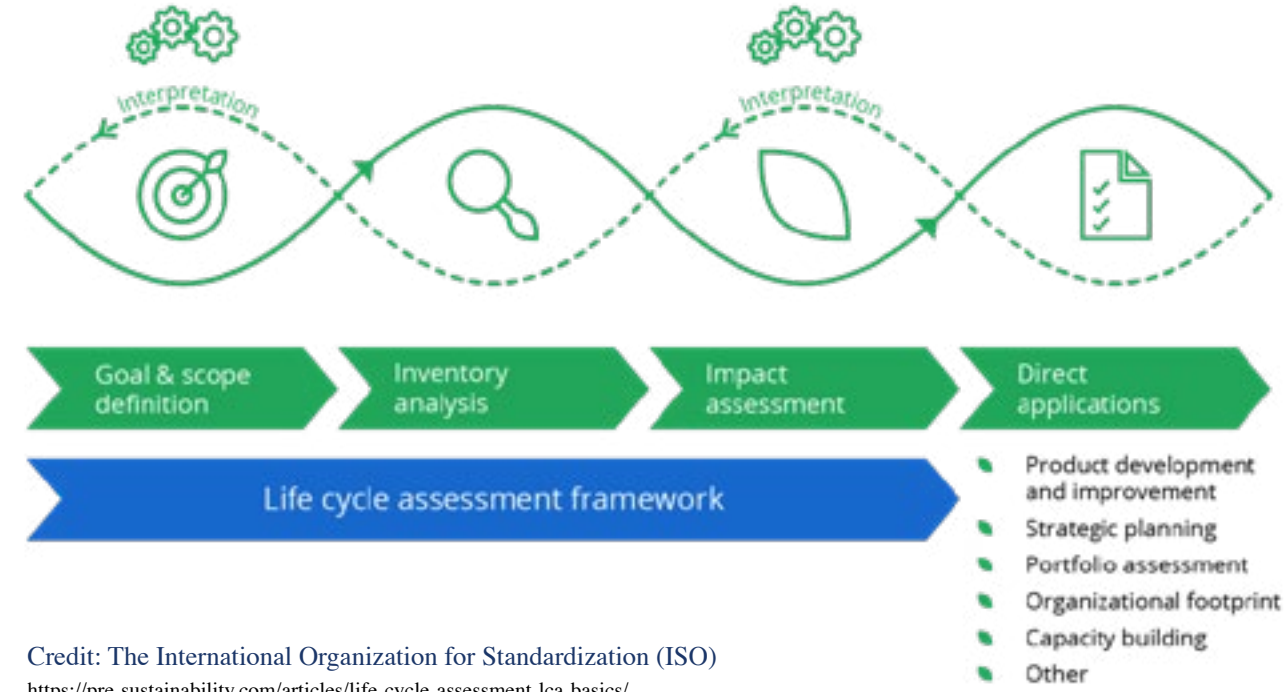
Schematic depiction, how applying the SSbD principles over time will move the portfolio of products towards safe & sustainable chemicals, products and processes.

Life Cycle Assessment (LCA) Explained



Life cycle assessment (LCA) is a method used to evaluate the environmental impacts of a product, process, or service throughout its entire life cycle, from raw material extraction to disposal. LCA offers numerous benefits, including insights into environmental implications, aiding sustainable product development, and informing policy decisions. However, it lacks a strategic perspective, omits social aspects, requires detailed data that is often unavailable in the early stages, and rarely takes into consideration the changes that could happen over time.

To address these limitations, the Life Cycle Sustainability Assessment (LCSA) can be employed. LCSA adds a strategic dimension by identifying sustainability impact hotspots early during product development, allowing for later quantification when the data becomes available.



Credit: The International Organization for Standardization (ISO)
<https://pre-sustainability.com/articles/life-cycle-assessment-lca-basics/>



The four fundamental steps of LCA are:

- **1. Goal and scope definition:** Establishes the purpose and boundaries of the assessment, ensuring consistency and defining system boundaries.
- **2. Inventory analysis:** Examines all environmental inputs (e.g., raw materials, energy) and outputs (e.g., emissions, waste) associated with the product or service, creating a comprehensive life cycle inventory (LCI).
- **3. Impact assessment:** Evaluates the potential environmental impacts identified in the inventory analysis, classifying them into environmental themes such as global warming or human health. The level of integration in the results can vary based on the intended audience and purpose.
- **4. Interpretation:** Concludes the assessment by reviewing the findings, ensuring they are well-supported, and allowing for the confident sharing of results and improvement decisions.

Whereas LCA focuses on data and analysis, other approaches such as cradle to cradle and the circular economy prioritize qualitative visions and storytelling. Cradle-to-cradle certification emphasizes material health, reuse, renewable energy, water stewardship, and social fairness, but it may not always guarantee a lower overall environmental impact. The circular economy aims to minimize resource use and environmental impacts through reducing, reusing, and recycling, thereby promoting a closed-loop system.

By combining the strengths of LCA with the inspirational principles of the circular economy and the Material Circularity Indicator (MCI), a more holistic approach to sustainable innovation can be achieved.

Different types of LCA

LCA is a standardized methodology, which makes it reliable and transparent. The International Organization for Standardization (ISO) provides standards for LCA in ISO 14040 and 14044. The Together for Sustainability (TfS) guideline for Product Carbon Footprints (PCFs) is a drop-in standard developed for the chemical industry and is based on the abovementioned generic ISO standards.

There are also many LCA-related assessments, such as:

- Environmental Product Declarations (EPDs – more reader-friendly documents for comparing products)
- Studies compliant with a product- or sector-specific standard such as the Product Environmental Footprint (PEF) and Organizational Environmental Footprint (OEF)
- Single-issues analyses such as the carbon- or water footprint
- Social LCA
- Organizational LCA
- Long-term monitoring studies

The interesting aspect of a life cycle model is its versatility; you can tailor it to perform a variety of assessments that align with your current business needs.

Cradle-to-cradle refers to a concept whereby all materials in a product are designed to be fully reusable in subsequent life cycles. The Cradle-to-Cradle certification system emphasizes qualitative aspects such as vision and narrative. It employs qualitative criteria to determine whether a product qualifies for certification. These criteria encompass material health, material reuse, renewable energy and carbon management, water stewardship, and social fairness. The lowest score among these criteria determines the product's overall rating. Unlike LCA, Cradle-to-Cradle does not measure the actual reduction in environmental impacts achieved by a certified product. Consequently, a Cradle-to-Cradle certified product might ultimately exhibit a shifted or even heightened environmental burden.

Circular economy offers a promising framework to create value for the economy, society, and businesses while minimizing the use of resources and environmental impact through practices such as reducing, reusing, and recycling. This approach aims to “close the loop” and prevent waste. The MCI assesses how well materials are circulated within the system. Integrating the rigorous LCA methodology with the inspirational principles of the MCI and the circular economy provides a comprehensive approach to fostering sustainable innovation.



Greenwashing – More than Just a Minor Offense



Greenwashing is a marketing strategy used by companies to present themselves as more environmentally friendly than they actually are. This article explores the prevalence of greenwashing across various industries, the tactics employed by companies to cultivate a “green” image, and how to identify and expose greenwashing practices.



Greenwashing: A pervasive issue

Greenwashing strategies can be found in various sectors, impacting the image of entire companies, institutions, or specific aspects such as manufacturing processes, transportation, working conditions, or chemical use. Companies often emphasize energy efficiency or climate neutrality, even when their products or services are harmful to the environment or ethically questionable. The rise in environmental consciousness has fueled demand for sustainable products and practices, creating opportunities for companies to exploit this trend through misleading advertising.

What is greenwashing?

Greenwashing is a marketing strategy that portrays companies as environmentally friendly and sustainable, even when their actions do not align with these claims. It involves disseminating misinformation, concealing negative impacts, and creating a false impression of environmental responsibility.

Greenwashing tactics across industries

Greenwashing is prevalent in almost every industry, from energy and fashion to food and finance. The more environmentally damaging a company's core business, the more likely it is to engage in greenwashing. Although the line between genuine green marketing and greenwashing can be blurry, certain strategies are commonly employed:

- **Misleading terms and phrases:** Vague terms such as “eco-friendly,” “regional,” or “natural” are often used without legal protection, thereby misleading consumers. However, in the worst case, these terms are just empty words, because they are not legally protected and can be used without restriction. For example, in the case of cosmetic products, the terms “natural cosmetics” or “organic cosmetics” are not legally protected. In these cases you should look for the seal of an officially recognized certification organization.
- **“Lighthouse products”:** Companies heavily promote individual products or services as sustainable even though their core business remains harmful. Worth mentioning here first and foremost are fast fashion companies, which advertise individual collections or pieces of clothing made from recycled fibers or organic cotton. However, this does not change or raise questions about the actual problems of the business model, yet several collections are still brought to the market every year. In addition, an organic certified cotton label, for example, does not indicate anything about the working conditions during harvesting or the production of the raw material.

- **Advertising the obvious:** Companies tout their compliance with existing laws, thereby creating a false impression of going above and beyond. They sell product features as something special, for example by no longer using plastic straws, although these are already prohibited by law. In this way, companies try to present themselves as sustainable, even though they only meet the minimum standards.

- **Questionable sustainability labels:** Companies create their own labels without independent verification, making it difficult for consumers to assess their validity. Often, seals indicate that products are “climate neutral.” Caution is also advised here because no production process can be completely climate-neutral. It is often unclear whether greenhouse gases were actually reduced or simply offset during production. In the latter case, companies pay money to environmental protection projects, for example, in order to be allowed to display such a certificate. However, this does not change the way their products are manufactured.

- **“Green” imagery:** The color green and images of nature are used to evoke positive associations, even when products are not genuinely sustainable. This is supported in the food sector by images of “happy animals” or illustrations that look like genuine quality seals but are only part of the product design.

The problem with greenwashing

Greenwashing misleads consumers and hinders transparency, creating the illusion that consumption has no negative consequences. It exploits the growing demand for sustainable products, allowing companies to charge premium prices. The European Commission is considering legislation to combat greenwashing by requiring scientific evidence for environmental claims and imposing penalties for false advertising.

Target audience and impact

Greenwashing targets environmentally conscious consumers who are willing to pay more for sustainable products. Companies exploit the discrepancy between consumers' intentions and actions, offering “green” alternatives that allow them to maintain their current habits without making significant changes.

Unmasking greenwashing

Identifying greenwashing can be challenging, but environmental organizations and consumer initiatives play a crucial role in exposing these practices. Tools such as apps that can verify seals help consumers assess the credibility of sustainability claims and navigate the complex landscape of eco-labels.

Conclusion

Greenwashing is a pervasive issue that undermines genuine efforts towards sustainability. By understanding the tactics employed by companies and utilizing available resources, consumers can make informed choices and hold companies accountable for their environmental impact. The proposed European Union legislation against greenwashing is a step in the right direction, but individual awareness and action are equally important in combating this deceptive practice.



Prof. Dr. Paul Shrivastava,
Co-president of The Club of Rome



Thirty years ago people thought of sustainability as a kind of tradeoff, that if you do sustainability you will lose some money – you have to invest some money and then become sustainable. Today the biggest trend that I see emerging is that management has figured out that you do not have to lose money to become sustainable.

Sustainability can be the source of what I call “eco efficiencies”: There are a variety of eco efficiencies that you can innovate around. Some of them are on the labor force, some of them are on the shop floor, some of them are in waste control and management of recycling.

So all across a business operation – from its supply chain to its customers – there are opportunities for extracting ecological efficiencies. That means making things more ecologically efficient while reducing costs. I think this is an important emerging trend because it fits into the logic of the business model of companies. Companies are there to make things and to efficiently produce profit.

Innovation is in the distribution of those profits: Right now they are tightly controlled by investors but that can be changed by sharing the profitability or improvements with the taxpayers, consumers, and other stakeholders in society.

Source

ZOOMING IN



How Do You Make a Large Portfolio Sustainable?

TripleS (Sustainable Solution Steering) provides BASF with transparency about the sustainability performance of its product portfolio. This is a challenging task when accounting for more than 50,000 products which are in scope of TripleS. The chemical company relies on a semi-automated process: A data management system supports the many employees and business units involved.



By BASF

With more than 50,000 products managed by about 70 business units and sales in the billions, BASF is the largest chemical company in the world. The sustainability of its portfolio plays a central role in its corporate strategy. "BASF

stands for chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility," explains Christoph Jäkel (Vice President Corporate Sustainability). BASF has therefore

set itself the goal of increasing the share of sales from Sustainable-Future Solutions from the current level of 41 percent to more than 50 percent by 2030. The chemical company has been assessing the sustainability per-

formance of its products for more than 10 years using the TripleS method. This is in line with the Portfolio Sustainability Assessment (PSA) framework of the World Business Council for Sustainable Development (WBCSD). The assessment is based on a two-step analysis. In the Check for Basic Sustainability Requirements, BASF examines whether the products comply with basic requirements such as the BASF Code of Conduct, the relevant regulatory frameworks such as REACH, TSCA and others, but also with customer needs and emerging regulations. Once the product has passed the check, the company uses the Check for Sustainability Value Contribution to analyze how a solution compares to a standard product or solution on the market in terms of sustainability performance. Finally, based on this analysis, BASF segments the products into five categories: Pioneer, Contributor, Standard, Monitored, and Challenged.

50,000 products, many more assessments

The products are not clustered into groups for the assessment. Instead, each of the 50,000 products is analyzed individually. This results in a lot of work because BASF assesses each product within its specific application and in a specific region (Product Application Region Combination – PARC). Since many solutions have multiple applications and are sold in different regions around the globe, this increases the number of assessments significantly. For example, BASF segments the high-performance Keropur gasoline additives according to the TripleS methodology in both the "Pioneer" and "Contributor" categories, depending on the market segment in which they are sold. "Keropur additives protect engine intake systems and reduce fuel consumption. Therefore, in markets where fuel additives are not yet standard, the product is considered a Pioneer," explains Peter Kölsch (Team Leader TripleS). "In markets where fuel additives are a standard solution, we

"BASF stands for chemistry for a sustainable future."

Christoph Jäkel Vice President Corporate Sustainability

classify the solution as a Contributor due to its sustainability contribution within the transformation themes 'Resource Efficiency' and 'Climate Change & Energy', but a performance level in line with the market standard."

IT data management system support

To handle this amount of data for more than 50,000 solutions, the company relies on a semi-automated process when using TripleS. This is an IT application that initially started with an Excel spreadsheet and was specially developed in-house for BASF to support the assessment. In the meantime, this data management system can also carry out most of the product segmentation itself. The Business Unit and the Corporate TripleS-Team check the segmentation proposed by the system and can correct and complete it manually if necessary. Because BASF has been evaluating its solutions using TripleS since 2012, the system already contains a lot of data that can be applied to a wide variety of solutions. This includes, for example, regulatory requirements. Life cycle data, on the other hand, is in most cases very product (group) specific and only in some cases, information from very similar products can be transferred to each other. The TripleS-Team also utilizes data from other internal BASF systems, such as databases that list the

individual components of a product or which kind of energy were used during production. Other information, such as the individual sustainability benefits of a solution, or additional information on an innovation project resulting in a new product, must still be entered manually. The company also adds some preconditions to the assessment, which need to be fulfilled. From time to time, simplified assumptions also come into play. "In the end-of-life phase, we do know which end-of-life treatment the products will generally be sent to. However, we do not know this for each individual product," says Wibke Lölsberg (Project Leader Corporate Sustainability). "Most of our customers are not the end customers, they modify or reformulate their products themselves before bringing them to the market. For this end-of-life data, we therefore rely on more general assumptions and also work with third parties." All of this data as well as the evaluation process are checked by external auditors. The results of TripleS are also included in BASF's annual report.

One assessment process – many stakeholders

In addition to digital data management, the sustainability assessment of all products requires a lot of information and resources. Therefore, the analysis and segmentation of PARCs involves various business units at BASF. The selection of those colleagues involved depends on the product, the strategic orientation of the business unit, and its regional structure. However, four departments accompany each analysis and segmentation process. As the owner of the method and with corresponding cross-market and cross-regional sustainability expertise, the Corporate Sustainability department, for example, checks and verifies the data entered and ensures consistency across different businesses. A Sustainability Representative from the business unit who is responsible for the product organizes the process within the unit and >>

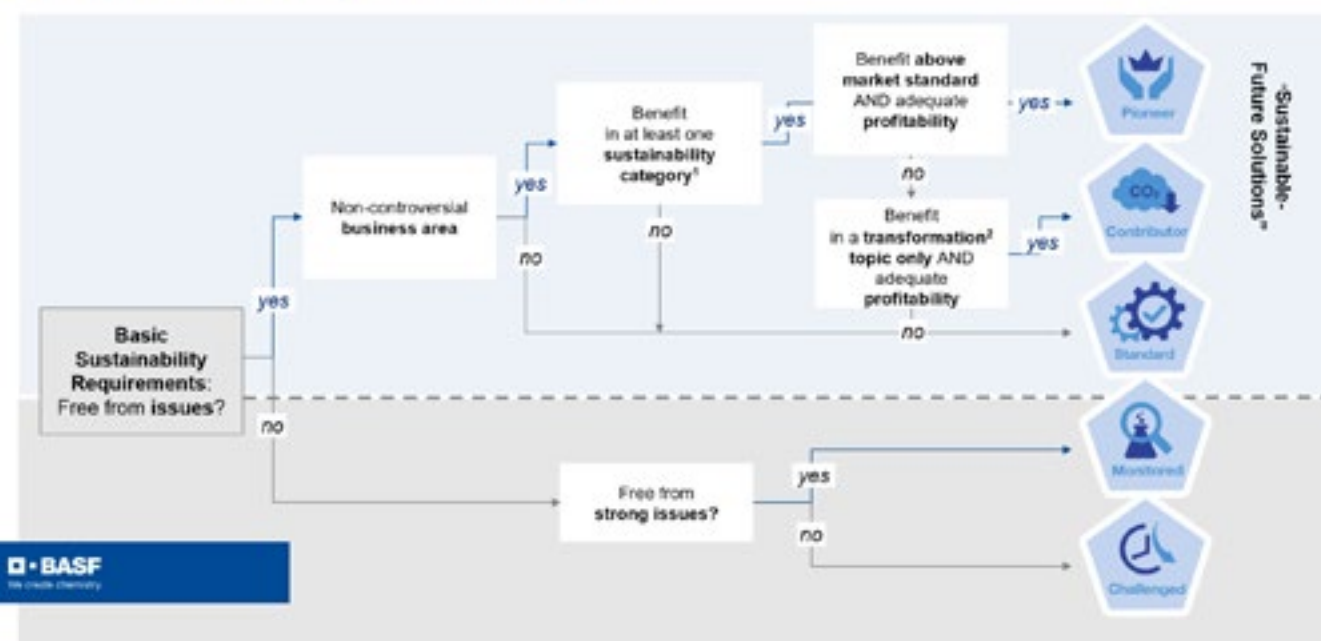
creates a summary, including action plans, after the final segmentation. The Product Steward/Regulatory Manager reviews and updates the data for regulatory relevance and develops options for dealing with products containing substances of concern. The Marketing and Product Management staff provide critical information on current market solutions and market developments and create procedures for products in the Monitored and Challenged segments that have sustainability issues.

Depending on the product or PARC and the data available, other units such as Research and Development, Controlling, and Regional Representative are involved in the process. The four-eye principle, consisting of the strate-

“Our products enable our customers to become more sustainable.”

Peter Kölsch, Team Leader TripleS

Segmentation process simplified



gic business unit and the Corporate Sustainability department, is mandatory in every assessment, regardless of who proposed the segmentation. Some of the sustainability information relevant for the analysis comes from

prior assessments or from the data management system. Incomplete or missing data must be provided by the parties involved. This then becomes the responsibility of the business unit. “Ultimately, the final segmentation of

a PARC is attempted in a consensus process. But the final segmentation lies with Corporate Sustainability who is also accountable for the annual auditing process. After implementing an updated version of TripleS in 2023,

the entire portfolio was reviewed during the last 18 months. Even with the support of a higher automated data generation, approx. 600 people were involved in this complete review process”, says Peter Kölsch.

A transparent product portfolio

This complex analysis and evaluation process provides BASF with transparency concerning its large portfolio and helps guide further development and innovation. It is a way to make the product portfolio more sustainable. But it is not just about looking at the weaknesses. “Identifying sustainability risks is only one part of TripleS,” says Peter Kölsch. “It also helps us see our strengths: Where and how does our portfolio contribute to sustainability?” A product might have a reduced water footprint than the most common product on the market. Or a product may have a particular benefit in the area of safety. TripleS analyzes and records all of these benefits. And this can then be passed on to BASF’s customers. “Ultimately, it’s about sustainability throughout the value chain,” Peter Kölsch continues. “Our products enable our customers to become more sustainable, for example through better recyclability, saving energy, reducing the carbon footprint and so on.”

TripleS as a kind of cycle

TripleS is a dynamic and ongoing process. Even innovative products eventually become the market standard and move further down in the segmentation. New research findings or changes in regulations also influence the segmentation of products. For example, in 2015 BASF classified a product used in the coating industry as “Challenged” in the European Union (EU). The product contained a poorly degradable (persistent) and toxic substance that can also bioaccumulate in the tissue of (aquatic) organisms. This substance was expected to become a Substance of Very High Concern, which is subject

to regulatory restrictions in the EU (REACH Annex XIV). In other regions, the product was initially segmented as “Monitored,” as there was no regulatory pressure yet.

“If a product is segmented as ‘Challenged’ in one region, it may be classified as ‘Monitored’ at most in the other regions,” says Wibke Lölsberg. “It doesn’t happen that we identify a product in one region with a severe problem, and then in the other regions it’s suddenly part of our key performance indicators and pays off on the sustainable products.”

In 2018, BASF decided that products which are “Challenged” must be removed from the market within five years. For solutions that were classified as “Challenged” in 2018 or earlier, a proactive phase-out was to be concluded by the end of 2022. BASF made

the final sales of the coating product in 2022, before the official expiration date. A new formulation with an alternative ingredient is now replacing the old product. BASF has also introduced alternative solutions outside the EU, regardless of whether there is still a market for the old coating product. BASF will stop marketing it outside the EU in the course of 2024, even though it can still be sold there from a purely regulatory perspective. “The example shows that you have to constantly adapt,” says Christoph Jäkel. “An innovative solution replaces a problematic product and becomes the market leader. After a certain period of time, it becomes the market standard and then, perhaps due to a new regulation or new scientific developments, it slides further and further down – until it is finally taken off the market and replaced by another innovation. Basically, you have to see TripleS as a cycle.” ■





Evolving EVOLVE 2030: Circularity as a New Evaluation Criterion

The circularity of products is playing an increasingly important role in the economy. The chemical company Chemours has also taken this into account in EVOLVE 2030 2.0: In the further developed methodology for the sustainability assessment of products, the circularity of materials and packaging is now a defined and central factor.

By Andrew Liu, Product Sustainability Strategy Leader, Chemours



Chemours' chemistry is essential for our everyday lives, be it in the refrigeration needed to preserve food and medicine, or in the critical components in our electronics and vehicles. This chemistry is also key to the emerging green technologies for artificial intelligence, clean hydrogen, and electric

vehicles, which makes it all the more important to develop these chemistries responsibly and sustainably. The company has therefore set itself the target that, by 2030, 50 percent or more of its revenue will come from offerings that make a specific contribution to the UN Sustainable Development Goals (SDGs).

To achieve this goal, Chemours developed the EVOLVE 2030 methodology in 2019. The strategic approach evaluates the sustainability of Chemours products in relation to their specific use (Product Application Combination – PAC for short). The methodology used is based on the Portfolio Sustainability

Assessment (PSA) of the World Business Council for Sustainable Development (WBCSD).

How does EVOLVE 2030 work?

In the first step, Chemours analyzes and evaluates the impact of the PAC on the environment and society ("imprint" of the PAC). To do this, the company analyzes various attributes such as the Greenhouse Gas (GHG) Emissions Intensity, and Human Health Risk. For each of these attributes, the PAC receives a score from minus two to plus two according to well-defined scoring rubrics. In the next step, the company evaluates the contribution of a PAC to the 169 SDG Targets (SDG contribution scoring). As making contributions to the UN SDGs is an important part of Chemours' sustainability strategy, this dimension represents an essential signal category in EVOLVE 2030.

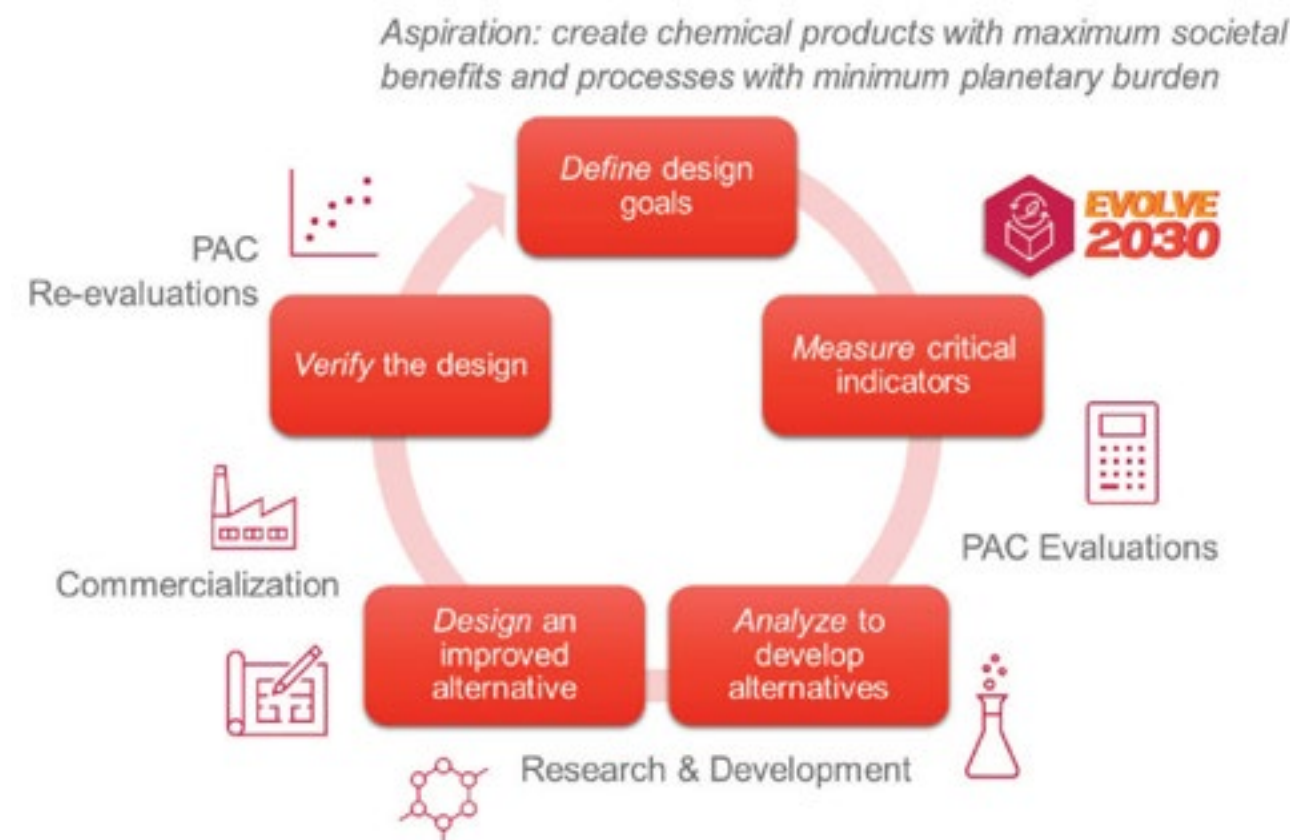
After assessing a PAC's imprint and SDG contributions, it is assigned to one of four quadrants in a 2x2 matrix according to the outcome of the evaluation. This gives the company an overview of the sustainability performance of its product portfolio and identifies opportunities to further evaluate and improve. "Chemours is driven by our strong commitment to sustainability. Our EVOLVE 2030 methodology enhances our ability to align our business processes with this commitment, allowing us to better quantify the societal and environmental impacts of our products and guide our decisions accordingly," says Dr. Amber Wellman, Chief Sustainability Officer at Chemours.

Evolving EVOLVE 2030

With the initial assessment of its portfolio nearly completed, 2024 was the perfect time for Chemours to improve the methodology and exemplify its

culture of continuous improvement. Version 2 of EVOLVE 2030 incorporated experiences gained, including lessons from a study designed to find ways to increase reproducibility. "Reproducibility is critical to ensure the quality and integrity of our methodology. It gives us confidence that our results are accurate and trustworthy," explains Kathy O'Keefe, Senior Director Product Sustainability.

In addition, Chemours had EVOLVE 2030 audited by an external global assurance provider. To provide full transparency, the auditor was given unrestricted access to the data systems where data, analyses, uncertainty scores, logic, conclusions, and evidence are stored, as well as the people involved. "We chose this approach to maximize the benefits of the effort and to learn from the auditor's observations and comments," says Kathy O'Keefe. The audit showed the strengths of the methodology and >>



"Our EVOLVE 2030 methodology enhances our ability to align our business processes with sustainability."

Dr. Amber Wellman, Chief Sustainability Officer

highlighted areas for improvement. Based on these experiences, Chemours further enhanced the methodology.

Circularity as new attributes for evaluation

Two new and important evaluation criteria included in the methodology are the material circularity of products and product packaging. The first version of EVOLVE 2030 already considered circularity as part of the SDG contribution scoring, for example reducing resource consumption and waste generation are captured in SDG Targets 12.2 and 12.5 scores. In the further developed methodology, material circularity is much more specifically evaluated in new attributes for calculating the imprint of PACs, to increase its importance in the method. Chemours used various approaches to develop its working definition of circularity. These include the Ellen McArthur Foundation's three principles of circular economy and butterfly diagram, the "reduce – reuse – recycle" approach of the US Environmental Protection Agency (EPA), and the nine "Rs" of the circular economy of the European Commission. Common to all three is the concept of a waste hierarchy that considers the environmental costs of those options. Using the US EPA's phrase, solutions to "reduce" are usually better than those that enable "reuse" which are better than "recycle". Based

on these concepts, Chemours' working definition is: "Circularity aims to minimize resources consumption and waste generation by keeping products and materials in use at their highest value for as long as possible."

Calculation of product material circularity

Determining how circularity could be calculated and evaluated as an attribute of a PAC in the context of EVOLVE 2030 2.0 was not a simple or straightforward exercise. Chemours evaluated many ideas and approaches and found their answer in the WBCSD's Circular Transition Indicators. This approach combines several parameters to create a single central indicator for calculating product material circularity. Both the inflow and outflow of a material are considered. The aim is to check how much circular inflow (e.g., renewable or recycled material) and how much circular outflow (potential and actual recovery) there is for a product. The outflow is calculated by multiplying the recovery potential by the actual recovery rate. To calculate the product material circularity of a PAC, the inflow and

$$\% \text{ product material circularity of PAC} = \frac{\% \text{ circular inflow} + (\% \text{ recovery potential} \times \% \text{ actual recovery})}{2}$$

the previously calculated outflow are added together, and this value is then divided by two. All values are given as percentages.

Using this result as an indicator, the circularity of products – specifically the imprint of the PAC – can be evaluated in the next step. To do this, Chemours compares the calculated value with the Circularity Metric of the Circularity Gap Report – an independent and, above all, dynamic figure that is also cited by others, like WBCSD. Depending on whether the value of product material circularity is above or below that of the global economy (in 2023, this was 7.2 percent), the PAC receives a score between minus two and two for this attribute, depending on other considerations, such as the PAC's impact on the entire system. "Looking too narrowly will likely lead to less than optimal and sometimes unintended outcomes," says Andrew Liu, explaining the approach. Ultimately, the best option is to keep the value of a material in the cycle for as long as possible: "Recycling is not always the better option, as it often generates emission and waste and consumes resources, including energy; this is reflected in the waste hierarchies of many organizations."

From theory to practice

A test phase followed in order to find out whether the equation and criteria produce realistic results and the method can be implemented. For example, the effects of upcycling and downcycling on the evaluation of a PAC were investigated. Chemours also used a sensitivity analysis to check how the methodology reacts to changes: do the output results respond appropriately and proportionally to different input data in a way that rewards investments to advance



"We are proud to see the continued positive impact of EVOLVE 2030 on our existing portfolio and development pipeline."

Kathy O'Keefe, Senior Director Product Sustainability

circularity while leaving enough room to entice further improvements?

Chemours made these initial test calculations by applying the methodology using hypothetical scenarios based on a range of relevant products and applications. Although these were not real figures, they were realistic and possible business cases. The company then moved on to a pilot project and tested the methodology with five real PACs from three different business units.

Reassessment according to EVOLVE 2030 2.0

EVOLVE 2030 2.0 was rolled out in summer 2024, ahead of portfolio reevaluation using updated methodology and data. Because the quality of analyses depends on the quality of input data, a point of focus will be increasing data accuracy and reducing uncertainty. Data quality is therefore evaluated, tracked, and improvements prioritized. "In this way, we make progress with the best data available while understanding

the reliability of our conclusions," explains Ashley Pelura, PAC evaluations manager.

Gathering data for evaluating material circularity of PACs will present added challenges, especially those not directly controlled or accessible by Chemours. Help from colleagues in Procurement, Sales, Marketing, and Technical Service will be needed. If no direct evidence is available, data from market reports, reports from governments or Intergovernmental organizations, peer-reviewed journal articles, and other qualified sources will be used.

"We are proud to see the continued positive impact of EVOLVE 2030 on our existing portfolio and development pipeline. We are confident that embedding EVOLVE 2030 2.0 into our business and technology processes will not only help us achieve our 2030 Sustainability Goal but will inform decisions and transform our business to deliver a more resilient and sustainable portfolio for years to come," says Kathy O'Keefe. ■



Clariant's Dynamic Portfolio Value Program: Innovating for a Sustainable Future

Transitioning to a safe and sustainable portfolio requires transparency across all sustainability dimensions and life cycle phases. Clariant's Dynamic Portfolio Value Program (PVP) revolutionizes portfolio sustainability assessments by providing real-time insights into how changes in sustainability criteria impact the portfolio. By simulating future scenarios, the Dynamic PVP enables forward-looking risk analysis and strategic prioritization, fostering innovation in an evolving landscape.

By Dr. Bettina A. Siggelkow, Head of Corporate Sustainability Affairs, Clariant



At Clariant, safety and sustainability are at the core of the company's purpose: "Greater chemistry – between people and planet." As a leading specialty chemical partner, Clariant believes it is their responsibility to provide transparent, science-based data on their substances, usage, and safe handling across a broad set of sustainability parameters.

The Portfolio Value Program is a comprehensive methodology designed to evaluate and enhance the performance of the product and project portfolio, focusing on increased sustainability and safety. For more than a decade, the PVP has played a crucial role at Clariant in driving continuous improvement and innovation toward increased sustainability. To

gain real-time insights on how external changes in sustainability criteria impact the portfolio, a cross-functional team at Clariant – comprising Product Stewardship, Sustainability Affairs, and Process Development – recently developed and integrated a dynamic functionality, the Dynamic PVP, into the existing PVP process. This Dynamic PVP allows for a >>

TWO-SIDED ASSESSMENTS

The PVP methodology follows a two-sided assessment: evaluating Clariant's performance against industry benchmarks, while also analyzing the direct and indirect absolute value and impact of sustainability criteria. PVP screenings are done on a product group level, meaning products are grouped into logical and comparable groups based on market application and chemical functionality, which allows for more efficient portfolio evaluations while maintaining granularity to identify issues.

In a nutshell, PVP:

- **Enables continuous improvement:** It screens and moves the portfolio toward increased sustainability performance.
- **Drives innovation:** It identifies areas for improved product profiles and anticipates trends, regulations, and stakeholder expectations.
- **Creates transparency:** It builds upon methodologies such as the World Business Council for Sustainable Development's Product Sustainability Assessment (PSA) and Safe and Sustainable by Design (SSbD), creating transparency and providing a data-driven foundation for sustainability in end markets.

TRANSPARENCY AND COMPLIANCE

Compliance with legal requirements is an important basic prerequisite, especially in the chemical industry. Clariant bases its product assessments on the strictest and most current guidelines, often following European Union regulations, regardless of the region where a product is sold.

The idea behind this is that people and nature are the same everywhere. "A product that is classified as unsustainable in Europe, for example, cannot be sustainable in other countries either, just because it is still allowed there," explains Fabio Amorim, Global Sustainability Manager at Clariant, "because the problems and risks of a product exist, regardless of the region. Sustainability is not based on the colors of a country's flag. And that was exactly the driving force behind this strict approach. We want to set our own standard at Clariant."

Although this approach has the risk that potential markets and customers can be lost, it can also be an advantage. "For customers who are very focused on sustainability, this may be a buying point," says Fabio Amorim. "The lack of regionalization allows us to decrease the number of different PVP screenings which have to be performed, while allowing us to follow the highest sustainability standards, thus, it is a win-win situation." Ultimately, it is also easier logistically: When a product is transported to various regions with different requirements, its sustainability classification remains the same, generating high levels of transparency.

fast-paced simulation of the impact of the latest sustainability developments in Clariant's product portfolio, enabling early risk analysis and the strategic prioritization of innovation projects by the business.

Holistic approach spanning the product life cycle

The PVP follows a holistic approach, spanning all life cycle phases: from raw materials to production, use phase, and end-of-life. It covers safety, environmental impact, and social sustainability through 39 criteria, including water, climate, bioeconomy, circularity, safety, social value creation, product performance, waste, and pollution. The characteristic of the PVP is that all products, independent of market application, are screened using the same set of criteria along the life cycle of products. As a result, products are classified as "EcoTain" (sustainability frontrunners in a market segment), "Sustainable," "Transitional," or "Non-Sustainable."

Dynamic simulations for future-proofing

Unlike traditional static assessments, the new Dynamic PVP allows for continuous assessments of external changes that may impact sustainability criteria. When a new regulation, hazard classification, or sustainability requirement emerges, the Dynamic PVP can simulate how this change would affect Clariant's product portfolio in real time without requiring a full reassessment of all criteria, even the ones not impacted.

This forward-looking approach allows Clariant's business to quickly identify products within the existing portfolio that may become non-sustainable due to evolving sustainability criteria. Like the SSbD approach – an iterative process guiding innovation to achieve solutions that are not only safe, but deliver environmental, social, and economic value through their application – the Dynamic

PVP enables Clariant to pinpoint current products that require changes or innovation to help guide the overall portfolio toward greater sustainability. By proactively identifying these at-risk products, Clariant can initiate innovation projects to address the sustainability challenges before they become critical issues, ensuring a proactive transition of their portfolio to meet emerging standards and stakeholder expectations.

"This comes into play, for example, when a new hazard classification is emerging," explains Dr. Erika Kunz, Head Global Product Stewardship at Clariant. "It sometimes takes three to five years from the intention of such a new rule to its implementation. The Dynamic PVP enables us to understand the potential impact and get prepared for alternative solutions in due time."

The functionality of the Dynamic PVP simulates the classification of all active PVP assessments before considering a new scoring of one or more sustainability criteria. Importantly, the new Dynamic PVP functionality enables multiple screenings and products to be assessed simultaneously, streamlining the process of identifying and addressing potential products to be

transformed to offer a safer and more sustainable portfolio.

Based on the simulation, all affected products are identified. The system also explicitly identifies the products whose PVP classification will change as a result. "The tool not only gives us a good overview of which products are affected by changes, but also how much," says Erika Kunz. "Does the change result in a new risk? Has an existing risk perhaps increased? Or do other criteria now predominate that the product slips into a different, possibly unsustainable, classification?" Based on this information, the responsible business unit can plan at an early stage how to proceed with the product and, for example, initiate an innovation project. "Only those who have a good overview of the movements in the market and react quickly to them can keep up with their portfolio and assert themselves on the market," says Kunz.

An action-oriented approach

Because the PVP at Clariant is very action-driven, in addition to the categories "EcoTain," "Sustainable," and "Non-Sustainable," there is also the category "Transitional" in the assessment process. The "Transitional" category

Why is a dynamic assessment needed? In a standard portfolio assessment:

- Changes in sustainability requirements in between the screening cycle are not systematically captured in the assessment results;
- Often, changes impact only one out of all 39 criteria, requiring a product-by-product assessment to evaluate if the impact is significant enough to shift the overall product classification from "Sustainable" to "Non-Sustainable";
- Only a full portfolio evaluation based on one changed parameter allows for understanding the overall commercial impact on the portfolio.

is a temporary state for products that require improvement or innovation to meet sustainability standards.

"We don't have a neutral rating category. Either a product is sustainable or even a leader in the market or it is not sustainable," says Fabio Amorim. "Transitional" is therefore a transitional group that was introduced with the revision of the PVP method in 2022. Clariant sorts the products with sustainability risks into this category, and the business unit actively works on them. This can be the case, for example, if a substance used has a high hazard classification, and then the busi-

ness unit starts an innovation project to replace the hazardous characteristics. Or even if there are sustainability risks with the supplier of a necessary raw material that Clariant wants to remedy, for example by improving the situation or changing the supplier.

Products that are in the "Transitional" category are reviewed annually to evaluate whether the transitional criteria are still valid. As a result, they are either confirmed as transitional, moved into a more sustainable category if they have been improved, or they are placed into the "Non-Sustainable" category if improvements were un-

successful or uneconomical or if a more sustainable alternative was developed. "Something must happen with all the products in the 'Transitional' category," says Amorim. "That's what the category is for. It motivates us to find solutions and new products. And for products where no solutions can be found, these will be reclassified as 'Non-Sustainable,' followed by our ambition to phase-out the product within five years."

This action-oriented approach ensures that Clariant's portfolio is continuously evolving toward increased sustainability, driven by the insights provided by the Dynamic PVP. ■

..... In summary: the Dynamic PVP – Clariant's dual-pronged approach for sustainable portfolio innovation

..... Clariant's Dynamic PVP is a powerful tool that enables the company to future-proof its product portfolio and drive innovation toward greater sustainability. The Dynamic PVP combines two key capabilities:

1) Forward-looking simulations:

The Dynamic PVP simulates the entire existing product portfolio based on changes in sustainability requirements, whether environmental or social. This allows Clariant to instantly identify products with the highest risks and impacts from emerging sustainability trends or regulations. By providing this real-time insight, the Dynamic PVP empowers Clariant to initiate innovation projects early on, transforming its portfolio proactively to meet evolving sustainability standards.

2) Action-oriented classification:

Clariant limits the classification of its portfolio to four categories: "EcoTain," "Sustainable," "Non-Sustainable," and "Transitional." This action-oriented approach ensures that the portfolio is continuously evolving toward an increased share of sustainable products. Non-sustainable products require a phase-out plan, whereas transitional products necessitate a transition to more sustainable alternatives through innovation.

..... By combining these forward-looking simulations with an action-oriented classification system, Clariant is well-positioned to navigate the ever-changing sustainability landscape, ensuring that its products remain at the forefront of sustainability, benefiting both people and the planet.

Impact Intelligence: Integrating Sustainability and Compliance for Industry Transformation

Sustainability requirements are increasing worldwide. Companies have to prove that they are meeting the requirements with reliable figures. The basic information can be found in the product, according to software company iPoint. Life Cycle Assessments (LCAs) provide the ideal basis for improving product portfolios in terms of environmental impacts and meeting legal requirements.

By iPoint



In a world where the environmental impacts of products and production processes are increasingly becoming a focus of global responsibility, the industrial landscape is undergoing a dramatic transformation. Legislation now demands from companies not just voluntary evidence of their envi-

ronmental impacts, but also that they make such disclosures mandatory for access to crucial markets. In this context, compliance evolves from a mere market-access discipline to a complex field intertwined with sustainability practices. From this merger comes an innovative category in data handling:

the synergistic utilization of compliance and sustainability information. As innovators and thought leaders in this new domain, we not only demonstrate the necessity of this category, but also its efficiency in terms of time and cost savings. We are at the forefront of this development, actively shaping



“Companies need to stay competitive. With a plethora of new regulations, this is difficult. But it’s time to act now, face the requirements, and adapt. Otherwise, it will be costly for companies and they will lose market access.”

Dave Ellis, General Manager North America at iPoint



Many products, such as a car, consist of countless individual parts – a challenge for sustainable product management, photo: Volkswagen

the future of the industry by showing how companies can create not only environmental benefit but also economic value by integrating sustainability into their compliance strategies.

Transparency and traceability are becoming increasingly important not only to meet current and future legal requirements, but also to improve and future-proof product portfolios in terms of environmental impacts. Consumers, investors, non-governmental organizations (NGOs), and government agencies want to know what is in the products that companies manufacture and bring to market. In particular, what environmental risks and opportunities are involved? The well-known slogan “No data, no market” puts the onus on industry to recognize and manage the risks posed by products and to provide safety information about substances.

Management roles are changing

As a result, a growing number of companies are moving beyond mere compliance. Integrated management systems that combine traditional business disclosures with sustainability metrics are becoming a hallmark of progressive organizations. Compliance and sustainability are becoming increasingly intertwined. This intertwining of compliance and sustainability requirements is a development that Reutlingen-based software developer iPoint has long predicted. “Compliance with regulations and mandatory standards always had direct financial implications and the benefits were easily quantifiable. Environmental protection issues, on the other hand, were for a long time seen more as voluntary efforts whose economic benefits were not always immediately apparent,”

explains Martina Prox, Director Expert Services at iPoint.

End-to-end material Life Cycle Management is key

This is where digitization and automation can play to their strengths, otherwise the complexity of the data cannot be managed. The sheer volume of products, components, suppliers, and regulations can hardly be mapped correctly without software.

The iPoint Product Sustainability solution supports effective automation and scaling of Life Cycle Assessments and Product Carbon Footprinting based on material and substance data. It thereby drives the integration of environmental performance measurement and in-depth approval reviews into all business processes and the fulfillment of ESP >>

These regulations are not limited to the European Union:

- Legal requirements such as CSRD (Cooperate Sustainability Reporting Directive) for emissions and the mandatory CBAM (Carbon Border Adjustment Mechanism) regulations for steel and aluminum imports require that non-European suppliers switch to efficient and accurate solutions.
- The EU regulation REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), which came into force in 2007, has prompted other countries and jurisdictions to introduce similar regulations.
- California Prop(osition) 65, officially known as the Safe Drinking Water and Toxic Enforcement Act, is another example of this type of right-to-know legislation.
- As soon as raw materials such as cobalt, tungsten, tantalum, tin, or gold are involved in a company's production or supply chain, conflict minerals become an issue. From the US Dodd-Frank Act and the Reasonable Country of Origin Inquiry to the CMRT (Conflict Minerals Reporting Template) of the RMI (Responsible Minerals Initiative) and the OECD Due Diligence Guidance to the EU Conflict Minerals Regulation – the traceability of critical materials is becoming mandatory.

approaches. Often the material is the biggest climate driver – a further breakdown shows which specific materials and processes contribute the most. In several industries, metals such as steel and aluminum are the main contributors, in addition to plastics.

Once the materials have been identified, it is time to back them up with data: Based on classification suggestions, the software automatically generates corresponding LCA data sets, and the user can confirm them individually. This logic can be applied to all other materials with the same classification suggestions. In this way, repetitive tasks are avoided, which is a great timesaver, especially for complex products.

Now the real product portfolio assessment can begin and you can use these insights about emission hotspots to derive effective improvement measures. You can easily copy and adapt the reference variant to analyze optimized variants before changing the actual production.

For example, product engineers can change the bill of materials and processes or reduce the weight of the material to analyze improvements. Adjusting relevant parameters helps to compare different variants with just a few clicks. For example, you can increase the recycled content of the plastic. The comparison then shows that the improved variant has a significantly lower CO₂ footprint than the reference variant. Reducing the weight and increasing the recycled content of the material have therefore proved to be important eco-design measures.

Act proactively before legislation forces you to

This is very clear in the automotive industry: Regulations have been in place for some time to ensure data transparency. Increasing the use of sustainable, recyclable, and reusable materials leads to better circular economy targets. Many automotive OEMs (origi-

reporting requirements. An effective tool would allow multiple stakeholders to work seamlessly together in reviewing new and existing materials and substances. Consider the different aspects of an effective and thorough approval process for a typical manufacturing company: Product designers and engineers will review material specifications, test data, and assess the quality and the impact of a material during the very early stages of the product development cycle.

Users can quickly access relevant LCA results and easily perform their own analyses and variation scenarios, thereby avoiding the sending of time-consuming

individual information requests to the LCA expert. The Smart Mapping feature reduces the manual work involved in mapping substances to environmental impacts or secondary data sets, thus significantly streamlining the work. The data can also be used generically: Connected databases provide facts that can be quickly applied to new products or groups instead of looking at each case individually. This is especially important for large product portfolios..

The devil is often in the details

For example, identifying emission hotspots is crucial for deriving effective



“Environmental protection issues were for a long time seen more as voluntary efforts whose economic benefits were not always immediately apparent.”

Martina Prox, Director Expert Services at iPoint

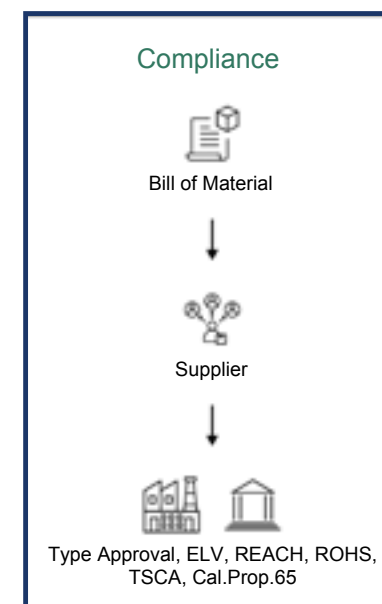
nal equipment manufacturers) such as Daimler, Ford, GM, Toyota, and Volvo have announced future sustainability goals such as zero crashes, zero emissions, and zero congestion; 100 percent sustainable materials; reductions in CO₂ emissions from new vehicles; as well as the elimination of CO₂ emissions in all materials used to produce vehicles, in all manufacturing, and in carbon-neutral products.

Prioritize safer materials and chemicals to support design-for-compliance

and design-for-sustainability practices before deadlines are set by regulators. We can see this unfolding at scale on many levels: at the EU level, the state level (California, Washington, Maine, Minnesota), and also at the company level. Automotive OEMs and suppliers have incorporated the compliance status of materials into design and development phases to avoid late design changes and non-compliance risks.

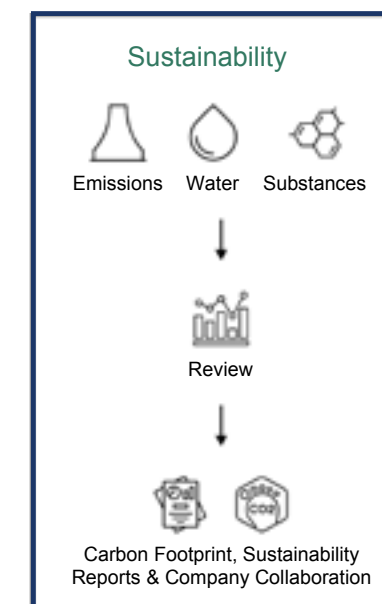
For OEMs, the cost of raw materials is a significant contributor to over-

all production costs and can range from approximately 40 percent in the electronics industry to more than 70 percent in the automotive sector. Managing materials efficiently and reducing material costs and waste have a tremendous impact on profitability. For a major OEM, a 2 to 3 percent reduction in material costs translates to billion-dollar opportunities. This is where an end-to-end material and substance management process plays a key role, as it can provide benefits far beyond material compliance management.■



Manufacturers are facing complexity and high stakes like never before.

With rising stakes and increased complexity, Manufacturers must change (and integrate) their Compliance and Sustainability approach.



From Idea to Sustainable Product: Syensqo's Innovation Process

Syensqo is an international chemical company formed as a spin off from Solvay in 2023 focusing its business on specialty products and novel application areas. Syensqo solutions contribute to safer, cleaner, and more sustainable products found in homes, food and consumer goods, planes, cars, batteries, smart devices and health care applications.

By Bruno Van Parys, Corporate Sustainable Development Sr. Officer, Syensqo



"Sustainability is our license to operate and it has to inform any decision we are making in business development, strategy, innovation, capital expenditure, and M&A. Among the tools we use, the Sustainable Portfolio Management (SPM) is our compass to grow our business AND be good for people and our planet. At Syensqo, we are explorers pursuing breakthroughs that advance humanity. We invest in science, creating advanced, sustainable solutions that help drive better growth."

Ilham Kadri, Chief Executive Officer

At Syensqo, we believe that operating as a responsible company means providing true sustainable business solutions to our customers.

The SPM is an evidence-based, third-party auditable tool that assesses the risks and opportunities within our business portfolio. It takes into account the social and environmental effects of our operations, as well as sustainability market signals, to anticipate their impact and formulate appropriate responses in a timely manner.

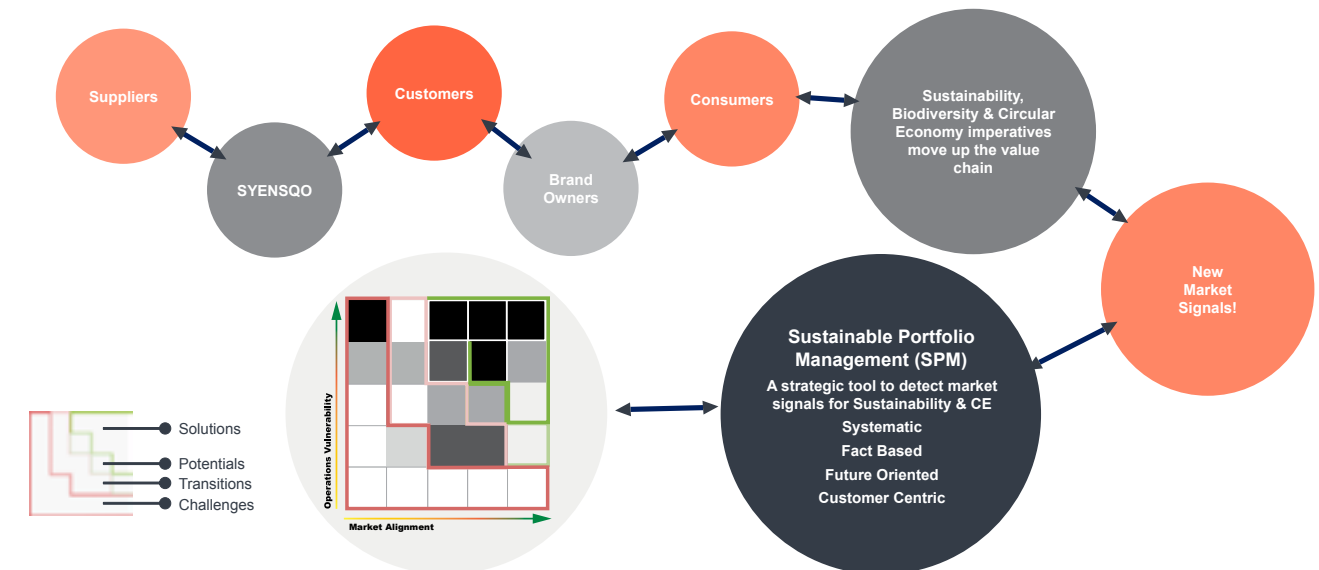
SPM as it was developed in 2012 has

a structured way into businesses decision-making and steer product & services portfolio performance toward sustainability among other key business dimensions: performance & functionalities competitiveness, quality...

In other words, the SPM serves as a compass, integrated into the company's strategy and decision-making, ultimately helping to navigate uncertainties, reducing impacts on society and the environment. SPM is designed to boost Syensqo's business performance and deliver better

ucts bring benefits or face challenges in a holistic market perspective – horizontal axis – qualitative assessment on social and environmental topics covering four main themes: Health and Safety, Climate Change, Resources and Opinion Leaders.

The goal is to position the business portfolio in four resulting categories: Potentials and Solutions, Transitions, and Challenges. Each category will require a different call for action by decision makers, helping Syensqo's Global Business Units to deliver on their business ambitions.



already integrated in advance most of the SSbD principles with robust foundations and sees SSbD as an opportunity to strengthen the tool and raise sustainable business ambition. Sustainable topics are complex, interconnected, and rapidly evolving with regard to climate change, resources scarcity, societal expectations, supply chain constraints, regulatory landscape, market trends... to name some.

SPM supports Syensqo to capture and embed those new market signals in

growth. With SPM, company strategy is systematically informed about the contribution of Syensqo's products to sustainability, considering both:

Comparing the monetization of the manufacturing footprint of our products through extensive Life Cycle Assessment (LCA) with the value they bring to the society - vertical axis - informs the business about the related risks and opportunities.

How in their applications the prod-

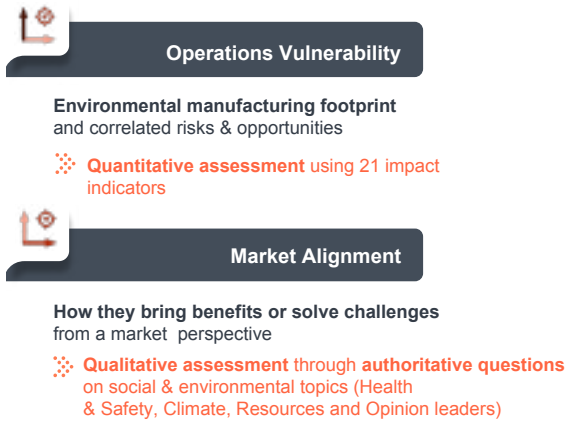
Here are some examples of business Solutions as defined by our SPM tool:

We develop biotechnology solutions, which focus on increasing the use of renewable carbon, developing biodegradable technologies that enable eco-friendly end-of-life practices, and transforming feedstock into valuable molecules. Biotechnology

Our green solvents provide less hazardous and more circular solutions for the agricultural market. We >>

SPM methodology How does it work?

Thanks to our SPM tool, customers are informed of how Syensqo's products contribute to sustainability, taking into account:



offer agrochemical formulators the best solvent performance with the safest toxicity and ecotoxicity profiles. Green Solvents

Other examples include the creation of lighter, faster, and stronger thermoplastic composites. This enables us to scale manufacturing processes in the aerospace market and design flexible, high-performing solutions for the energy sector – solutions that help drive decarbonization. It also allows us to improve lightweighting and performance in the automotive industry by offering higher motor efficiency and power density for electric vehicles. Aerospace, Battery.

SPM in Innovation process

Innovation is the engine for positive change, supporting transition and development toward a more sustainable products for society and environment. Research and innovation (R&I) plays a particularly important role in the chemical industry, which is continually facing new challenges and

requirements. “Innovation is at the heart of our strategy; it will fuel our growth and accelerate value creation,” says Mike Finelli, Chief Technology and Innovation Officer (CTIO) at Syensqo.

Two factors in particular play a major role in the R&I process at Syensqo: On the one hand, innovation is triggered by customer needs, for example when new challenges arise that need to be solved. On the other hand, developments in global megatrends such as electrification, lightweighting, advanced connectivity, resource efficiency, sustainable sourcing, and

quality of life continually require new approaches.

“Thousands of organizations have now made commitments to deliver better-sustainability solutions. However, few organizations have developed the necessary tools and management practices to drive strategy implementation and achieve those outcomes in a way that is profitable and therefore scalable. The sustainable portfolio management tool represents an important example of such much needed management innovations that will allow organizations to integrate sustainability issues

“Innovation is at the heart of our strategy; it will fuel our growth and accelerate value creation.”

Mike Finelli Chief Technology and Innovation Officer (CTIO)

in their strategy and capital allocation decisions making sustainability not a compliance issue but a driver of innovation and growth.” George Serafeim, Charles M. Williams Professor, Harvard Business School & author of “Purpose + Profit: How Business can lift up the World”

Moving in the right direction with SPM as a compass

The entire R&I process consists of a stage gate process.

SPM plays a key role as an early decision-making aid to steer innovation projects in a sustainable direction right from the start till the product launch, using first a set of key questions based on design principles with different levels of sustainability performance, for example on toxicity, energy consumption, circularity and wastewater to name some...

These first qualitative answers provide an initial orientation by identifying risks and opportunities through the lens of sustainability and help the project team to refine the project by address-

ing the challenges and strengthening the sustainability features in a timely fashion, such as choosing a different raw material or technology or developing new functionalities or applications.

Early decision support for the project team and management

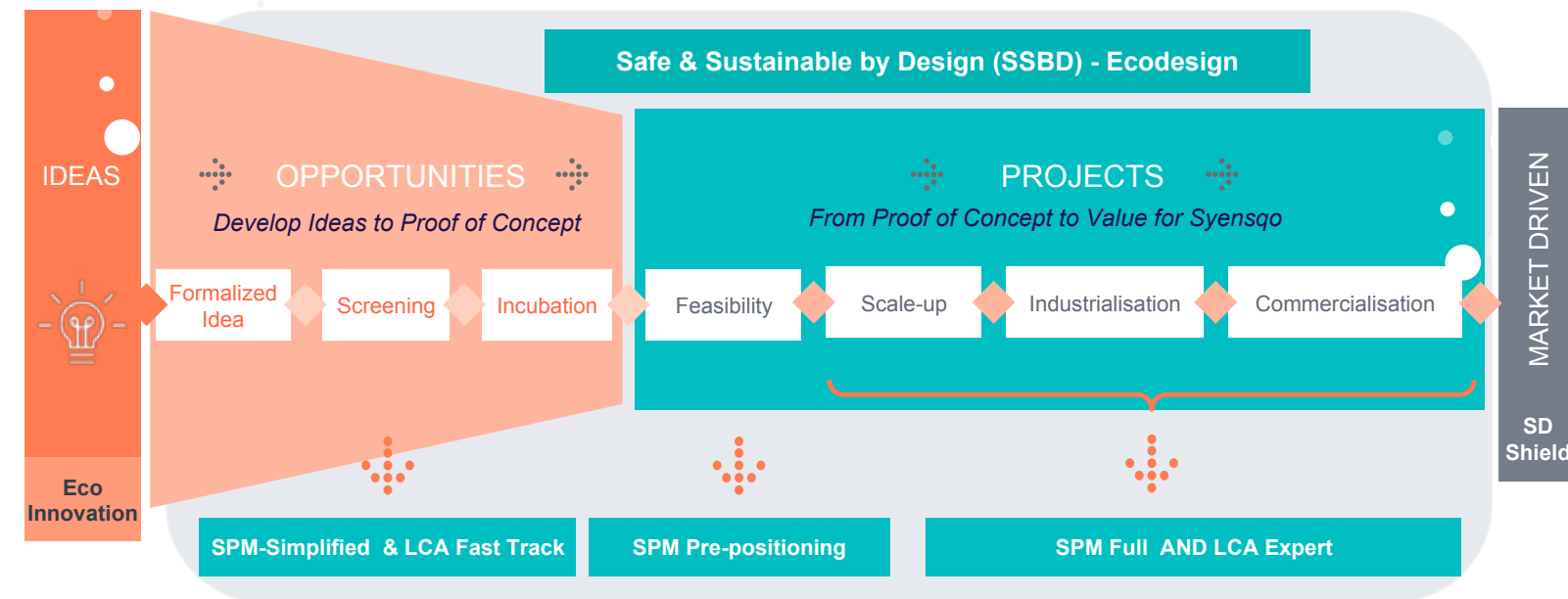
During the research process, the project team usually goes through various scenarios. The SPM can show which of these scenarios is the most promising in terms of sustainability and help to set priorities.

Our green solvents provide less hazardous and more circular solutions for the agricultural market.

At the same time, this exercise raises awareness and helps to integrate sustainability at all steps of the innovation process. This allows the project team to think about the best option in terms of sustainability among the other dimensions : performance, functionalities, technology, competitiveness... Thanks to this assessment, the company receives a global picture about the position of the innovation projects portfolio on sustainability taking into account future development as well.

As the innovation project along the stage gate process moves from high uncertainty to low uncertainty and from with qualitative data to more quantitative data, SPM assessment becomes more robust and in a way de-risk the project when it comes to investing more money and resources or if necessary, to stop it early on, even true to the motto ‘fail fast, fail cheap.

Above all, working with SPM throughout the innovation process changes ways of thinking about managing R&I projects and is aligned with SSbD principles.■



The Future Is Circular and Green

Humanity is overexploiting the Earth's natural resources, resulting in significant environmental damage, including waste and greenhouse gas emissions. Symrise, a company that works with many natural raw materials in all areas, is committed to the principles of the circular economy. This enables it to use resources more efficiently, avoid waste, and make biodegradable products. Examples such as the upcycling of ginger and the production of sustainable cosmetic ingredients show how Symrise develops innovative approaches to promote ecologically responsible value chains.

By Christina Witter and Friedrich-Wilhelm Micus, Directors Corporate Communications, Symrise



Humanity is living beyond its means. It consumes too many raw materials. It generates too much waste on the Earth – and it only makes partial use of what it offers. Production and consumption too often follow the same pattern: Companies sometimes extract hundreds of different raw materials, use them to make more or less durable consumer products, and then finally dispose of them. So far they have only been able to recycle and reuse some of them.

This linear chain also applies to the consumer goods produced by the industries in which Symrise operates. This becomes visible for example in the food industry, where a third of global agricultural production is currently lost or wasted along the food chain. Many natural raw materials could and should be used more consistently. Challenges also exist in the cosmetics industry, for example regarding disposal: The products that Symrise supplies must be biodegradable and keep nature intact because they end up in the environment at the end of their life cycle.

The time for a rethink has long since begun. Economic activities worldwide already have far-reaching consequences for the environment and biodiversity. For example, around 50 percent of global greenhouse gas emissions and around 90 percent of species extinction can be traced back to the extraction and processing of raw materials. If the current level of resource consumption continues at the same rate, this could even double by 2060. This would massively endanger the ecological balance of the Earth.

Symrise needs the services of the ecosystems, as almost 90 percent of the raw materials it uses come from natural sources. It therefore lies in the company's own interest to focus on sustainable sources and develop innovative solutions that reduce resource consumption levels and protect the environment. So, what can be done? Stopping the use of resources is not an

Symrise's sustainability program focuses on regenerative cultivation methods. This includes crop rotation, soil curves, and/or the use of organic fertilizers.

option. Using resources responsibly and cleverly, on the other hand, is

Symrise uses the principles of the circular economy at all levels of the value chain

The circular economy is based on several concepts and approaches that build on three fundamental principles: preventing waste and pollution, keeping non-renewable resources in circulation, and using renewable resources in a sustainable way while regenerating nature. This aims at replacing the linear economy – extraction of raw materials, use and disposal – with a circular structure. In this process, products and raw materials do not end up as waste after use. Instead, they are fed back into closed cycles.

Symrise uses the concepts of the Ellen MacArthur Foundation and the World Business Council for Sustainable Development as a guide, both of which promote the cradle-to-cradle approach.

Developed by US architect William McDonough and German chemist Michael Braungart, this approach promotes the idea of designing products in such a way that their materials are preserved at the end of their useful lives and serve as resources for new products. This aims at using resources more efficiently and minimizing environmental impact.

These principles get applied to two main cycles: the technical and biological cycle. The technical cycle involves consumer goods that are designed in such a way that they can be broken down into their original materials and reused. Instead of disposing of the materials they become pure source materials in order to get reintroduced into the production cycle. For Symrise, the biological cycle plays a particularly important role, as most of its products return to nature after use. The biological cycle describes processes in which natural raw materials are extracted from the environment and returned to the soil after use to nourish and regenerate nature. This applies in particular to consumer goods such as food and cosmetics, which consist mainly of natural or fossil raw materials and must be processed in accordance with ecological principles.

The example of ginger

The task for Symrise includes to ideally manufacture all its products, regardless of their origin, in a way so that they are completely biodegradable. They should allow microorganisms to subsequently "metabolize" and safely return them to nature after use. The circular economy approach also includes to move the energy supply from fossil fuel sources to renewable energy sources to decouple economic activities from the consumption of finite resources.

Processing natural raw materials often leads to side streams that still contain valuable materials. The researchers and developers at Symrise are therefore looking for solutions to upcycle >>



them. One example of this relates to the water phases that result from the production of essential oils. They contain valuable fragrant substances. The Symrise experts have found a solution for utilizing the water phases of ginger from Madagascar, for example. They use carbon dioxide as a “green” solvent, which can flow through solids as a gas and dissolve materials like a liquid. Symrise uses this process to extract two products from the ginger root: the active ingredient SymVital® MADA with cosmetic properties, and an extract with a strong ginger scent that can be used as an essential oil. In addition, the biomass produced after

extraction contains fibers from the roots, which can go into cosmetic applications.

Within this business model, Symrise exchanges information directly with the farmers, tracks the raw materials, and controls the entire process “from farm to bottle” instead of buying a finished product from the supplier. Due to high consumer demand, the dried ginger is also certified organic.

The sustainable program focuses on regenerative cultivation methods. Depending on the local conditions (climate and soil structure), farmers get

support in maintaining the soil. This includes crop rotation, soil curves, and/or the use of organic fertilizers.

Symrise has also launched an environmental program that includes tree nurseries and an annual reforestation program. Women and young people get empowered as part of the company’s social commitment. At the farm level, many people involved are women and young people, while more than 75 percent of those working on ginger-drying activities are women.

Applied to a sustainable portfolio management model, the example of ginger

STRATEGY OVERVIEW PROVEN THREE PILLAR APPROACH SINCE 2009

Growth

*Growth in emerging markets
Maximization of customer spectrum
Targeted innovations & investments*

Efficiency

*Optimization of raw material portfolio
Backward integration
Specific efficiency programs*

Portfolio

*M&A
Partnerships & collaborations
Cross-divisional networking*

Sustainability

*Minimize the ecological footprint
Maximize positive social environment
Improve performance of supply chains*

shows that the starting point for the analysis relates to market signals such as the SDGs in responsible value chains. Symrise then applied these specifically using the example of a product and a region. This leads to changes in processes and ultimately to a more sustainable and resilient portfolio. The UN’s SDGs address ecological and also numerous social facets, which this project demonstrates very well.

The example of cosmetic products

In recent years, the trend toward “green” care products has gained momentum based on the growing consumer interest in the innovation and use of renewable raw materials. Hence, the cosmetics industry is looking for ingredients that come from nature, are biodegradable, and at the same time offer good economic prospects in addition to working well even at low concentrations.

This requirement profile, for example, applies to the active ingredient Hydrolite®. It improves the skin’s ability to bind water and offers antimicrobial properties. Conventional Hydrolite® used a conventional synthetic raw

material. As part of the sustainable portfolio alignment, Symrise introduced an innovative approach. The new, “green” Hydrolite® uses side

The cosmetics industry is looking for ingredients that come from nature, are biodegradable, and at the same time offer good economic prospects.

streams of sugar production from sugar cane (bagasse) as a raw material. This specific example shows how

a green raw material – in this case from sugar cane – can increase added value for consumers, manufacturers, and suppliers.

“The development of this high-purity ingredient with 100 percent bio-based carbon content gives proof of our high standards in terms of quality and sustainability. It opens the door for new applications with the multifunctional high-performance ingredient caprylyl glycol. In addition to its consistent efficacy as a product protection booster and its multitude of other formulations and consumer benefits, it can now also add value in eco-friendly formulations or make conventional formulations greener,” says Dr. Balint Koroskenyi, Senior Global Product Manager Cosmetics Ingredients at Symrise.

Applied to a sustainable product portfolio model, the Hydrolite® example shows that innovation and research – and the resulting data – are the starting point for further product development. In this case, a demonstrable improvement in the ecological and climate footprint of raw sugar cane ensures a more sustainable product. ■



How to Make Textile and Garment Production Sustainable?

The textile and garment industry is grappling with its significant environmental impact. Despite increased discussions about sustainability, the sector continues to leave a substantial ecological footprint. This is particularly concerning due to the fact that the demand for clothing is projected to surge from 62 million tons in 2015 to 102 million tons in 2030. The World Wildlife Fund (WWF) warns that maintaining the status quo is unsustainable for both the industry's profitability and the planet.

The World Economic Forum's perspective

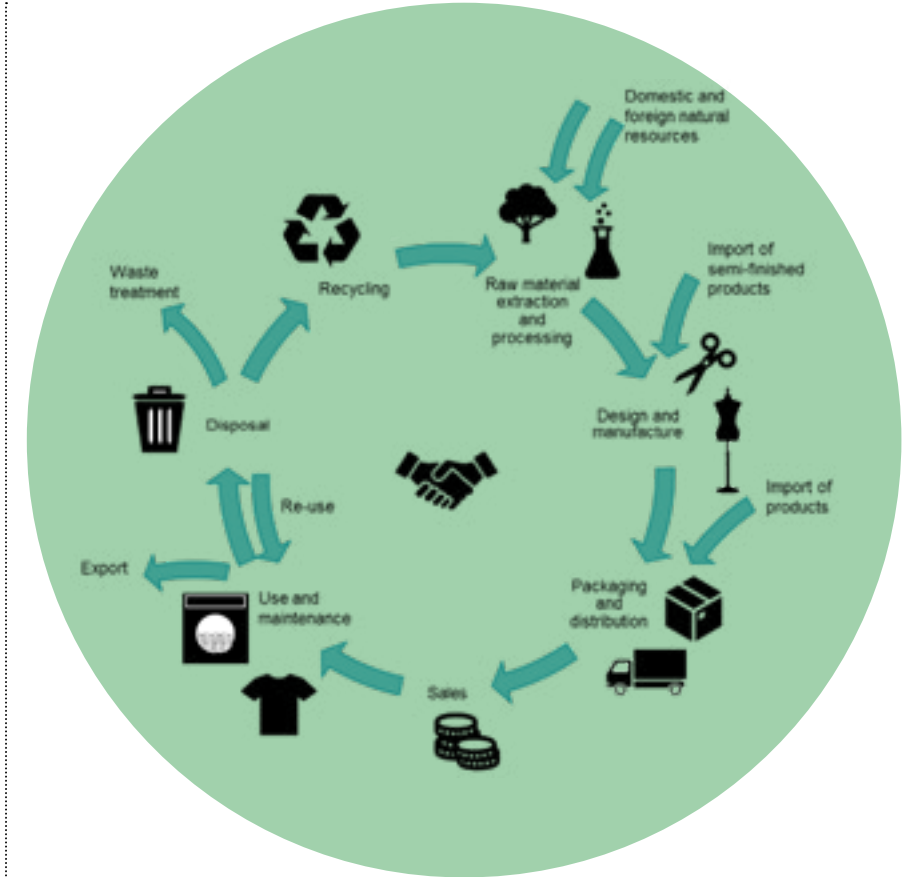
The WEF highlights the textile industry's long history of sustainability issues, including low wages, gender wage gaps, abusive labor practices, gender discrimination, unsafe working conditions, and a lack of supply chain transparency. The environmental impact is equally alarming, with the industry contributing 4–10 percent of global carbon emissions, a figure that could rise to 26 percent by 2050.

Efforts toward improvement

Various frameworks, standards, initiatives, and conventions have been introduced to address these labor and environmental concerns. However, achieving sustainability requires comprehensive data and knowledge about yarn and fabric production, finishing, functionalization, and alternative manufacturing techniques.

The role of sustainable product management

This is where sustainable product management comes into play. It enables the analysis, quantification, and transparency of each step in the production process, providing a foundation for change. But knowledge alone is not enough; it requires individuals within the industry to champion and implement sustainability practices. Stella McCartney serves as an inspiring example of such leadership.



THE WAY FORWARD

To make textile and garment production truly sustainable, a multi-faceted approach is necessary. This includes:

- **Improving labor conditions:** Ensuring fair wages, safe working conditions, and gender equality throughout the supply chain.
- **Reducing environmental impact:** Minimizing carbon emissions, water pollution, and waste generation through innovative materials and processes.

- **Promoting transparency:** Enhancing supply chain traceability and accountability to address issues such as forced labor and environmental degradation.
- **Embracing circularity:** Designing products for longevity, repairability, and recyclability to reduce waste and resource consumption.
- **Consumer education:** Raising awareness about the environmental and social costs of fast fashion and promoting sustainable consumption habits.

By taking these steps, the textile and garment industry can move toward a more sustainable future, benefiting both people and the planet.



The Stella Effort

Blurring the lines between fashion designer and activist, Stella McCartney is not just an inspiration for consumers and creatives, she is also a pioneer for change in an uncompromising and ruthless industry.

By Violet Wilder

We live in the most wasteful and excessive epoch in human existence. The scourge of the landfill is not one we have solved – indeed, hidden beneath a metaphorical top-layer of green-thinking and rampant environmentalism, the glut of garbage, globally, has never been greater, nor has there been less space for further subterranean deposits.

At the same time, microplastics drift extensively around the world, permeating not just our oceans, but the animal world, and even human blood cells. In addition, we continue to consume everything at a ravenous pace ... out of greed, out of necessity, out of a lack of knowledge for temperance.

It would be unfair to suggest great swathes of the world's population have not woken up to the reality of the situation. Concerted moves are afoot to turn back the clock, but the reality is that the road back is long.

A fuel to the fire of the sustainability issue is undoubtedly the fact we are ensconced in a digital existence from which we will surely never relent – less a tech generation, more a new reality. Connected like never before, we are globally united in everything from language to culture to consumerism, and new monikers have sprung up like unwelcome ads on an internet browser: “YouTuber,” “influencer” and, slightly leftfield but perhaps most scathingly, “nepo baby” (meaning: Nepo-Baby refers to people who have a better start to their careers because of their family and relationships).

“I’m one of the original nepo babies,” fashion designer Stella McCartney declares with a dryness that juxtaposes the glint in her smile. “I had the privilege from the very beginning to make the kind of choices other designers could not, and I’m happy to recognize that fact.”

Now a veteran of her industry, having launched her eponymous fashion

brand way back in 2001, the fresh-faced 51-year-old is having an “I told you so” moment. She happily admits to being seen as “the eco-weirdo” in the room back in the early noughties, when her vision to create cruelty-free, environmentally conscious luxury clothing was regarded – in high fashion circles – as brand suicide. Yet, McCartney was firm in her convictions, and she is now celebrated as the undisputed queen of sustainable style. It makes her, what she has created, and the ongoing conversations about the subject of sustainability permeating into the very fabric of who we are – right down to the clothes we wear – a worthy subject.

The British designer, who has fastidiously eschewed animal leather, skin, fur, and feather in her brand's products from the outset, reflects on a journey of two decades marked by ridicule. Now, however, there is a palpable shift as people increasingly show a greater interest and willingness to embrace this ethos. No longer the hippy minority, these are international thought-leaders pushing an accepted and approved narrative for temperance and change.

“The tide seems to be turning,” McCartney continues, “with individuals eager to engage, educate themselves, and drive meaningful change. Some time ago I realized we had reached that point – a pivotal moment that meant we had fully ignited momentum for the cause. That definitely makes me feel somewhat vindicated for all those years when everyone thought I’d lost the plot!”

Showing courage in the face of derision is in McCartney's DNA. Forged in the fires of activism, her parents – Beatles and Wings legend Paul McCartney and late American photographer Linda – were both high-profile advocates for animal rights who publicly penned protest letters to companies engaged in animal abuse. They campaigned against the fur industry, and in Linda's case pioneered not just vegetarian cuisine with her line

of cookbooks, but an eponymous range of meat-free ready meals.

Despite being born of rock ‘n’ roll royalty, the flame-haired youngest daughter of the McCartney clan did not have a typical privileged upbringing. Yes, she had the pleasure of touring the globe on private jets and tour buses, but she and her siblings all attended local state schools. “They had to take a bit of flak for having a famous dad, but it toughened them up,” Paul McCartney has said. Also, thanks to her mother's desire to move away from her own gilded upbringing on Manhattan's Park Avenue, the creative youngster spent most of her childhood at the McCartney's modest farmhouse around the sparse lochs of Scotland (Kintyre, no less, which famously inspired her father musically), or on their farm in the rural south of England.

Though McCartney and her family (husband Alasdhair Willis and four children: Miller, Bailey, Beckett, and Reiley) primarily reside in West London, she still has a deep affinity with the countryside and a life that respects nature, the environment, and simple pleasures – horse riding in particular. The designer's steadfast moral principles have positioned her uniquely as an activist within the fashion industry, which she identifies as the second most detrimental to the planet.

“It is ingrained in me to have a level of respect for the planet and its creatures,” says McCartney. “So, from my very first days in the industry it was never an option to turn my back on those values. My aim is to align with conventional fashion houses and demonstrate that it's possible to prioritize respectfulness in your supply chain and manufacturing processes. And the evidence shows that this is not a financial decision, but a moral one.”

When it comes to the fashion industry, statistics do not lie. The United Kingdom alone – McCartney's native >>

country – sees, on average, 300,000 metric tons of textiles sent to landfill every year, 60 percent of which consists of synthetic fibers. Yet, with clothes being usurped only by food and water in terms of necessity, it can be difficult to source garments that are genuinely low impact. Even cotton, the world’s most widely used natural fiber, has other drawbacks, such as the 10,000 liters of water it takes to produce just one kilogram of raw material.

Then there is the human cost. Textile workshops are notorious for their poor working conditions and paltry pay, with the 2013 Dhaka garment factory collapse in Bangladesh – resulting in more than a thousand deaths – drawing a salient line in the sand for a fashion industry upon which 24/7 social media-driven production-line expectations are laden.

However, these are all challenges McCartney embraces. “I think the drive to work and to create in this industry is in solving problems,” she says. “That could be anything from the almost flippancy of how to make a certain body type look good in a certain dress, through to the elixir of this whole thing – ensuring that drive to look good and feel good isn’t at the expense of the planet.”

She is correct, of course. Yet, in an industry that for centuries has associated glamour with pelts of pillowy fur and buttery leather, founding a luxury brand that does not rely on these materials was always going to be an arduous challenge. However, with her ethical umbrella covering more than just the animal aspect of environmentalism, McCartney has created alternatives not just to leather and fur, but to all sorts of materials.

“Take PVC for example. Its chemical production is so harmful. The evidence is it’s cancerous to the people who work with it, and then the residue runs into the rivers because the factories are built on rivers. This can never be accepted. I think what’s important to me is that



"I'm not just a fashion designer anymore; I'm an activist."

none of this has been a creative choice, or a marketing ploy. I’m not here for an easy ride – how could I be? This is never going to be the simpler path to take. You have to work really hard to innovate, and it took a decade just to find a way of crafting a transparent shoe without PVC.

“I don’t want to be the mouthpiece for change, although sometimes I inadvertently feel like it. The reality is though, if everyone embraced sustainability, we could level the playing field.”

Having been raised in an offbeat but stylish family, McCartney showed an interest in fashion very early on. In 1997, a mere two years after completing her studies at Central St. Martins – the prestigious art and design institution in London – the 25-year-old McCartney assumed the role of creative director at Chloé in Paris, succeeding Karl Lagerfeld. The industry was not impressed, with fashion bible Vogue running a headline that read “More Clueless Than Couture.”

During her tenure at Chloé, McCartney collaborated with her former classmate Phoebe Philo, infusing a daring sensibility into the traditionally soft and feminine French brand. Together, they introduced provocative elements such as sheer tank tops adorned with gold chains, provocative low-slung, form-fitting trousers, and revealing sequined dresses that soon became a favorite look among Nineties “It girls” such as Kate Moss and Naomi Campbell.

Even while showing a flair for bold and exciting design, and despite being under immense pressure to deliver for her superiors, McCartney remained true to her values, and some quarter of a century on, none of her collections have ever incorporated animal products. One imagines the Stella McCartney HQ appearing more like a laboratory than a creative studio as she pioneers spider-silk garments, jeans made from recycled denim, and even vegan Stan Smith slides

crafted from industrial waste. You could call her fashion’s answer to Heston Blumenthal as she makes history by introducing the world’s inaugural line of apparel and handbags crafted from Mylo, and vegan mushroom “leather” developed by Bolt Threads.

There are also the oversized tote bags ingeniously crafted from the repurposing of grape waste sourced from Italian wineries and, most recently, her use of Mirum, a ground-breaking, scalable, plastic-free alternative to leather that the industrious designer showcased in her latest winter 2023 collection.

She adds: “One of the greatest contradictions for me is the association between leather and luxury, because the harsh reality of animal slaughterhouses contradicts any notion of luxury,” noting that a billion animals are slaughtered annually to slake our thirst for fashion.

“People think it’s weird to dedicate time to finding an alternative for glue used to adhere parts of bags and shoes together, but to me, the traditional method of boiling down fish and animal bones is practically medieval. We abstain from harming animals for any purpose, minimize water consumption in our processes, and do our utmost to not contribute to deforestation.” Designing under someone else’s name is one thing, but setting up an eponymous brand that’s cast in extraordinarily high ethical standards from the get-go is at best courageous ... and at worst, foolish. Yet, McCartney has flourished. In 2024, she remains a fixture on the high-fashion circuit, crafting attire renowned primarily for its precise tailoring, clean lines, and striking aesthetics, and as a natty side-note, its eco-friendly credentials.

“It had to be that way,” she says. “Environmentalism and sustainability is all good, but fashion and style is one of the most important, particular, and personal feelings someone can have. Let’s not kid ourselves that someone wants to wear something unflattering

or uncomfortable just because it doesn’t negatively impact the planet. People just don’t operate like that, so the first base was always the product, then the provenance.”

Beyond the catwalk, McCartney has also made cultural strides, having collaborated on a hugely successful line with sports brand Adidas since 2004, designing the apparel for Team GB athletes, and creating Meghan Markle’s reception dress for her wedding to Prince Harry.

Epitomizing her brand, McCartney remains elegant, glamorous, and confident – living proof that being fueled by eco values does not mean compromising on style and luxury. Having said that, the erudite innovator is not about to lecture anyone else on how to live their lives.

“I hold an objective and an aim to offer stylish and luxurious solutions whilst simultaneously providing information and alternative choices,” she states. “I am not here to lecture people or make them feel guilty, and of course I appreciate how daunting and difficult it is to make better decisions when much of the system around us is designed in the opposite direction.”

This irresistibly optimistic perspective, coupled with an unparalleled expertise in clothing production science, elucidates why McCartney has been warmly embraced by politicians and royals alike, earning her status as a trusted advisor. In 2018, she was selected to collaborate with the United Nations on a sustainable fashion charter, and she was invited by HRH The Prince of Wales’s Sustainable Markets Initiative to participate in the G7 Summit in 2021. Furthermore, she has been the exclusive fashion designer to attend both the United Nations Climate Change Conferences in 2021 and 2022 (COP 26 and COP 27), with strong indications – although she refrains from confirming – she was present at last year’s COP 28 as well. “I’m not just a fashion designer anymore; I’m an activist,” she asserts. ■



Global Goals Editorial Board



The Global Goals Yearbook is published under the patronage of the macondo foundation. It is a non-commercial publication and emerges from the renown Global Compact International Yearbook (2009–2017).

The Global Goals Yearbook helps to advance corporate transparency, promotes the sharing of good business practices, and, perhaps most significantly, gives a strong voice to the regional and global stakeholders that are at the heart of the sustainability agenda.

The task of the Global Goals Editorial Board (EB) is to support and advise macondo foundation to identify and locate core corporate sustainability issues. These issues should find entrance in the editorial content of the Global Goals Yearbook and dialogue panels conducted under the title Global Goals Forum.

The support does not involve any responsibility for the contents of the yearbooks in terms of liability or (inter-)national press law.

Editorial Board Members:

Prof. Dr. Dr. Stefan Brunnhuber
Member

Club of Rome (CoR), World Academy of Arts and Science (WAAS)

James Gomme

Director of Education and Knowledge Management at WBCSD

Jorge Laguna-Celis

Head of One Planet Network, UNEP

Dr. Elmer Lenzen

Chair
macondo foundation (ex officio)

Dr. Andrew Mawson

Chief
Child Rights and Business, UNICEF

Jonas Svensson

Head of Innovations Unit
United Nations Office for Project Services (UNOPS)

Steven Tebbe

CEO
Global Footprint Network, former
Managing Director

Patrick van Weerelt

Head of Office
UNSSC Knowledge Center for
Sustainable Development (UNSSC)



The **UN One Planet** network is a global community of practitioners, policymakers and experts, including governments, businesses, civil society, academia and international organisations, that implements the 10-Year Framework of Programmes on Sustainable Consumption and Production and works towards achieving SDG 12: ensuring sustainable patterns of consumption and production.

It is comprised of thousands of individual members; six thematic programmes and their partner organisations; numerous working groups; and over 140 national focal points for sustainable consumption and production within country governments. Serving as the secretariat of the 10YFP, the United Nations Environment Programme facilitates the One Planet network.

Collectively, the One Planet network holds enormous experience and expertise on sustainable consumption and production, and houses a global repository of projects, policies, tools and resources.

The One Planet network inspires a global movement for sustainable consumption and production, facilitating collaboration, cooperation and coordination to increase our combined knowledge, effectiveness and impact.

UNICEF works in 190 countries and territories to protect the rights of every child. UNICEF has spent 70 years working to improve the lives of children and their families.

UNICEF promotes the rights and well-being of every child, in everything we do. Together with our partners, we work to translate that commitment into practical action, focusing special effort on reaching the most vulnerable and excluded children, to the benefit of all children, everywhere.

In all of its work, UNICEF takes a life-cycle based approach, recognizing the particular importance of early childhood development and adolescence. UNICEF programmes focus on the most disadvantaged children, including those living in fragile contexts, those with disabilities, those who are affected by rapid urbanization and those affected by environmental degradation.

UNICEF was created with a distinct purpose in mind: to work with others to overcome the obstacles that poverty, violence, disease and discrimination place in a child's path. We advocate for measures to give children the best start in life, because proper care at the youngest age forms the strongest foundation for a person's future.

UNOPS is focused on implementation and committed to UN values. We support our partners' efforts to bring peace and security, humanitarian and development solutions to some of the world's most challenging environments.

UNOPS works towards a better, more sustainable future by contributing to broader efforts to help partners achieve all 17 of the Sustainable Development Goals.

While UNOPS can expand capacity towards achievement of all the Sustainable Development Goals, focus is always defined by the needs of people, partners and countries.

As part of this, we're also committed to helping achieve the Paris Agreement on Climate Change, the Sendai Framework for Disaster Risk Reduction and are working with partners – like UN-Habitat – to make progress on the New Urban Agenda.

The development needs, as articulated by the above agreements and the Addis Ababa Agenda on Financing for Development, will require trillions of dollars in investments. UNOPS is committed to facilitating private sector investment to achieve the Global Goals.



UNITED NATIONS
SYSTEM STAFF COLLEGE

The **UNSSC Knowledge Centre for Sustainable Development** was established to equip the UN and its partners with the knowledge, skills, and behaviours to implement the 2030 Agenda for Sustainable Development as well as the Paris Agreement under the United Nations Framework Convention on Climate Change.

The Centre supports policy and operational work of the UN through the development of learning tools, platforms for interaction and a mature set of learning offerings for UN staff. It serves as a catalyst and convenor prompting dialogue and knowledge sharing on issues relevant to the vision and mission of the United Nations.

The 2030 Agenda for Sustainable Development profoundly challenges the way all development partners think, work and act. It requires enhanced multi-sectorial as well as cross-institutional integration and holistic thinking. Moving beyond separate mandates and structures, exploring linkages and interdependencies between different pillars and thematic issues is imperative. It is in this context that:

- We strengthen and communicate the sustainable development narrative.
- We focus on empowering stakeholders and facilitate integrated and transformative action for sustainable development.
- We support the UN Development System reform process.



The **World Business Council for Sustainable Development (WBCSD)** is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. WBCSD helps its member companies to become more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies.

Its member companies come from all business sectors and all major economies, representing a combined revenue of more than US\$8.5 trillion and with 19 million employees. WBCSD's global network of almost 70 national business councils gives our members unparalleled reach across the globe. WBCSD is uniquely positioned to work with member companies along and across value chains to deliver high-impact business solutions to the most challenging sustainability issues.



The **Club of Rome** is an organisation of individuals who share a common concern for the future of humanity and strive to make a difference. Our members are notable scientists, economists, businessmen and businesswomen, high level civil servants and former heads of state from around the world. Their efforts are supported by the Secretariat in Winterthur, Switzerland, the European Research Centre registered in Constance, Germany and National Associations in more than 30 countries.

The Club of Rome conducts research and hosts debates, conferences, lectures, high-level meetings and events. The Club also publishes a limited number of peer-reviewed "Reports to the Club of Rome", the most famous of which is "The Limits to Growth".

The Club of Rome's mission is to promote understanding of the global challenges facing humanity and to propose solutions through scientific analysis, communication and advocacy. Recognising the interconnectedness of today's global challenges, our distinct perspective is holistic, systemic and long-term.



CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts. Over the past 15 years we have created a system that has resulted in unparalleled engagement on environmental issues worldwide.

To achieve this, CDP, formerly the Carbon Disclosure Project, has built the most comprehensive collection of self-reported environmental data in the world.

Our network of investors and purchasers, representing over \$100 trillion, along with policy makers around the globe, use our data and insights to make better-informed decisions. Through our offices and partners in 50 countries we have driven unprecedented levels of environmental disclosure.

Over the past 15 years CDP has created a system that has resulted in unparalleled engagement on environmental issues between investors, companies, cities, states and regions worldwide. CDP's data enables our network to link environmental integrity, fiduciary duty and public interest to make better-informed decisions on climate action.



The **macondo foundation** is a non-profit organization. It supports the following charitable purposes: The promotion of nature conservation, environmental protection and coastal protection; the promotion of tolerance in all areas of society and international exchange; the promotion of animal welfare; the promotion of development cooperation; the promotion of civic engagement.

Since 2018 the macondo foundation is patron of the Global Goals Yearbook in support of the Sustainable Development Goals (SDGs) and the advancement of corporate sustainability globally. As a grassroots publication it offers proactive and in-depth information on key sustainability issues and promotes unique and comprehensive knowledge-exchange and learning in the spirit of the SDGs and the Ten Principles of the Global Compact.

Awards



Bronze Medal, 2019
12th Axiom Business Book Awards,
Category "Business Ethics"



Silver Medal, 2016
10th Axiom Business Book Awards,
Category
"Philanthropy/Nonprofit/
Sustainability"



Bronze Medal, 2015
20th Independent Publisher Book
Awards, Category "Finance/
Investment/Economics"

Patronage:
macondo foundation gUG (haftungsbeschränkt)

Publishing House:
macondo publishing GmbH
Dahlweg 87
48153 Münster, Germany
Tel.: +49 (0) 251 – 200 78 20
Fax: +49 (0) 251 – 200 78 222
URL: www.macondo.de

Publisher:
Dr. Elmer Lenzen

Photo Director:
Marion Lenzen

Art Director:
Juan Manuel Chevalier, Gustavo Martín Chevalier

Text Editors:
Robert Furlong, Marion Lenzen

Source of the quote (P. 24/25):
H.E. António Guterres, UN Secretary-General, United Nations, April 2024

Source of the quote (P. 42/43):
Maroš Šefčovič, Executive Vice-President for the European Green Deal, European Union (2023-2024), 2024

Authors of this edition (in alphabetical order):
Elena Köhn, Jorge Laguna-Celis, Dr. Elmer Lenzen, Andrew Liu, Dr. Wibke Lölsberg, Catherine McKenna, Friedrich-Wilhelm Micus, Dr. Eva-Kathrin Schillinger, Prof. Dr. Paul Shrivastava, Dr. Bettina Siggelkow, Bruno Van Parys, Violet Wilder, Christina Witter

Named articles do not reflect the opinions of the publisher.

ISBN-13: 978-3-946284-14-7
ISSN-Print: 2365-3396
ISSN-Internet: 2365-340X

Copyrights:

© macondo publishing GmbH

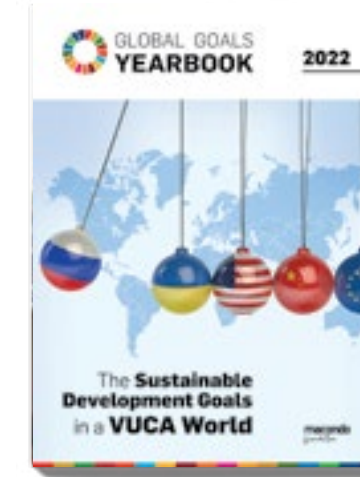
All rights reserved. You may not modify, copy, reproduce, republish, upload, post, transmit or distribute in any way any material, including photos, without the express written consent of macondo publishing.

Germany 2024

Cover:
macondo publishing GmbH, Cavad/stock-adobe.com

Photo Credits:
One Planet Network, UNEP (P. 3), UN Photo/JC McIlwaine (P. 5), metamorworks/stock-adobe.com (P. 6, 16, 18, 20), Sergey Yarochkin/stock-adobe.com (P. 6 above, 36), Summit Art Creations/stock-adobe.com (P. 6 middle, 48), engel.ac/stock-adobe.com (P. 10), ArtVader/stock-adobe.com (P. 11), panaramka/stock-adobe.com (P. 12), Zigmunds/stock-adobe.com (P. 13), Lubo Ivanco/stock-adobe.com (P. 14), michaeljung/stock-adobe.com (P. 15), UN Photo/Mark Garten (P. 25), macondo publishing (P. 26), Dr. Eva-Katrin Schillinger/EKS Picture Achema/Cefic (P. 28), Dr. Wibke Lölsberg/BASF (P. 29), Dr. Bettina Siggelkow/Clariant (P. 30), Marion Lenzen (P. 31), tanakorn/stock-adobe.com (P. 34), Arpon/stock-adobe.com (P. 39), European Union, 2024 (P. 43), Omega/stock-adobe.com (P. 54), AliFuat/stock-adobe.com (P. 55), artjazz/stock-adobe.com (P. 58), Club of Rome (P. 62), BASF (P. 64), Chemours (P. 68, 71), Clariant/Shutterstock /Olena Yakobchuk (P. 72), iPoint (P. 76, 79), Volkswagen (P. 77), Syensqo (P. 80), Symrise (P. 84), Kanea/stock-adobe.com (P. 86), HongKi/stock-adobe.com (P. 88), (P. 24kilos/Stella McCartney UK/A Orenstein (P. 90), 24kilos/Anthony Harvey/Shutterstock (P. 92)

GLOBAL GOALS YEARBOOKS





THE GLOBAL GOALS
For Sustainable Development

globalgoals-yearbook.org

ISBN-13: 978-3-946284-14-7



9 783946 284147



Published by



Germany, December 2024