



GLOBAL GOALS **YEARBOOK**

2023

Sustainable **Impact** Matters

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.

.....
H.E. António Guterres
UN Secretary-General
.....

*Secretary-General's remarks to the
Security Council – on Sustaining Peace
through Common Development,
New York, 20 November 2023*



At a time when 85 per cent of SDG targets are off track, we must act on this understanding with far greater urgency and ambition. Developing countries – particularly Least Developed Countries – are being battered by a perfect storm of crises. Crushing debt burdens, evaporating fiscal space, and soaring prices. Escalating climate catastrophe, widening inequalities, and worsening unemployment and poverty. And the lingering effects of the COVID-19 pandemic and unequal recovery.

This is a recipe for social strife, political instability, and, ultimately, open conflict. We must do more to support countries in dire straits. I have been advocating for bold steps to make our global institutions – including the international financial architecture – more representative of today's realities, and more responsive to the needs of developing economies....

Because investing in development today means investing in a more peaceful tomorrow.

QUOTE

3 H.E. António Guterres,
United Nations
Secretary-General

TOPIC

- 8 A Promise in Peril
Dr. Elmer Lenzen
- 16 Researchers Call for Major
Reforms of the UN Sustainable
Development Goal
Prof. Frank Biermann

IMPACT INVESTMENT

- 20 How to Make the Most of Impact
Investing
Matt Christensen
- 24 Other Sustainable Investment
Methods
- 26 How Do We Measure Sustainable
Business?
Franziska Zenkner and Vinzenz
Fundel

METHODOLOGY

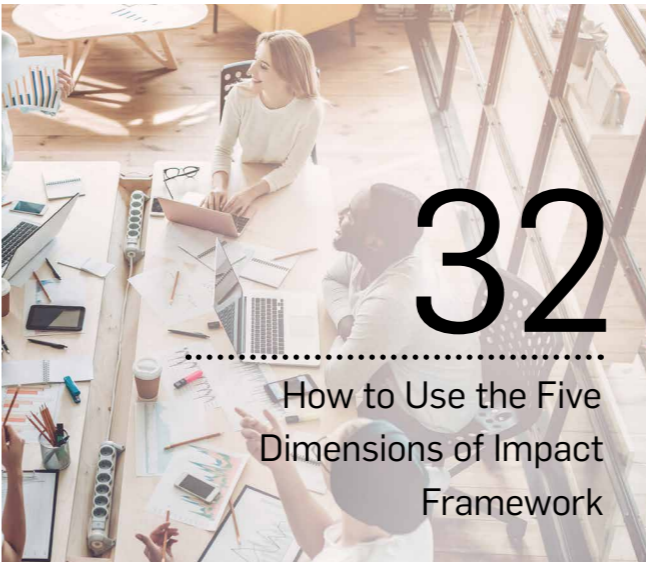
- 32 How to Use the Five Dimensions of
Impact Framework

PUBLICATIONS

- 44 Impact Measurement
Publications

ANNEX

- 102 SDG Impact Assessments
- 114 Editorial Board
- 118 Imprint



BEST PRACTICES

In alphabetical order and sorted according to the **ESG** subject areas



E

- 52 The transformative role of Product Carbon
Footprint
Clariant
- 56 The Impact of a Circular Economy
Various
- 60 "We need strong partners to transform the coffee
supply chain for good"
Nespresso
- 64 The Value of Natural Capital
REN
- 68 Innovative Concepts for a Sustainable Future
Symrise
- 72 Financial Instruments to Counter Climate Change
and Biodiversity Loss
Various
- 76 Perfect Forest
PMI

S

- 80 The Invisible Burden of Tourism
Cornell University
- 84 Sustainability Criteria Push Real Estate Values
ICG
- 88 Equitable Healthcare for All
Merck
- 92 Connecting Family Farmers to Just,
Equitable, and Supportive Markets
Urgenci
- 96 The Triple Billion Method
WHO

G



TOPIC

A Promise in Peril

By Dr. Elmer Lenzen,
Publisher Global Goals Yearbook

No poverty, no hunger, peace: In 2015, the United Nations adopted the 17 Sustainable Development Goals, which were supposed to make the world a better place by 2030. Now it is half-time. The results are sobering. In the remaining time, measures must be more targeted and more effective. This means that the issue of impact is moving into better focus.



The UN had ambitious plans for a world in which there would no longer be a drastic disparity between the Global South and the Global North: In 2015, the UN adopted 17 goals and 169 targets. By 2030, they were to make the world a better place, one without extreme poverty, hunger, and gender inequality. Education opportunities should be improved, all people should have access to clean water, and cities should become more sustainable.

Peace and justice are also on the list. This framework is one of the most ambitious and important global agreements in recent history. It challenges communities, industries, and governments at national and regional levels to change business-as-usual operations into more sustainable ones.

But halfway to 2030, that promise is in peril. The UN itself says: “It is time to sound the alarm. At the midpoint on our way to 2030, the SDGs are in deep trouble.” An assessment of the around 140 targets for which trend data is available shows that about half of these targets are moderately or severely off track; and more than 30 percent have either seen no movement or regressed below the 2015 baseline.

It is evident that our collective failure has disproportionately affected developing nations and the most disadvantaged individuals, making it abundantly clear that progress toward the SDGs remains inadequate on a global scale.

There is a growing determination to achieve ambitious objectives on environmental and social fronts, both at the international and local levels. These goals are specifically designed to tackle risks head-on and drive transformative change. One notable initiative in this regard is the UN SDGs, which have gained global recognition as a comprehensive framework aimed at eradicating poverty, >>



“The enormity of issues like clean energy transition will not be possible without the backing of large and well-funded, publicly listed firms.

Hari Balkrishna,
Vice President of T. Rowe Price Group

safeguarding our planet’s well-being, and fostering widespread prosperity.

The UN estimates that we will need an annual investment of \$5 trillion to \$7 trillion by 2030 to achieve this, and that some sectors, including utilities and automobiles, will need to completely transform their energy use to reach net zero by 2050.

On the other hand, a lot is happening. Investments, initiatives, and innovations are improving the world — every day. But what impact does that have? Impact measurement is still a new field for many. Yet it is so urgently needed.

“Societal, governmental, regulatory, and fiduciary pressures for change on a range of environmental and social fronts have been building over time. The emergence of an agenda of broad and global governance change that should shape a broad spectrum of corporate activity is evident on many levels,” says Hari Balkrishna, Vice President of T. Rowe Price Group. “The enormity of issues like clean energy transition will not be possible without the backing of large and well-funded, publicly listed firms.”

With momentum building, companies are moving to actively shift investments and policies to address distinct regulatory changes and environmental and societal pressure points. Either through compulsion or a desire to influence positive change, these trends are rapidly shaping the way companies behave, invest, and innovate.

Increasingly, therefore, the issue of impact is coming into focus. Managing the impact of economic activity on society and the environment is increasingly becoming a central pillar of sustainable business success. Four drivers can be identified:

1) It is more than ever about what you do. Capital markets are moving into sustainability. Many things that were ex-

otic a few years ago are now investable, so return on investment becomes important. Impact investment measures social and environmental dividends.

- 2) The challenges presented by the SDGs are huge. Everyone has needs in the multi-billions, but not everything will be fundable. It is increasingly about the “right” investments and competition for scarce resources. Impact materiality is becoming an important decision-making tool.
- 3) What both approaches have in common is that impact must become measurable. Key performance indicators are coming into focus.
- 4) Politics is also pushing the idea behind it: The EU is taking the regulatory route (CSRD, SFRD, CBAM, CS3D, etc.). In other words, it is a question of transformation at the joints. In contrast, the United States, with the IRA (Inflation Reduction Act), is relying on money and locational advantages as a means of attracting people in the hope that transformation will organize itself.

Impact investment

Impact investment is increasingly becoming an important driver. Why? Here, models have been developed to open up the topic for monetization. Over the past decade, impact investing has emerged as a fresh and increasingly popular investment approach. This innovative concept revolves around investors actively seeking out companies that not only generate financial returns but also create positive social and environmental change. The ultimate objective is to make a tangible difference in society and the environment while reaping financial rewards. However, accurately gauging the extent of this societal or ecological influence can be challenging in practice. Consequently, specific indicators or metrics are frequently employed to efficiently

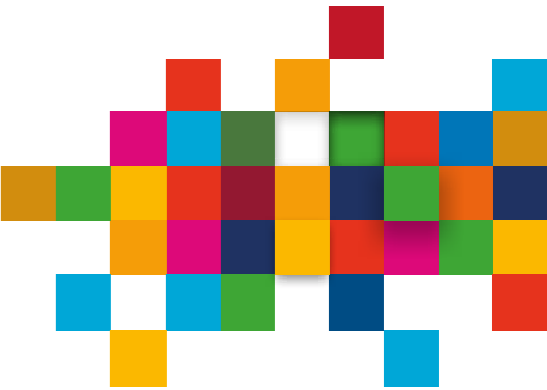
evaluate and track these transformative effects.

The concept for this investment strategy stems from the visionary minds of philanthropists. As per multiple reputable sources, the term (commonly referred to as “impact investing”) can be traced back to the Rockefeller Foundation. Nevertheless, these investments also aim to yield profits — setting them apart from mere donations. The political foundation for impact investing is rooted in the SDGs.

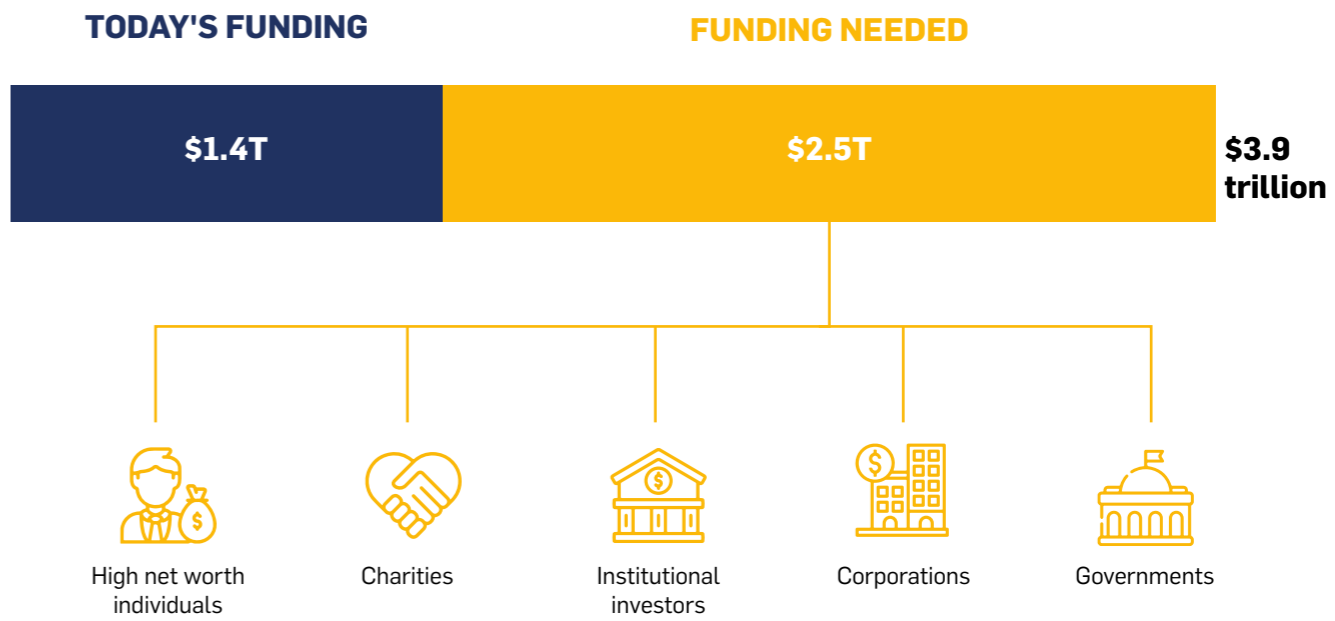
How is impact investing different from responsible, sustainable, and ESG investing?

In other words, stakes such as ESG are about not investing in certain areas and/or conducting regular business activities with as much consideration of the criteria as possible. A car manufacturer, for example, may well meet ESG criteria without exerting social, environmental, or ethical influence.

With impact investing, the situation is different. Here, investments are made in companies, projects, etc., that want to have a concrete social, ecological, and/or ethical impact. For example, investments are made in education, organic farming, medical care, renewable energies, etc. >>



ANNUAL INVESTMENT NEEDED TO MEET THE SDGs



Source: www.bridgespan.org

There has never been a better time to seize the chance of owning businesses that generate a constructive influence on our environment or society within public equity markets. It is crucial for companies to redirect their investments toward tackling environmental and societal challenges. By aiming to align ourselves with this inevitable shift, we can uncover an authentic opportunity to choose stocks that embody a beneficial impact profile. Moreover, by doing so, we unlock the potential for additional returns.

Nevertheless, it is important to note that pursuing these objectives does not mean sacrificing financial gains in favor of supporting socially responsible organizations.

In financial theory, the sustainability of returns has always been a crucial concern. However, there is now an amplified emphasis on evaluating a company’s impact profile, which presents an enticing opportunity to invest in enterprises that may have novel sources of growth through innovative or more environmentally friendly practices. The values attributed to stakeholders and shareholders are closely linked together. By comprehending and aligning the interests of businesses, shareholders, and society as a whole, we can unlock the potential for superior risk management and bolster a company’s competitive edge.

Impact materiality

The importance of measuring and reporting sustainability is growing in the business sector. Stakeholders are increasingly seeking detailed, uniform, brief, and comparable data regarding companies’ sustainable practices. Various organizations such as IFRS, ISSB, GRI, the European Commission, SEC along with others are working toward establishing a universal set of reporting standards that can be adapted to specific jurisdictions.

There is widespread uncertainty surrounding the guidelines that companies should adhere to when disclosing sustainability-related data. Presently, businesses are confronted with a disorganized assortment of reporting frameworks (see the diagram on the next page). Moreover, they are compelled to furnish sustainability information by completing surveys and questionnaires from various entities such as investors, data consolidators, indices, and rating agencies. In fact, it is not uncommon for larger corporations to receive more than 100 inquiries of this nature annually. Consequently, identical sustainability matters can be evaluated in numerous ways and communicated through multiple channels based on the chosen framework and specific questionnaire format. This convoluted process imposes unnecessary complexity and reporting burdens upon companies.

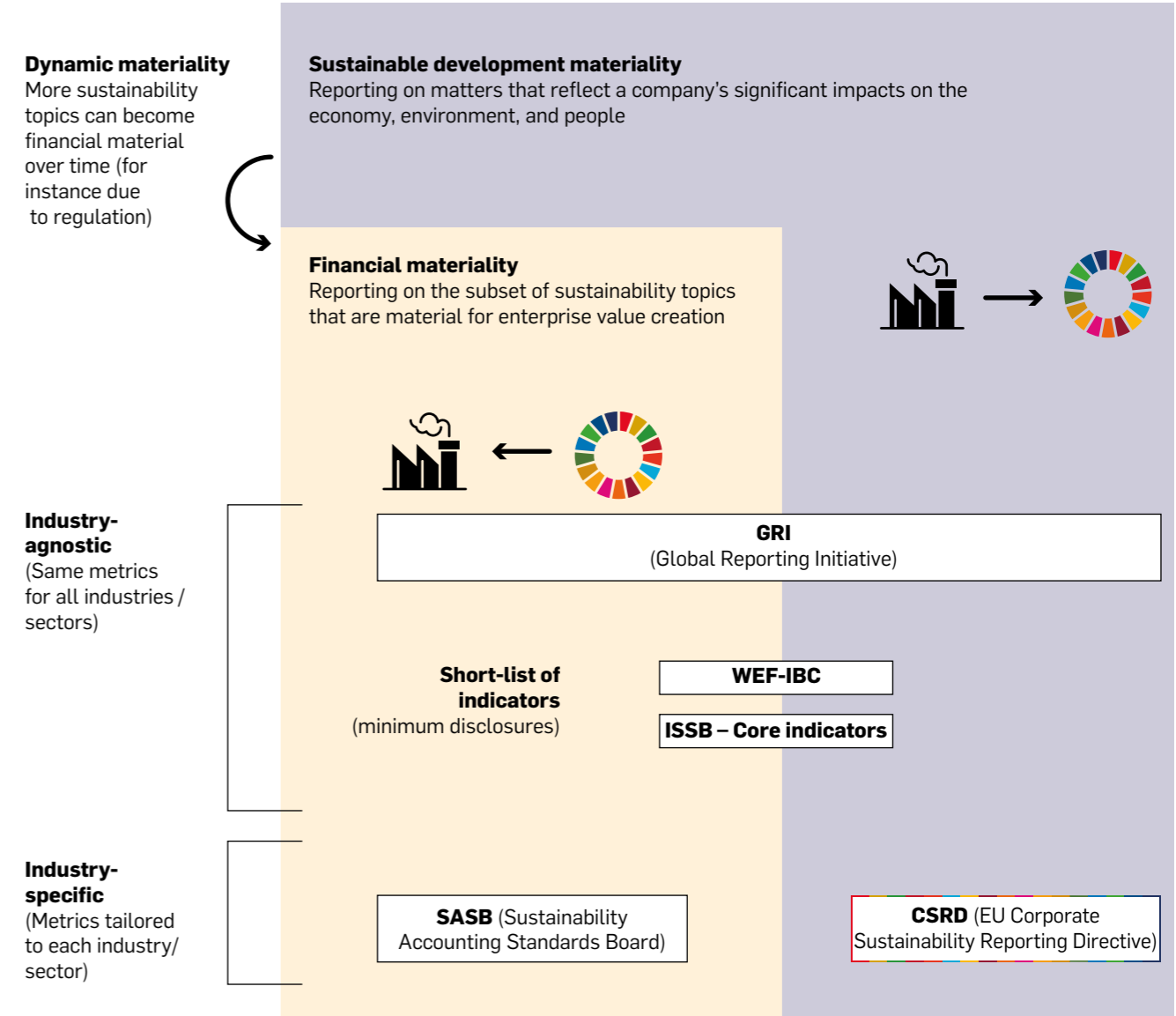
Standard setters, especially those with a double materiality lens, are encouraged to adopt these metrics in their sector-specific standards. This facilitates the standardized adoption of sector-specific metrics at scale, which in turn increases the value of this data to investors. The majority of these metrics were adopted from existing standards, in which case the more defined methodological notes on measurement already exist. The process of measuring impact effectively breaks down the barriers between conventional financial data and non-financial information, thereby providing a comprehensive understanding of sustainability data for corporate decision-makers. By assigning monetary value to these impacts, companies can vividly showcase the extent of negative consequences that require immediate attention as well as highlight the positive effects they should strive to enhance even further. Parallel to this, efforts in the business community to drive forward the holistic measurement of corporate performance increased last year. One example of this is the Value Balancing Alliance initiative, in which

Various organizations such as IFRS, ISSB, GRI, the European Commission, SEC along with others are working toward establishing a universal set of reporting standards that can be adapted to specific jurisdictions.

well-known companies are involved. The initiative aims to develop a standardized model for assessing the environmental, social, and financial value contributions of companies.

What do we mean by impact and what do we mean by impact measurement? We define impact as the portion of changes in outputs and outcomes that result from the organization’s activities. This view is consistent with global consensus builders such as the Impact Management Project, and leading Canadian initiatives such as Innoweave, as well as work from the Rockefeller Foundation. ■

SCOPE OF REPORTING FRAMEWORKS



Graphic: GSID – Sector-specific SDG-related metrics for corporate reporting



OPINION:

Researchers Call for Major Reforms of the UN Sustainable Development Goals

Sustainability goals laid out by the UN have had little political impact so far, according to a new study.

By Prof. Frank Biermann

The study, based on research led by Utrecht University in the Netherlands, brought together a group of scholars with broad expertise in global sustainability governance. “Our research has shown that the SDGs lack any sizeable impact on political systems,” argues Frank Biermann, professor at Utrecht University and the lead author of this study. “Now is the moment for change,” he continues. “Governments must urgently launch a process to strengthen the SDG framework through four make-or-break reform measures.”

Four reforms needed

First, the expert group calls for the SDGs to be strengthened in a way that commits high-income countries to stronger and more concrete action. So far, wealthier countries have often focused on those SDGs that they can most easily achieve, and the agenda’s universal approach may be obscuring unequal global consumption and emission patterns. Also, with inadequate finance holding back SDG implementation in the Global South, stronger commitments by high-income countries to equitable financing solutions are needed.

Second, the SDGs must be adjusted to new challenges, improved scientific understanding, and past failures in implementation. The goals must become more adaptable to escalating crises of ecological breakdown, global pandemics, and rising inequali-

“Now is the moment for change. Governments must urgently launch a process to strengthen the SDG framework through four make-or-break reform measures.”

ties, and the UN should introduce regular review rounds in which countries can adjust their ambitions to evolving global circumstances.

Third, the SDGs are not legally binding and are often merely vague commitments. Although this approach has helped to bring governments together under the broad banner of the SDGs, it is no longer enough. Instead, governments must together take steps to turn at least parts of the SDGs into binding international law. As an example, the authors highlight the ongoing negotiations for an international treaty to end plastic pollution, which is linked to Goal 12 (Responsible consumption and production).

Fourth, many SDGs are poorly embedded in the structures, policies, practices, and norms of local, national, and international institutions and political systems. Governments need to build stronger institutions, both internationally and at home, to make the SDGs a fundamental part of how they operate and make decisions. To support this, the researchers argue that much stronger global oversight of the SDGs is needed. One option would be the creation of a UN Council on Sustainable Development as a major center of global sustainability coordination in the UN System. They also draw on recent research showing that the SDGs are making notable impact through the work of cities, provinces, and parts of civil society, arguing that strengthening these networks can also play a key role in accelerating the SDG agenda.

A global agenda

“The SDGs must be supported across the board by all levels of government, civil society, and the private sector. Only this will ensure that our world will make meaningful progress toward global sustainability,” argues Dr. Yixian Sun, an assistant professor at the University of

Bath in the United Kingdom and co-author of this study.

The UN’s 17 SDGs sit at the heart of the UN’s global 2030 Agenda for Sustainable Development. The UN SDG Summit in September 2023 — one of a string of recent high-profile global megaconferences attempting to mobilize action for a sustainable future — could act as a springboard to achieving the goals by 2030. Professor Biermann: “The SDG Summit is a crucial event to pave the way for a major reform process that will allow the floundering SDGs to deliver on their promise of a global sustainability transition, while ensuring that no one is left behind.” ■



Prof. Frank Biermann
Copernicus Institute of
Sustainable Development
Utrecht University



“

We believe that impact investing is a vital tool for investors aiming to position themselves on the right side of societal and environmental change. Combined with fundamental analysis, deep research, and a valuation discipline, this investment style enables capital to be directly deployed into positive impact and change enabling companies.

Hari Balkrishna, Vice President of T. Rowe Price Group



How to Make the Most of Impact Investing

By Matt Christensen

Investors increasingly want to use their capital to achieve environmental and social impact while generating a return. Impact investing offers a solution to these twin goals, representing a fast-growing asset class that both facilitates positive change and resonates with a growing investor base.

With the rising frequency of major environmental events and social movements — from floods to wildfires, and #MeToo to Black Lives Matter — the objective of making the world a better place has gone from personal choice to global necessity. The 2021 UN Intergovernmental Panel on Climate Change report issuing a “code red for humanity” represented another urgent wake-up call.

Moreover, the Covid-19 pandemic revealed some profound social inequalities, and many investors have become

increasingly aware of the role their capital can and should play in addressing these imbalances. The pandemic and events since, such as the war in Ukraine, have magnified the existing funding shortfall needed to meet the UN Sustainable Development Goals by 2030.

According to Force for Good’s annual report, the total cost of achieving the SDGs has increased by up to 25 percent in the last year alone, from \$116–142 trillion to \$134–176 trillion. This has been driven by systemic underfunding, high inflation, increasingly urgent requirements for hitting net zero, and an ever-shortening window in which to get all of this done.

Although investors have become increasingly aware of the role their capital should play in addressing environmental and social concerns, the challenge has been to combine the twin goals of “doing good” and “earning a return” in a single investment.

Impact investing offers an answer by providing a credible and scalable pathway to balancing a targeted, measurable, and beneficial environmental or social impact on the one hand, with a financial return on the other. As a result, it has transitioned from the realm of direct

private-market investments into a significant and expanding market segment. Where investors previously thought only in terms of risk and reward, they can now add a third dimension of oversight to their portfolios: impact.

More opportunities are driving growth in impact investing

The Global Impact Investing Network (GIIN) values the worldwide investing market at \$1.164 trillion. This still represents a very small proportion of global assets, but it is a space that is growing at pace: GIIN valued the market at \$715 billion as recently as 2020.

This growth has, in part, been driven by an increase in investment options across the various impact asset classes. Whether through public or private instruments, investors can gain exposure through fixed income, equities, real estate, infrastructure and other real assets, and private equity and venture capital investment vehicles.

How the investment industry makes sure impact investing delivers

The future growth trajectory of impact investing depends on the industry demonstrating where these investments are being directed and why — and how the impact can be measured and reported. Debate continues about what constitutes an acceptable or competitive rate of return from these investments.

Consensus has also emerged that impact investments should contribute to at least one, and preferably several, of the 17 UN SDGs. The involvement of the private sector is critical in helping to achieve these goals, not least because of the increasing shortfall in investment capital needed to finance the SDGs.

To assist with framing impact investments, GIIN has outlined several requirements. As the investment industry coalesces around these standards, an increasing number of private-market participants are developing initia- >>





tives around minimum requirements and identifying best practices and audit processes for impact projects and investments. Examples include the Operating Principles for Impact Management and the Impact Management Project.

Raising the bar on transparency and reporting can help the industry deliver on its promise and insulate itself from accusations of “impact washing,” whereby funds make claims that are not substantiated by any relevant or demonstrable positive impact. In addition, monitoring the progress of investments in achieving impact against expectations helps improve decision-making and delivery.

The breadth and depth of impact are developing very quickly

The notion of “co-investing” with sovereign and corporate entities to support transition strategies can be integral to impact investing. An example is the growth of debt that carries an ESG label. The majority of this debt derives from green, social, and sustainability (GSS) bonds, where proceeds are directed toward specific projects with an ongoing audit requirement, but these bonds are complemented by other structures.

The global issuance of GSS and sustainability-linked bonds stood at \$992 billion in 2021. Moody’s ESG Solutions has forecast that this figure will hit a record \$1.35 trillion this year, a 36 percent year-on-year increase.

Impact investing can also extend to blended finance, where investment from both institutions and philanthropic funds can be combined to create opportunities for commercial investors. Sovereign nations are also getting in on the act, where impact investing can complement initiatives such as the World Bank’s International Development Association lending to low-income economies. In 2021, Benin issued Africa’s first social bond in the international markets, raising money to broaden access to drinking water for its population of 12 million.



From identifying risks to creating solutions

The best-in-class investment approach is a well-recognized and accepted way of directing capital toward companies with above-peer or better-than-average sustainability profiles. However, this framework is still heavily skewed toward avoiding those with less favorable sustainability profiles, rather than prioritizing those geared toward new technologies and services that provide solutions.

Impact investing touches on this notion, both in terms of targeting solutions and the opportunity created. Many “handprint” opportunities, which seek to positively contribute to sustainability objectives, revolve around new technologies and services that seek to shift the mechanics of our daily lives fundamentally. These are often in an early stage of development and are in an area that has typically been the preserve of venture capital and private equity.

Nevertheless, there is a trend both to develop these solutions and to scale them for wider applications that can influence sectors and geographies. The reach of impact investing into both public and

private domains means it can cover the full breadth of the opportunity set. Its success is in connecting to the changing nature of client demands by articulating a three-dimensional perspective — incorporating risk, return, and impact — and demonstrating how finance can lead to positive societal outcomes.

Impact investing: What constitutes an acceptable return?

As impact investing’s investment options grow, attention is turning to the second goal of impact — “earning a return” — and specifically what constitutes an acceptable or competitive rate of return. Views on this question vary and have arguably become more diverse in recent years. An underlying premise of investing for many is a “risk-adjusted financial return.” But how can the return be adjusted to account for non-financial risks — and can the addition of a non-financial return be quantified to complement a financial return?

The finance industry continues to refine the methodology for integrating ESG or sustainability factors into investment decisions, but formally integrating these into valuation models for investments has presented a challenge. Investors have

As impact investing’s investment options grow, attention is turning to the second goal of impact — “earning a return” — and specifically what constitutes an acceptable or competitive rate of return.

have a significant impact on assumptions regarding terminal growth rates, terminal margin rates, the weighted average cost of capital and, ultimately, access to liquidity. The term “stakeholder” is used since it better encompasses the full breadth of those assessing behavioral biases. Simply put, if an entity’s potential investor universe is too narrow, its financing options will likely be constrained and the associated cost of capital higher.

The flip side is that those sectors, companies, and projects geared to providing solutions will likely benefit from im-

(SROI) and impact multiple of money (IMM).

Once the targeted impact outcome is identified — along with the relevance of a product or project to that outcome — it is possible to estimate the economic value of those outcomes with appropriate risk adjustments, and thereby generate an estimated terminal value. Then, based on the degree of risk associated with the project or product, an appropriate discount rate can be applied to calculate the estimated social or impact return on the investment. This area is expected to develop further.

The case for market — not maximized — returns

Assuming one can accurately calculate and attribute both the financial and non-financial returns of an investment, there remains the divisive topic of the balance between the two. Allianz Global Investors disagrees that there must be a trade-off between impact and financial returns. In fact, as non-financial returns become an increasingly important factor, they could provide a strong technical tailwind.

However, it may be difficult to target maximized rather than market rates of return. The difference lies in the associated risk attribution and adjustments tied to the expected rate of return. As such, fast-changing perceptions and the attribution of sustainability risk factors could swiftly impact expected returns.

We like the notion of sustainability requiring an improving positive “handprint” coupled with the lowering of a “footprint.” The more the impact investment industry can qualify and quantify non-financial returns, the more likely these could not only complement, but also support financial returns. ■

Matt Christensen is Global Head of Sustainable and Impact Investing and a Managing Director with Allianz Global Investors, which he joined in 2020.



historically focused on cyclical and longer-term secular trends, but they see an increased focus on structural trends — for example, how a sector or company is aligned to changing expectations in the modern economy. Allianz Global Investors expects structural positioning to be a key factor for valuations.

A company’s or sector’s positioning in the modern economy — coupled with changing stakeholder expectations — could

proved perceptions. By providing access to a broader audience, impact investing can help increase their financing options, lower their financing costs, and enhance their overall financial viability.

Measuring the return of an impact

The work on calculating the value of a non-financial return has led to metrics such as a social return on investment



Beyond Impact Investment Other Sustainable Investment Methods



Negative screening approaches

Exclusion criteria: What is important to you when investing? Sometimes it is easier to say what you do not want. Negative selection involves blacklisting certain industries, countries, or business practices. This means, for example, that you no longer lend your money to companies that produce or sell weapons, armaments, drugs, alcohol, tobacco, gambling, pornography, genetic engineering, nuclear power, or fossil fuels such as oil, coal, or gas. The idea originates from the so-called Sin Stocks from the beginning of the 20th century. At that time, shares

of companies that produced tobacco and alcohol, as well as gambling, were excluded. The use of exclusion criteria has a direct impact on the size of the possible investment universe that remains investable.

In the **norm-based screening approach**, a review of investments is referred to as their compliance with certain international standards and norms. Typically, the UN Global Compact, the OECD Guidelines for Multinational Enterprises, or the ILO Core Labor Standards are used.



Positive screening approaches

Best-in-class method: Probably one of the best-known approaches for filtering sustainably operating companies is the so-called best-in-class principle. It was developed by Sarasin Bank AG in the 1990s. The best-in-class approach selects the company in an industry that receives the highest marks for implementing ESG criteria. The principle is very widespread and recognized in the financial world. As a result, it is an incentive for many companies to get hold of this title in their industry and, above all, to be listed in sustainable indices, for example the Dow Jones Sustainability Index. The biggest point of criticism is the lack of exclusion criteria. Since no industries are excluded, even the most sustainable company in an absolutely non-

sustainable and ethically controversial industry can be awarded. An example of this is BP (British Petroleum), which was “best-in-class” in the oil industry before the BP Deepwater Horizon oil rig polluted the Gulf of Mexico.

In the **best-of-class method**, exclusion criteria are first applied to the investment universe to fundamentally exclude controversial investment opportunities, such as the provision of fossil energy. Positive criteria are then formulated and used to select from the remaining investments those that best meet the sustainability requirements that are set. The best-of-class approach is thus a hybrid form of positive and negative screening. ■



Impact Measurement: How Do We Measure Sustainable Business?

How can sustainable business practices be evaluated and compared? Impact measurement can provide the answers – as soon as binding standards are found.

By Franziska Zenkner and Vinzenz Fundel

It sounds so easy to be a sustainable company. Meatless Tuesday in the cafeteria? Sustainable! Planting apple trees in the company daycare center? Sustainable! Run production with green electricity? Sustainable! That is right, in a way, but it is hardly comparable. Adding two electric cars to your fleet is just as sustainable as the company next door installing solar panels on its roof and making itself independent of fossil fuels. The problem is that, up to now, there have been no binding metrics to show who is making a real effort and who really wants to make a difference. “Impact measurement” is the technical term for this. The goal is to make the company’s overall performance transparent and comprehensible.

Impact measurement measures and evaluates how a company’s business activities affect society and the environment – both positively and negatively. This illustrates the interdependencies between economic, environmental, and social impacts along the entire value

chain and provides the key levers for making improvements. In her master thesis at Frankfurt School of Finance & Management titled “Impact Measurement,” Franziska Zenkner explains why it is so difficult to find binding and standardized metrics for this purpose.

Measuring success: Values or profit?

Zenkner sees corporate performance measurement undergoing a fundamental shift “away from profit maximization to profitable value optimization.” What is missing, however, are binding key figures that guarantee a holistic evaluation of corporate performance. As long as these indicators are lacking, any comparability will fall by the wayside.

At the moment, there are three drivers to end this state of affairs. The first approach is through the [EU Taxonomy](#), which is being phased in across the European Union (EU). It sees itself as a classification system that strives for a uniform definition of sustainable activities >>





The question is always: How much perfection is needed and when is ‘good’ good enough?

of these interviewees (anonymized) in her master’s thesis. Impact measurement is of strategic business relevance for all companies in order to be able to operate on the market in the long term: This statement from a manager illustrates the necessity of addressing the topic of impact measurement.

An interviewed manager confirms that the primary goal is transparency. In addition to identifying risks, they want to take advantage of opportunities to open up new markets and enhance their reputations. By integrating impact considerations into decision-making, the biggest levers along the value chain can be addressed in a targeted manner, while respecting limited resources. By monetizing this, discussions about corporate social benefits are no longer limited to industry and sustainability experts who are familiar with the existing jargon. As a result, sustainability goals and measures can be made more concrete and communicated and advanced more comprehensibly to the Board of Management and employees, as well as to stakeholders.

Companies want to compete, so there is a need for transparency and comparability in calculation methods. One manager regrets that impact measurement is not a precise science “and is still very much based on estimates and proxies.” So what to do in the “tension between perfectionism and pragmatism,” as Franziska Zenkner puts it. Another of the interviewed managers gives a less scientific than practice-tested answer: “The question is always: How much perfection is needed and when is ‘good’ good enough?” ■

Franziska Zenkner is Analyst Corporate Finance, Vinzenz Fundel is Corporate Finance Sustainability Advisory, both at LBBW Landesbank Baden-Württemberg

Franziska Zenkner and Vinzenz Fundel are not providing legal advice with this text. In addition, the thesis was part of the work of Sustainability Advisory to support the advisory service.

within the EU. The focus is not only on companies. At the same time, investors should be shown how their investments affect the environment and society. This should also increase demand for sustainably oriented investment products. In this way, “banks can become sustainability intermediaries,” notes Zenkner, “active shapers of sustainable development.” This is because they scrutinize certain industries or business models, for example, and thus financially support the transformation.

The second approach to achieving binding impact measurement is the Corporate Sustainability Reporting Directive (CSRD), which profoundly changes — and expands — the scope and nature of sustainability reporting by around 15,000 companies in Germany alone. The transparency requirements imposed by the EU Commission for this reporting go far beyond the previous levels of non-financial reporting. The key point is the

so-called double materiality: The effects of the company’s activities on society and the environment are investigated “inside out.” Conversely — “outside in” — financial impacts on the respective company are identified through sustainability aspects. The CSRD will be introduced in 2024 for companies already subject to reporting requirements, in 2025 for all other large companies, and in 2026 for listed small and medium-sized companies. Similarly, non-European companies that generate more than €150 million in net sales in the EU and have at least one European subsidiary or branch are to report in accordance with the CSRD.

The third — and according to Franziska Zenkner, probably the most important — driver is the employees in the companies. They are increasingly recognizing the added value of sustainable action “and enabling the basis for cultural change and deeper implementation,” Zenkner writes. The more that stakeholders —

even beyond the workforce — are involved in this transformation, the greater the credibility of the actions: They mean business!

Increase sustainable maturity level for companies

With the help of impact measurement, companies can communicate their level of sustainability maturity and the quality of their progressive sustainability management more credibly to the capital market and other stakeholders. In order to measure the impact of sustainable efforts, technical and organizational prerequisites must be created.

Sustainable entrepreneurial action requires innovative strength and a change in values, which is why it is considered a key factor for the future viability of business models. The requirements of the German government and the EU are clear: Business is faced with the need for

a sustainable transformation, which has long since begun.

However, many companies are not yet fully aware of what this means for them. That is why Landesbank Baden-Württemberg (LBBW) supports its customers in this transformation. It supports them in all aspects of sustainable investments and financing and accompanies them on their way to sustainable business models. To this end, LBBW is continually expanding its Sustainability Advisory: It primarily advises companies on strategy and financial issues, but also foundations, savings banks, and other banks. The range of green finance solutions is also growing steadily.

Create standards for impact measurement

Once the framework is in place, it has to be filled with content. And that is where the challenges begin: “There is

not yet a standard that represents all the relevant building blocks for practical implementation,” Zenkner writes. She is pinning her hopes on the VBA (Value Balancing Alliance), an association of more than 40 multinational corporations, strategy consultancies, and other organizations. The VBA’s goal: a global accounting standard for measuring and valuing impacts. The holistic corporate value is derived by monetizing environmental, social, and financial value contributions. This is desirable, writes Zenkner: “By eliminating the different metrics, a uniform monetary language emerges, analogous to financial metrics; consequently, complexity and the need for explanation decrease.”

Managers are driven by holistic transparency and comprehensible communication. LBBW provided Zenkner with a number of interviewees from renowned organizations with sustainability track records. She reproduces the statements

METHODOLOGY



How to Use the Five Dimensions of Impact Framework

All businesses have both favorable and unfavorable effects on society and the environment – whether these effects are intentional or not. To gauge, regulate, and convey these impacts effectively, organizations can use the Five Dimensions of Impact Framework developed by the Impact Management Project. This framework encompasses five key aspects: What (is being impacted), Who (are affected), How Much (impact is generated), Contribution to impact generation, as well as Risk assessment – thereby ensuring uniformity in communication across stakeholders.

Impact can be defined as the transformation brought about by an organization. In order to make a significant difference, organizations must prioritize aligning their actions with the UN Sustainable Development Goals, which serve as a universal guide for tackling pressing social and environmental issues. The well-being of our planet is something that affects us all, but each individual has unique reasons why sustainability matters to them personally and what inspires them toward action. It is time we come together under this common cause for the future health of our world.

Numerous enterprises have initiated the integration of the SDGs into their reporting, with a particular emphasis on Goal 13: Climate action. However, it is imperative to go beyond mere conformity and avoid “impact washing.” Organizations must genuinely comprehend the SDGs and their implications to ensure that their impact efforts are purposeful and transformative. The challenge lies in managing and gauging positive environmental as well as social outcomes while mitigating negative ones. The Impact Management Project’s Five Dimensions of Impact Framework was developed for precisely this reason. It encompasses what objectives an enterprise intends to achieve through its actions; who experiences these effects; how much they experience them; what contribution business makes toward achieving those goals; along with assessing any resulting risks if impacts differ from what was planned.

If a corporation wishes to address the issue of obesity, it could begin by comprehending the root causes behind this societal problem and which individuals are most likely to be impacted. A thorough analysis may reveal that low-income families residing in certain regions

across the globe (Who) face an elevated risk of developing obesity. The company can then attempt to identify effective strategies for providing these people with the necessary physical or mental health outcomes (What), considering factors such as the depth, scale, and duration required for implementation while also assessing market saturation levels and existing offerings (Contribution). Based on this evaluation process, corporations might opt either for interventions with proven track records that have delivered specific results or experiment with new approaches due to the lack of a substantial evidence base. Ultimately, the choice depends upon the impact risks undertaken by the enterprises, along with their desired contributions toward addressing the issues at hand.

1. What

The “What” dimension is crucial for determining the outcome that an enterprise contributes to and how significant it is for its stakeholders. However, the question remains: What constitutes a satisfactory outcome? While there is not yet a centralized database of standard-based thresholds, governmental and intergovernmental organizations have created benchmarks for various social and environmental concerns. Take, for instance, the World Bank’s three international poverty lines (\$1.90/day, \$3.20/day, and \$5.50/day), which are used globally to measure progress toward alleviating poverty – particularly useful information if your business has anti-poverty policies or interventions. Another valuable resource that can help you determine whether your outcomes are meeting universal standards across all 17 SDGs is the SDG Index, which has more than 80 such thresholds. By >>

utilizing these resources as guidelines when evaluating your impact on society or the environment, it not only ensures accountability but also demonstrates a commitment toward achieving the SDGs while contributing positively toward stakeholder experiences — something every responsible enterprise should strive to achieve.

It is imperative for businesses to determine whether their results are positive and sustainable as well as exceed nationally or internationally recognized benchmarks. Conversely, if the outcomes fall short of these standards, they can be considered negative and unsustainable. Additionally, companies must ensure that their achievements align with the SDGs as well as meet stakeholder expectations in order to thrive.

2. Who

Companies have a significant impact on various stakeholders, but who is being underserved in terms of the outcomes delivered by these enterprises? To answer this question, we delve into analyzing the data categories under the “Who” dimension. The idea behind this approach is straightforward: If you are looking to make an impactful change with limited resources at hand, it is crucial to identify which stakeholder group requires your attention and investment more urgently. Should you prioritize those already being well-served or focus on uplifting those that are currently underserved? It goes without saying that directing your efforts toward serving the most vulnerable groups will result in maximum positive impact for all involved. By utilizing our comprehensive set of

impact data categories within the “Who” dimension framework, businesses can accurately segment their stakeholders based on who stands to benefit from their initiatives most.

(See the diagram on the right for an illustrative example.)

The initial step in comprehending the impact of an enterprise’s actions is to categorize stakeholders into distinct groups. This grouping can be further refined by breaking down suppliers based on upstream or downstream activities and classifying ecosystems according to their influence on the planet. By obtaining this knowledge, enterprises are empowered to allocate resources toward those who require it the most or will experience significant change. This analysis enables businesses to determine whether

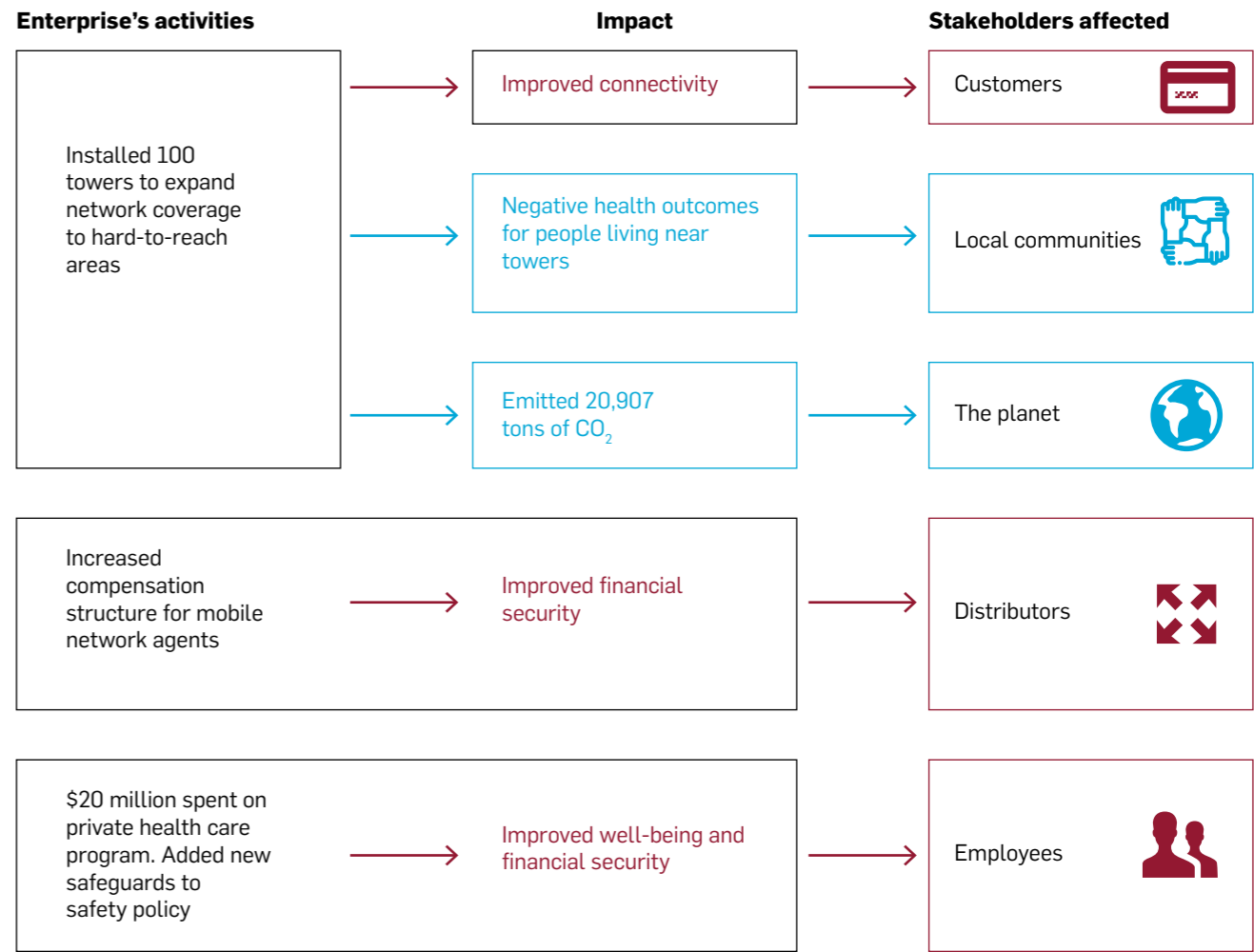
DATA CATEGORIES

Outcome: “Good health”	Example outcome indicators	Example threshold	Threshold data source
Goal 3.3: End the epidemic of AIDS, tuberculosis, malaria, and neglected tropical disease indicator: 3.3.3 Malaria incidence per 1,000 population	Suspected cases of malaria	Patients exhibiting four or more symptoms of malaria	WHO
Goal 3.4: Reduce premature mortality from non-communicable diseases	Body mass index	22	Patient feedback
Goal 3.8: Access to quality essential healthcare services	Patient Health Questionnaire PHQ-9 score	< 4	PHQ-9
Goal 3.7: Ensure universal access to sexual and reproductive healthcare services	Birth weight	< 2,500g	WHO

Source: impactfrontiers.org/norms/five-dimensions-of-impact/what/

ENTERPRISE'S ACTIVITIES AFFECT MANY STAKEHOLDER GROUPS

Illustrative example of a mobile network company operating in an emerging market



Source: Impact Management Project

consumers are being adequately served by the products available on the market and to devise a strategy for entering the market if they believe there is a demand not being met by the competition. Once launched, continuous performance assessments against baseline metrics as well as peer benchmarks drive results that lead toward success.

Case study: M-PESA in Kenya

When Safaricom and Vodafone launched the M-PESA pilot project in Kenya, they were sur-

prised to find that users preferred peer-to-peer transfers over loan repayments. This discovery led them to investigate why this was happening in order to tailor their marketing strategy accordingly. Through a threefold approach involving competitive analysis, large-scale surveys, and socio-demographic profiling of target customers, Safaricom discovered that Kenyans found traditional money transfer methods inconvenient and unreliable, while only 3 percent had a microfinance institution loan compared to 17 percent who transferred mobile money at least once within the last 12 months. With these findings in mind,

Safaricom launched its “Send Money Home” campaign aimed at young male migrant workers living in urban areas where demand for affordable remittance services was high. The investment paid off: By August 2008 — just 17 months after launching — only 18 percent of non-users were still unaware of the product, thanks largely due to effective advertising that targeted key demographics with messages emphasizing ease-of-use combined with affordability offered exclusively by M-PESA.

Source: GSMA (2012)

Ideally, companies should seek to create positive outcomes that have far-reaching impacts and bring about lasting change.

3. How Much

Businesses must consider more than just the number of people reached when assessing their impact. To truly understand how significant their outcomes are, they need to delve deeper into three key data categories under the “How Much” dimension: scale, depth, and duration. Scale is only one piece of this puzzle; it is important to also measure the degree of change experienced by stakeholders (depth) as well as how long these changes last (duration). By taking all three factors into account, enterprises can gain a comprehensive understanding of their true impact on society and make informed decisions about where to focus future efforts.

The Impact Frontiers website offers a good example: Imagine a solar energy enterprise that operates in three East African nations. Although it is impressive to announce the distribution of 500,000 solar home systems that reach 450,000 households, such statistics are insufficient for measuring the true impact on customers’ productivity or how long these benefits last. On the other hand, if we could confirm an increase of up to 20 percent in customer productivity as a result of our efforts, that would be truly remarkable. However, without data that analyzes scale and duration to back this claim up, two essential factors would be missing from fully understanding the effectiveness of our performance. Let us not settle for mere numbers but strive toward meaningful change by obtaining comprehensive information about the real-world outcomes of our operations.

Ideally, companies should seek to create positive outcomes that have far-reaching impacts and bring about lasting change. However, the significance of these outcomes cannot be ranked, as each has

its own value. Some companies may prioritize creating deep-rooted changes for fewer individuals over superficial improvements for many others, whereas some believe in achieving scale, depth, and duration equally. Ultimately, it is up to individual entities to decide what they deem important when striving for success.

4. Contribution

Have the operations of the company played a role in achieving its desired outcome? Would there have been any difference if they were not involved at all? These are important questions that can be answered by analyzing the impact data categories under our “Contribution” dimension. It is crucial to note that “Contribution” is distinct from depth, which falls under the category “How Much.” The latter only considers changes within a given period without factoring in external factors such as economic conditions or other organizations.

Enterprises must evaluate their impact on social and environmental outcomes by considering what would have happened without their involvement. The “Contribution” dimension provides data categories that allow enterprises and investors to measure an enterprise’s contribution toward positive social or environmental results, compared to the expected outcome in its absence — known as the outcome counterfactual. The insights gained from this evaluation are crucial for decision-making. If an enterprise discovers that it has made minimal progress toward a particular challenge, then it may choose to redirect resources elsewhere. Conversely, if significant contributions have been made, then increasing commitments can be considered with confidence.

Enterprises can enhance their understanding of the system they operate in by reflecting on their own contribution. This involves identifying key actors, analyzing interactions, and determining levers

for change. Armed with this knowledge, enterprises can focus on optimizing the entire system rather than just one intervention. For instance, partnering with an NGO to reach last-mile consumers or collaborating with government to upskill smallholder farmers are potential avenues toward achieving holistic impact. In terms of measuring impact, “contribution” is closely related to concepts such as “additionality,” “deadweight,” and “attribution.” While all these approaches aim at assessing what would have occurred without enterprise involvement — thereby gauging its actual influence — each method has unique nuances that require careful consideration when evaluating outcomes holistically.

Case study: Smallholder farmers in Kenya and Rwanda

In 2011, One Acre Fund (OAF) achieved impressive year-over-year growth of 145 percent, reaching out to more than 78,000 smallholder

farmers in Kenya and Rwanda. The organization’s remarkable impact per farmer — with a \$120 increase in yearly income — led them to explore the Ghanaian market as a potential launchpad for other West African countries. After conducting extensive research on the terrain and scouting efforts that lasted several months, OAF launched its pilot program offering loan packages comprising half-acre maize seed and fertilizer to about 500 farmers. To understand how they could scale up their operations effectively across West Africa while analyzing the impact of this program, OAF implemented three approaches: collecting outcome data such as annual incomes before implementing any interventions; conducting system dynamics research; and interviewing both field officers at OAF alongside participating farmers. However, after much analysis following the implementation of these measures within Ghana’s agricultural sector, it became clear that existing intervention methods were not well-suited to achieving success. Therefore, minimal contributions have been made by OAF toward outcomes so far.



Initially, farmers did not heavily rely on agriculture, as they also earned income from other sources. The implementation of a maize-based program in an area focused on cash crops proved to be challenging for OAF. Despite quickly pivoting to another region with favorable farming conditions, the organization realized that the population was too small for their business model. Furthermore, upon relocating to this new area, droughts plagued the farming season due to regional changes toward semi-arid growing conditions. These challenges ultimately led to OAF’s decision to shut down its Ghanaian operation; however, valuable lessons were learned through this process. OAF recognized the need for professionalized country scouting units and constant adjustment as well as innovation during pilots and scale-ups while also locating operations far from large urban cities to places where commercial agriculture would dominate over non-agricultural activities and prove beneficial for future endeavors.

Source: One Acre Fund (2014)

5. Risks

When corporations establish financial objectives, they inevitably confront the possibility of not attaining them. The identical risk applies to impact creation. What are the hazards that businesses encounter while striving for positive change? How can these risks be assessed and minimized? These inquiries may be addressed by examining data categories in relation to the “Risk” dimension of impact analysis. This evaluation determines how probable it is that an organization’s intended effect will differ from what was anticipated, with a significant difference being experienced by those impacted or affected environmentally or socially.

Although financial risk assessments are useful, they may not always encompass impact risks. To illustrate this point,

ENTERPRISES AND INVESTORS FACE NINE TYPES OF IMPACT RISKS

Impact risk	Definition
1. Evidence risk	→ The probability that insufficient high-quality data exists to know what impact is occurring
2. External risk	→ The probability that external factors disrupt our ability to deliver the impact
3. Stakeholder participation risk	→ The probability that the expectations and/or experience of stakeholders are misunderstood or not taken into account
4. Drop-off risk	→ The probability that positive impact does not endure and/or that negative impact is no longer mitigated
5. Efficiency risk	→ The probability that the impact could have been achieved with fewer resources or at a lower cost
6. Execution risk	→ The probability that the activities are not delivered as planned and do not result in the desired outcomes
7. Alignment risk	→ The probability that impact is not locked into the enterprise model
8. Endurance risk	→ The probability that the required activities are not delivered for a long enough period
9. Unexpected impact risk	→ The probability that significant unexpected positive and / or negative impact is experienced by people and the planet

Source: Impact Management Project

consider the scenario where a business is advised to increase prices for greater profitability – but at the expense of customers from low-income backgrounds. In contrast, an evaluation that takes into account impact risks would suggest exploring alternative options (such as cross-subsidization) to avoid pricing out those who stand to benefit most from

their product or service. Therefore, it is crucial for enterprises and investors alike to evaluate both financial and impact-related risks separately. The “Risk” dimension pertaining specifically to impacts provides valuable data categories that can guide businesses toward assessing and mitigating such potential hazards proactively.

When corporations establish financial objectives, they inevitably confront the possibility of not attaining them. The identical risk applies to impact creation.

In what ways can enterprises reduce the likelihood of impact risks? The process of mitigating such risks involves two stages that are iterative and build upon a thorough assessment. Firstly, businesses must address any gaps in data identified during their initial evaluations, as additional information may help to mitigate several types of impact risk. Consequently, gathering further data and conducting analyses is often an effective starting point. The second stage entails utilizing these new insights to modify the business model by making necessary adjustments such as altering prices or hiring staff members while extending initiatives or reinforcing health and safety measures where applicable.

Example: Education Outcomes Fund for Africa and the Middle East

In 2019, the Education Outcomes Fund for Africa and the Middle East (EOF) launched a project with the mission of enhancing educational attainment by expanding proven and innovative education solutions. To achieve its goals, EOF collaborates with impact investors, philanthropic organizations, and aid agencies across various countries at all levels of education. Recognizing that understanding risk exposure was crucial for success, EOF took proactive measures toward identifying potential risks through a four-step approach: Firstly, using expert interviews along with an evidence-based analysis of past experiences within the sector helped identify comprehensive lists of possible challenges from design to implementation as well as monitoring and evaluation stages. Secondly, ranking these identified risks based on their likelihood and severity enabled them to better assess each challenge’s overall significance. Thirdly, they went back into research mode, filling data gaps while reassessing more accurately any previously overlooked or underestimated issues. Lastly, creating new procedures while updating existing ones allowed for the de-

velopment of mitigation strategies against specific types of impact, such as stakeholder participation-related incidents. Nearly half of 64 total threats were found under unexpected impacts or stakeholder involvement categories – threats that could be mitigated via preventive actions. Although predicting future events remains limited in scope due to unforeseeable variables, this exercise has been invaluable, enabling EOF team members to put together effective plans, ensuring successful outcomes despite potential setbacks.

Source: Education Outcomes Fund (2018)

Note: The article is based on the excellent overview of Impact Frontiers and paraphrases the most important information from their website.



Corporate's view

Businesses have various motivations for managing their impact. Some are driven by a deep-seated desire to create positive change for people and the planet, as this is at the core of their existence. Others may be motivated by concerns about regulatory or reputational risks that could arise from not taking action on sustainability issues. For some companies, managing impact can also unlock commercial value through energy savings, increased workforce retention, or customer loyalty. And there are those who believe businesses should respect society's values and strive toward living up to these ideals — regardless of financial gain.

Depending on each enterprise's motivation behind sustainable practices, they will set either broad commitments — such as mitigating risk or achieving long-term financial performance goals alongside leaving a positive mark on our world — or more specific objectives that are aimed at supporting particular groups, places, and outcomes while addressing social and environmental challenges head-on.

Self-image as Compliance Manager: It is imperative for companies to take action and prevent any harm caused by their operations. The first step toward this goal should be identifying the areas where the organization may potentially cause damage to people's well-being or natural environment, followed by implementing measures that improve these outcomes in a sustainable manner. By doing so, businesses can align themselves with societal and ecological thresholds while ensuring the long-term sustainability of their practices.

Self-image as Concern Manager: Companies have the power to positively impact stakeholders by prioritizing and enhancing the welfare of individuals or a specific

community, as well as preserving our natural environment. This is crucial to ensure that we operate within sustainable boundaries set forth by society's standards and ecological limits. By taking proactive measures to achieve these goals, enterprises can make meaningful contributions toward creating a better future for all involved parties while also safeguarding our planet's health.

Self-image as Changemaker: Companies have the power to positively impact both communities and nature, resulting in sustainable outcomes that were previously unattainable. By taking proactive measures toward sustainability, businesses can improve the well-being of people and protect our environment for future generations. It is imperative that companies prioritize their contribution to sustainable development, as it not only benefits society but also ensures long-term success for themselves.

Businesses must not disregard the positive and negative effects they generate. The impact of a company's distribution network, operations, or supply chain is just as crucial to consider as that of its products or services. In fact, a large business can create significant impacts through its production process alone. So how do enterprises navigate these complex situations? They must make informed decisions regarding whether the achievement of certain positive outcomes outweighs any potential negative consequences in the near term. For example, when producing electricity with various application fields in mind, it may be necessary for businesses to weigh up if this action will result in substantial carbon emissions.

However, acknowledging such detrimental impacts does not mean ignoring them altogether; instead companies should actively work toward reducing their harmful footprint over time by setting goals accordingly. Impact valuation

serves as a critical tool for organizations looking to estimate the relative value created versus that which is preserved or eroded for stakeholders expressed via common units — thereby ultimately aiding effective decision-making processes.



Investor's view

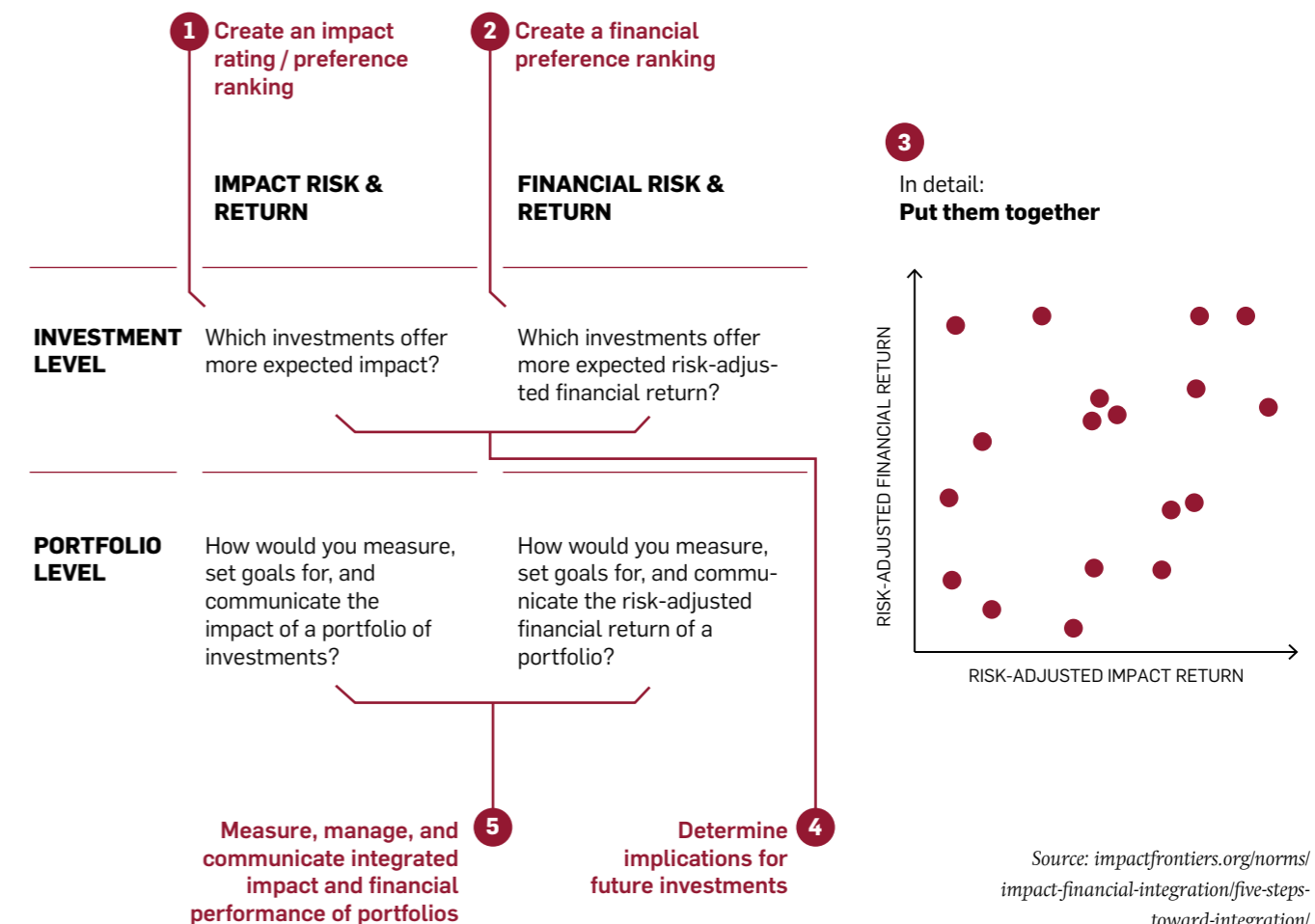
Investors who are committed to addressing social and environmental issues must recognize that impact management cannot operate in isolation from financial management. The major obstacle is the lack of interoperability between financial and impact management methodologies — an obstacle that poses a significant challenge to investment fund specialists. These experts have their own unique terminologies, frameworks, and datasets that exist independently of one another. Successfully incorporating impactful investments into decision-making processes requires investors to ask four fundamental questions:

Investors who limit their approach to impact or financial considerations are missing out on potential gains. However, those seeking a more holistic investment strategy face the challenge of creating a customized plan that integrates social and environmental factors. The process begins with an impact analysis during pre-investment screening using both negative (excluding companies engaging in harmful practices) and positive screenings (including only those meeting minimum standards for positive impact). Once investments pass these tests, most investors make decisions based solely on financial performance. Unfortunately, few investors actively optimize both profit and societal benefits

simultaneously beyond initial screening stages. This is where consulting firms like Impact Frontiers come into play by working alongside investors to develop new methods for integrating sustainable management strategies with traditional finance approaches while sharing best practices across industries.

As Hannah Schiff from Nuveen says about Impact Frontiers: "Our clients expect us to deliver results through sound fiduciary duty as well as meaningful social change." Therefore it is crucial to explore innovative solutions that balance economic growth without sacrificing the commitment to sustainability goals.

ENTERPRISES AND INVESTORS FACE DIFFERENT TYPES OF IMPACT RISKS





PUBLICATIONS

Global Investors for Sustainable Development (GISD):

SECTOR-SPECIFIC SDG-RELATED METRICS FOR CORPORATE REPORTING, October 2021

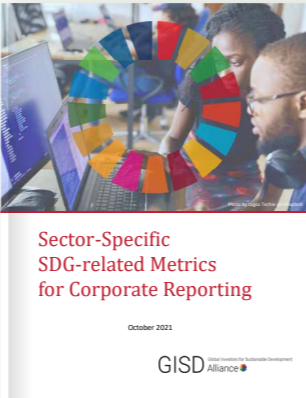
Metrics are key to enable a better measurement of contributions to the SDGs by companies active in a particular sector. Investors can subsequently rely on this disclosure to make capital allocation decisions between companies in a given sector.

Harmonized, sector-specific metrics can provide a more complete picture of a company’s sustainable development impact. Existing reporting frameworks focus on measuring the impact of company operations (how they produce). Assessing company contributions to the SDGs also requires accounting for the impact of products and services (what they produce). For example, an information technology company may provide information on its energy consumption, but not on the number of people granted internet access for the first time. This

information is inherently specific to an industry and is not captured by general sector-agnostic metrics.

In this report, GISD recommends a common set of sector-specific, SDG-related metrics to standard setters and companies. The alliance has surveyed existing metrics used in standards, reporting frameworks, and corporate sustainability reports. Drawing from these, it makes initial recommendations for a set of key sector-specific metrics that can help measure the sector’s contributions to the SDGs and be used in a harmonized way alongside sector-agnostic metrics. This will increase the comparability and precision of sustainability reporting, and in doing so help investors align their financing with sustainable development.

Source: GISD



Norma Schönherr and André Martinuzzi:

BUSINESS AND THE SUSTAINABLE DEVELOPMENT GOALS: MEASURING AND MANAGING CORPORATE IMPACTS, May 2019

This book discusses the contribution of business to the SDGs, adopted by the UN in 2015. It critically analyses selected impact measurement and management tools to highlight their respective benefits and limitations. It also provides guidance on critical management decisions to support high-quality impact measurement and management. The analyses underlying this book are the result of a

three-year research project conducted by an international consortium in the EU-funded research project GLOBAL VALUE — Managing Business Impact on Development. The research is complemented by examples from corporate practice and expert interviews to demonstrate and measure the contribution of business to sustainable development in the context of the SDGs.



United Nations Economic Commission for Europe (UNECE):

MEASURING AND MONITORING PROGRESS TOWARDS THE SUSTAINABLE DEVELOPMENT GOALS, May 2020

This publication was prepared to support UNECE’s efforts within the fourth nexus area: measuring and monitoring progress toward the SDGs. It is based on a consultant’s report that was largely complete before the Covid-19 pandemic was declared, and its effects were felt across the region. The pandemic has forcefully demonstrated the importance of well-informed decision-making in times of crisis. The focus of the publication is — among other topics — on the challenges faced by countries in the UNECE region with respect to defining the roles of National Statistical Offices (NSOs) in SDG measurement and monitoring. It is also intended to support NSOs in executing those roles and coordinating the activities of the myriad organizations involved in measurement and monitoring, ensuring collaboration among them.

In each area, the publication identifies the nature of the challenges faced and the responses offered to the challenges. It emphasizes the responses presented by regional organizations (including, but not limited to, UNECE) and by member state central governments. The global and subnational responses cannot be overlooked, however, since measurement and monitoring extend beyond the activities of regional organizations and national governments. Thus, the publication touches on all of these. It concludes with recommendations regarding the ways in which UNECE and other regional organizations can better support member states in overcoming their measurement and monitoring challenges.

Source: UNECE



Ann Mei Chang:

LEAN IMPACT: HOW TO INNOVATE FOR RADICALLY GREATER SOCIAL GOOD, October 2018

Despite enormous investments of time and money, are we making a dent on the social and environmental challenges of our time? What if we could exponentially increase our impact?

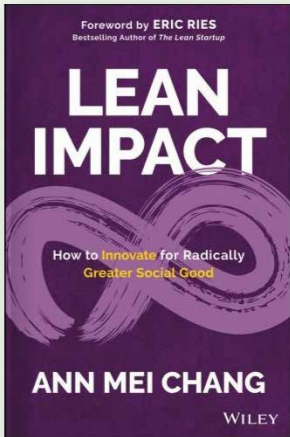
Around the world, a new generation is looking beyond greater profits and for meaningful purpose. But unlike business, few social interventions have achieved significant impact at scale. Inspired by modern innovation practices popularized by the bestseller *The Lean Startup* that have fueled technology breakthroughs touching every aspect of our lives, *Lean Impact* turns our attention to a new goal — radically greater social good.

Social change is far more complicated than building a new app. It requires more listening, more care, and more

stakeholders. To make a lasting difference, solutions must be embraced by beneficiaries, address root causes, and include an engine that can accelerate growth to reach the scale of the need. *Lean Impact* offers bold ideas to reach audacious goals through customer insight, rapid experimentation and iteration, and a relentless pursuit of impact.

Ann Mei Chang brings a unique perspective from across sectors from her years as a tech executive in Silicon Valley to her most recent experience as the Chief Innovation Officer at USAID. She vividly illustrates the book with real stories from interviews with more than 200 organizations across the United States and around the world.

Source: Author

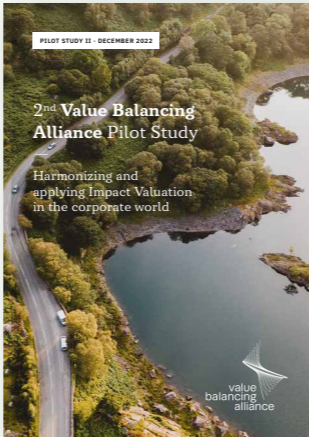


2ND VALUE BALANCING ALLIANCE PILOT STUDY, December 2022

The landscape of stakeholder requirements — with the concomitant business risks and opportunities — is expanding, and trade-offs between these have added complexity to business steering. Thus, a holistic picture is needed that covers all impacts of business on nature, society, and the economy. Impact measurement and valuation (IMV), which captures the positive and negative effects of corporate activities and values them in monetary terms, enables such a holistic view. IMV eliminates barriers between traditional financial and non-financial information and contextualizes the sustainability data used by corporate decision-makers.

With the methodology for IMV, the Value Balancing Alliance is developing and testing new accounting solutions for the shift. The methodology includes two perspectives — Value to Society and Value to Business. Value to Society (inside-out perspective) assesses a company’s external impacts on society and the environment, whereas Value to Business (outside-in perspective) assesses how external sustainability aspects such as climate change impact a company’s enterprise value.

Source: Value Balancing Alliance



University of Cambridge Institute for Sustainability Leadership (CISL):
MEASURING BUSINESS IMPACTS ON NATURE: A FRAMEWORK TO SUPPORT BETTER STEWARDSHIP OF BIODIVERSITY IN GLOBAL SUPPLY CHAINS, April 2020

Regardless of its size, location, or sector, a business is both affected by and relies upon nature. However, nature and the resources it provides are declining at rates unprecedented in human history, with the private sector being a key contributor to the crisis. Protecting and restoring nature is fundamental, not only to global economic prosperity, but also to the health and well-being of society. There is increasing consumer, regulatory, and corporate awareness about the urgent action needed to halt the degradation and loss of nature.

The University of Cambridge Institute for Sustainability Leadership (CISL) — through its Natural Capital Impact Group, whose corporate partners span different sectors — identified a need for a high-level measurement that could provide

an indication of a business’s impact on biodiversity in different regions of the world for different commodities. Given that many businesses lack comprehensive data on the precise impacts of their upstream suppliers, there was a need for a method that could make inferences using credible alternative data sources.

The first step toward reversing nature’s decline is for businesses to understand their own contributions and responsibilities. The second is to set bold, ambitious targets that move beyond being incrementally less bad to restoring nature. Building metrics and targets into corporate strategy is key to ensuring delivery on commitments.

Source: CISL



United Nations Development Programme (UNDP):
SDG IMPACT STANDARDS: ENTERPRISES, July 2021

The Standards are decision-making standards, not performance or reporting standards. They are designed to help enterprises integrate their operations responsibly and sustainably, thereby contributing positively to sustainable development and the SDGs by incorporating these operations into organizational systems and decision-making practices, using a common language and shared approach to do so.

The Standards help to make high-level impact management principles actionable and guide the choice of which frameworks, methodologies, and tools should be used to appropriately measure and manage impact. They embed the shared norms of the SDGs and the Impact Management Project, providing an operating system for the application of existing tools and frameworks, including metrics and taxonomies. By creating a robust

internal impact management system, enterprises that adopt the Standards will also be in a much better position to meet the growing and various sustainability reporting and disclosure requirements and expectations of governments, regulators, investors, and other stakeholders.

Ultimately, the Standards facilitate enterprises in adopting responsible business practices and integrating impact management into organizational systems and decision-making practices in order to operate sustainably and optimize contributions to sustainable development and the SDGs. The Standards have been designed to accommodate future changes to the SDGs and/or related targets and indicators post 2030. Changes to the structure or form of the SDGs will not require changes to these Standards.

Source: UNEP



Authentic Sustainability Assessment:
A USER MANUAL FOR THE SUSTAINABLE DEVELOPMENT PERFORMANCE INDICATORS
(UNRISD), November 2022

The United Nations Research Institute for Social Development (UNRISD) has developed a new set of indicators that go beyond ESG to contextualize data, address common reporting and measurement gaps, and facilitate the transformational change needed to achieve the SDGs. They also include metrics that address the unique characteristics of nonprofit social enterprises, cooperatives, and other actors in the social and solidarity economy. The indicators are presented in the User's Guide to the Sustainable Development Performance Indicators (SDPIs).

The SDPIs have two types of tools. The first, referred to as Tier 1, includes 20 indicators that address economic, environmental, social, and governance dimensions commonly found in ESG reports but require time series data for a period of at least five years.

A second set, called Tier 2, consists of 41 newly developed indicators related to environmental, socioeconomic, and institutional (or governance) dimensions. Of these indicators, 17 aim to measure current performance relative to a sustainability standard — for example, a CEO — worker ratio of 30 to 1, or a gender pay gap of 3 percent.

Also included in the Tier 2 category are 24 meaningful disclosure indicators that aim to shed light on issues that have the potential to change the structural conditions for sustainable development. However, these are often omitted or neglected by companies — issues such as inequality, unsustainable production and consumption, and power imbalances within corporate structures, value chains, and political processes.

Criteria for change include raising wage levels above the minimum wage; increasing percentages regarding worker participation; creating long-term labor contracts; and monitoring indicators for Scope 1, 2, and 3 greenhouse gas emissions (including Scope 1 and 2 indicators based on science-based interim targets to limit warming to 1.5°C above pre-industrial levels).

Another indicator tracks the percentage of profits (or excess profits) distributed to members/employees; employee stock plans; shareholders; reinvestment in the organization; and other categories such as community investment.



OLDIE BUT GOLDIE:

World Business Council for Sustainable Development (WBCSD):
MEASURING IMPACT BEYOND THE BOTTOM LINE, March 2008

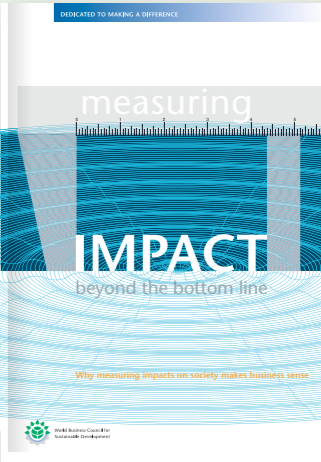
The nature of international business is complex, shaped by globalization and rapid socio-economic and political changes. Sustainability issues are increasingly contributing to this complexity, not least climate change, resource constraints, endemic poverty, and ecosystem degradation.

Several WBCSD member companies have explored ways to measure the impact of their business activities on the societies in which they operate. These innovations have in turn prompted the WBCSD, with its members, to develop a common approach to measuring business impact that can be used by all business sectors. This publication presents the resulting WBCSD Measuring Impact Framework and highlights the experiences and lessons learned from those companies that pioneered the thinking behind the

Framework. It explains why measuring and understanding a company's impact is good for business and good for society.

Although these conditions are critical for business growth and success, the benefits resulting from the presence of multinational businesses and the associated in-flows of capital may not reach all sectors of society. The consequence can be thriving middle and upper classes while the low-income segment gets left behind. This can lead to strained relations between business and the communities associated with their activities, increased scrutiny from civil society organizations, and greater levels of political pressure from local and national governments, all of which can increase commercial risks for investors.

Source: WBCSD



UN Global Compact:
SDG COMPASS: THE GUIDE FOR BUSINESS ACTION ON THE SDGs, January 2015

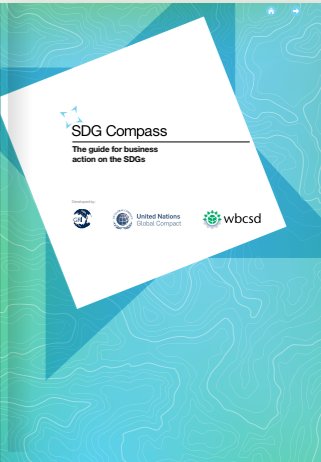
The SDGs present an opportunity for business-led solutions and technologies to be developed and implemented to address the world's biggest sustainable development challenges. As the SDGs form the global agenda for the development of our societies, they allow leading companies to demonstrate how their business is helping to advance sustainable development, both by minimizing negative impacts and maximizing positive impacts on people and the planet.

The objective of the SDG Compass is to guide companies on how they can align their strategies as well as measure and manage their contributions to the SDGs. It presents five steps that assist companies in maximizing their contributions to the SDGs. Companies can apply the five steps to set or align their course, depending on where they are on the

journey of ensuring that sustainability is an outcome of their core business strategy.

The five steps of the SDG Compass rest on the recognition of the responsibility of all companies to comply with all relevant legislation, respect international minimum standards, and prioritize all negative human rights impacts. The SDG Compass is developed with a focus on large multinational enterprises. Small and medium-sized enterprises and other organizations are also encouraged to use it as a source of inspiration and adapt as necessary. It is designed for use at the entity level, but it may be applied at the product, site, divisional, or regional level as required.

Source: UNGC



OUR APPROACH

Input

Traditionally, a best practice example forms the core of the Global Goals Yearbook. Our understanding is that we can learn from each other. The best way to do that is through best practices. In addition to describing what companies are doing to implement the SDGs, we will support companies in assessing the impact of these measures. The output section describes how this is done.

Output:

Challenges in measuring and monitoring the Sustainable Development Goals are various: The 231 indicators selected to measure the SDGs are varied, complex and, in many cases, methodologically underdeveloped. As a result, accurate and timely statistics about some critical aspects of development remain missing, we therefore focus very strongly on the availability of data. In the context of growing reporting and transparency obligations – especially through ESG reporting – the data situation is improving with each passing year.

Impact

The implementation and analysis of SDG impact takes place in a multi-stage process: In the first step, we agree on the key outcomes from the case study with the participating company. The SDGs addressed are derived from this. In the second step, we compare the sub-goals of the respective SDGs specified by the UN with the data situation in the company. As a rule, the sustainability report serves as a source and we ask the company directly. In the third step, we translate the state of impact measurement into a clear chart.

BEST PRACTICES



The transformative role of Product Carbon Footprint

This article delves into the transformative role of an automated Product Carbon Footprint (PCF) calculator in fostering four key aspects: driving tangible action, building organizational competence, engaging the supply chain, and fostering transparency.

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



The chemical industry is responsible for a significant 6 percent (Bloomberg Intelligence, January 27, 2021) share of global greenhouse gas emissions, and its products are found everywhere in our daily lives. Reducing emissions in

the chemical industry therefore has an influence on almost all value chains of the economy. As there is an urgency to address the global climate crisis, it has become increasingly evident that merely setting emission reduction tar-

gets is insufficient. Effectively combat- ing climate change demands proactive measures from organizations in order to capitalize on their expertise, tools, and partnerships across their entire operations.

The product carbon footprint as a mirror of emission sources

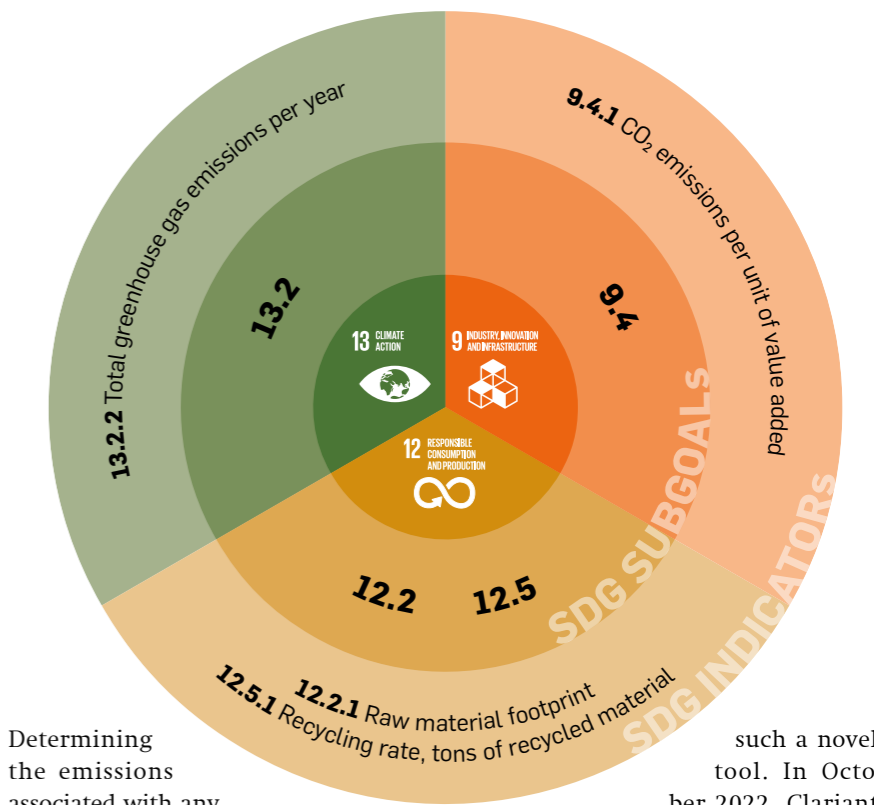
Sustainability has been a fundamental pillar at Clariant for many years, with an internal program (Portfolio Value Pro- gram) aimed at developing products to shift toward a sustainable portfolio. In 2020, Clariant analyzed its total emis- sions — encompassing Scope 1, 2, and 3 — and set emission-reduction targets that were validated by the Science Based Targets initiative (SBTi) in early 2021. Clariant’s overall emissions are relatively low for a specialty chemical company. It was important to define and set a Scope 3 SBTi-approved target, as it is one of the frontrunners within the chemical industry.

A major part of Clariant’s Scope 3 emis- sions are related to Category 1 (purchased goods and services). Achieving these emis- sion reductions not only requires a careful selection of raw materials — transitioning toward low-carbon alternatives such as bio-based or circular sources — it also demands a comprehensive understand- ing of emission-reduction opportunities during product development, as well as a robust supplier engagement to further drive emission reductions along the value chain.

Although the targets are set on a corporate level, Clariant also looks at the emissions on a product level. PCFs consolidate direct emissions (Scope 1 and 2) and indirect emissions (Scope 3), which are measured in kg CO2-eq/kg. PCFs provide valuable insights into underlying emission drivers. Clariant has therefore defined the PCF as one important key indicator promoting transparency and advancing sustainable practices, both internally and externally.

Calculating PCFs at scale

A consistent and reliable method for calculating PCFs is essential to facilitate internal discussions regarding emission reductions at all levels of the organiza- tion as well as to share the PCF with our customers.



Determining the emissions associated with any specific product can be challenging due to the amount of data that is required to be collected and as- sessed. To address this, Clariant devel- oped an automated PCF calculator, which feeds directly on the bill of materials and includes raw materials and production parameters. The development of this cal- culator involved an internal team com- prising colleagues from Sustainability, IT, and Procurement who collaborated with the external software provider NDC Group (www.ndcgroup.com). The team encountered a twofold challenge: Firstly, they needed to integrate the correct data and tools while defining the calculation method, based on the Greenhouse Gas Protocol and the ISO 14067 standard; sec- ondly, comprehensive internal training was essential to explain the advantages and limitations of an automated PCF calculator, as well as to understand the main contributions of the inputs and outputs to the PCFs.

It was clear from the beginning that thorough comprehension throughout the organization would determine the success of the achievable impact using

such a novel tool. In Octo- ber 2022, Clariant launched the PCF calcula- tor, which was named CliMate.

Benefits of the automated PCF calculator, CliMate

Since the launch of CliMate, Clariant has been able to provide an increasing number of PCFs to meet the growing needs of its customers. Sharing the PCFs of products serves as a basis for discussing achievements in emission reductions throughout the value chain. It enables productive conversations with customers about their ambitions and facilitates the demonstration of achieve- ments regarding reductions based on internal efforts.

In a subsequent development, Clariant has enhanced the tool with a simulation feature, which allows for determining the effects of changing raw materials or process parameters on the PCF. By incorporating this feature, the inno- vation community at Clariant has an- other tool available to develop targeted products with lower emission impacts. Furthermore, it promotes discussions >>

along the value chain regarding various product options and their impacts.

The results generated by the CliMate tool not only provide the necessary transparency on product emissions and trigger discussions on product decarbonization, but also enhance organizational knowledge about the origins of emissions in the different products. The innovation organization creates an understanding of the main emission drivers and their impact on product design. The operations teams can identify the impact of resources on individual products. The procurement team can build up knowledge about the emission footprint of different raw materials based on technologies and energy usage in production. Meanwhile, the marketing and sales organizations gain insights into product value propositions based on the PCF.

Recognizing that all the individual aspects need to work hand in hand to achieve emission-reduction targets, CliMate goes beyond facilitating discussions during product development: It also supports broader understanding within Clariant on climate-related drivers, contributing toward the achievement of overall climate targets.

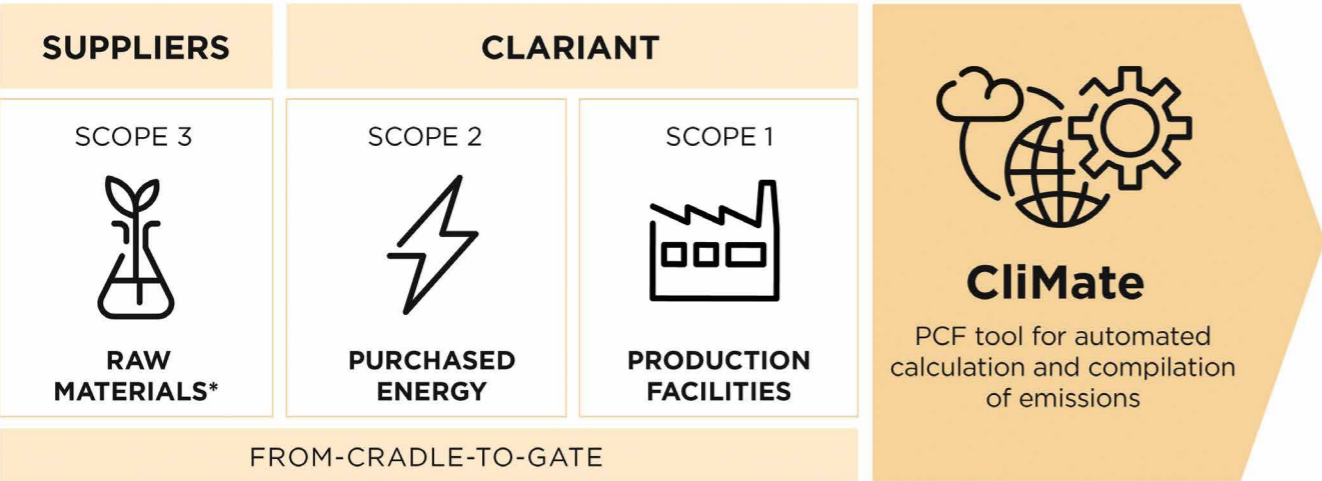
Selection of low-emission raw materials

To make a substantial impact in the industry, it is crucial to adopt a harmonized approach to calculating PCF's. A significant advancement has been the publications of industry-specific guidelines, such as those from Together for Sustainability (TfS is a joint initiative of chemical companies, founded in 2011. It focuses on the promotion of sustainability practices in the chemical industry's supply chain). The World Business Council for Sustainable Development (WBCSD is a CEO-led community of more than 200 of the world's leading sustainable businesses working collectively to accelerate the system transformations needed for a net zero, nature positive, and more equitable future.). A harmonized approach for calculating PCF's facilitates an easier acceptance and use of PCF's along the value chain. One of the key challenges in calculating PCF's is the availability of reliable supplier-specific emission factors.

Clariant has therefore established a comprehensive supplier engagement program aimed at gathering supplier-specific emission factors for raw mate-

rials. Additionally, the program allows Clariant to engage with suppliers to understand improvement initiatives, resulting in raw materials with lower carbon emissions. Another key lever is the increased identification of raw materials from circular sources, for example from recycling or reuse. In addition moving towards biobased raw materials may also lead to lower carbon emissions. For example, Clariant offers a Vita-range, which is a product range with 100 percent bio-based surfactants and Polyethylene Glycol (PEGs). These products find applications in various industries such as home care, industrial lubricants, and paints and coatings. This offers customers an appealing opportunity to gradually reduce the carbon footprints of their products.

Taking the next step to accelerate the decarbonisation of the value chain would benefit from a broader use of bio-based raw materials. Scope 3.1 or emissions related to "purchased goods and services" rely heavily on emissions of the purchased raw materials, and currently, the benefits associated with using bio-based feedstocks are not accounted for. Enabling the inclusion of biogenic carbon uptake in cradle-to-gate PCFs for Scope 3.1 ("Purchased goods and



*Purchased goods and services (scope 3.1)

“The chemical sector holds a pivotal role in shaping our global emissions landscape, and the urgency to combat climate change demands more than just targets. It necessitates a transformation across the value chain – from suppliers to customers. Clariant’s Product Carbon Footprint tool ‘CliMate’ not only quantifies emissions, but also drives comprehensive understanding and strategic decision-making to help enable a sustainable future beyond our industry.

Richard Haldimann, Chief Technology & Sustainability Officer at Clariant

services”) while also treating end-of-life emissions equally between bio-based and fossil materials in Scope 3.12 (“End-of-life treatment of sold products”) would reflect the impact throughout the value chain by reducing the reliance on fossil-based raw materials.

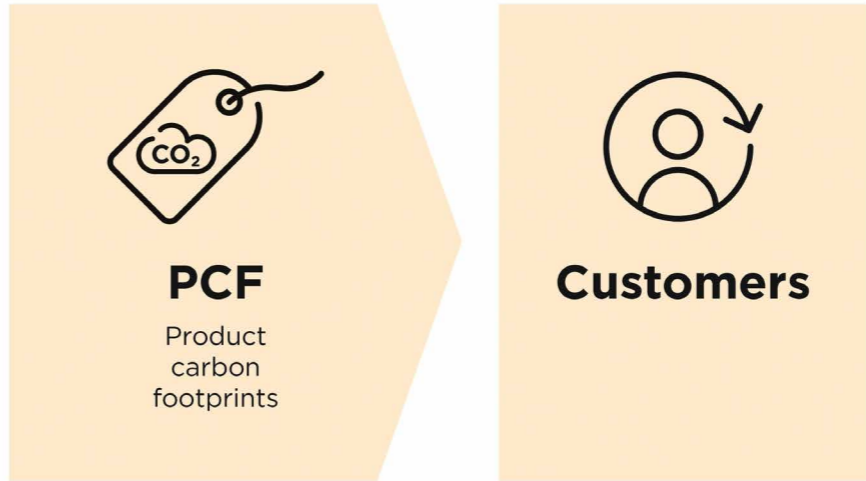
CliMate tool – winner of the prestigious SAP Quality Award 2023

In 2023, Clariant was honored with the prestigious SAP Quality Award in the “Sustainability” category for its successful implementation of the CliMate tool,

based on SAP technology. The “Sustainability” category recognizes projects that actively deploy one or more solutions from SAP’s sustainability portfolio and have a measurable impact on at least Sustainable Development Goal 13 (Climate action). The judging panel was impressed by the project’s innovative approach to sustainability and its potential to serve as a model for other companies.

Conclusion

To effectively implement an emission-reduction roadmap, it is crucial to integrate the climate topic into a comprehensive sustainability strategy. This includes setting measurable and ambitious KPIs, developing a project pipeline for Scope 1, 2, and 3 emissions, enhancing transparency on emission drivers across the entire portfolio, and engaging stakeholders throughout the supply chain. Successful execution of these roadmaps demands not only organizational expertise but also essential tools, such as the PCF calculator, to facilitate the necessary transparency and priority-setting. ■



The Impact of a Circular Economy

How can recycling technologies, biomaterials, and circular business models avoid waste generation, create jobs, and add value while reducing CO₂ emissions and biodiversity loss?

By Gabriela Ensink



According to the Circularity Gap Report, more than 90 percent of all materials ever extracted and used around the globe are wasted, and less than 10 percent are kept in the global economy. Released during the World Circular Economy Forum, which took place from May 30 to June 2 in Helsinki, Finland, the report also estimates that the extraction of raw materials has risen dramatically in the last 50 years, from 28.6 gigatons/year in 1972 (when The Limits to Growth by The Club of Rome was published) to more than 100 gigatons/year in 2023, pushing planetary boundaries and damaging ecosystems across the globe.

The linear economy — paraphrased as the “take-make-use-waste” economy — is the source of this, as it dominates companies, supply chains, and production systems. However, transitioning into a circular economy (based on the reduction of waste and the reuse and recycling of products) not only could help to cut 28 percent of virgin resource use and 39 percent of global greenhouse gas emissions, but also encourage new business models, technological innovations, and new green jobs creation.

“Countries have pledged to reduce their emissions since the Paris Agreement in 2015 and to preserve 30 percent of terrestrial and ocean ecosystems by 2030

at the Canada Biodiversity Summit last year,” says Jyrki Katanien, former Prime Minister of Finland and President of the Sitra Foundation, co-organizer of the World Circular Economic Forum. “To preserve the remaining 70 percent of our planet, we must move from the current linear economy to a circular economic model,” he affirmed.

A roadmap to a circular economy: Germany’s case

How can national paths be designed? The example of Germany offers approaches. In 2019, Germany set out its Circular Economy Roadmap, which will deliver “a 50 percent reduction in natural resource consumption by 2050 compared to 2018, plus net zero greenhouse gas emissions.” Furthermore, it will increase competitiveness and independence from raw material imports as well as jobs and local value creation. Raw material consumption is directly related to greenhouse gas emissions, since the increasing consumption of new products generates carbon emissions along the value chain in terms of extraction, processing, and transport.

To address a circular economy model, the German roadmap set some policy recommendations such as: regulatory instruments (EU Ecodesign Directive;

“Countries have pledged to reduce their emissions since the Paris Agreement in 2015 and to preserve 30 percent of terrestrial and ocean ecosystems by 2030 at the Canada Biodiversity Summit last year,”

Jyrki Katanien, former Prime Minister of Finland and President of the Sitra Foundation, co-organizer of the World Circular Economic Forum



waste legislation; minimum content of recycled components in products); economic incentives (financial support for research; development and implementation of circular economy business models; targets for circular products in public procurement); education and knowledge transfer; and economic and scientific support for technologies, business models, and knowledge-building in SMEs.

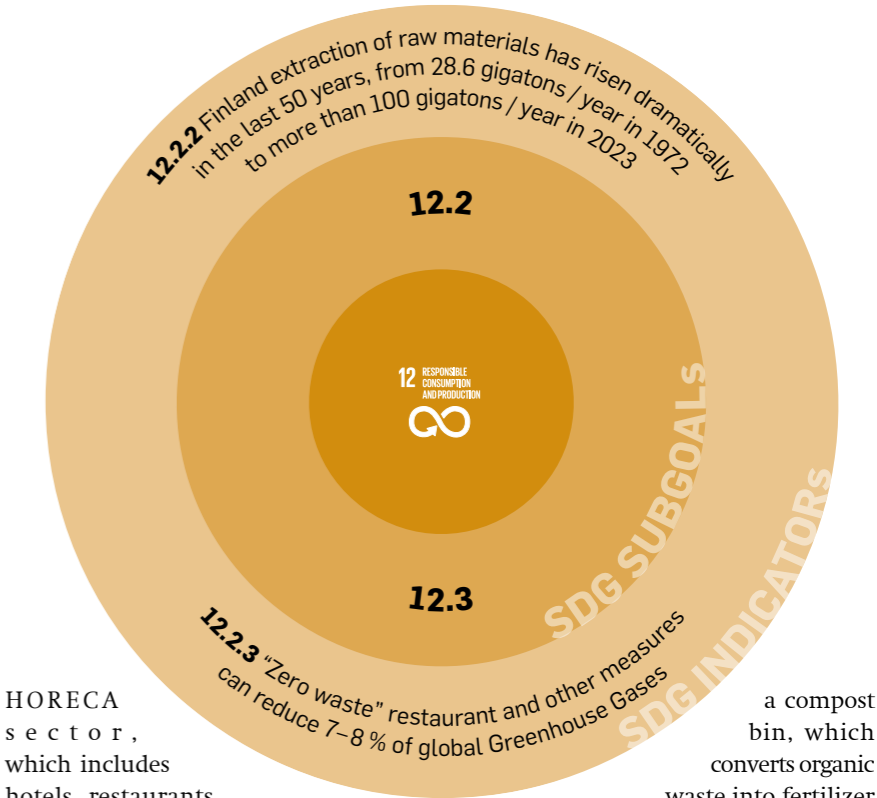
According to the roadmap, the implementation of a circular economy model will allow the decoupling of economic growth from resource consumption, enhance the quality of life, and ensure equitable prosperity through collaborative, inter-company value creation and innovation.

Waste can be recovered in two ways: as a biological resource that can be returned to the biosphere, or as a technical resource that can be reincorporated into the technosphere (see figure following page). The biosphere covers consumables such as biologically based materials (food, wood, or cotton that can be fed back into the system through decomposition processes. Meanwhile, the technosphere includes components and materials that are recovered and restored through strategies that include reusing, repairing, remanufacturing, refurbishing, or recycling.

Avoiding food waste

Nowadays, one-third of global food production is wasted in harvesting, transport, and storage, as well as in households and places of consumption, according to FAO. This is one of the main obstacles to meeting Sustainable Development Goals 1 (No poverty) and 2 (Zero hunger).

Food wastage has ethical, economic, and environmental consequences. It is estimated that 7–8 percent of greenhouse gases produced globally are due to food waste. As most of the food waste is disposed of in landfills, it harms not only the air, but also seeps into the underground water.



HORECA sector, which includes hotels, restaurants, and catering companies, is a major generator of food waste — during preparation in kitchens and also by customers. According to the report Circular Economy Impact Assessment in HORECA Sector — published by the Center of Advanced Economic Studies (CEVES) and the German Development Agency GIZ — minimizing waste first requires reducing the unnecessary production of food and improving stock management in both households and warehouses; feeding the hungry by donating to food banks; feeding animals; followed by composting and converting the scrap food into energy.

Located in the center of Helsinki, Nolla (“zero” in Finnish) is a “zero waste” restaurant where every aspect seeks to minimize waste and the restaurant’s environmental footprint: for example crockery made from recycled materials or bought in second-hand stores, reused fabric tablecloths, and menus based on seasonal and local products. Portions are reasonable to avoid wasting food. And if something is left over, it can be carried in compostable containers or disposed of in

a compost bin, which converts organic waste into fertilizer and also energy. Nolla has a social side, too. The store employs people in vulnerability (youth without work experience, the elderly, people with disabilities, migrants) and provides them with training.

Circular cities

To speed up the transition from a linear to a circular economy, Finland is promoting the concept of “circular cities.” Kera, 20 kilometers from Helsinki, is the first urban development that is being built based on this paradigm. The project started at the end of 2020 and will develop over the next decade. Everything there is designed under the concept of circularity: buildings built with biomaterials and energy-efficient, flexible spaces; a system that prioritizes public transport, bicycles, and electric mobility, and seeks to attract innovative companies and people with low environmental impact.

One of the companies that already works in Kera is Hyperion Robotics, a technology startup that produces construction biomaterials based on forest and >>

agricultural waste by using 3-D printers. Its innovative system, which allows materials to be produced in mini-factories operated by robotic arms, reduces energy consumption and emits 30 times less CO₂ than conventional concrete production.

Rethinking packaging

Every year, 12 million tons of plastic end up in the sea, which is equivalent to emptying a garbage truck every minute, according to a report by the United Nations Environment Program (UNEP). The work also warns that if current production and consumption trends continue, by 2040 the volumes of this material that will flow into the sea will triple,

with serious effects for all ecosystems and human health.

However, it is possible to stop this crisis due to plastic pollution from technologies and regulations already in force. In the document Cutting Off the Tap: How the World Can End Plastic Pollution and Create a Circular Economy, UNEP outlines a roadmap to “reduce by up to 80 percent the volume of plastics that ends up in landfills and oceans.” The plan is based on measures such as removing subsidies for virgin plastic, banning single-use plastics, fostering reuse and recycling, and the development of new biomaterials that can be degraded or composted without causing damage to the environment and

people’s health. Within the framework of the Green Deal, the European Union implemented a special tax on non-reusable plastic packaging in January 2024. Around the world, the development and production of bioplastics, which replace conventional plastics, is growing. Fungi-por is a form of bio-packaging produced from fungi and other agricultural residues developed by the biologist Ayelén Malgraf in Salta province (northern Argentina). “The idea was born from growing edible mushrooms. Observing that at the end of the crop, there were very resistant structures, I began to investigate and test this biomaterial as an alternative to single-use plastics and Styrofoam,” says the entrepreneur.

Among its advantages is that “it is insulating, it has low combustion speed, lightweight, resistant to water, biodegradable, and compostable. If it is buried, it degrades in the soil in 45 days,” explains Malgraf. Currently, the firm produces packaging for wines, perfumes, and other personal care products. “The costs are competitive with conventional materials,” says the biologist.

Sustainable fashion

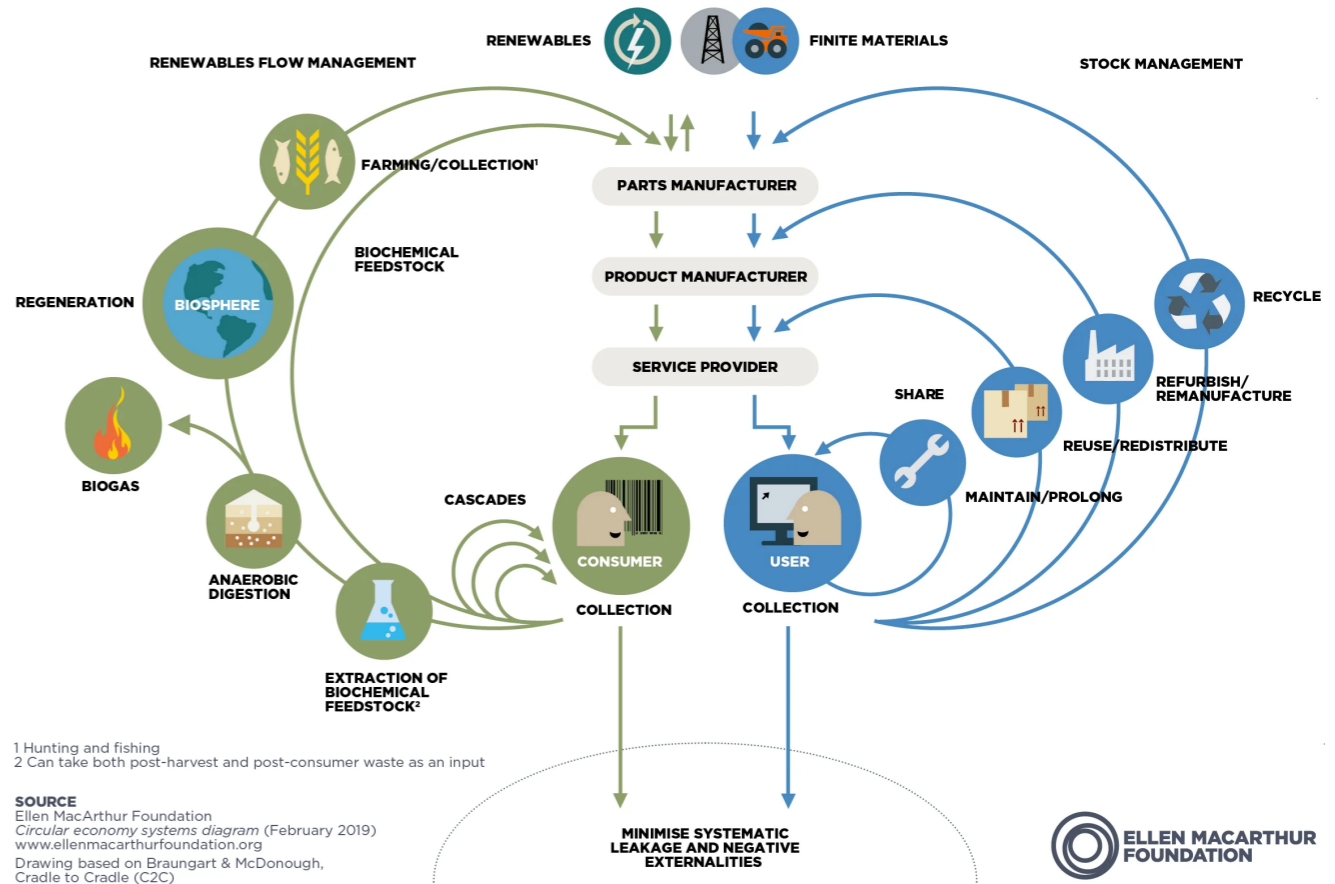
The fashion industry is one of the five most polluting industries on the planet, and it is also one of the activities most closely linked to slave labor. According to the UN, it accounts for 8 to 10 percent

of the world’s carbon emissions. Additionally, clothing production consumes more energy than the aviation and shipping industries combined. It is estimated that more than half of the fashion and design items produced each year will be discarded within the following year. A minimal portion is donated or resold, and the vast majority of items end up in landfills.

The firm Infinited Fiber converts textile waste into new fibers for the industry, and it is currently a supplier to leading brands such as Adidas and Zara. “We are transforming the fashion industry, because there is no need to extract natural resources and use chemicals to make new

textiles, since they can be obtained from used clothing,” comments Kirsi Roine, co-director of the brand. Increasingly, consumers are looking to buy used clothing and other products to reduce their carbon footprints. Kierrätyskeskus is a Finnish chain of stores for second-hand and up-cycled products. It is a public–private venture – supplied by donations from citizens – that also creates job opportunities and economic value.

The transition toward a circular economy – in which resources are reused and recycled instead of constantly producing new objects that end up accumulating or in the trash – is urgent and essential. We do not have a planet B. ■



“We need strong partners to transform the coffee supply chain for good”

Are you aware that regenerative coffee sourcing goes beyond sustainable practices such as water management? It is about rebuilding and restoring the health of the soil, promoting biodiversity, and empowering local communities, resulting in a truly holistic and environmentally friendly approach to coffee production. Alessandro Piccinini, BEO Nespresso Germany, talks about high-quality coffee, the company’s long-term approach to save it for the future – and the appreciation for a premium cup of coffee.

By Alessandro Piccinini, BEO Nespresso Germany



Mr. Piccinini, how would you define regenerative coffee sourcing?

Future-proof coffee, as we at Nespresso understand it, is regenerative and fairly grown. Specific know-how and healthy ecosystems are essential for providing excellent coffee, today and in the future. Promoting biodiversity and agroforestry on coffee farms is integral in our approach to ecosystem resilience — and to securing the livelihoods of farming communities.

We focus on the aspects and measures with the biggest impact along the entire value chain. In sourcing, our commitment comprises sharing our experiences and building on collaboration and education for the farmers we work with. We keep sharing results and best practices, for

instance building community mills to use water more efficiently. By doing so, we foster an environment of innovation and improvement, ultimately pushing the whole sector toward continuous and much needed transformation.

How exactly is biodiversity promoted on the plantations?

Let me give you one example. Birds are an excellent indicator that other species are present, that there is clean water, healthy soil. In Costa Rica, the Cornell Lab of Ornithology established the Biodiversity Progress Index (BPI) to monitor birds in specific regions. By monitoring birds, you can tell if you are doing well or if you need to do more. We work with more than 600 agronomists who train 150,000

coffee farmers in regenerative agriculture, technology, and equipment. We also promote agroforestry, knowing about its multiple benefits. Firstly, planting trees helps to prevent soil erosion. Secondly, it provides shade for coffee plants, cooling the plants and reducing the amount of water needed. We have planted more than 5.3 million trees in AAA regions already and will plant 32 million trees by 2030. Thirdly, the diversification of plants leads to a healthier ecosystem and increased soil health. Another benefit: By planting a variety of trees, we contribute to additional income streams for farmers such as fruit. Incorporating bees into these systems further enhances this.

Why is sustainability now crucial for the coffee industry of the future?

The Nespresso business model builds on high-quality coffee. If premium coffee is at risk, our business is, too. Studies see around 50 percent of coffee-growing areas in danger of being lost for coffee cultivation by 2050. We need to act decisively, cooperating with the right partners, to mitigate the consequences of climate change. Only then will we be able to offer premium coffee in the future.

This is not new. Over the past 20 years, we have focused on sustainable business practices within our sourcing program. We founded the AAA Sustainable quality™ program in 2003 in collaboration with the Rainforest Alliance. Since then, we have made major progress and tracked and shared our journey in our reports, but we know that this is not enough. We set out a clear strategy to reach the important milestone of net zero in green coffee emissions by 2030. As part of our efforts, we accelerate the transition to regenerative agriculture, support communities, advance circularity, and drive down emissions.

Why are farmers such an important factor for sustainable transformation?

Farmers play an integral role in growing and processing coffee sustainably. Coffee cultivation still relies heavily on manual labor and specialized knowledge. On top of that, 85 percent of farms worldwide are run by smallholder farmers, and many of them struggle to generate living incomes. The uncertainty linked to coffee cultivation has led to the migration of young people to urban areas in search of more secure jobs. It is a challenge we need to address.

At Nespresso, we understand the farmers’ pivotal role in the coffee supply chain. We pay prices that exceed the Fairtrade minimum price and additional premiums for high quality. We leverage gender inclusion and equality to strengthen communities and empower women. Currently, 35 percent of our AAA agronomists are women, and our goal is to increase that number continuously. We also invest in



WOMEN IN COFFEE: CATALYZE CHANGE

Income inequality arises due to, among other aspects, women being often directly involved in cultivation activities (harvesting, picking, sorting, drying, etc.), whereas higher profits are generated in downstream areas of the value chain (roasting, grading, marketing, trading, as well as owning and managing a coffee farm), which are mostly male-dominated areas. For instance, in Guatemala, only 20 percent of farm owners and managers are female. Globally, this percentage is estimated to be around 20 to 30 percent (ICO 2018).

Gender equality is a key driver for coffee sustainability. This is why Nespresso aims to have women make up half of all program participants by 2030. To achieve this, the company has adopted a transformative and inclusive approach, actively training and involving men as well.

To understand the specific conditions of each region, the Gender Analysis Tool was developed in collaboration with partners such as the UN. One important finding: Women prefer training conducted by other women, who better understand their needs and challenges. Agronomists act as powerful role models, so Nespresso actively worked to increase the number of female agronomists in the AAA program. In 2022, the percentage of female agronomists stood at 35.2 percent. The goal is to raise it to 40 percent by 2025 and 50 percent by 2030.

programs such as pension funds and crop insurance to provide stability and security. We cannot do this alone — we work with strong partners such as Fairtrade International and OpenSC. The latter, for instance, ensures the traceability of payments via blockchain and AI. We are convinced that coffee must be a force for good — with positive impacts on people and the planet.

What is your approach to achieving your aims?

Sustainability is a community task. We have a vast network of strong, like-minded partners — from cradle to revalorization. Partners such as the Rainforest Alliance, Fairtrade, TechnoServe, PUR, and many local initiatives work with us.

Of course, there is a lot of internal work, too. We are committed to radically changing the way we do business. Our B Corp certification that we earned in 2022 shows: We are ready. It provides a benchmark and strict standards against which we measure and accelerate our actions. We are part of a global movement of companies that put sustainability, social responsibility, and fairness first. Being a B Corporation reflects our shared understanding of purpose-led businesses, balancing people, planet, and profit.

Even as we continue to grow, we will reduce and eliminate emissions throughout our value chain. We are determined to achieve net zero emissions by 2035 at the earliest in accordance with the

Science Based Targets initiative (SBTi). Our emission factor (Explanation: Emission factor for the production of one kg green coffee) is already considerably lower than the average: 3.9 vs. 7. We are implementing low-carbon practices by pushing the transition to regenerative agriculture. We prioritize circularity and are using at least 80 percent recycled aluminum in our caps, increasing the use of recycled plastics in machines, scaling our RE:LOVE machine refurbishment, and exploring compostable alternatives.

Fostering innovation while optimizing energy consumption and logistics play an important role on our road to decarbonization, too. By using renewable energy in our production centers and

strategic partnerships with road and sea freight partners, such as DHL with their GoGreen Plus program, we are reducing our carbon footprint along the value chain.

How does Nespresso support the UN Sustainable Development Goals?

We use a variety of frameworks to measure our success, the SDGs being one of them. Nespresso's commitment to sustainability aligns with 11 out of the 17 SDGs, with a focus on Goals 12 (Responsible consumption and production), 13 (Climate action), and 15 (Life on land).

All examples I mentioned come down to this: We set ourselves high goals in

impactful areas every year and work hard to reach them. One of our main goals is to source 95 percent of our coffee from regenerative agriculture by 2030, meaning that it is rated at least bronze on the Rainforest Alliance Regenerative Coffee Scorecard; 76 percent of our green coffee volumes already comply with this aim.

Do you have personal plans for Nespresso Germany?

Portioned coffee systems are very efficient, as recent LCAs show. In Germany, I want to push this notion even further and focus on driving circularity and the use of recycled materials, among other aims. The recycling options here are very convenient with the collective

system, yet we need to improve the actual recycling rates. We will push programs such as RE:LOVE. Already 60 percent of our machines are made with recycled plastics, and we have set a target for 2025 to have 10 percent of our machines refurbished. Additionally, we are part of the B Corp movement and I want to bring its principles to life in our company, with our customers and our suppliers.

We want to lead the coffee industry to change in the right direction. The starting point is a general understanding that coffee is a precious good. I want a good cup of coffee to be truly appreciated for what it is: a special moment in everyday life. ■

Up to 60 %
of the world's arable land will be lost by 2050, according to a study by the Swiss research group "Geography of Food". The end of our favorite drink? Not yet, but it's getting close. The coffee plant only thrives in the coffee belt — between 23° north and 25° south latitude. It likes it moist, evenly warm and shady.

39 %
is the current proportion of **Robusta coffee**. As the name suggests, this variety is more robust and is therefore increasingly being cultivated. The popular Arabica coffee, which has a milder taste, is particularly threatened by climate change. The variety is more prone to damage from cold weather, drought, pest infestation or fungal diseases such as coffee rust.

Coffea Arabica
61 %

Coffea Canephora (Robusta)
39 %

5 QUICK FACTS ABOUT THE FUTURE OF COFFEE

HOW CAN WE SAVE OUR FAVORITE DRINK?

Coffee is the Germans' favorite drink, now more popular than water and even beer. 167 liters were drunk per capita on average in Germany in 2022. However, climatic changes in the countries where coffee is grown could mean that we will have to adapt our habits.

To preserve coffee for the future, everyone must work together — starting with resource-intensive cultivation.

~12,5 million
coffee farms worldwide. Coffee cultivation is manual labor, which is mainly carried out by small farmers: Around 85 percent of farms are smaller than two hectares. Fair wages are essential to ensure that cultivation remains profitable for them. Organizations such as Fairtrade and the Rainforest Alliance are working on this. Coffee manufacturers, such as Nespresso, cooperate with them and pay wages that are often even higher than the Fairtrade minimum price.

Bananas on the coffee plantation?

The key to sustainable coffee cultivation: **regenerative agriculture with a high level of biodiversity** Mixed cultures with other (useful) plants such as guava trees or banana plants that provide shade are essential for this. Efficient water management and the use of nature-based fertilizers are also part of this. At Nespresso, for example, more than 645 agronomists train farmers in more sustainable cultivation methods.

Lots of birds = good coffee

That's right: In coffee cultivation, birds are considered a positive indicator of healthy plantations. The Biodiversity Performance Index (BPI for short) is used to determine the completeness and abundance of bird species. If there are lots of birds, this means that the water is clean and the soil and vegetation are healthy. As birds regulate the insect population, less pesticide use is also necessary.

Alessandro Piccinini, CEO
Nespresso Deutschland

The Value of Natural Capital

REN is committed to the protection of natural capital. Being at the core of the energy transition, it plays a key role in the decarbonization of electricity and gas energy systems, and through this, the decarbonization of the economy.

By Pedro Ávila, Operational Sustainability Director, REN

Commitment to sustainability

In 2021, REN presented its Strategic Plan for 2021 – 2024, with sustainability as

its strategic pillar, alongside solid financial results and sustainable shareholder returns as well as the growth of investment with corresponding operational

excellence. Within this framework, the company has established clear goals for decarbonization – including a targeted 50 percent reduction in Scope 1 and 2



emissions by 2030 compared to 2019 levels — and achieving carbon neutrality by 2040, which is 10 years ahead of the European Union’s defined timeline. REN also strives to promote green financing through the issuance of green bonds and aims to have one-third of women in first-line management positions by 2030.

By the end of 2022, Scope 1 and 2 emissions were reduced by 36 percent compared to 2019, and 30 percent of top management positions were held by women.

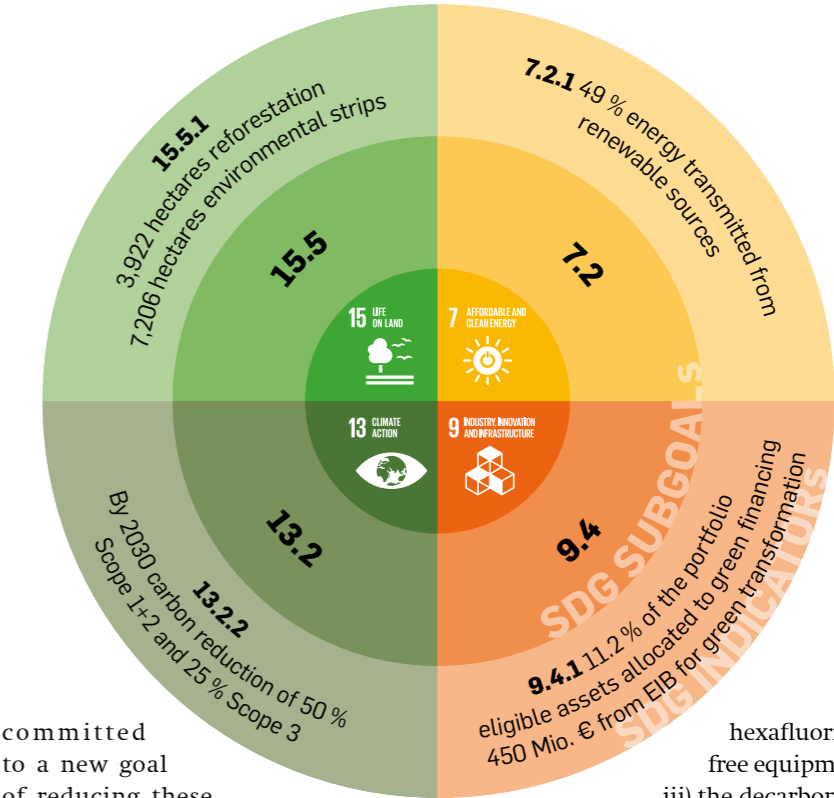
REN at the heart of the energy transition

The energy sector plays a vital role in combating climate change and implementing public policies at both national and European levels. In Portugal, the speed and complexity of changes in the electricity and gas energy systems present a constant challenge for REN.

The company is striving to achieve the goal of 80 percent renewable energy consumption in the electrical system by 2026. As for the gas system’s infrastructure, REN aims to progressively introduce renewable gases into its infrastructure, incorporating increasing percentages of hydrogen and biomethane. During the last three years (2020 to 2022), the installed capacity from renewable energy sources in Portugal’s mainland electric system witnessed a growth of 9 percentage points, increasing from 69 percent to 78 percent of the total power capacity.

Decarbonization, climate action, and innovation

Concrete action in favor of the climate entails identifying and analyzing our performance, as well as measuring the impact of our activities. In this sense, in 2022, REN completed the assessment of its carbon footprint by calculating the amount of Scope 3 emissions, which account for approximately 34 percent of total emissions. As a result of the calculation of Scope 3 emissions, REN has



committed to a new goal of reducing these emissions by 25 percent by 2030, compared to the levels of 2021.

In order to certify emission-reduction targets (Scope 1, 2, and 3), REN submitted a proposal to the SBTi (Science Based Targets initiative).

In addition to the decarbonization efforts in the electricity and gas energy systems, REN has been decarbonizing its operations by implementing CH4 (methane) emission-reduction programs in alignment with the OGMP (Oil and Gas Methane Partnership) standard. In this context, REN has achieved recognition for two consecutive years with the OGMP’s “Gold Standard.” Additionally, the company is acknowledged as a “leading company” in the field of “methane emissions and leak detection and repair.” This distinction is part of the “Decarbonisation to Net Zero” initiative within the Gas Transmission Benchmarking Initiative. Besides CH4 emission-reduction programs, REN has been promoting: i) the replacement of mineral oils with ester oils, ii) the study for the future progressive introduction of SF6 (sulfur

hexafluoride)-free equipment, iii) the decarbonization of the fleet (by the end of 2022, more than one-third of REN’s fleet was electrified, with a target for 2023 of 45 percent), iv) the installation of self-consumption systems from renewable energy sources for administrative buildings and technical facilities (more than 3 MW will be installed by the end of 2023), and the implementation of energy-efficiency programs, v) the implementation of innovation projects aimed at optimizing network capacity, maximizing its potential for increasing renewable energy sources in the electrical system (Dynamic Line Rating), protecting people (Digital Substation Project) and the forest (rePLANT), increasing electric mobility (Speed-E), and vi) the design, construction, and exploitation of more sustainable assets from a life cycle assessment perspective.

The achievement of REN’s decarbonization objectives also relies on the supply chain. In 2022, several initiatives were implemented, such as a study on suppliers’ ESG maturity, the introduction of the new Supplier Code of Conduct outlining ESG matters, and the >>



It is a priority for REN to progressively integrate the concept of natural capital into business activities, allowing it to permeate and support decision-making processes.

facilitation of a diverse range of alignment and awareness meetings focused on reducing the carbon footprint within the supply chain. Studies were also conducted in collaboration with higher education institutions, with the aim of acquiring primary data for emissions calculations. This data will gradually substitute secondary data obtained from various existing bibliographic references, thereby enabling the gradual integration of more stringent criteria in purchasing processes. This approach facilitates a progressive transition toward “sustainable purchasing.”

Furthermore, REN is actively developing a circular economy strategy to enhance the circularity of its operations. In 2022, REN launched the “Transforming is simple!” campaign, aimed at repurposing technical clothing that was no longer being utilized by operational teams. This initiative prevented the disposal of these items in landfills and their subsequent incineration, thereby avoiding the emission of approximately 0.6 tons of CO₂.

Natural capital and terrestrial life conservation

REN’s approach to sustainability encompasses environmental protection and the implementation of practices that safeguard, preserve, and restore ecosystems and biodiversity. It is a priority for REN to progressively integrate the concept of natural capital into business activities, allowing it to permeate and support decision-making processes.

For REN, biodiversity is considered one of the key environmental factors in the systematic assessment of potential impacts throughout the life cycle of its infrastructure. Therefore, the company has established a structured approach that enables effective action in preventing and mitigating negative impacts on biodiversity. REN approved the commitment charter for its Biodiversity Strategy as a result of the intensive work carried out in 2022, which involved key stakeholders in a series of workshops.

In the context of biodiversity, REN joined the transnational strategic alliance against *Cortaderia selloana*, an initiative that originated from the international project LIFE + STOP CORTADERIA. The primary objective of this alliance is to curb the spread of this invasive exotic species, commonly referred to as pampas grass, feather pampas grass, or plume grass. Since 2021, REN has been a founding member of the BIOPOLIS Association, an internationally recognized organization in biodiversity management and conservation. This initiative, which builds upon the “REN Chair in Biodiversity” (2015–2020), involves the active participation of reputed institutions such as CIBIO, the University of Montpellier, and Porto Business School. The current protocol is divided into four areas of action: i) Biodiversity in REN structures: opportunities and risks, ii) Technological development applied to biodiversity, iii) Impacts and mitigation, and iv) Transfer of knowledge and interaction with REN and other stakeholders.

As an example of the work carried out by the REN Chair in Biodiversity, a study investigating the spatial utilization of the Bonelli’s eagle (*Aquila fasciata*) around power transmission lines was published in the Environmental Impact Assessment Review journal. This study allows us to understand the impact of power lines on the habitat of the Bonelli’s eagle and identify potential risks for these birds in order to implement effective mitigation measures.

Through the management of servitudes and land-use conversion, REN ensures the maintenance of clean strips (covering 7,206 hectares of vegetation management in 2022). This approach not only enhances the resilience of the territories but also creates additional opportunities for Civil Protection Agents to access these areas. Additionally, as part of its afforestation program for servitude strips, REN successfully planted 3,922 hectares between 2010 and 2022.

In 2022 alone, a total of 77,342 trees were planted in an area spanning approximately 278 hectares. Notably, 86 percent of this area was dedicated to planting the native species known as the strawberry tree, thereby contributing to an increase in biodiversity.

Partnerships for the environment and communities

In the context of forest management and within the scope of the Ribeira de Pena – Vieira do Minho Line, REN, the municipality of Vieira do Minho, the Association for the Management of Serra da Cabreira (APOSC), and the Association of Garrano Breed Equines (ACERG) signed a protocol. The primary objectives of this collaboration are to prevent fires in Serra da Cabreira and to create favorable conditions for the protection and preservation of the Garrano horse breed, one of the four native equine breeds in Portugal. About 263 mares and 28 stallions will contribute to the prevention of forest fires in that mountainous region. This involves the creation of improved pastures, the installation of drinking troughs for the horses, and the placement of GPS devices on dominant mares and stallions.

From a climate perspective, in 2022, REN, along with other Portuguese companies and organizations, participated in the Portuguese national campaign advocating for the recognition of the climate as a Common Heritage of Humanity. The objective of this initiative, as outlined in the Portuguese Climate Basic Law, is to encourage participating companies and organizations to actively promote and support actions that seek to recognize the climate as a Common Heritage of Humanity.

We work today to create a more sustainable tomorrow

REN aims to address the future in the present, operating proactively and constructively with various stakeholders, and in harmony with the planet. ■



Innovative Concepts for a Sustainable Future

Symrise views nature as a treasure that it should use responsibly and sustainably, today and in the future. For good reason: The company draws many of the ingredients it uses in its products from nature. At the same time, climate change is exerting an impact on biodiversity, something that is closely tied to the core business of Symrise. For this very reason, the company, which is listed on Germany's blue-chip index, is applying its entrepreneurial principles and interest in the sustainable procurement of raw materials and their use for the good of humanity and nature itself in every area. Climate protection and climate change pose tremendous challenges. At the same time, they are also creating tremendous opportunities to improve things.

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



Symrise bases its actions on the 17 global Sustainable Development Goals (SDGs) of the United Nations. Drawing on the materiality analysis that the company regularly conducts, Symrise has launched a structured process that is designed to set the right priorities. During this effort, it identifies areas

where it can make the biggest contribution, bearing in mind its limited resources. This push applies to both its own business activities and to all the company's stakeholders. The ambitious goals set by Symrise originate from this commitment. The company believes in one thing: It can achieve success only

if commercial success and sustainable actions go hand in hand.

In particular, Symrise is committed to the achievement of Goals 8, 12, 13, 14, and 15. These goals focus on procurement and human rights, two areas for which Symrise has set specific objectives.

Symrise has integrated its suppliers into its processes to help it achieve these goals. As part of this effort, Symrise reworked its Responsible Sourcing Supplier Code in 2022. This new policy applies to suppliers and the sustainable procurement activities they conduct on behalf of Symrise. Under this policy, the percentage of suppliers that it evaluates on the basis of sustainability criteria is to reach 100 percent by 2025, based on a procurement volume of 90 percent. The Scent & Care Segment — an area that focuses primarily on raw materials and active ingredients — has already reached 93 percent.

In addition to this goal for suppliers, Symrise has set four top priorities: climate protection and adaption to climate change; procurement practices and human rights; raw materials and circular economy; and environmental protection and biodiversity. One of the Group's major objectives relates to operating in a climate-positive manner from 2030 onwards and producing fewer emissions than it consumes. We thus intend to operate climate-neutral along the entire value chain including the raw materials produced by suppliers, by 2045. Symrise has regularly had its climate goals externally reviewed and approved by the Science Based Targets initiative (SBTi) since 2017. This organization confirms whether the climate goals will contribute to the overall objective of limiting the rise of the Earth's temperature due to the greenhouse effect to 1.5°C. Symrise was the first SBTi member in its industry and among the first 100 SBTi-certified companies in the world.

Holistically creating value

The circular economy forms one of the critically important components of the ambitious sustainability goals of Symrise. This economy is defined by three fundamental principles: using only raw materials when possible, avoiding waste, and returning materials back into processes. As a producer of fragrances, flavorings, cosmetic raw materials, and active ingredients as well as functional ingre-

dients for foods, Symrise integrated sustainable practices into its business operations years ago for the purpose of protecting global ecosystems. The circular economy forms an important element that complements a broad range of other measures which the global company has used to improve its process efficiency, minimize its consumption on all levels, and optimize its processes. Symrise employs this action plan throughout the company whenever possible. Numerous repeat awards have recognized this successful, resource-conserving effort year in and year out and publicized it. As one example of these achievements, Symrise once again received the highest score, "A," in the three categories of Climate, Water, and Forests in the annual sustainability rating issued by the non-profit organization the Carbon Disclosure Project (CDP) in 2022. Symrise is now one of only 13 companies among a total of 18,700 worldwide that have made the Triple A List.

Pioneer from the very beginning

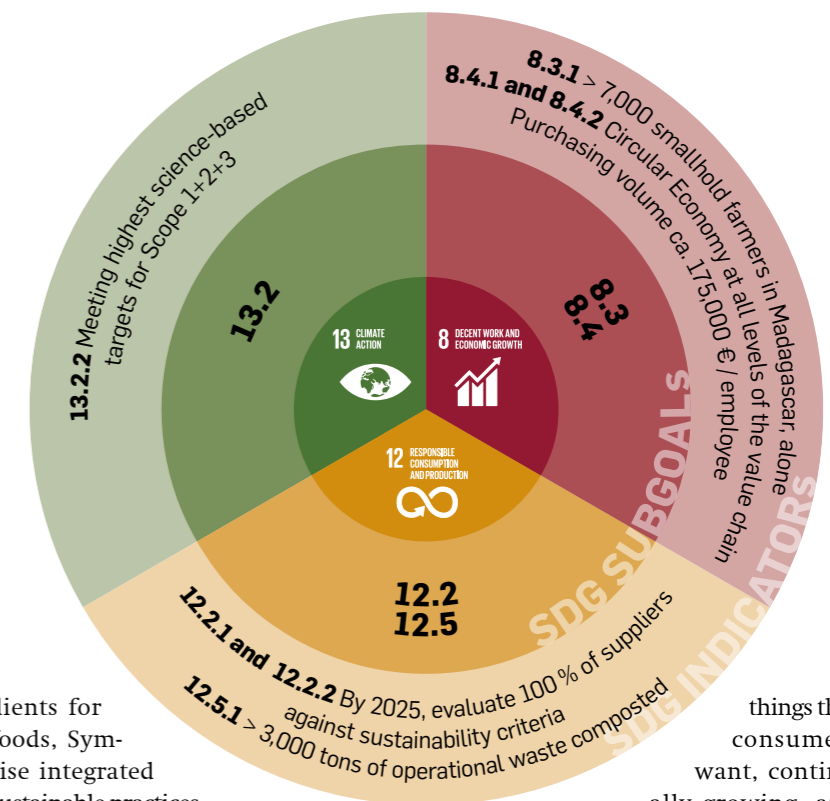
Minimizing consumption on all levels, optimizing processes, producing

things that consumers want, continually growing, and decoupling the use of resources from growth: These are the permanent elements of the DNA of Symrise.

In 1874, the company's founder, Wilhelm Haarmann, and his colleague Ferdinand Tiemann produced synthetic vanillin from the sap of conifers for the first time. They used materials that others had ignored. In the process, they used a valuable resource in an economical manner. The company that Haarmann established in 1874 laid the foundation for Symrise. Thinking in multidimensional and circular terms — as well as considering the interaction and interrelationships between business activities, the environment, and society — helps to make Symrise a role model in its industry.

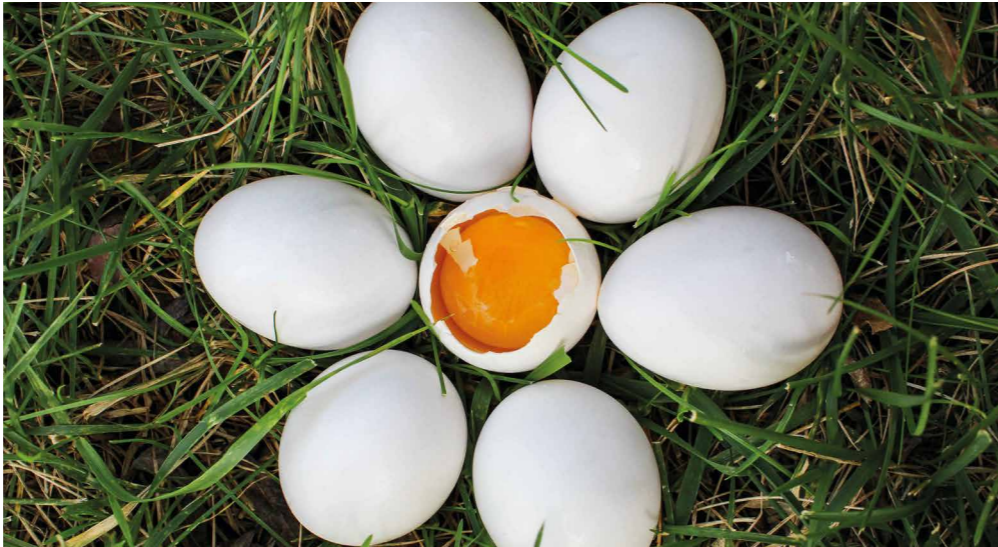
Side streams, by-products, and repeat use – a systematic circular economy approach

The following examples show how circular economy can help Symrise achieve its company goals in a sustainable and value-creating manner. >>



Egg products for the pet-food market

Last year, Symrise acquired the Dutch company Schaffelaarbos, which produces ingredients for the pet-food market that are made from the side streams of egg production. The company successfully applies circular-economy principles by sustainably processing used raw materials. The eggs utilized by Schaffelaarbos are not suitable for human consumption. Still, they can be processed into powdered egg products. In doing so, they make an important contribution to animal health

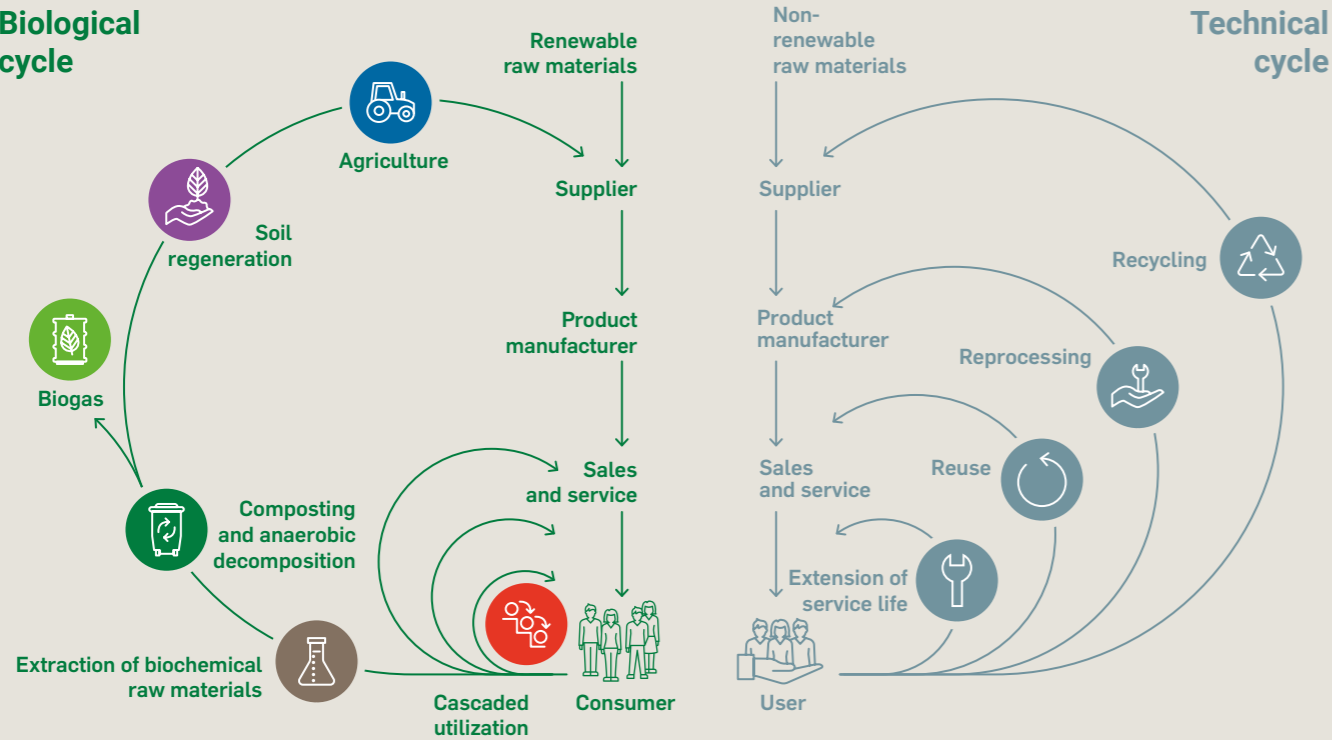


Symrise applies the principles of the circular economy across all levels of the value chain.

Within the concept of circular economy, the biological cycle is particularly relevant for the core business of Symrise, since all its products ultimately end up back in nature after use. The biological cycle describes those processes that initially extract raw materials and nutrients from the soil and return them, contributing to the regeneration of nature. This includes consumer goods such as foods and cosmetics, which are

primarily made from natural raw materials or produced synthetically on the basis of fossil fuels.

The ambition for Symrise: All of the products that it manufactures ideally need to be fully biodegradable regardless of their origin, then further "metabolized" and, following use, safely returned to nature. The circular economy also calls for a shift in the energy supply from fossil fuels to renewable energy sources in order to decouple economic activities from the consumption of limited resources.



through pet food. The products complement the portfolio of Nuvin, the feed brand of Symrise Pet Food. Schaffelaarbos presses the eggshells into so-called pecking stones, among other things. The pecking stones are then placed in chicken coops, and the animals can use them to keep their beaks short in a natural way. The eggshells are also used to create a powder that serves as a source of calcium in the feed for young animals.

Shrimp to protect fish stocks

Animal-based side streams also serve for other types of high-quality products: In Ecuador, Symrise turns shrimp heads that are not suited for human consumption into functional fish feed. Symrise purchases about 20,000 tons of this side stream from shrimp farms each year and uses valuable ingredients that used to be thrown away. The benefit of this circular principle: The feed improves the eating behavior and the health of the fish, and fewer wild fish must be caught to produce fish feed.

Valuable use of the entire chicken

Symrise also turns parts of chicken left over from food production into valuable products: It uses various cooking technologies, extraction methods, hydrolysis, and dehydration to make aromas, broths, powder, and purified fats for all sorts of foods and pet food applications. They create the taste of meat and the desired consistency.

Active ingredients from sugar production

Replacing ingredients represents another way to create valuable and sustainable products with the help of innovative processes: Symrise has been selling the cosmetic active ingredient Hydrolite® 5-pentylene glycol for more than a quarter of a century. This ingredient moisturizes the skin in many applications and improves the effect of the active ingredients. With the introduction of "Hydrolite® 5 green," the company now has added an

active ingredient to its portfolio that can do the same thing. It is also completely nature-based and sustainable. Symrise uses a by-product called bagasse as the basis. This by-product is created when sugar cane is converted into sugar. Sugar factories frequently give the material to the paper industry, supply it to feed processors or burn it to produce energy.

Fragrances from natural ingredients

Symrise is also working to find alternatives to captives — those very special fragrances that give perfumes their distinct character, among other things. These alternatives would replace non-biodegradable or non-renewable fragrance ingredients, such as the fragrance ingredient raw sulfate turpentine oil. It occurs as a natural component of conifers during the paper production process and serves as a base material for a new Symrise captive with a resinous, herbal, and green scent.

Less waste, less water use, more yield

Another example of the sustainable practices of the circular economy relates to the principle of cascade use. It utilizes raw materials in different application areas and over and over again. About 50 years ago, Symrise developed a process to produce menthol that returned by-

products during various process stages. These elements of the circular economy improve yield and significantly reduce the amount of waste products. In addition, the process does not produce one single drop of wastewater.

Side streams supply valuable resources

All examples share one fact: By applying circular economy principles, we can create valuable products from formerly worthless side streams. They either go through a comprehensive and efficient recycling process or get reused. This reduces the use of resources, eases stress on the environment, and creates economic benefits. The circular economy facilitates sustainable and resource-conserving business practices. It views side streams as valuable resources that we can use and reuse.

Incentive for additional goals

Symrise views its many successful achievements and solutions as an incentive. Nature and ecosystems continue to face extreme stress. For this reason, the company is working to tap additional renewable sources of raw materials, develop process innovations, find alternatives to raw materials, and systematically use them in circular economies. ■





Beyond financing mechanisms within the UN System such as the Green Climate Fund and REDD+ to stop deforestation, some developing countries are proposing debt swaps for climate action. Companies and financial players are developing innovative instruments based on the experience of carbon credits, such as plastic credits and food credits, to avoid food waste. The role of digitalization and crypto currencies are also being explored as additional sources of finance.

By Gabriela Ensínck

The climate crisis, the loss of biodiversity, and increasing pollution levels require financing. According to the International Monetary Fund, the level of investment to be made by emerging economies is \$1 trillion in energy infrastructure by 2030 and between \$3 trillion and \$6 trillion in all sectors per year by 2050. In addition, according to the United Nations Development Programme, the level of investment needed to adapt to the consequences of climate change, such as droughts and floods, will be between \$140 billion and \$300 billion per year

by 2030, and between \$315 billion and \$565 billion by 2050.

However, the commitment of developed countries agreed in 2009 at the climate summit in Copenhagen (and ratified in 2015 at the COP in Paris) to contribute \$100 billion annually from 2020 to 2025 to finance mitigation and adaptation to climate change in developing countries (through the Green Climate Fund) has not yet been fulfilled. That is why many developing countries are promoting “debt-for-nature swaps.” This idea

emerged in the 1980s during the debt crisis in Latin America. The premise is to forgive all or part of a country’s financial debt in exchange for those funds being invested into the conservation of natural ecosystems, or in the infrastructure for mitigation or adaptation to climate change.

Bolivia was one of the first countries to access a debt-for-nature swap in 1987. Its international creditors forgave part of its debt in exchange for the preservation of 3.7 million acres of land adjacent to the

Amazon basin (Goal 13: Climate action, and Goal 15: Life on land).

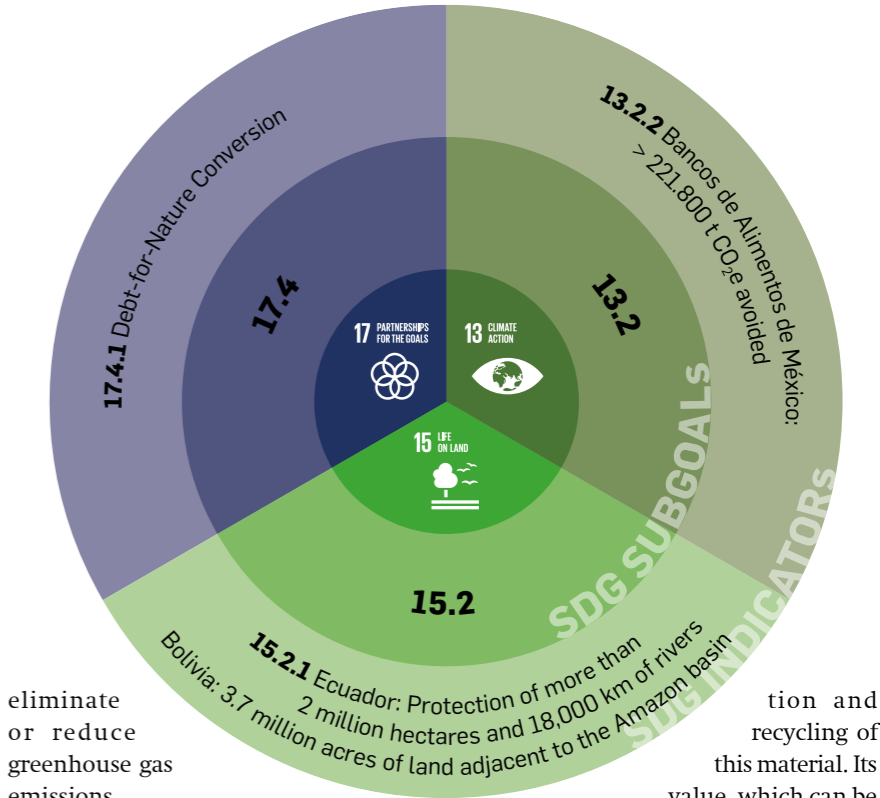
Since the pandemic crisis, Latin American countries have stopped allocating resources for long-term sustainability. According to research by the United Nations and the University of Oxford, of the more than \$318 billion allocated by its 33 countries to economic recovery, only 0.5 percent can be considered “green spending.” Today, most of the region — which possesses 23 percent of all tropical forests, 31 percent of water resources, and 70 percent of the planet’s biodiversity — faces the dilemma of preserving its environmental goods and services, or continuing with the expansion of the monocultures and extractive industries on which they depend for export income and to service their debt.

This year, Ecuador completed the largest debt-for-nature conversion in the world and created an Amazon biocorridor for the protection of more than 2 million hectares and 18,000 km of rivers. The operation consisted of an \$85 million guarantee from the Inter-American Development Bank and \$656 million in political-risk insurance from the US International Development Finance Corporation to Ecuador to purchase existing public debt on better terms.

The project has been made possible through collaboration with the Confederation of Indigenous Nationalities of the Amazon (Confeniae) and technical assistance from The Nature Conservancy (Goal 17: Partnerships for the Goals).

From carbon credits to plastic and food bonds

Some of the first financial mechanisms to reduce emissions globally have been carbon credits, created after the Kyoto Protocol in 1997. Currently, there are two types of markets: mandatory markets as well as regulated and voluntary ones. In both, companies or organizations can offset their carbon footprints by purchasing carbon credits from entities that



eliminate or reduce greenhouse gas emissions.

Inspired by this mechanism, the Banco de Plásticos Foundation launched the first Plastic Bond in Argentina in 2022, aimed at financing the recovery and recycling of this material. According to a report by the United Nations Environment Programme (UNEP), “reducing the production of virgin plastic by 55 percent would reduce greenhouse gas emissions by 25 percent and create 700,000 additional jobs in the recycling industry.”

The problem is that, although most types of plastic are recyclable, less than 15 percent is actually recycled in the world, basically due to the lack of proper separation of materials at source, and for logistical and cost reasons. “One of the main obstacles to recycling is economic. When the cost is higher than that of virgin plastic, the equation does not close and therefore, it is not recycled,” says Carlos Briones, one of the founders of Banco de Plásticos.

Plastic bonds allow companies to offset their plastic footprints by acquiring credits that finance projects for the collec-

tion and recycling of this material. Its value, which can be traded on the international market, depends on the project and the type of plastic being recovered. The first project financed with Plastic Bonds in Argentina was the recycling of 100 tons of fishing inputs (nets, boxes, ropes, and buoys) on beaches and the sea in Argentine Patagonia (Goal 13: Climate action, and Goal 14: Life below water).

They were issued by the Banco de Plásticos Foundation in alliance with the Plastic Credit Exchange. The company Cabelma SA was in charge of cleaning, grinding, and treating the waste to incorporate it into the production of different recycled plastic objects. Both plastic and carbon credits are tools that companies can use to meet their sustainability targets and mitigate their impact on the environment. These are still voluntary compensation tools in most countries, although the trend indicates that they will become a mandatory requirement.

Core Zero is a startup based in Miami, whose purpose is to transform food trash into carbon credits (Goal 2: Zero hunger, and Goal 13: Climate ac- >>

tion). It was created in 2020 by Ignacio Bordigoni, an Argentine former executive at a consumer goods firm, and Jean Pierre Azañedo, a Peruvian entrepreneur. “We noticed that many products, in perfect condition to be consumed, ended up

in incinerators or landfills due to inefficiencies throughout the value chain. Therefore, we decided to develop a solution that links two agendas: Zero Waste and Net Zero. Thus CoreZero was born,” says Bordigoni.



The entrepreneurs created an online store to market products that were not sold by large companies. At the same time, they developed a method to quantify how much CO₂ was not emitted into the environment due to the recovery of these products. This allowed them to generate carbon credits.

The first partner of this project was Bancos de Alimentos de México, an institution that rescues more than 150,000 tons of food a year to supply soup kitchens and vulnerable communities. Together with them, in the last 18 months, 221,800 tons of CO₂ emissions were avoided and equivalent carbon credits were generated. With the income generated by these carbon credits, the activities of food banks can be financed and scaled. The idea is to replicate this



experience in other countries in America and Africa.

Take care of forests and earn money

In addition to their carbon storage role, forests are crucial for water regulation, soil protection, food production, and biodiversity. It is estimated that 1.6 billion people worldwide depend on forests. Worldwide deforestation and forest degradation accounts for 11 percent of greenhouse gas emissions, more than the global transportation sector and second only to the energy sector.

In response, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have designed a mechanism to finance the Reduction of Emissions from Deforestation and

forest Degradation, known as REDD+. This program is being implemented in many countries in Latin America and Africa, with the participation of local organizations and indigenous communities (Goal 17: Partnerships for the Goals, Goal 13: Climate action, and Goal 15: Life on land).

It offers training for the sustainable management of forests and financing based on “payment for results.” In Argentina, it is being implemented in the Biosphere Reserve in the province of Misiones (in the north of the country), benefiting communities of the Guaraní ethnic group, and its results (the recomposition of forests) are monitored with satellite images. So far, the country has received \$82 million for this project.

In Ghana and other West African countries, REDD+ involves a gender perspective, since women are both the primary users of forest resources and the main producers of food through agricultural activities. And they also perform important roles in the conservation of natural resources. Directing training and financing toward women is a way of preserving forests and bridging the gender gap (Goal 5: Gender equality).

Toward a reform of the global financial system

Despite ambitious goals and numerous financing tools, the world is not moving fast enough in the right direction, and more and more voices are being raised calling for a comprehensive reform of the global financial system. António Guterres himself, president of the UN, pointed this out at the Summit on Climate Finance held at the beginning of September in Nairobi, Kenya. “Global governance structures reflect the world as it was, not as it is,” Guterres said. Digitalization and blockchain technologies could play a relevant role in a new global climate financing scheme.

This is the hypothesis of Stefan Brunnhuber, member of the Club of Rome, the World Academy of Arts and Science, and author of *Financing Our Future — Unveiling a Parallel Digital Currency System to Fund the SDGs and the Common Good*.

“By readjusting our monetary system, adding digital currencies and blockchain technologies, we can create carbon default swaps to finance clean energy projects or new forms of funding WHO (World Health Organization) to be prepared for the next pandemic,” he assures.

Today, the world is confronted by multifaceted crises, and the tools of the past are proving inadequate. Emerging technologies and the reconfiguration of the monetary system may offer a path forward aligned with the urgent need for global cooperation and collective action. ■

FINANCIAL TOOLS

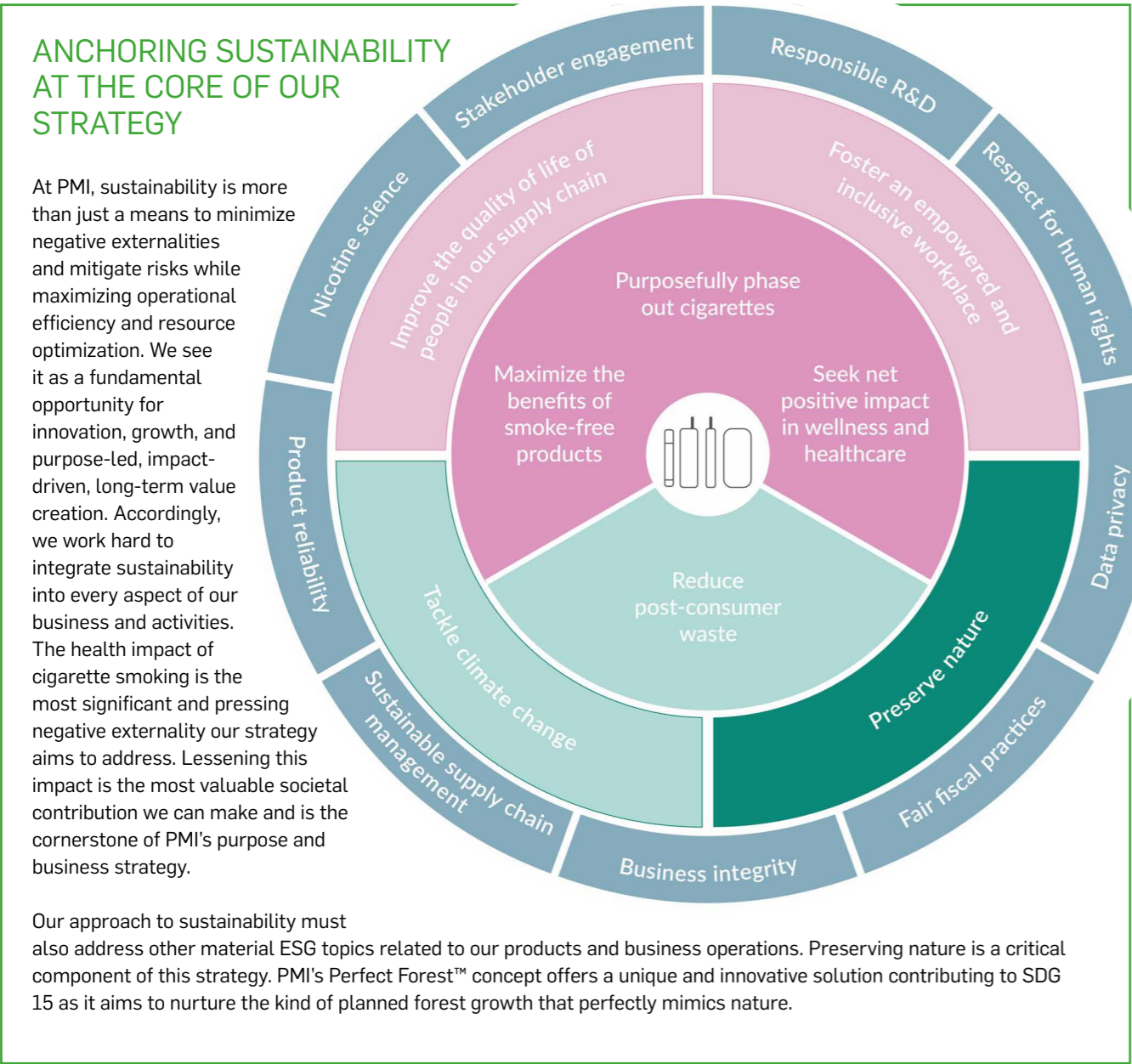
Within the framework of UNFCCC and UNEP, various funds were created for the adaptation and mitigation of climate change, biodiversity preservation, sustainable agriculture, as well as clean energy and ocean protection. Here is a list of some of them:

- Green Climate Fund (GCF): greenclimate.fund
- Global Environment Facility (GEF) (a family of funds dedicated to confronting biodiversity loss, climate change, pollution, and strains on land and ocean health): thegef.org
- Adaptation Fund (AF): adaptation-fund.org
- International Fund for Agricultural Development (IFAD): ifad.org/en
- BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL): biocarbonfund-isfl.org
- Global Energy Efficiency and Renewable Energy Fund (GEEREF): geeref.com
- Global Climate Partnership Fund (GCPF): gcpf.lu
- International Climate Initiative (ICI): international-climate-initiative.com/en
- Euroclima+: euroclima.org/en

Perfect Forest™

Perfect Forest™ is PMI's nature-based solutions (NbS) concept to preserve forest resources. We believe that constant effort at the landscape level is key for transforming our relationship with forest ecosystems and local stakeholders. For us, "perfection" is the mutual contribution between the protection of nature and its resulting ecosystem services.

By Jennifer Motles, Chief Sustainability Officer at PMI, Claudia Berardi, Director of Environmental & Social Sustainability at PMI, and Michele Pisetta, Senior Manager, Environmental Sustainability at PMI



“According to the FAO, despite Global progress towards forest management, forest losses remain high. SDG indicator 15.1.1 seeks to ensure that forests are efficiently managed and encourages a better balance between conservation and sustainable use of natural resources.

Food and Agriculture Organization of the United Nations, SDG Indicators Data Portal

The Perfect Forest™ concept will aim to sequester carbon while enhancing the forestry systems' potential to deliver sustainable forest products and societal benefits. It will also aim to create the conditions for protecting water resources, balancing soil elements, and preserving natural habitats, which are key to supporting biodiversity.

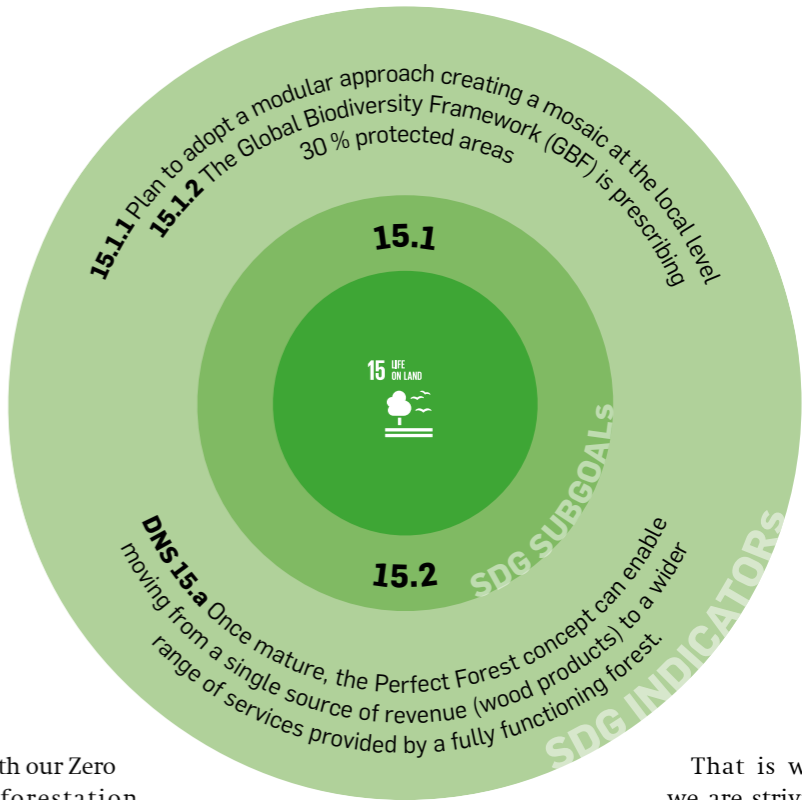
Since the rise of industrial forestry, forest management has largely focused on maximizing production yield (e.g., timber in construction, wood for furniture and panels, or biomass for energy).

This kind of forest management often reduces the ecosystem services provided by a forest stand. This is a serious problem. Forests are critical for limiting global warming to 1.5°C and for supporting interconnected biodiversity systems across the planet.

Despite an increased focus on planting industrial forests to release pressure on natural ones, deforestation rates are not falling fast enough, and we still see a net loss of forests globally.

We at PMI strive to prioritize environmental stewardship for natural forests.

AT THIS STAGE, THE PERFECT FOREST IS A CONCEPT. HOWEVER, ONCE IT REACHES MATURITY, IT WILL AIM TO PROVIDE:



With our Zero Deforestation program, launched in 2018, we have used the program to validate if the tobacco we purchase poses any risk to primary or protected forests linked to tobacco production. Furthermore, to support a forest-positive future and based on our Zero Deforestation Manifesto, we go beyond protecting pristine forests to prescribe and regulate sustainable forest management in natural forests across PMI's supply chain. We have expanded the program beyond tobacco to paper- and pulp-based materials with a target to achieve zero gross deforestation by 2025 and zero net deforestation in managed forests by 2030.

At PMI, we believe that avoiding deforestation should go hand in hand with renewed approaches for forest management to value a forest beyond the revenue generated by its wood products. For PMI, the entire forest ecosystem is valuable.

That is why we are striving to usher in a new paradigm for forest management through the Perfect Forest™ concept.

Through our Perfect Forest™ concept, we build on our deep experience in agricultural supply chains to apply principles of NbS to carbon sequestration, working with global forestry experts and engaging local communities as we develop innovative methods for harnessing the positive benefits that forest ecosystems provide.

The Perfect Forest™ will aim to generate revenue by providing wood products, forest products, and bioenergy. Through careful, close-to-nature silvicultural management — a practice that focuses on managing a forest for ecosystem services — the forest can also provide a host of benefits, including pollination, shading, air purification, insect population >>

control, and more. And finally, it will seek to deliver societal benefits for communities surrounding the forest.

How it works

The overarching goal of the Perfect Forest™ Concept is to create long-term carbon storage, resulting in a carbon sink for CO₂ absorbed by growing trees, soil, roots, etc. In the concept, PMI is directly involved in creating and managing the Perfect Forest™, either by holding the stewardship of the land directly or by applying influence indirectly through value chain partners.

The Perfect Forest™ model is based on an ecological approach that can be implemented starting from a degraded natural forest or from bare land, depending on whether the intervention is a reforestation or afforestation. The biology of the land, ecology, trees, and local environment need to be understood in order to create the necessary conditions for the entire ecosystem to thrive. The layout and planting of the Perfect Forest™ is also critical. For example, fast-growing softwood species can only be used where there are appropriate soil conditions and water availability. In addition, the seedlings themselves must be planted with a specific design to allow for native species (generally hardwood) to be

planted in between. In this way, the planting layout follows a clear distribution inspired by nature.

It is also important to respect the limiting factors of the local area. Limiting factors are the variables that can affect the health and productivity of an ecosystem. For instance, if soil fertility is the limiting factor for the planting region, we would then work to select the appropriate species and plan for the appropriate canopy density accordingly.

Timing is also key: Fast-growing species should be planted in the first rotation cycle to provide shelter and shade to the native trees that grow more slowly. The stand is first thinned after 5 to 10 years and first logged after 12 to 15 years. Thus, the revenue provided by the first harvest supports the investment, management, and growth of the trees that will permanently define the Perfect Forest™ and ensure its longevity.

At the core of the forest, we plan to preserve a large diameter of living trees, leaving dead trees in strategic places to create shelter and microhabitats for insects, birds, small mammals, and fungi – which themselves help sustain the proper functioning of the forest.

When extractions are performed outside of this preserved diameter, any excess

material should be fed back into the ecosystem for sustained health and longevity. For example, residue from logging within the early rotation cycles would be collected and heated in the absence of oxygen to create carbon-rich charcoal (biochar) that, when reapplied into the soil, improves the physical and chemical properties of the soil itself, acting as a long-term carbon sink.

Any excess biomass that is not suitable for biochar production can be repurposed as bioenergy. The added benefit of this step will aim to support local communities by providing access to energy, while simultaneously contributing to reduced dependency on fossil fuels, thus helping to further decrease CO₂ emissions.

It's an ambitious vision, but because of our experience working with forestry experts and local stakeholders, as well as our experience in agricultural supply chains, we believe the Perfect Forest concept will be beneficial from a financial, social, and environmental perspective.

Measuring progress

PMI plans to apply an impact valuation model to quantify the value of the forest services provided beyond wood production in the Perfect Forest™. Impact valuation enables us to understand the full spectrum of benefits associated

AR³T FRAMEWORK



AVOID

Avoid new impacts compared to 2023 baseline with focus on no gross conversion of natural habitats.



RESTORE & REGENERATE

Restore affected biodiversity areas to balance degradation caused by ecosystem loss and validate outcomes on net gains.



REDUCE

Reduce and minimize existing unavoidable impacts through the application of sustainable and regenerative practices and measure progress across the 5 highlighted pressures on nature.



TRANSFORM

Transform business models within and beyond sectors to include regenerative practices to foster long-term sustainability of ecosystem and resource use.

with a particular investment over and above simple financial terms. With our approach, we look at natural, human, and social capital value creation, and we include the outcomes of the analysis in the design elements that are considered in the Perfect Forest™ project.

In our decarbonization strategy, we established monetization mechanisms to assign an internal price to the carbon we reduce and remove across our supply chain. This is the first step, and we aim to include additional ecosystem services moving forward as we work to perfect the impact valuation methodology to establish a robust approach for measuring the value generated from the Perfect Forest™.

In the interest of transparency, we plan to certify the Perfect Forest's generation of carbon credits through one of the internationally recognized voluntary carbon standards, as we have done with other projects through [International Carbon Reduction and Offsetting Accreditation \(ICROA\)](#). In addition, we aim to employ specific methodologies to demonstrate the benefits for people and biodiversity. We plan to use the Forest Stewardship Council (FSC) Ecosystem Services Procedure to take ownership of the

verification and validation of additional ecosystem services related to water, wild species, and resilience to disturbances. And for estimating the volumetric water benefits that will be generated, we aim to deploy PMI's proprietary Volumetric Water Validation Tool (VWTL), which incorporates a mathematical model to simulate the removal of carbon based on the options available to optimize water benefits.

Our journey to the Perfect Forest™

In PMI's Perfect Forest™ – a multi-decade project – the aim is that the societal and environmental benefits generated will grow with the forest and last for the long haul, offering benefits that continue well into the future.

We hope that the Perfect Forest™ will contribute to a mindset shift on investments and their impact – a mindset in line with sustainable growth for the future, for PMI's stakeholders, the environment, and wider society.

The carbon our Perfect Forest™ will aim to remove, the water it will seek to purify, and the biological diversity it will help to preserve are value drivers over and above more traditional financial

indicators. But, nevertheless, we believe will be tangible signs that business and sustainability are mutually reinforcing.

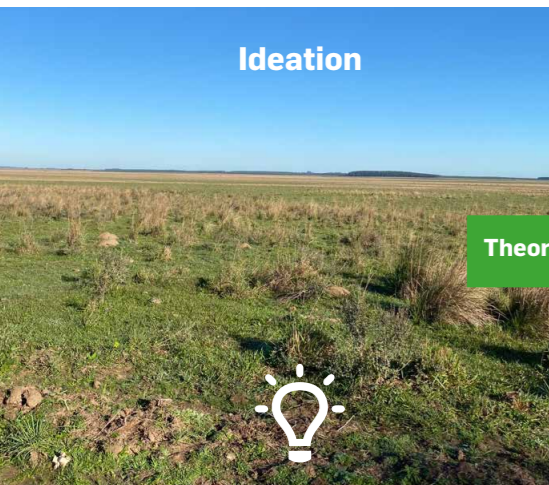
On the journey to the Perfect Forest™, we are working with experts both on forestry and impact valuation, sharing the belief that a different way of growing forests and accounting for a company's results are possible.

We are building our internal capabilities and knowledge base on sustainable forestry practices – including ecological silviculture. Leveraging the experiences, methodologies, and tools developed across forestry projects within our leaf tobacco supply chain over the past decade also prepares us for success over the long term.

Only by using a multistakeholder approach, being humble, sharing our ideas with others, and especially working closely with local communities and key global experts will we see our dream of the Perfect Forest™ become a reality.

Innovating with passion and impact, we hope to continue leading the way, inspiring long-term investment into reforestation and afforestation practices across the private sector. ■

Ideation



Establishment



Revenue



Theory of change

Revenue



The Invisible Burden of Tourism

As global tourism grows, the toll on infrastructure related to transportation, lodging, energy, water, and sewage threaten natural and cultural icons.


Cornell
SC Johnson College of Business
 Center for Sustainable Global Enterprise
 Sustainable Tourism Asset Management Program (STAMP)


EPLERWOOD
 INTERNATIONAL

Ambergris Caye in Belize — a captivating vacation spot renowned for its pristine azure waters and protective coral reef — played a significant role by contributing approximately 18 percent to the nation’s GDP last year. However, it is crucial to acknowledge that most of the tourism income flows back into the hands of the central government, leaving this picturesque island devoid of adequate resources necessary for enhanc-

ing water and sanitation facilities that cater to both inhabitants and tourists alike. Consequently, these unfortunate circumstances have given rise to pollution concerns as well as an alarming decline in water quality, thereby posing detrimental consequences on Ambergris Caye’s esteemed reef system and lucrative fisheries, which serve as major attractions for visitors from across the globe.

The local economies of numerous tourist destinations worldwide face a significant threat known as the “invisible burden,” which not only puts the attraction itself at risk, but also has the potential to reduce per-tourist revenue, despite an overall increase in tourism. This burdensome situation arises when local businesses are made responsible for funding infrastructure and other necessary enhancements without any assistance

from the thriving tourism sector, thereby hindering their profitability. In some cases, this predicament can worsen in cases where tourists become exhausted by overcrowding and pollution, ultimately resulting in a complete cessation of visits to these locations.

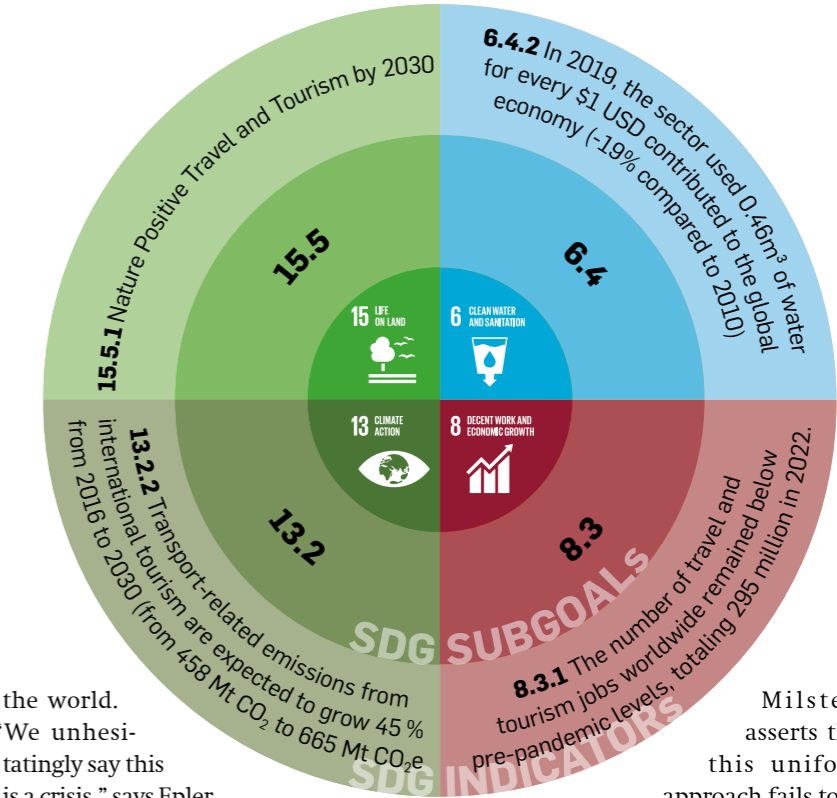
“This is a challenge of investing for the long-term health of a critical global economic sector,” says Professor Mark Milstein, Cornell University. “Future success will require collaboration among business, government, and civil society so that destinations are managed as the valuable, yet vulnerable, assets that they are.”

A report published by the Travel Foundation, Cornell University’s Centre for Sustainable Global Enterprise, and Epler-Wood International describes how destinations must uncover and account for tourism’s hidden costs — the “invisible burden.”

In straightforward terms, the report, titled *The Invisible Burden*, makes a compelling case for an entirely revamped accounting and financial system within the tourism industry. It emphasizes that there is an unseen array of local fiscal responsibilities that burden destinations with financing essential infrastructure needs such as energy, waste management, wastewater treatment, and the preservation of natural and cultural resources — all without receiving any compensation from the tourism economy. Neglecting to acknowledge the actual costs associated with tourism poses a growing threat to ecosystems, cultural treasures, and community well-being while also weakening the very foundation upon which the tourism industry stands — potentially leading it to collapse under its own weight.

Addressing a growing crisis

As the world’s largest industry, tourism already makes up more than 10 percent of global GDP, and continued growth is putting a strain on destinations around



the world. “We unhesitatingly say this is a crisis,” says Epler Wood. “Everyone thinks the system will adjust. Actually, it won’t unless there is a policy change.”

The availability of convenient digital tools for booking travel will lead to a significant increase in global tourism, driven by the expanding middle class. This growth is expected to reach 4 percent annually by 2030, with certain developing countries in Asia experiencing even higher rates and exceeding 10 percent. The UN World Tourism Organization emphasizes the need for these nations to establish comprehensive accounting systems that consider all aspects of tourism-related expenses. Additionally, the report highlights the importance of implementing creative financing methods to support essential investments in infrastructure.

The report also underlines the pressing requirement for diversifying skills in an industry that has predominantly concentrated on marketing. Historically, numerous tourism bureaus have monitored only a limited number of metrics while primarily emphasizing visitor expansion.

Milstein asserts that this uniform approach fails to address the diverse nature of the issue at hand. However, if we aim to prioritize sustainability, it is imperative to adopt innovative analysis systems that enable individuals to comprehend their expenses and ascertain positive overall results.

We destroy what we love

The exponential expansion of tourism in the 21st century is resulting in detrimental consequences for numerous destinations worldwide. These adverse effects often go underreported and remain unnoticed by travelers, posing a significant threat to these locations without any proactive measures being taken.

The lack of comprehensive analysis on the cost management of tourists is hindering local communities from effectively dealing with the increasing expenses. These hidden financial obligations are forcing destinations to invest in additional infrastructure for energy, waste disposal, sewage treatment, and preservation without receiving any compensation from the tourism >>

industry. As a result, these costs diminish the economic advantages brought by tourism and often go unnoticed in both international and local economic evaluations. To address this issue, it is crucial to establish a new approach that considers the net economic benefits of destination tourism while also devising an ambitious plan for protecting valuable assets. This endeavor will require a diverse array of talented individuals who can safeguard our priceless global heritage, vital natural resources, and essential social and community amenities.

Despite the industry’s consistent growth over many years, there remains a notable delay in implementing effective measures to tackle its substantial economic, social, and environmental impacts. Although tourism brings in valuable revenue that benefits the economy, it seems that underdeveloped infrastructure is gradually succumbing to the unseen burdens imposed by this sector. As the industry continues to expand, destina-

tions will face significant challenges in managing and constructing sustainable infrastructure at considerable cost. Furthermore, they will also have to contend with diminishing non-renewable resources, the degradation of ecosystems, and an alarming rise in greenhouse gas emissions. These factors collectively create an unstable foundation for tourism, which could potentially collapse due to its own magnitude.

In search of answers

There are a few commendable destinations that are seeking to adopt a unique approach. Some of them have decided to implement tourism taxes, while others are imposing restrictions on certain types of tourism, such as Airbnb and cruises. Additionally, some destinations are modifying their marketing strategies and showing increased concern for the opinions of local residents. However, these responses primarily address specific issues that have already become critical

and can no longer be overlooked. The question remains: What other underlying problems may lie beneath the surface, waiting to emerge in the future? To date, most of the dialogue on these issues fails to adequately address the root causes or account for the key policy and governance reforms necessary to address the implications of unfettered growth.

Businesses are increasingly concerned about the deterioration of global tourism assets, which they often have little control over. As the top international tourist destination worldwide, Europe is facing a worrisome issue of overcrowding at its major attractions. Historic cities that hold great significance are suffocating due to congestion, and local residents have resorted to displaying anti-tourism signs. Furthermore, popular landmarks are overwhelmed with visitors beyond their capacity. Currently, businesses find themselves ill-equipped to address the decline in value experienced by main-

stream destinations when they become overcrowded or degraded. However, this poses a significant risk to their financial performance and contributes to tarnishing the reputation of the entire tourism industry amidst mounting global protests against “overtourism.” Consequently, if companies fail to invest in crucial core assets that generate value for tourists seeking unique experiences, they will inevitably witness a decrease in revenue per visitor, despite an increase in overall tourist numbers.

Better data and management needed

The logical inference is always that we require “enhanced destination control.” Nevertheless, these discussions triggered by overtourism have not significantly contributed to our comprehension of what constitutes “superior destination management,” the reasons behind its absence thus far, and the necessary modifications required for its realization on a global scale.

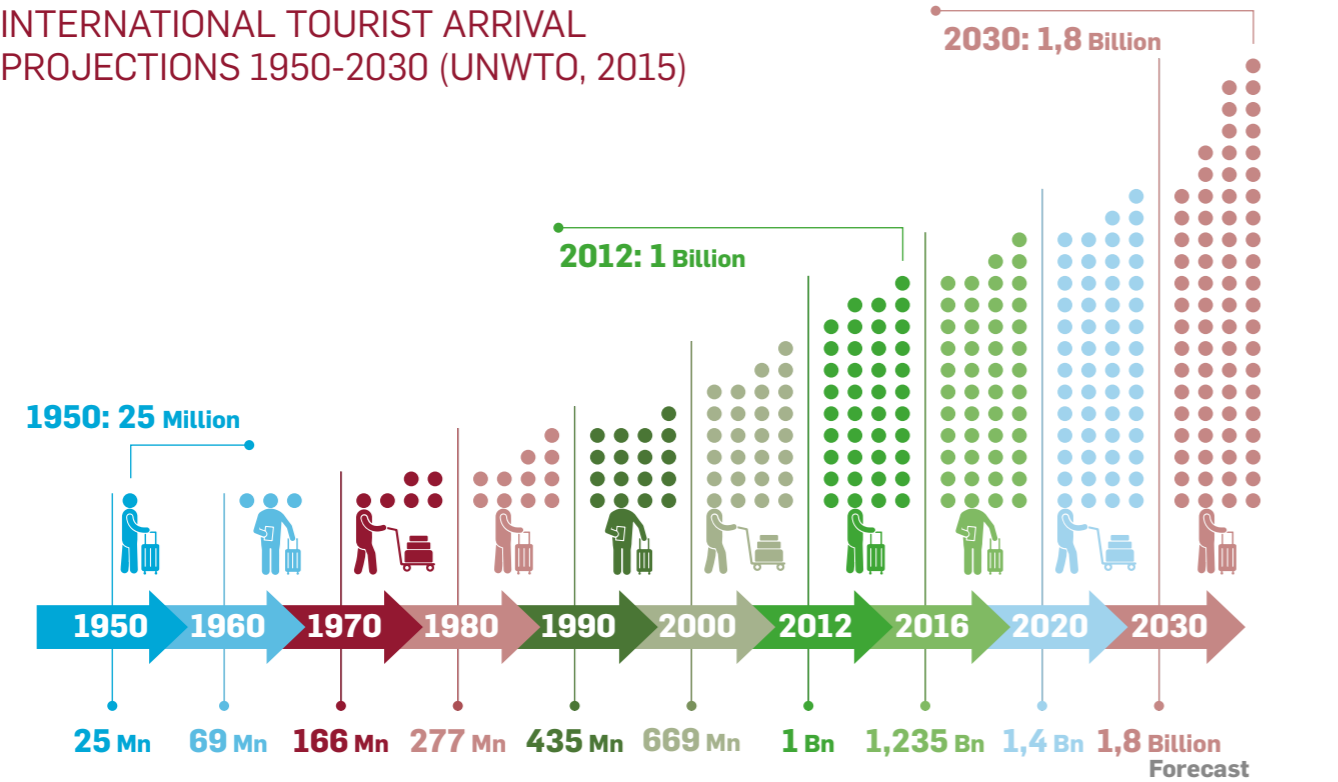
as risk elements into tourism funding and investment choices. These tools for decision-making are indispensable for governments and businesses to be able to formulate superior policies and execute more productive and economical investment determinations.

The Travel Foundation’s collaboration with PwC to use their Total Impact Measurement and Management methodology was an early attempt at deploying holistic methods of impact measurement to quantify the economic, tax, environmental, and social impacts of tourism activities. Significant benefits have been identified in terms of human resources, livelihoods, financial gains, employment expenses, and tax revenues. On the other

hand, it is crucial to acknowledge that the most detrimental consequences arise from environmental factors such as water contamination, excessive water consumption, land utilization issues, waste management challenges, along with air and greenhouse gas emissions. Additionally, adverse social effects encompass compromised public infrastructure and services alongside potential harm inflicted upon our invaluable cultural heritage.

With the continuous expansion of tourism on a global scale, effectively addressing the challenges arising from overtourism will require targeted interventions that specifically focus on the underlying causes. ■

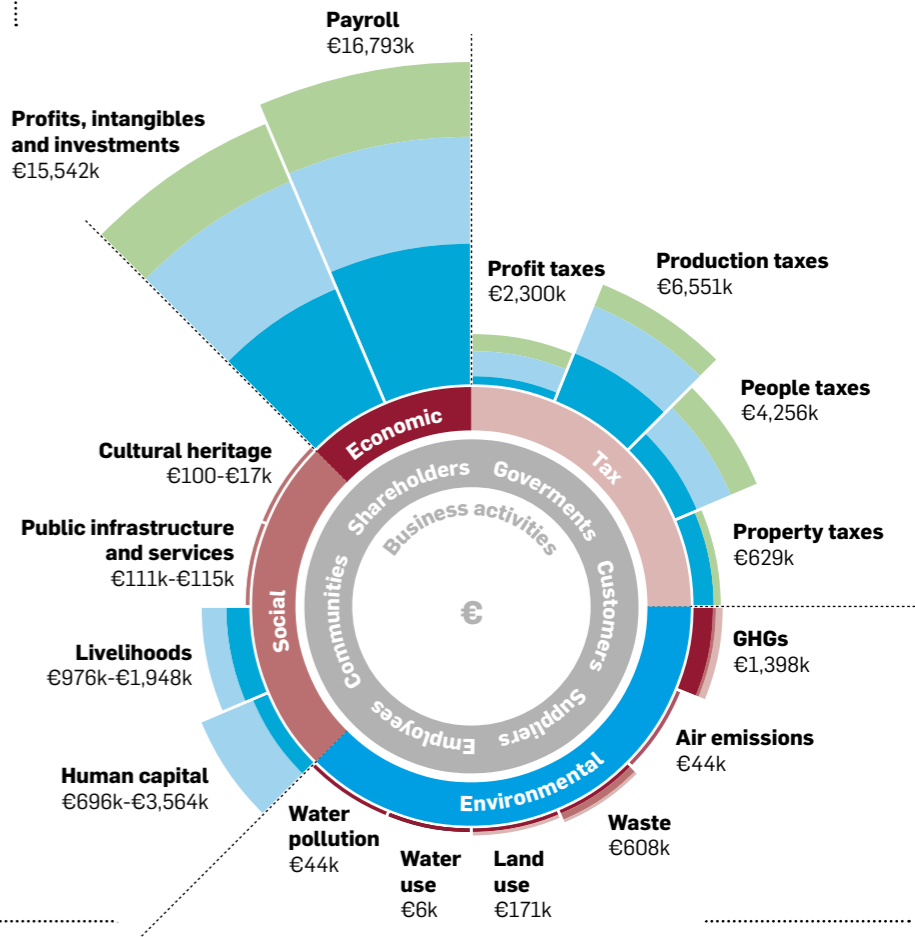
INTERNATIONAL TOURIST ARRIVAL PROJECTIONS 1950-2030 (UNWTO, 2015)



SUMMARY OF TOTAL IMPACT OF TUI GROUP'S ACTIVITIES IN CYPRUS 2013 (TRAVEL FOUNDATION, 2016)

There is an urgent need to promptly establish effective investment and management systems for safeguarding tourism destinations. This endeavor demands a comprehensive understanding of the expenses involved in managing tourist attractions, as well as the specific costs associated with each visitor. Although this accounting practice is still in its nascent stage, it is crucial that immediate measures be taken to lay down initial foundations that can later be enhanced and perfected.

The Organisation for Economic Co-operation and Development suggests enhancing the examination of data to effectively incorporate environmental and sustainability standards as well





Sustainability Criteria Push Real Estate Values

How can you measure social impact? For a long time, this was considered very difficult. But now we are seeing significant progress in this area as well. The example of the real estate industry shows how SDGs can be measured and thus controlled. This has a direct impact on investor decisions, but can also be used by policymakers to bring peace to problem neighborhoods, for example.



The tightening of climate targets, the new Green Deal regulations, and increasing social tensions, as seen in the summer of 2023 in the French banlieues, are raising the pressure on the real estate industry – the extent of which is still being underestimated by many players. Properties that do not meet the latest sustainability standards will become much less attractive to investors and fund managers in the future. No one wants to invest in environmental and social legacies anymore.

This paradigm shift will have a long-term impact on asset management and the valuation of individual properties, in addition to the direct consequences for fund management due to the close integration of the financial and real estate industries. The concept of social

impact investing has launched a novel and progressive movement based on attitude, participation, and a clear commitment to stakeholder value. Those making investment decisions need to consider not only the return on investment, but also the impact that the investment will have. This innovation has already made its way into global capital and financing markets and is growing in popularity. In the United States and the United Kingdom in particular, impact investments account for an important and rapidly growing share of real estate investments, in which various financial players along the value chain are specializing in real estate with impact.

The real estate industry is facing permanent changes due to the “European Green Deal” initiated by the European

Commission and the increasing demand for ESG-compliant investments on the part of investors. Until recently, return and risk were the only criteria in the analysis of real estate portfolios and transactions. But now another crucial factor is also being considered: impact. After all, capital is not neutral, and every investment has a social and/or environmental impact. ESG criteria aim to minimize this impact (“do no harm”), while impact investments want to go one step further and become part of the solution to social challenges (“contribute to solutions”).

What is social impact?

To this end, the Institute for Corporate Governance in the German real estate industry developed a practical guide

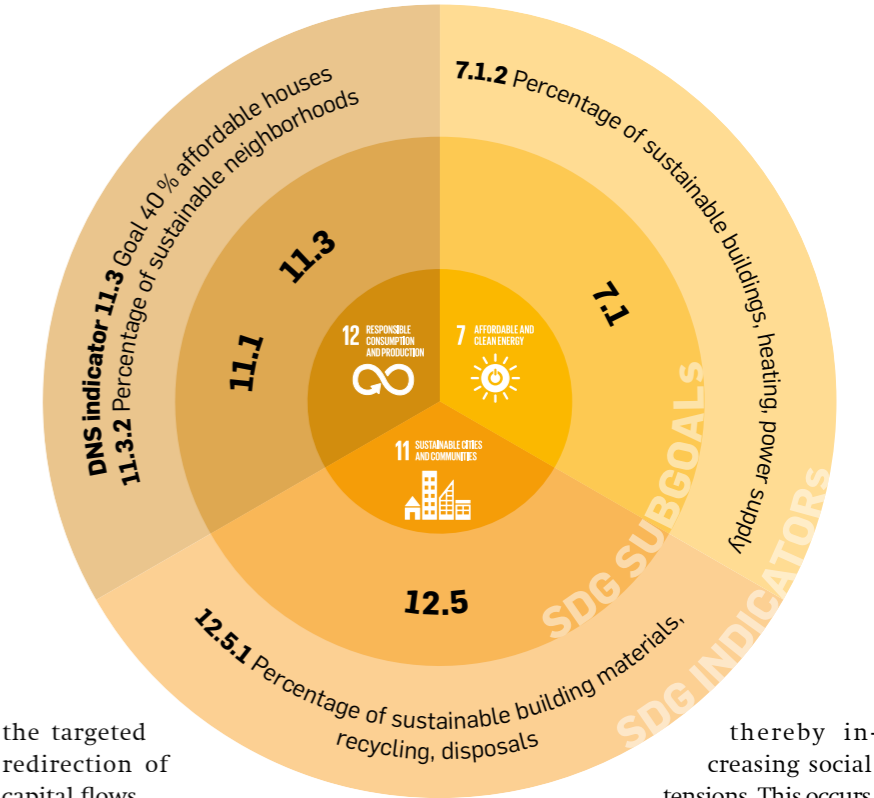
with which we want to encourage and enable the industry to implement impact-oriented approaches in its business models. The guide explains the principles and mechanisms of impact-oriented investments and applies them to the real estate industry for the first time. The globally applicable United Nations Sustainable Development Goals (SDGs) form the basis for this.

The current state of research clearly illustrates that social impact investing offers a new category of investment products for the real estate industry that comes with its own mechanisms, benchmarks, and KPIs. It is an overarching type of investment classification that includes existing categories such as “green,” “sustainable,” “social,” and “ESG-compliant.” In the future, sustainable real estate investors will be increasingly confronted with the task of dealing with “impact factors” and “impact measurement.”

New mindset of a young generation of asset managers

Climate change and social conflicts are no longer just spreading to faraway places but are now being felt directly in all living spaces. Heavy rainfall, flooding, storm damage, heat, particulate pollution in cities, and washed-away river banks have found their way from Bangladesh to our front yards. These developments also impact the risk profiles of our real estate investments. With Covid-19, these effects have been amplified and have a lasting impact on both the demand for real estate and its long-term performance.

A look at the global investment market clearly shows the direction that a new generation of investors – guided, among other things, by the SDGs and the European Commission’s Green Deal – is prepared to take. This generation does not have to develop the sustainability-focused mindset – it demands it itself. Its representatives are eager to exert a positive influence on the social and ecological development of our habitats through



the targeted redirection of capital flows.

The importance of affordable housing for social justice and social cohesion

The issue of affordable housing is a perennial political topic of high social relevance. An adequate housing situation is a fundamental human need and forms the basis for active participation in social life. Especially in urban agglomerations, rental and real estate prices have increased considerably in recent years. These developments hit households with medium and low incomes particularly hard, as housing costs account for a significant share of household expenses, compared with higher income groups. In addition to the costs of water/sewage, energy, heating, and maintenance, housing costs are on average the largest consumption expenditure at the household level. Moreover, the ability to control housing costs is often limited, as family, work, and school commitments limit flexibility.

The lack of affordable housing exacerbates the gap between rich and poor,

thereby increasing social tensions. This occurs through overcrowding, displacement effects, and increasing social segregation into geographically separate, socially homogeneous neighborhoods. However, additional affordable housing can help prevent or mitigate these negative developments. Investors who take such an impact-oriented measure can thus make a valuable contribution to social justice and social cohesion.

The affordable housing impact issue can be broken down into a series of impact goals that represent different aspects and success factors:

- Creating and maintaining affordable (and/or social) living spaces
- Providing disadvantaged target groups with affordable living spaces
- Improving the income situations of target groups
- Creating stable living situations
- Improving the living situations of disadvantaged target groups

IMPACT GOALS FOR AFFORDABLE HOUSING

Inputs Ressources	Outputs Services	Outcomes Effects at target group level	Impact Effects at a societal level
<ul style="list-style-type: none"> Long-term real estate financing Real estate expertise (especially affordable housing) Relationships with the public sector Existing infrastructure and networks (e.g. partnerships with local stakeholders) Impact expertise 	<ol style="list-style-type: none"> Residential properties are reviewed on the basis of social criteria Relevant residential properties in structured, mixed locations are purchased and/or developed Affordable living space is made available to potential tenants Socially disadvantaged people (target groups) are made aware and informed about conditions Socially disadvantaged people apply for affordable housing, are selected and move in 	<ol style="list-style-type: none"> Disadvantaged tenants ... <ul style="list-style-type: none"> ... live in affordable housing in the long term ... spend a lower proportion of their income on rent Disadvantaged tenants ... <ul style="list-style-type: none"> ... stabilise their economic situation ... integrate themselves into society ... invest in their future (education, health, etc.) Disadvantaged tenants ... <ul style="list-style-type: none"> ... improve their situation with regard to poverty and social participation participation (e.g. work, education) ... increase their well-being and life satisfaction 	<ol style="list-style-type: none"> <div>3 GOOD HEALTH AND WELL-BEING</div> <ul style="list-style-type: none"> Higher standard of living for socially disadvantaged people <div>10 REDUCED INEQUALITIES</div> <ul style="list-style-type: none"> Reduced inequality <div>11 SUSTAINABLE CITIES AND COMMUNITIES</div> <ul style="list-style-type: none"> Sustainable cities and communities. Safe and affordable housing

Source: Phineo (left and right)

Sustainable neighborhood development as a social task for the future

Already today, the majority of the world’s population makes its home in urban areas, or more precisely in urban neighborhoods. But by 2050, according to estimates by the United Nations, this proportion will grow to almost 70 percent. The term “neighborhood” is often used to refer to districts or neighborhoods that form an administratively defined unit. However, this definition is by no means limited to administrative boundaries. A borough may consist of multiple neighborhoods, or a neighborhood may span multiple boroughs. Even a single street or a former factory site that has been upgraded with new residential and commercial developments can become a neighborhood.

Many urban agglomerations are currently bundling ecological and social challenges that should not be underestimated. From an ecological point of view in particular, cities represent one of the

greatest challenges, as they are responsible for around 75 percent of global CO₂ emissions due to the high density of buildings, traffic, and consumption levels. But social problems are not to be neglected either.

A typical example is socio-spatial segregation, in which certain neighborhoods become increasingly remote from one another, thus affecting the socialization and participation opportunities of the people living there. Rising rents and living costs are also forcing low-income and middle-class people out of attractive residential neighborhoods and into less favorable peripheral locations, which often also have inadequate infrastructure. There is therefore an urgent need to find sustainable solutions to counteract these challenges.

It is becoming obvious that ecological and social aspects are of enormous importance when it comes to designing new residential neighborhoods. Contemporary neighborhood development

should enable residents to combine living, working, leisure, and social life while fostering a sense of community. The importance of these aspects is particularly evident from the social unrest seen in the French banlieues.

Analogous to affordable housing, the impact field of sustainable neighborhood development can be broken down into a series of impact goals representing different aspects and success factors:

- Promotion of socioeconomic mixing in the neighborhood
- Access to local infrastructure and sustainable mobility
- Promotion of cultural and economic diversity in the neighborhood
- Improvement of social housing and quality of life in the neighborhood
- Improvement of the ecological quality of living and life in the neighborhood ■

MEASURING IMPACT – IMPACT TARGETS FOR SUSTAINABLE NEIGHBORHOOD DEVELOPMENT

Inputs Ressources	Outputs Services	Outcomes Effects at target group level	Impact Effects at a societal level
<ul style="list-style-type: none"> Long-term real estate financing Impact-oriented development Impact-oriented allocation and management Real estate expertise Relationships with the public sector Existing infrastructure, networks and partnerships with local stakeholders Impact expertise 	<ol style="list-style-type: none"> Neighborhoods are developed according to high social and ecological sustainability standards and with good connections to local infrastructure (education, health, social services, employment, etc.) Residential and commercial areas with good connections to local infrastructure (education, health, social services, employment...) are offered to target groups (residents, businesses and NPOs) Residential and commercial spaces are rented or sold to interested parties from the target groups (residents, businesses and NPOs) Interested parties move in 	<ol style="list-style-type: none"> Residents, businesses, NPOs receive ... <ul style="list-style-type: none"> ... Access to local infrastructure and sustainable mobility ... Access to leisure and recreation areas ... Access to economic / cultural / social opportunities residents, businesses, NPOs receive ... <ul style="list-style-type: none"> ... use local infrastructure ... use leisure and recreation facilities ... use economic / cultural / social offers High social and ecological quality of living and quality of life in the neighborhood High quality of cultural and economic diversity in the neighborhood High quality of socio-economic mix 	<ol style="list-style-type: none"> <div>3 GOOD HEALTH AND WELL-BEING</div> <ul style="list-style-type: none"> Increasing well-being <div>10 REDUCED INEQUALITIES</div> <ul style="list-style-type: none"> Reduced inequality and higher living standards <div>11 SUSTAINABLE CITIES AND COMMUNITIES</div> <ul style="list-style-type: none"> Sustainable cities and communities

SDGS AND ESG

The SDGs call for joint action to decisively advance activities to solve social, ecological, and economic development issues by 2030. For a heterogeneous industry such as real estate, collaboration is a key success factor. Investments require the positive incentives of many stakeholders during the planning, implementation, and creation phases as well as in the operation of the real estate and neighborhoods. The well-being of our cities is driven by political will and good prospects.

- Goal 1:** No poverty (Affordable housing, access to good location, etc.)
- Goal 7:** Affordable and clean energy (Sustainable buildings, heating, power supply, etc.)
- Goal 10:** Fewer inequalities (Affordable housing, equal opportunities, etc.)
- Goal 11:** Sustainable cities and communities (affordable housing, sustainable neighborhoods, sustainable buildings, etc.)
- Goal 12:** Sustainable consumption and production (sustainable buildings, sustainable building materials, recycling, disposal, etc.)
- Goal 13:** Climate protection measures (Sustainable buildings, energy efficiency, electrification, etc.)

Onion Layer Model
Impact investing in Germany according to investment strategies and investor groups
 For each investment strategy, the colours of the ring segments indicate, true to scale, the portfolio shares of the respective investor groups or intermediaries. Accordingly, each investor group has its own focus within the portfolio mix. In contrast, the size of the rings should not be understood as true to scale.

- Narrow understanding (Impact-First & Finance-First)

Broad understanding (ESG & SRI)

Foundations

Family Offices

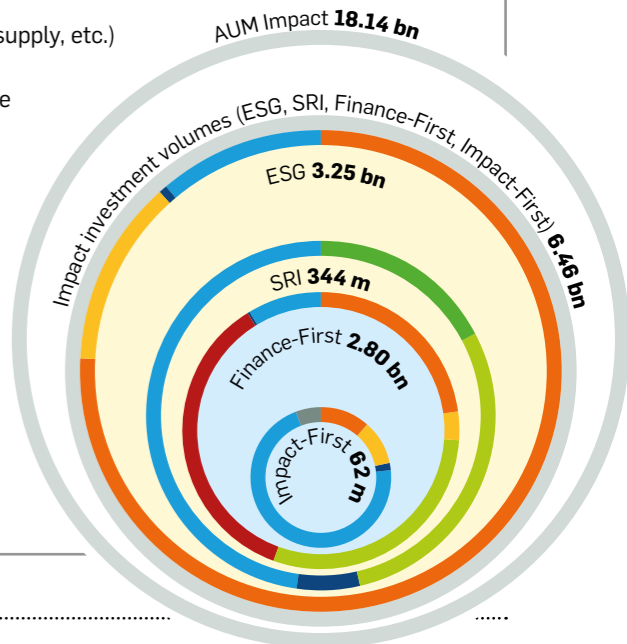
Individual Investors

Intermediaries

Fund Managers

Banks

Others



Source: Social Impact Investing. Praxisleitfaden für die Immobilienwirtschaft. ICG (Publisher)

Equitable Healthcare for All

How can healthcare be made more equitable worldwide? In addition to improvements regarding affordability and accessibility, the approach to clinical trials also plays an important role. Women, people of color, and children are often not adequately represented. This is where Merck has a focused strategy to better reflect patient populations in its clinical trials. Through its efforts, the company aims to reduce the key barriers that still stand in the way of diversity, equity, and inclusion.

By Melaina Boyce, Head of In-Country Clinical Study Operations (USA, Canada, and Latin America), and Junyang Wang, Director, Global Regulatory and Scientific Policy (USA)



In general, healthcare has improved around the world in recent decades. Nevertheless, this progress is not sufficient if basic healthcare is to be provided to all people by 2030, as envisaged by the UN Sustainable Development Goals (SDGs).

The problem:

“Variability is the law of life, and as no two faces are the same, so no two bodies are alike, and no two individuals react alike and behave alike under the abnormal conditions which we know as disease.

Sir William Osler, 1904

The father of modern medicine, Sir William Osler, presciently stated this fact more than a century ago. It continues to plague the healthcare ecosystem and the communities served by it to this day. The Covid-19 pandemic uncovered prevailing health inequities in America, highlighting striking life and death differences in healthcare based on demographic factors such as race and ethnicity. For example, during the course of vaccine development, it was reported that Black Americans made up

only 7 percent of study participants. That number should be closer to 12 percent to reflect the US Black or African American population. According to the 2020 US Census, the population is 58.9 percent White (not Hispanic), 13.6 percent Black or African American, 6.3 percent Asian, and 19.1 percent Hispanic. This is in addition to the fact that Black Americans were — and are — disproportionately affected by Covid-19, as pointed out in a report by the National Urban League. According to the report, Black Americans were not only more likely to be infected with Covid-19 than White Americans, but they also died more frequently from it and were exceptionally affected by the negative psychological and economic consequences.

Although the pandemic brought such health disparities to light, these healthcare inequities existed long before and apply not only to healthcare, but also to clinical research. Most clinical trials are not representative of the general population. Ethnic minorities, women, children, and the elderly are often not given sufficient consideration. According to a 2020 US Food and Drug Administration (FDA) analysis of approved molecular entities and therapeutic biologics, 75 percent of US clinical trial participants were White, whereas only 8 percent were Black or African American, 6 percent were Asian, and 11 percent were Hispanic.

As part of a longstanding effort to increase the diversity of clinical trials, the FDA unveiled new Diversity Plans guidance (April 2022). It was created to shift the industry focus from a retrospective, post-hoc approach to one that is inclusive and systematically incorporates diversity in the early design stages of development and throughout the lifecycle of the program. This new FDA objective is backed by legislative changes made by the US Congress that makes Diversity Plans a requirement for all clinical studies submitted to the FDA. Similar requirements have been implemented in Japan and China, where a fixed percentage of Japanese and Chinese patients are required for clinical trials. The World Health Organization (WHO) is also seeking to develop best practice guidance that highlights and addresses underserved populations in clinical trials.

There is a renewed focus on Osler’s challenge — all stakeholders in the healthcare ecosystem need to reflect upon past lessons and address the fundamental fact that some individuals can experience the same disease differently than others. This makes it more critical than ever for drug developers to understand how their potential therapies affect different groups. It is imperative that diverse groups of people participate in drug studies. When these studies acquire comprehensive data on the representative populations,

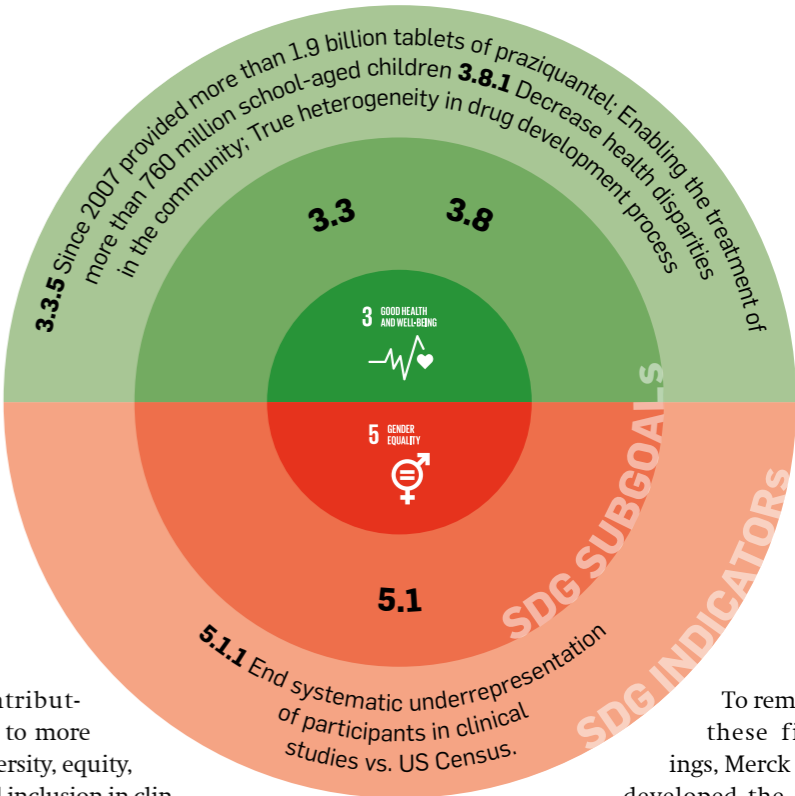
ABOUT MERCK

In the healthcare business sector, Merck develops, among other products, drugs and technologies to prevent and control non-communicable diseases such as cancer, multiple sclerosis (MS), diabetes, and hypertension. It is also the world market leader in fertility treatments. Merck has been engaged in the fight against the neglected tropical disease schistosomiasis and is working toward its elimination as a public health problem. In conducting clinical trials, the company adheres to the highest ethical and scientific standards worldwide – always in compliance with the applicable laws and regulations. This is ensured not only via routine checks by the relevant regulatory authorities, but also through internal and external quality assurance audits.

it enables programs that can identify potential biologic variabilities across heterogeneous subgroups according to age, gender, race, and ethnicity, among other factors. Researchers are thus able to identify the different effects of drugs on different population groups, leading to data that supports treatment guidance and decision-making for the diversified population. Furthermore, allowing individuals to see that the clinical trials include people like them engenders trust in a historically challenging medical environment of distrust among underserved populations.

Merck takes the lead

The science and technology company Merck also sees itself as responsible for



contributing to more diversity, equity, and inclusion in clinical trials. The company is committed to making efforts to ensure that the clinical trial population reflects the population it intends to treat with the company’s products.

In order to translate this approach into clinical research practice, the company conducted analyses to examine the status quo of recruitment diversity, equity, and integration in clinical trials. The data is from global studies sponsored by Merck that were conducted between 2013 and 2022.

The results revealed that Black people and Hispanics were systematically underrepresented in the studies conducted by Merck. On average, only 7.8 percent of the study participants were Black, and the proportion of people of Hispanic origin averaged only 8.0 percent. While overall Asians seem to be well represented, Asian-Americans were underrepresented. Looking at the proportion of women, it can be stated that there is a good overall representation of women, but large variation across trials and a tendency for underrepresentation in late-stage trials.

To remedy these findings, Merck has developed the “Diversity, Equity & Inclusion (DE&I) in Clinical Trials” (DEICT) approach, which was rolled out in 2022. It contributes to Merck’s new company-wide DE&I strategy, which was completed in 2022. It is aligned with, and supported by, the numerous efforts and initiatives generated in recent years on this topic throughout the pharmaceutical industry. The company’s DE&I approach aims to create an inclusive working environment and tackle DE&I in all dimensions, including in clinical trials.

The approach starts with increasing understanding within the organization via training on DEICT. This is designed to provide R&D with the awareness, knowledge, and skills to implement the company’s commitments to DEICT, specifically through the use of a template (tool) in the development of a diversity plan. Outlining the approach helps Merck to break down barriers that still stand in the way of integration and to foster inclusion. Despite the complexity, the company has identified four areas of focus: increasing awareness, broad- >>



MERCK'S PROGRAM FOR THE ELIMINATION OF SCHISTOSOMIASIS AS A PUBLIC HEALTH PROBLEM

Merck is engaged in the fight against the neglected tropical disease (NTD) schistosomiasis. Its approach is in line with WHO's NTD Roadmap, which seeks its elimination as a public health problem by 2030.

Schistosomiasis is a chronic condition and one of the most common and most devastating parasitic diseases in tropical countries. It is estimated that approximately 240 million people are infected worldwide and that around 200,000 die from it each year, mainly in sub-Saharan Africa. If untreated, the disease can lead to potentially fatal chronic inflammation of vital organs as well as anemia, stunted growth, and impaired learning ability. It has devastating consequences for the lives of children, for whom the infection rate is particularly high.

Merck has adopted an integrated schistosomiasis strategy that is being implemented in close collaboration with partners worldwide and focuses on: treatment, research and development, health education, advocacy and partnerships.

In 2007, Merck partnered with WHO to fight this disease. Since then, the company has provided more than 1.9 billion tablets of praziquantel, enabling the treatment of more than 760 million people, mainly school-aged children, in 47 endemic countries. Each year, Merck provides up to 250 million tablets to WHO for mass drug



administration programs in endemic countries. In 2022, the company provided more than 200 million tablets for distribution in 27 countries – 24 of which were in sub-Saharan Africa. Joint global efforts – including the large-scale provision of treatments – have proven to be successful. [Data shows](#) that in 2019, almost 60 percent fewer school-aged children were in need of treatment than in 2000.

Within a consortium of partners established in 2012, Merck has developed a potential new pediatric treatment option to address the unmet medical needs of preschool-aged children (PSAC). In line with Merck's approach to involve the patient population in need, clinical studies have been implemented in Africa, for example pivotal [Phase III trial](#) performed in children aged 3 months to 6 years in Côte d'Ivoire and Kenya. The results showed efficacy and demonstrated favorable safety, tolerability, and improved palatability among PSAC. This program is currently in the regulatory phase, with the scientific opinion of the European Medicines Agency expected by the end of 2023.

ening access, enabling patient participation, and lowering screening barriers. To address this, Merck has defined concrete goals as well as internally and externally oriented measures.

The approach is based on four pillars:

- 1) Partner with diverse healthcare professionals or those who provide treatment to diverse communities.
- 2) Invest in community education and outreach – spread awareness and amplify the trusted voices in the community.
- 3) Facilitate patient participation in clinical research by ensuring access to resources.
- 4) Leverage protocol design and the use of real-world data.

These activities help to reduce health inequities and achieve true heterogeneity in the drug development process. One example of how Merck is putting this into practice is the "I'M IN" initiative. Launched in 2019, it addresses both Merck's own employees as well as external stakeholders with whom the company collaborates. As part of the initiative, it hosts lectures and panel discussions that offer a forum on overlooked health disparities regarding MS. Since its launch, "I'M IN" has engaged with more than 1,000 healthcare professionals.

In addition, Merck supports and funds "I'M IN Neurodisparity Fellowship" projects, which develop strategies for more equitable MS care, lower barriers, inspire replication, and create "ripple effects" in the MS community. In the area of reproductive medicine and infertility, Merck also funded the Diversity Fellowship Research Award in 2022, in addition to initiating its Reproductive Endocrinology and Infertility (REI) Diversity Fellowship, dedicated to diversifying the pipeline of REI physicians.

In medicine, DE&I isn't just the latest business acronym – it's a critical component of providing equitable healthcare. By prioritizing under-represented physicians and underserved patients, we can create innovative solutions that address systemic inequalities and ultimately build a more inclusive healthcare system. At the core of this mission are a deep sense of purpose and a commitment to creating lasting impact for generations to come.

*Gretchen Terry-Leonard,
Professional Relations, Strategic Alliances,
Healthcare, United States*

To meet legal requirements and adequately address diverse patient populations, Merck performs epidemiological landscape analyses to determine the size of patient populations and their geographic locations. Another measure to promote diversity is to enhance the site selection process to reach minority populations and collaborate with specialized vendors focused on DE&I training at the site level. Furthermore, Merck is committed to creating protocols with diversity in mind (e.g., gender-neutral language, inclusion, and exclusion criteria considerations) so that their design is more inclusive and patient friendly.

The company also utilizes digital recruitment campaigns and employs traditional and modern tactics to reach diverse communities. This includes appropriate patient-facing materials and digital social campaigns.

Understanding that multiple stakeholders are on this journey, Merck has assembled a committee of experts in the community to advise the company on efforts to increase diversity in clinical research. The committee is comprised of healthcare professionals and patient advocates to

ensure that Merck's clinical development ecosystem fosters inclusive research.

It is equally important to measure progress, thus Merck created a DEICT Scorecard, which evaluates whether diversity is being integrated into its culture and leadership. The Scorecard was inspired by the Diversity Maturity Model from the Clinical Trials Transformation Initiative (CTTI). It was endorsed by senior leaders to enable Merck to apply DE&I in clinical trials.

Besides the DEICT Scorecard, the Good Pharma Scorecard was developed to assess how women, older adults, and ethnic minorities are being included in clinical trials. Merck's gold rating in the Good Pharma Scorecard ranking this year provided confirmation of its good performance with regard to fair inclusion in its oncology trials, especially women and older patients.

In addition to providing medicines, Merck is committed to building capacity and expertise throughout the value chain. Complementary measures such as awareness-raising and educational work help to improve the lives of local populations overall.

Positive effects include, for example, improving future employment opportunities for local health workers and promoting equal rights for women. An important lesson learned is that in order to leave no one behind, you have to reach people where they are, even if they live far from the clinical research site.

These are examples of Merck's commitment to improving health for all – regardless of age, gender, or race – and advocating for the implementation of DE&I in clinical trials. Cooperation and partnership – whether with authorities, local communities, healthcare experts, or through industry initiatives – is the common thread running through all of its activities. This also includes support for the UN's 2030 SDGs. ■



Connecting Family Farmers to Just, Equitable, and Supportive Markets

Sustainable transformation means a shift of lifestyle, both for people in cities and most of all for people in the country. The efficient-driven monocultures must be overcome. Below are some examples of alternative housing/working/living as well as impact measuring and potentials for global food security.

By Gabriela Ensink



Current food production levels are enough to feed the entire world population. If the food were efficiently and equitably distributed, the Sustainable Development Goal 2 (Zero hunger) could be met without problems. However, the basic nutritional requirements of more than 820 million people are not being

met, according to the UN. Food production is based on monocultures, resulting in the intensive use of agrochemicals, deforestation, and loss of biodiversity. Furthermore, the food industry is responsible for 30 percent of greenhouse gas emissions and is also one of the largest generators of garbage.

Agribusiness is highly dependent on external inputs (pesticides, herbicides and chemical fertilizers, fossil fuels), long distribution chains, financial capital, and the concentration of land and markets. It is reaching its limits due to salinization and erosion of the soil, depletion, water pollution, and the impacts of agrochemi-

cals on health. Added to this are the consequences of climate change (droughts, floods), to which industrial agriculture itself contributes by emitting greenhouse gases. But this agribusiness model is opposed by others, such as those who work in organic production and agroecology and who promote biodiversity, combining crops and respecting natural biological processes that are carried out by small producers and cooperatives.

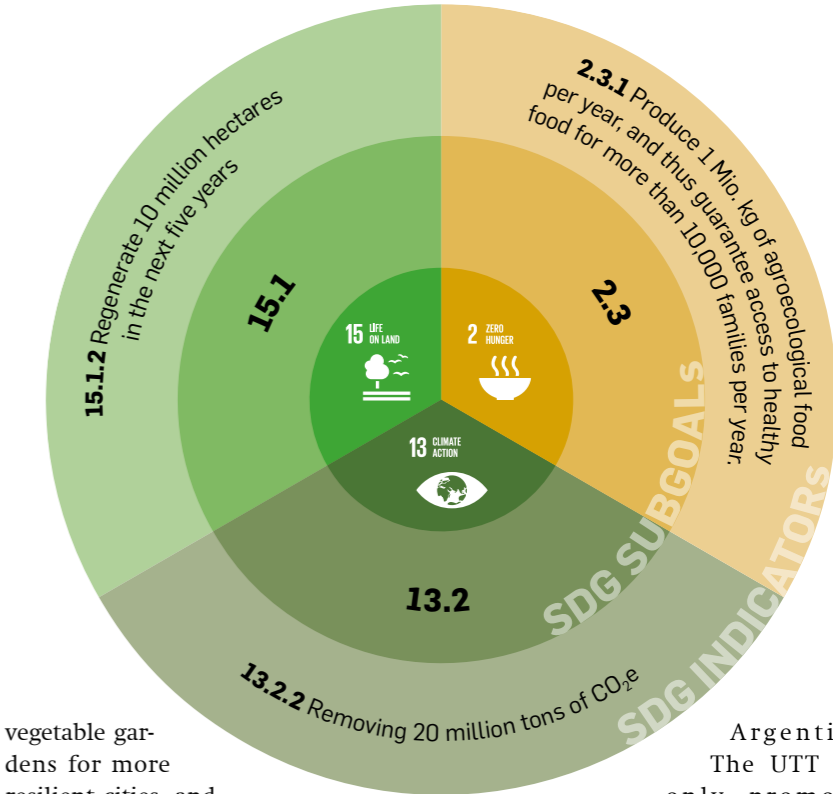
Fair trade in network

URGENCI is an international network of agroecological farmers based on solidarity and fair trade. It brings together small-scale food producers, consumers, activists, and researchers in more than 30 countries. “We rely on partnership, local exchange, or direct relationships where producers can earn a decent living and consumers access healthy, nutritious, locally grown food,” explains Isabel Alvarez Vispo, Agroecology researcher and co-president of URGENCI.

“Die Agronauten” is one of its network members. Located in Germany, it is a nonprofit research association for sustainable food systems and the integration of social and ecological aspects into agriculture. The organization has carried out many projects, such as “the 15 km dish.” The challenge is to prepare a dish — after getting the ingredients from producers within a radius of 15 kilometers — to revalue local consumption and reduce the environmental footprint.

In Morocco, the Network of Agroecological Initiatives (RIAM) promotes a labeling system for agroecological products and direct sales between producers and consumers in local and nearby markets. The RIAM network is part of URGENCI and the “Institutional Innovations for Organic Agriculture in Africa” project.

It also carries out training programs and the promotion of urban agriculture, ecotourism, and agrotourism. Urban agriculture’s mission is to develop micro-farms and urban and peri-urban



vegetable gardens for more resilient cities, and to educate citizens for a healthier and more environmentally friendly diet.

Ecotourism offers travelers the opportunity to discover natural ecosystems and agrosystems through the enhancement of local production and the creation of jobs and income. Agrotourism in rural and peri-urban areas promotes local knowledge (agricultural, culinary, crafts) and favors local production.

Agroecological colonies

Family, peasant, and indigenous farming produces 80 percent of food consumed nationally worldwide, according to FAO. Between 2002 and 2018 in Argentina, 100,000 small and medium-sized farms were lost, and thus the concentration of land increased. This forces the migration of rural populations to marginal urban areas, where families live in conditions of extreme vulnerability.

Created in 2010, the Union of Land Workers (UTT) is a pioneer organization in the implementation of agroecology in

Argentina. The UTT not only promotes changes in the way of producing, but also in the way of commercializing food through community purchases by neighborhood groups. It proposes the creation of Agroecological Colonies, granting idle land to families for food production.

“Having land, planting without agrochemicals, harvesting according to natural times, caring for soil and human health, and selling what is produced at a fair price in nearby markets, is not a utopia, but rather a reality,” says Agustín Suárez, spokesperson for UTT.

So far, eight colonies have been created in different areas of the country, where fruits and vegetables are produced without agrochemicals and where there is caring for and restoration of native forest. Machine and storage sheds are shared there, trade schools operate, and training is provided on various topics: from production and marketing techniques to the prevention of gender violence, since most of the producers are women. Through productive practices based on agroecological and agroforestry tech- >>

niques, they plan to produce 1,000,000 kg of agroecological food per year, and thus guarantee access to healthy food for more than 10,000 families per year.

Regenerative agriculture

Ruuts is an Argentine startup that advises agricultural producers in changing from an extractive and linear food production system toward a regenerative and holistic model while capturing emissions and participating in markets for carbon credits.

“Soils are carbon reservoirs. Today carbon is being released into the atmosphere due to poor management and water erosion. But what is a problem in the air is a solution on the ground. If we change practices, we can capture carbon and return it to the soil,” says the founder of Ruuts, Pablo Borrelli. “This would help stabilize the climate while improving food security and living conditions for millions of species,” he highlights.

The company developed a platform to connect companies that need to offset their environmental footprints with producers that generate carbon credits from soil regeneration. One of the ways to do this is through regenerative farm-

ing, in which animals are fed on natural pastures instead of feedlots. Ruuts is part of the South American Regenerative Agriculture (SARA) program, an initiative that seeks to promote regenerative agriculture and livestock through economic incentives for producers. To date, almost 100 establishments covering 154,000 hectares eligible for the carbon program have already joined. Producers expect to collect the first carbon credits in 2024.

“To avoid greenwashing, it is important to first reduce the carbon footprint as much as possible, and then compensate,” says Borrelli. “We want to regenerate 10 million hectares in the next five years in Latin America, removing at least 20 million tons of CO₂ equivalent from the atmosphere, with the participation of two thousand producers,” he highlights. “We have a purpose and it is to accelerate a paradigm shift in food production through incentives for producers to start regenerating the land.”

Circular coffee

With an annual consumption of 1.3 kg per person, and 5 kg per capita in the case of the countries of the European Union, coffee is one of the most popular drinks worldwide. Some 25 million

people make a living from coffee (mostly in Latin America, Africa, and Southeast Asia), and another 100 million from its transformation and commercialization. Therefore, coffee cultivation is one of the industries that is most affected by the climate crisis. It is also related to various environmental problems: water pollution, deforestation, soil degradation, and biodiversity loss. Circular coffee, therefore, is a good example of how a traditional and essentially extractive activity such as coffee harvesting and production can become sustainable.

“As coffee production and consumption increases, more and more consumers prefer coffee with a smaller environmental footprint and demand certifications, which are difficult for small producers to obtain,” says Julio Leoncio Ugarte, researcher and advisor in agroforestry for FAO.

For this reason, some initiatives are being carried out to promote circular coffee cultivation practices. In Peru, Olam Agro, Solidaridad, the Netherlands Enterprise Agency, and local governments are training 1,600 farmers to introduce circularity principles in the coffee value chain. The project started in 2019 and will run until 2024 with



the aim of reducing the use of resources while creating an economically viable solution to manage waste by producing fertilizer of organic material that used to be discarded.

The program is focused on small family producers — especially women — with training and financing to improve agricultural practices as well as water and soil management. As a result, the pro-

ducers increased their productivity by 20 percent while improving the quality of their coffee. The next step is the creation of a circular coffee fund (CCF) to collect used coffee grinds in the Netherlands and recycle this into oils and dyes for the cosmetics industry and biomaterials for construction or disposable tableware. The profits of this intervention will go to the CCF to be used as agricultural loans for Peruvian farmers.

Growing a better world

There is a growing consensus on the unsustainability of industrial agriculture. Agroecology and regenerative farming are not a marginal option, but rather a growing trend that is health- and environmentally friendly and starts debates about food sovereignty, access to land, labor rights, and ethics. ■





The target of Sustainable Development Goal (SDG) 3 is to ensure healthy lives and promote well-being for all – at all ages. But reality is sobering: Only 12 percent of the UN SDG targets are on track to being fulfilled. In order to fully achieve the United Nations goal of “leaving no one behind,” it is increasingly important to examine health-related SDGs beyond a national perspective.



Leave no one behind. That defining principle of the 2030 Agenda for Sustainable Development is a shared promise made by every country to work together to secure the rights and well-being of everyone on a healthy, thriving planet. But with 2030 not far off, that promise is in peril, as shown in a recent study of the UN Secretary-General on the progress being made with the SDGs.

This lack of progress is universal, but it is abundantly clear that developing countries and the world’s poorest and most vulnerable people are bearing the brunt of our collective failure.

The global Covid-19 pandemic has shown us how extremely important it is to invest in a sustainable and resilient healthcare system. This requires a systematic as-

essment of the performance of health systems on the one hand, and the development of goals based on this assessment on the other. This is not possible without a valid database. However, data from healthcare systems across the world is not centrally bundled, but instead available from many data silos.

To do this, we look at the performance and core functions of health systems and their relation to the SDGs at different levels: At the global level, we use the “Triple Billion” method, and on the national level we focus on a concrete example from Germany.

Triple Billion method

At the global level, the Triple Billion method is WHO’s preferred tool to sum-

marize the health-related SDGs. This approach aims to ensure an additional one billion people receive universal health coverage (UHC), that another billion people are better protected from health emergencies, and one billion people enjoy better health and well-being.

The pandemic underscored the importance of emergency preparedness and illustrated that the goals of the Triple Billion method are interconnected. This allows us to build upon them and ensure that we emerge with stronger, more resilient health systems. WHO uses this method not least because it is accessible to all member states, enabling the following impacts:

- advocating for ambitious improvements in global health

- evaluating interventions and their impacts
- identifying data gaps that need to be addressed
- measuring the resulting changes
- offering a gateway to reporting and accountability through measurement.

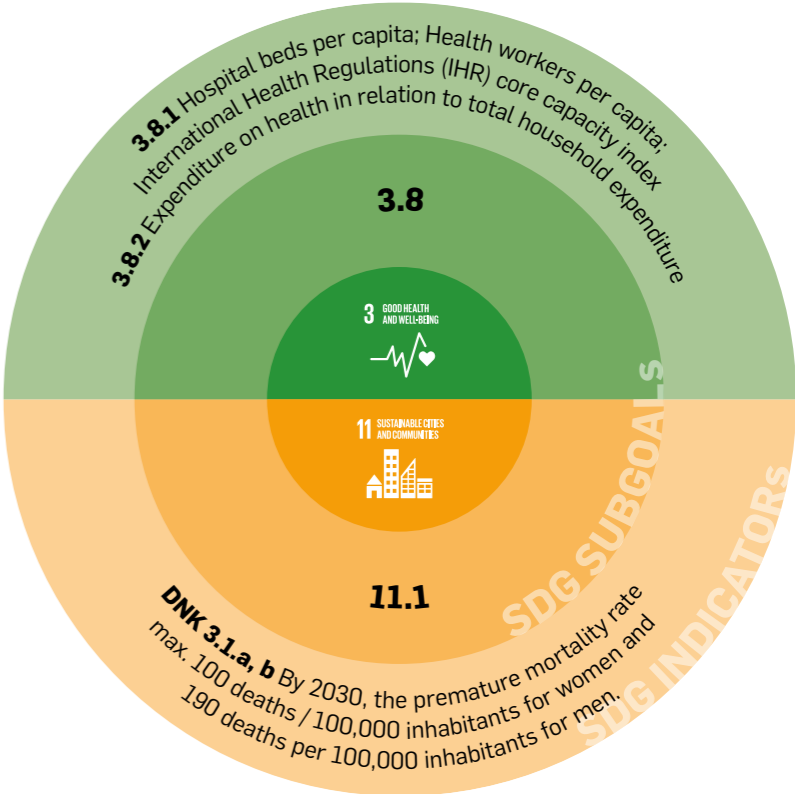
Outcome indicators

Each goal of the Triple Billions method is measured against several component indicators. Understanding these indicators is a key component to implementing and executing the method. It is necessary to examine each indicator in detail to determine the actions required.

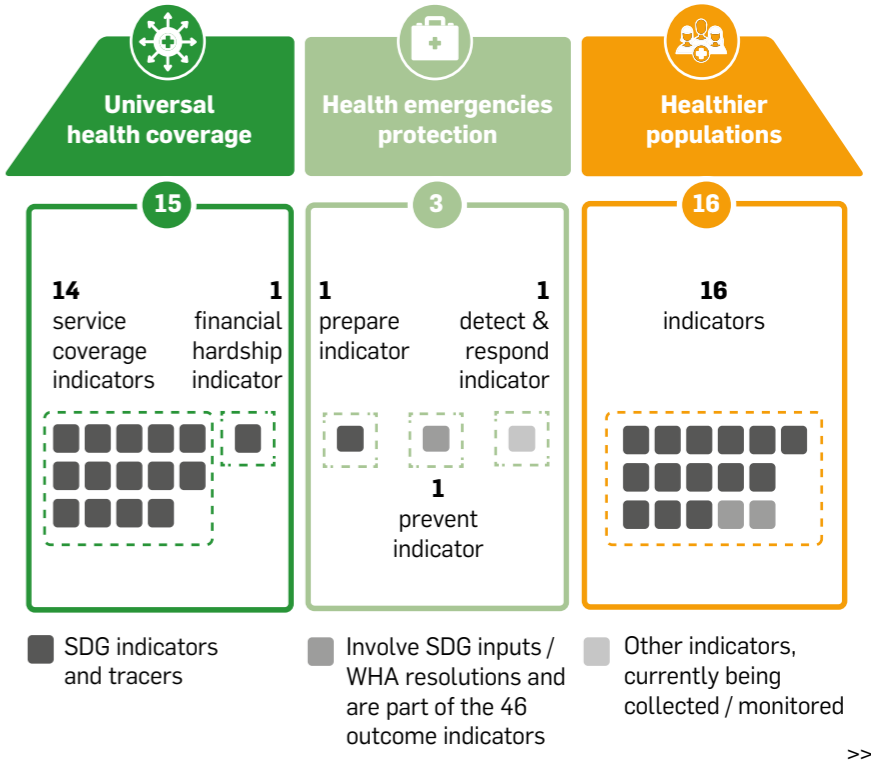
The goals are formed primarily from SDG indicators (and the SDG 3.8.1 tracer indicators, see Triple Billion indices in the figure). The 46 outcome indicators cover a range of important health topics. They include 39 SDG indicators and 7 non-SDG indicators that address priorities identified by member states, including antimicrobial resistance, polio, and noncommunicable diseases.

The billion figure for UHC is determined by analyzing the SDG 3.8.1 indicator – “Index of Coverage of UHC Services” – and the SDG 3.8.2 indicator on the financial need in the UHC sector. Both are key indicators for measuring progress toward UHC. The former comprises a total of 14 tracer indicators, 6 of which directly relate to outcomes achieved through healthcare services provided under the umbrella term “universal health coverage.” For instance, tuberculosis treatment serves as an indicator within this framework. Its incidence rate is one such outcome measure used to gauge success in achieving these goals effectively and efficiently across populations globally.

The billion figure for health emergencies protection is calculated using two of the six outcome indicators for health emergencies.



INDICATORS IN THE TRIPLE BILLION INDICES



The billion figure for the calculation of healthier populations is done using 16 component indicators from the outcome indicators.

Example: Universal health coverage

As we strive toward achieving the SDGs, it is imperative that we prioritize UHC, whose billion initiative focuses on two crucial aspects to ensure accessible healthcare for all. Firstly, average coverage encompasses reproductive health, maternal and child health, as well as infectious and noncommunicable diseases. This includes 14 tracer indicators derived from the SDG 3.8.1 indicator, with an updated medical workforce density indicator. Secondly, financial need is measured by the proportion of households spending more than 10 percent of their income or expenditure on healthcare (SDG 3.8.2 indicator). It is time to take action toward making quality healthcare a basic human right!

The average service coverage (ASC) of the billion UHC initiative estimates the average proportion of essential services that

are available to a population. It can be viewed as an estimate of the probability (in percent) that a person will receive the health service(s) needed. Tracer indicators measure coverage in five basic areas of healthcare: reproductive health; maternal, newborn, and child health; infectious diseases; noncommunicable diseases; and service capacity and access.

The 14 indicators are not intended to be a complete or exhaustive list of health services and interventions needed to achieve UHC in a given country, nor do they measure the health impact of those services. However, they do provide a clear signal about the coverage of health services needed by most populations across all socio-demographics. 25

Lancet study reveals national view

A *Lancet* study on the achievement of the health-related SDGs for 195 countries by 2030 concludes that SDG index scores will vary significantly in some countries in the coming years. The researchers measured 41 health-related SDG indicators from 1990 to 2017 and

derived a health-related SDG index. The subsequent projection and scenario calculation was based on previous trends.

The results projected that by 2030, most countries will achieve a higher health-related SDG index than in 2017. However, the likelihood of reaching these targets varies greatly, depending on each country's individual indicators. Fortunately, for under-five mortality rates, neonatal mortality rates, maternal mortality ratios, and malaria incidences, most countries have at least a 95 percent chance of meeting their goals.

On the other hand, it appears that those nations that perform well overall with regard to their health-related SDG index tend to struggle more when it comes specifically to childhood obesity and alcohol consumption markers compared to other areas.

It is concerning that no countries are projected to achieve the SDG targets for noncommunicable disease mortality and suicide mortality by 2030. However, there is still hope, as some nations have

a chance of reaching these goals within this timeframe. It is worth noting that many countries with low scores on the health-related index struggle with well-certified mortality registration – an issue they must address if they wish to improve their standing in global rankings.

As populations continue to age worldwide, it becomes increasingly important for all nations to strengthen their health information systems so that death registrations can keep up with rising numbers among older demographics. By doing so, we can ensure accurate data collection and analysis while working toward achieving our shared goal of better healthcare outcomes across borders.

For some indicators – including child malnutrition, several infectious diseases, and most measures of violence – the annualized rates of change needed to achieve the SDG targets far exceeded the pace of progress each country has made in recent years.

However, even for those indicators whose projected mean fell short of the 2030

target, there was some likelihood that it would be achieved by 2030, highlighting the potential for future SDG success if progress can be accelerated in the coming years. These findings underscore the need for a more rapid, yet strategic implementation of programs and continued monitoring of inequities in health-related SDGs within the population. S: 2108

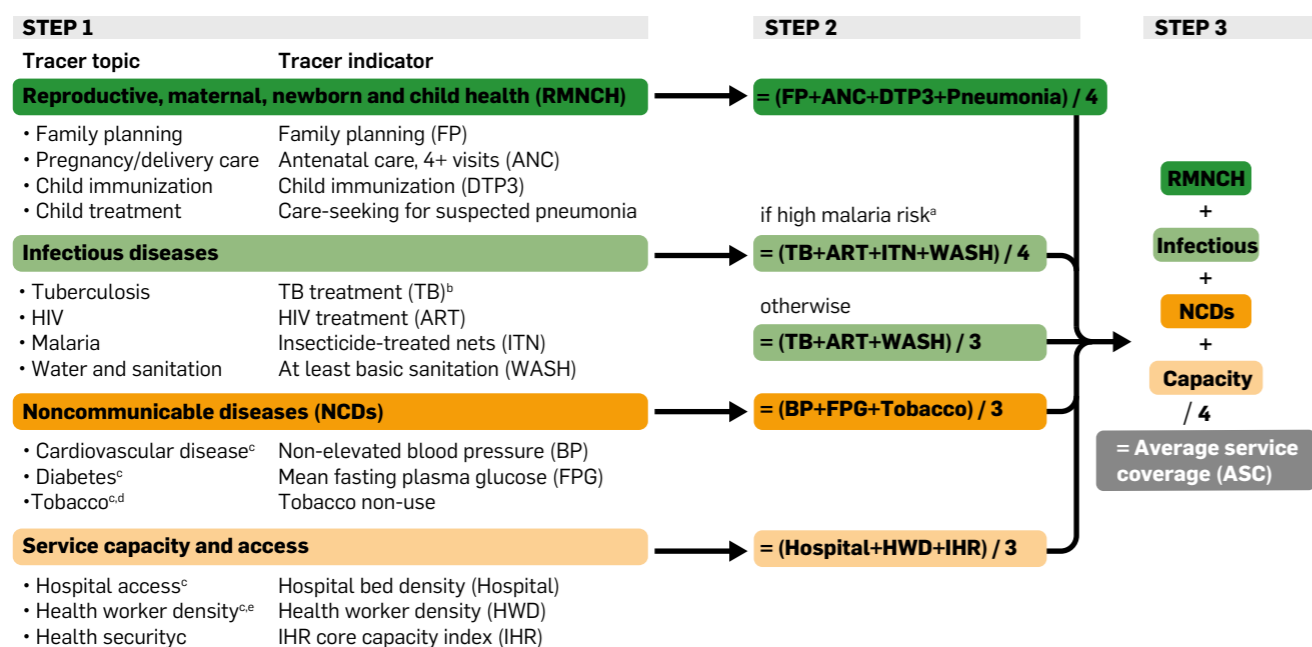
Sustainability index: German health-care system

The German healthcare system is one of the best in the world, but also one with potential for improvement, as the overload of care facilities during the pandemic showed. The crucial question is how resources will be distributed in the future and where investments in sustainability will be made in order to make the healthcare system fit for the future. Currently, there is a lack of concrete sustainability targets. An index presented in 2023 will for the first time provide a comprehensive database for this purpose, which will holistically record the sustainability and performance of the

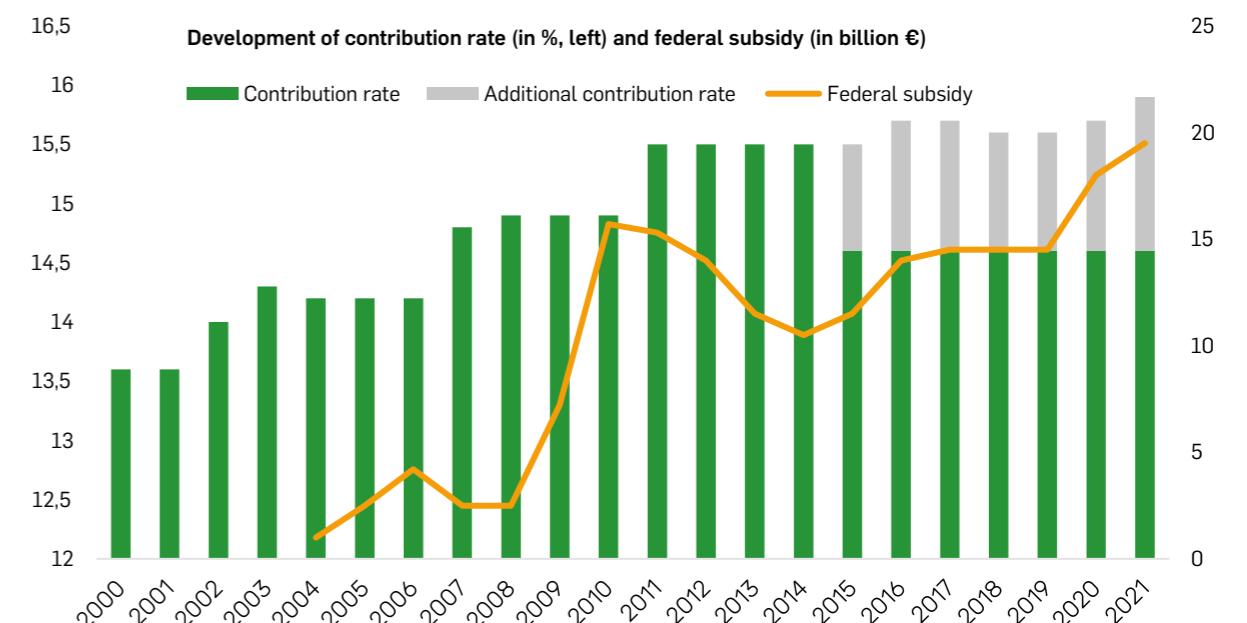
healthcare system, making it measurable and comparable.

The sustainability index enables a realistic representation of the current situation and the creation of a timeline, as well as the addition of further sustainability aspects. The example of healthcare spending shows what this looks like in concrete terms: Healthcare spending is recorded on a numerical basis using 33 indicators. The background to this detailed analysis is that it is based on health expenditure accounts. After healthcare spending as a whole has been presented, it is described on the basis of spending units, service type, and facility type, and it is supplemented by the extended service area and out-of-pocket payments. This detailed structuring provides a basis for assessing the economic situation as well as other indicators. All indicators depicting the development of healthcare spending have shown an upward trend, although no assessment have been made. Reference data was not used because of the indicators' strong focus on Germany. The data quality can be rated as very good. ■

CALCULATING AVERAGE SERVICE COVERAGE (ASC) FOR THE UHC BILLION



REVENUE SURPLUS VS. DEFICIT IN GERMANY



ANNEX


Clariant

THE TRANSFORMATIVE ROLE OF PRODUCT CARBON FOOTPRINT

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	9.4.1 CO ₂ emissions per unit of value added	<p>Since 2019, Clariant’s direct and indirect emissions decreased by 10 %.</p> <p>The scope 1 & 2 emissions per ton of product decreased by 5 %.</p> <p>Compared to 2019, the Scope 3 emission intensity decreased by 21 %.</p> <p>Absolut emissions: 0,168 CO₂e kg / production</p>
	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.1 Raw material footprint	Use of renewable materials in the chemical industry is becoming ever more important, both in terms of long-term costs and as regards environmental protection and sustainability. Therefore, Clariant has set out the following interconnected principles:
			<ul style="list-style-type: none">• Member of RSPO (Roundtable on Sustainable Palm Oil)• Development and production of innovative and bio-based chemicals and biofuels
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 Recycling rate, tons of recycled material	<p>In 2022, Clariant’s total waste generation decreased by 4.7 %, falling from 74,4 kg to 70,9 kg per ton of production. The total waste generated decreased by 13 % mainly due to production volumes impact as well as measures implemented to reduce non- hazardous waste.</p> <p>Clariant has set targets to reduce hazardous waste intensity by -25 % from 2019 to 2030.</p>
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.2 Total greenhouse gas emissions per year	<p>0.64 m t GHG emissions (Scope 1&2) CO₂ equivalents (This includes 0.02 m t of biogenic)</p> <p>3.47 m t indirect GHG emissions (Scope 3) CO₂ equivalents (This includes 0.02 m t of biogenic)</p> <p>2,593 m kWh total energy consumption</p> <p>Source: Integrated Report 2022</p>

Various





THE IMPACT OF A CIRCULAR ECONOMY

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	P12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.2 Domestic material use, domestic material use per capita and domestic material use in relation to GDP	Finlands extraction of raw materials has risen dramatically in the last 50 years, from 28.6 gigatons/year in 1972 to more than 100 gigatons/year in 2023
	12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	12.3.1 a) Food loss index and b) Food waste index	“Zero waste” restaurant and other measures can reduce 7–8 % of global GHG




Nespresso

"WE NEED STRONG PARTNERS TO TRANSFORM THE COFFEE SUPPLY CHAIN FOR GOOD"

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	5.5.2 Proportion of women in management positions	Raise number of female agronomists to 50 percent by 2030 (now 35%).
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of recycled material	80% recycled aluminum in caps
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.2 Available Total greenhouse gas emissions per year	Net zero emissions by 2035 at the earliest in accordance with the Science Based Targets initiative (SBTi).
	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress in sustainable forest management	Planted > 7.4 million trees and will plant 32 million trees by 2030.

REN

THE VALUE OF NATURAL CAPITAL




SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Share of renewable energies in total final energy consumption	78% of installed power from renewable energy sources In 2022, 49% of energy transmitted from renewable generation increasing renewable energy sources in the electrical system increasing electric mobility (Speed-E)
	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	9.4.1 CO ₂ emissions per unit of value added Green Bonds are any type of bond instrument where the proceeds will be exclusively applied to finance or re-finance projects with clear environmental benefits and which are aligned with the four core components of the GBP. Eligible green projects include renewable energy, energy efficiency, pollution prevention and control, eco-efficient and/or circular economy adapted products, production technologies and processes, green buildings, terrestrial and aquatic biodiversity conservation, clean transportation etc. <i>Source: Green Bond Principles, June 2020</i>	11,2% of the financial portfolio of eligible assets allocated to Green Financing. This corresponds to around 300 Mio. € in 2022. In December 2022 and January 2023 furthermore REN entered into a long-term financing agreement (twelve years), in the amount of 450 Mio. € with the European Investment Bank for renewable projects.
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.2 Total greenhouse gas emissions per year	Planned 50 percent reduction in Scope 1 and 2 emissions by 2030 and achieving carbon neutrality by 2040. In addition, REN completed in 2022 the assessment of its carbon footprint by calculating the amount of scope 3 emissions, which account for approximately 34% of the total emissions. As a result of the calculation of scope 3 emissions, REN has committed to a new goal of reducing these emissions by 25% by 2030, compared to the levels of 2021.
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index DNS Indicator 15.1: Biodiversity and landscape quality	Bonelli's eagle (Aquila fasciata): REN ensures the maintenance of clean strips (covering 7,206 hectares of vegetation management in 2022). REN successfully planted 3,922 hectares between 2010 and 2022. In 2022 alone, a total of 77,342 trees were planted in an area spanning approximately 278 hectares. Notably, 86 percent of this area was dedicated to planting the native species known as the strawberry tree, thereby contributing to an increase in biodiversity.



SYMRISE INNOVATIVE CONCEPTS FOR A SUSTAINABLE FUTURE


SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	8.3.1 Share of informal employment in total employment, by sector and gender	> 7,000 smallhold farmers in Madagascar, alone
	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-year framework of programmes on sustainable consumption and production, with developed countries taking the lead	8.4.1 Raw material footprint, raw material footprint per capita and raw material footprint in relation to turnover 8.4.2 Domestic material use, domestic material use per capita and domestic material use in relation to turnover	Circular Economy at all levels of the value chain; Purchasing volume ca. 175,000 €/employee
	12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.5.1 Recycling rate, tons of material recycled	> 3,000 tons of operational waste composed
	13.2 Integrate climate change measures into national policies, strategies, and planning	13.2.2 Total greenhouse gas emissions per year	Symrise aims to reduce its Scope 3 emissions (indirect greenhouse gas emissions) by 30 % by 2030. Symrise currently meets the highest SBTs (science-based targets) target for Scope 1+2+3.

Various FINANCIAL INSTRUMENTS TO COUNTER CLIMATE CHANGE AND BIODIVERSITY LOSS

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.2 Total greenhouse gas emissions per year	Bancos de Alimentos de México: > 221.800 t CO ₂ e avoided
	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress in sustainable forest management	Ecuador: Protection of more than 2 million hectares and 18,000 km of rivers Bolivia: 3.7 million acres of land adjacent to the Amazon basin
	17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress	17.4.1 Debt service in relation to exports of goods and services	Debt-for-Nature Conversion

PMI
PERFECT FOREST™

At this stage, the Perfect Forest is a concept. However, once it reaches maturity, it will aim to provide.




SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area in relation to total land area.	Plan to adopt a modular approach creating a mosaic at the local level
		15.1.2 Percentage of areas significant for terrestrial and freshwater ecosystem biodiversity covered by protected areas, by type of ecosystem	The Global Biodiversity Framework (GBF) is prescribing 30 % protected areas. PMI is incorporating that notion into assessments and feasibility studies.
		DNS 15.a Raise and significantly increase financial resources from all sources for the conservation and sustainable use of biodiversity and ecosystems.	Once mature, the Perfect Forest concept can enable moving from a single sources of revenue (wood products) to a wider range of services provided by a fully functioning forest.

CORNEL UNIVERSITY, EPLER WOOD
THE INVISIBLE BURDEN OF TOURISM

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.2 Degree of water stress: Freshwater abstraction in relation to available freshwater resources	In 2019, the sector used 0.46m³ of water for every \$1 USD contributed to the global economy (-19 % compared to 2010) wttc.org/news-article/wttc-unveils-world-first-global-travel-and-tourisms-water-footprint#:~:text=The%20water%20intensity%20of%20Travel,contributed%20to%20the%20global%20economy
	8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	8.3.1 Share of informal employment in total employment, by sector and gender	The number of travel and tourism jobs worldwide remained below pre-pandemic levels, totaling 295 million in 2022. statista.com/statistics/1268465/number-of-travel-and-tourism-jobs-worldwide/
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.2 Total greenhouse gas emissions per year	Transport-related emissions from international tourism are expected to grow 45 % from 2016 to 2030 (from 458 Mt CO2 to 665 Mt CO2e) www.unwto.org/sustainable-development/tourism-emissions-climate-change#:~:text=Transport%2Drelated%20emissions%20from%20international,to%201103%20Mt%20CO2).
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index	Nature Positive Travel and Tourism by 2030 www.responsibletravel.com/copy/what-is-nature-positive-tourism



ICG

SUSTAINABILITY CRITERIA PUSH REAL ESTATE VALUES

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.2 Proportion of the population using predominantly clean energy sources and technologies	Percentage of sustainable build-ings, heating, power supply
	11.1 By 2030, ensure access for all to adequate, safe and afford-able housing and basic services and upgrade slums	DNS indicator 11.3: Overburdened by housing costs (Indicators of the German Sustainability Strategy)	Goal 40 % affordable houses
	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and manage-ment in all countries	11.3.2 Proportion of cities with a regular and democratically functioning structure for the direct participation of civil society in urban planning and management	Percentage of sustainable neigh-borhoods
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of recycled material	Percentage of sustainable building materials, recycling, disposals

Merck




EQUITABLE HEALTHCARE FOR ALL

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	3.3.5 Number of persons in need of treatment for neglected tropical diseases	Since 2007, Merck has provided more than 1.9 billion tablets of praziquantel, enabling the treat-ment of more than 760 million people, mainly school-aged children.
	3.8 Achieve universal health coverage, including financial risk protection, access to quality es-sential health-care services and access to safe, effective, quality and affordable essential medi-cines and vaccines for all	3.8.1 Provision of universal health services	Decrease health disparities in the community; True heterogeneity in drug devel-opment process
	5.1 End all forms of discrimina-tion against all women and girls everywhere	5.1.1 Existence of legal framework to promote, enforce and monitor equality and non-discrimination on the basis of gender <i>Note: Nowadays we define the concept of diversity more broadly (e.g. concept of gender, race). Consequently, the SDG indicators are interpreted in an adapted way.</i>	End systematic underrepresen-tation of participants in clinical studies vs. US Census





URGENCI

CONNECTING FAMILY FARMERS TO JUST, EQUITABLE, AND SUPPORTIVE MARKETS

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment	2.3.1 Production volume per labour unit, by size classes of agricultural/pasture/forestry holdings	Produce 1 Mio. kg of agroecological food per year, and thus guarantee access to healthy food for more than 10,000 families per year.
	13.2 Integrate climate change measures into national policies, strategies and planning	13.2.2 Total greenhouse gas emissions per year	Removing 20 million tons of CO ₂ e
	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.2 Proportion of areas of biodiversity importance of terrestrial and freshwater ecosystems covered by protected areas, by ecosystem type	Regenerate 10 million hectares in the next five years

WHO

THE TRIPLE BILLION METHOD

SDG	SDG Subgoals	SDG Indicator	Performance
	Sources: sdgs.un.org/2030agenda	Sources: sdg-indikatoren.de	
	3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all	3.8.1 Provision of basic health services	Hospital beds per capita Health workers per capita International Health Regulations (IHR) core capacity index
		3.8.2 Proportion of the population with high household expenditure on health in relation to total household expenditure	Expenditure on health in relation to total household expenditure
	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	DNS 3.1.a, b (Indicators of the German Sustainability Strategy) Premature mortality	By 2030, the premature mortality rate max 100 deaths/100,000 inhabitants for women and 190 deaths per 100,000 inhabitants for men.



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

Director responsible for UN Environment's One Planet Network

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 Managin Director

Patrick van Weerelt

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



The **United Nations Environment Programme** (UN Environment) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system, and serves as an authoritative advocate for the global environment.

Our mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

Headquartered in Nairobi, Kenya, we work through our divisions as well as our regional, liaison and out-posted offices and a growing network of collaborating centres of excellence. We also host several environmental conventions, secretariats and inter-agency coordinating bodies. UN Environment is led by our Executive Director Erik Solheim.

We categorize our work into seven broad thematic areas: climate change, disasters and conflicts, ecosystem management, environmental governance, chemicals and waste, resource efficiency, and environment under review.



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.



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:
Gesa Weber

Text Editors:
Robert Furlong, Marion Lenzen

Source of the quote:
H.E. António Guterres, UN Secretary-General
Secretary-General's remarks to the Security Council –
on Sustaining Peace through Common Development,
New York, 20 November 2023

Authors of this edition (in alphabetical order):
Pedro Ávila, Hari Balkrishna, Claudia Berardi, Prof. Frank Biermann,
Melaina Boyce, Matt Christensen, Gabriela Ensinnck, Vinzenz Fundel,
Dr. Elmer Lenzen, Friedrich-Wilhelm Micus, Jennifer Motles,
Alessandro Piccinini, Michele Pisetta, Dr. Bettina Siggelkow, Junyang
Wang, Christina Witter, Franziska Zenkner

Named articles do not reflect the opinions of the publisher.

ISBN-13: 978-3-946284-13-0
ISSN-Print: 2365-3396
ISSN-Internet: 2365-340X

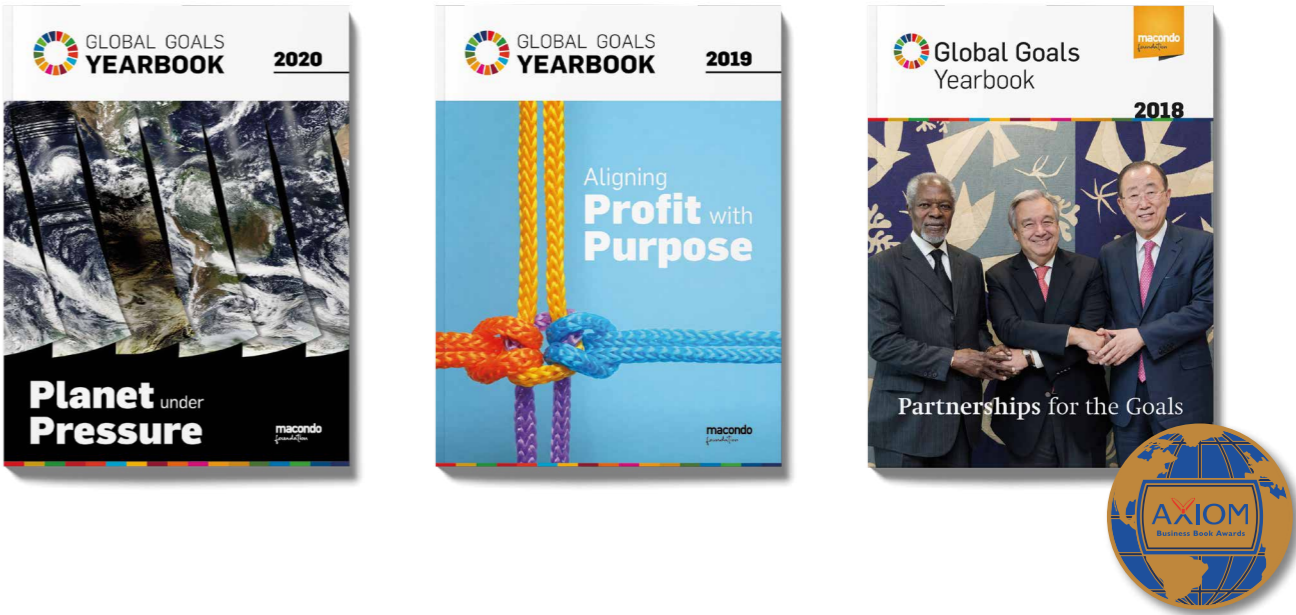
Copyrights:
© macondo publishing GmbH
All rights reserved. You may not modify, copy, reproduce, republish,
upload, post, transmit or distribute in any way any material, including
photos, without the express written consent of macondo publishing.

Germany 2023

Cover:
Victoria / stock.adobe.com

Photo Credits:
UN Photo/Laura Jarriel (P. 4, 8-9), Rawpixel/iStockphoto.com
(P. P. 5 above, 20), puhhha/stock.adobe.com (P. 5 middle, 26-27),
Vasyl/stock.adobe.com (P. 5 below, 32, 36-37), UN Photo/Manuel Elías
(P. 10-11), Copernicus Institute of Sustainable Development/Utrecht
University (P. 17), BillionPhotos.com/stock.adobe.com (P. 18-19),
Sebastian/stock.adobe.com (P. 21), Serhii/stock.adobe.com (P. 22),
Dangubic/stock.adobe.com (P. 23), Pali Rao/iStockphoto.com (P. 24),
rh2010/stock.adobe.com (P. 28), Alexander Ozerov/stock.adobe.com
(P. 52), Clariant (P. 54-55), WCEF 2023/Media (P. 56), Stéphane Bidouze/
stock.adobe.com (P. 58 below), Funfipor/Ayelén Malgraf (P. 58 above),
Nespresso (P. 60, 62), Philipp Lipiarski/Nespresso (P. 63), REN
(P. 64, 66), Shutterstock/NDanko/Symrise (P. 68), haley-hamilton-
HxNunc/unsplash/Symrise (P. 70), Symrise (P. 71), Marion Lenzen
(P. 72, 74), PMI (P. 78), Getty Images/iStockphoto.com (P. 80),
Peopleimages – AI/stock.adobe.com (P. 84), Merck (P. 90), UTT (P. 92,
94, 95 below), Pablo Borrelli/Ruuts (P. 95 above), UN Photo/Tobin Jones
(P. 96), macondo publishing (P. 119)

GLOBAL GOALS YEARBOOKS





globalgoals-yearbook.org

ISBN-13: 978-3-946284-13-0



Germany, December 2023

Published by

