

Sustainable Solution Steering

Manual, November 2021



Attention: Information of the present document are based on the actual (11/ 2021) know how and approach of Sustainable Solution Steering applied at BASF. We reserve the right to update contents and processes written in the present manual and as well implement them immediately, before publishing an updated version of the manual. Irrespective of the date of disclosure we take attention, that the implemented method is audited by the financial auditor of BASF.

Table of Contents

1.	We Create Chemistry for a Sustainable Future	7
1.1	How we live our Company Purpose	7
1.2	BASF's Sustainability Understanding	7
2.	Objectives of Sustainable Solution Steering	8
3.	Sustainable Solution Steering Methodology	9
3.1	Sustainable Solution Steering Categories	10
3.2	Process Flow	10
3.3	Scope and Boundaries	11
3.4	Check for Basic Sustainability Requirements	13
3.4.1	Minimum Requirement: Compliance with BASF's Code of Conduct	15
3.4.2	Minimum Requirement: Eco-toxicity Risk and Human Toxicity Risk in Sensitive Applications	15
3.4.3	Stakeholder Requirement: Relevant Upcoming Regulations and Industry/Customer Specific Requirements	17
3.4.4	Stakeholder Requirement: Reputational Risk	18
3.5	Impact Check	19
3.6	Check for Sustainability Value Contribution	20
3.6.1	Substantial Contribution to Sustainability Criteria	21
3.6.2	Performance Enables a Plausible External Corporate Communication on the SD Benefit	24
3.6.3	Adequate Profitability	24
3.6.4	No Link to Relevant Controversial Business Area	24
4.	Sustainable Solution Steering Key Processes in a Nutshell	25
4.1	Kick-off and Briefing Session	26
4.1.1	Roles and tasks	26
4.1.2	Procedure and documents	27
4.2	Preparation of Challenging Session	27
4.2.1	Roles and tasks	28
4.2.2	Procedure and documents	29
4.3	Challenging Session	29
4.3.1	Roles and tasks	30
4.3.2	Procedure and documents	31
4.4	Final Documentation	32
4.4.1	Roles and tasks	32
4.4.2	Procedure and documents	33
5.	Sustainable Solution Steering Business Approach	33
Appendix	1-8 (5-8 BASF internal documents)	36 – 49

List of Figures

Figure 1	Sustainable Solution Steering Categories	10
Figure 2	Sustainable Solution Steering Process Flow	11
Figure 3	Sustainable Solution Steering Logic	11
Figure 4	Check for Basic Sustainability Requirements	14
Figure 5	Impact Check	19
Figure 6	Check for Sustainability Value Contribution	20
Figure 7	Portfolio Update and Review Cycle	34
Figure 8	Upgrade Process	34
Figure 9	Derivation of the Sustainable Solution Steering Sustainability Criteria	40

Glossary and Abbreviations

CLP Regulation	Regulation (EC) No 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures
BASF	Badische Anilin and Soda Fabrik
BU	Business unit
BZVLE	Service materials
CLP Regulation	Regulation (EC) No 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures
CMR	Carcinogenic, Mutagenic or Toxic for Reproduction
ECHA	European Chemicals Agency
EHS	Environment, Health and Safety
ELoC	Equivalent Level of Concern
EU	European Union
OC	Operational conditions
OECD	Organization for Economic Co-operation and Development
PBG	Product-BASF-Group; the relationship PBG-PRD is 1:n (several PRD can be assigned to one PBG)
PBT	Persistent, Bioaccumulative and Toxic
PRD	<u>Product</u> with a name; a PRD is a chemical product characterized by a particular trade name (trademark or generic name – unless customer specific, and a particular use.
REACH Regulation	Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals
R&D	Research and Development
RC	Responsible Care
RCMS	Responsible Care Management System
RMM	Risk management measure
SDGs	UN Sustainable Development Goals
Verbund	In the BASF Verbund, production facilities, energy flow, logistics and infrastructure are intelligently networked with each other in order to increase production yields, save resources and energy, and reduce logistics costs.
vPvB	Very Persistent and Very Bioaccumulative
WBCSD	World Business Council for Sustainable Development
ZPAR	Semi-finished non-chemical products and components; represent technical, non-chemical sales products

Preamble

The purpose of this manual is to document the process of BASF's Sustainable Solution Steering approach. The manual aims to describe the segmentation methodology and respective processes including roles and responsibilities of participants involved.

The Sustainable Solution Steering process, as described hereinafter, fulfills the following quality criteria, based on the GRI Standards.

- *Completeness:*
For reflecting the Sustainable Solution Steering results in a reasonable and appropriate manner, the Sustainable Solution Steering approach covers BASF's group-wide sales to third parties under consideration of the scope described in chapter 3.3. The segmentation shall be considered as complete if at least 90 percent of the defined scope is covered.
 - *Accuracy:*
The Sustainable Solution Steering approach includes clearly defined criteria, which allow for a precise and distinct segmentation of the portfolio. Thereby, the assessment is sufficiently accurate and detailed to enable a reproduction of the individual portfolio evaluation.
 - *Materiality:*
Economic, environmental and social criteria material for BASF's business are taken into account in the Sustainable Solution Steering approach. The sustainability criteria of the Check for Sustainability Value Contribution are based on BASF's material topics, which identify the most important issues on global and regional levels. Changes in BASF's materiality matrix are only reflected in the method if these changes are material for the overall segmentation.
 - *Comparability:*
Sustainable Solution Steering provides a consistent process design that facilitates comparability between individual segmentation results over time. The methodology for compiling and reporting segmentation results remains consistent.
 - *Balance:*
To enable a reasoned assessment of the complete business portfolio, the Sustainable Solution Steering approach reflects the whole range of sustainability performances, ranging from solutions with a substantial sustainability contribution to solutions with a significant sustainability concern.
 - *Timeliness:*
The process of Sustainable Solution Steering allows for the evaluation, interpretation and segmentation of the business portfolio on a regular basis. Sales updates are performed on a regular basis and at least every four years a segmentation review with the four-eye principle is performed.
 - *Clarity:*
The Sustainable Solution Steering methodology is presented in a manner that is understandable and accessible to participants involved in the process. The final documentation of segmentation results is comprehensible to persons who have a reasonable understanding of the methodology.
 - *Reliability:*
The Sustainable Solution Steering process is based on a valid source of information and ensures a reliable compilation of data without incurring a loss of quality.
-

1. We Create Chemistry for a Sustainable Future

We want to contribute to a world that provides a viable future with enhanced quality of life for everyone. We do so by creating chemistry for our customers and society and by making the best use of available resources. We live our corporate purpose “We create chemistry for a sustainable future” by

- Sourcing and producing responsibly,
- Acting as a fair and reliable partner,
- Connecting creative minds to find the best solutions for market needs.

For us, this is what successful business is all about. This ambition is directly linked to a number of business factors:

- Growing customer needs to differentiate with sustainability
- New regulations, standards and commitments related to sustainability in all value chains
- Changing societal and business environments prompting demand for sustainable products.

Sustainability is becoming an increasingly important key factor for growth and value creation. We therefore cooperate with our customers and value chain partners in creating and driving more sustainable solutions while discontinuing products with sustainability issues in their specific application. This helps to support customers with solutions which contribute to current and future sustainability needs. Our purpose summarizes BASF’s aim to combine economic success, social responsibility and environmental protection: We create chemistry for a sustainable future.

1.1 How we live our Company Purpose

BASF is committed to respect and promote internationally agreed standards regarding compliance, environmental protection, health and safety and decent work. Adherence to these standards is important to avoid strategic, operational or reputational risks. Besides taking account of sustainability aspects in the process of acquisition, BASF expects its suppliers to be committed to and actively support the implementation of the principles of sustainable development within their sphere of responsibility.

BASF engages in an ongoing dialog with stakeholders like customers, employees, shareholders, neighbors, workers’ representatives, politicians, media, civil society and business partners. This ongoing dialog not only supports BASF in recognizing sustainability issues at an early stage, it also lays the ground for identifying market needs and turning them into product solutions.

Sharing the knowledge about the Sustainable Solution Steering methodology can help customers and other third parties to analyze their portfolio and steer it towards their sustainability targets.

1.2 BASF’s Sustainability Understanding

Sustainable development is a broad term that is open for interpretation. A common understanding of the term is essential for leveraging sustainability as an important growth driver for business. Besides taking advantage of business opportunities, BASF’s sustainability management has two further strategic responsibilities: minimizing risks and establishing strong relationships with internal and external

stakeholders. To do so, BASF has defined its understanding of sustainable development based on the United Nations' definition:

Humankind is in a dilemma situation as human beings consume more than earth can regenerate. While the global population is growing, rising demands have to be met at present and in future. This will pose great challenges on the planet. Yet, these challenges open up many opportunities for the chemical industry. With its high-value products and intelligent solutions, BASF is in a great position to address global challenges and contribute to sustainable development, particularly in the following areas: resources, environment and climate, food and nutrition.

The ambition to create sustainable products and services is being driven by a number of compelling business factors. New laws and standards regarding carbon emissions and other sustainability topics are being implemented, or look set to be enacted, all over the world. At the same time, there is growing market uncertainty about the cost of raw materials and the availability of natural resources. Finally, the end consumers are evolving their expectations about the goods and services they purchase. Increasingly, they are holding brand owners and companies to a higher account in terms of materials that go into consumer products and the way those products are made, this includes also the respect of human rights along the supply chain. In short, for BASF and for our customers, creating more sustainable products and solutions makes good sense. For us, sustainability is about enabling long-term business success.

2. Objectives of Sustainable Solution Steering

To evaluate how a company's current portfolio contributes to the purpose of a more sustainable future, the Sustainable Solution Steering method was developed in 2012 by BASF. The objective of Sustainable Solution Steering is to provide us with a fully transparent and consistent evaluation of the sustainability performance of BASF's solutions. It provides the basis for actively steering a portfolio towards a more sustainable profile. This manual provides details on what Sustainable Solution Steering is about: how to apply it and how it can help to meet the needs of customers, government and society to sustainably grow the business.

Sustainable Solution Steering was introduced at BASF with the aim to increase our portfolio of innovative and sustainable solutions and make our customers more successful. By identifying key drivers and issues in our customers' industries, we intend to assess the sustainability contribution of each of our products in its specific application. In order to do so, solutions in their respective application and region are reviewed in terms of defined sustainability criteria.

With our approach we evaluate the value chain from cradle-to-grave considering industry and region-specific views in our markets. We strive to achieve a balance between the three dimensions of sustainability:

- Economy, e.g. potential cost savings for customers using of our technologies
- Environment, e.g. ensuring standards are met, developing environmentally sound solutions
- Society, e.g. enhancing safety in production, use or end of life.

The results derived from the evaluation of the value chain supports the business divisions in gaining a clear picture of sustainability concerns and drivers within the current and future portfolio. In this respect,

the performance assessment serves as an early warning system. We intend to identify solutions which will likely be affected by regulations and/or a negative market perception in the future at an early stage. Where deemed required, mitigation options for solving the sustainability issue(s) are developed within the process of segmentation.

In addition, the tool serves as steering instrument triggering sustainability-related innovations that ensure differentiation in the markets through their contribution to improve quality of life. This provides content for a consistent market communication and hence generates business opportunities.

Sustainable Solution Steering is embedded into BASF's sustainability management. Several strategic responsibilities are meant to ensure an efficient integration and coordination of the outcomes of the segmentation process in the organization. Using a cross-functional workshop setup, Sustainable Solution Steering reaches and involves a large number of employees and thus supports the anchoring of sustainability in a company's daily business. By the end of the Sustainable Solution Steering process, employees in various positions and functions such as R&D, Marketing, Sales, Strategy or Product Stewardship will have been engaged in sustainability in a structured and consistent approach.

In a nutshell, the tool helps to enable company's long-term economic success while improving environmental and social performance.

3. Sustainable Solution Steering Methodology

BASF manages a broad portfolio of approx. 50.000 solutions in approx. 80 business units globally. In order to gain a comprehensive understanding of our sustainability topics and opportunities, we have created a robust and scalable evaluation process which accounts for our upstream, intermediate and downstream businesses as well as regional market differences. In case of industry-specific sustainability requirements, segmentation criteria may be adapted accordingly. Applying Sustainable Solution Steering, solutions are evaluated in a cradle-to-grave value chain approach including raw material supply, production, usage phase and end of life, e.g. disposal or recycling. The assessment takes account of industry and customer specific requirements and evaluates the solution's sustainability contribution compared to alternative solutions in the market. It is based on a combination of scientific evidence, expert judgments as well as market knowledge and perception.

3.1 Sustainable Solution Steering Categories

The Sustainable Solution Steering approach reflects the full range of sustainability performances, ranging from solutions with a substantial sustainability contribution, to solutions with market standard performance, up to solutions with a significant sustainability concern (see quality criterion “Balance”). Within the Sustainable Solution Steering process, solutions of BASF business portfolios are grouped into four categories according to their sustainability performances in the respective application, industry and region.

Figure 1: Sustainable Solution Steering Categories



Please note: Since 2018, Challenged solutions are phased out latest five years after first identification.

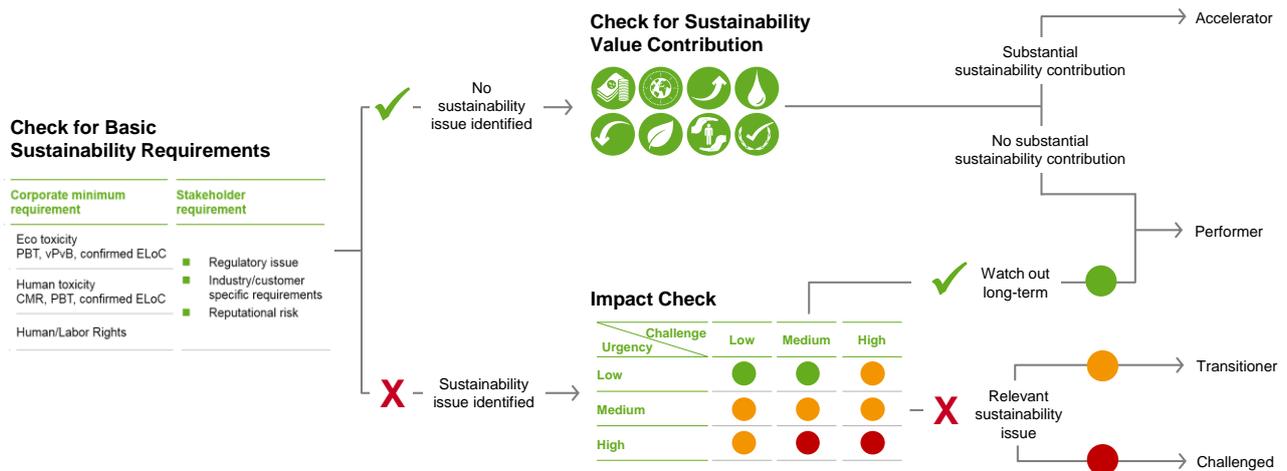
3.2 Process Flow

In the first step, all solutions of a business unit portfolio are subject to a so-called “Check for Basic Sustainability Requirements” (see 3.4) to systematically and proactively identify solutions which are likely to be affected by a sustainability issue, either at present or in the foreseeable future. Within this check, each solution in its respective application and region is evaluated based on corporate minimum and stakeholder specific criteria.

Solutions which are identified as likely to be affected by a sustainability issue are subject to a separate Impact Check (see 3.5) for analysing the significance of the sustainability issue in a following step.

Solutions which have successfully passed the initial Check for Basic Sustainability Requirements are then, in a second step, subject to a Check for Sustainability Value Contribution (see 3.6) which intends to evaluate the solution’s sustainability contribution compared to competitive solutions in the same application and region (see quality criterion “Accuracy”).

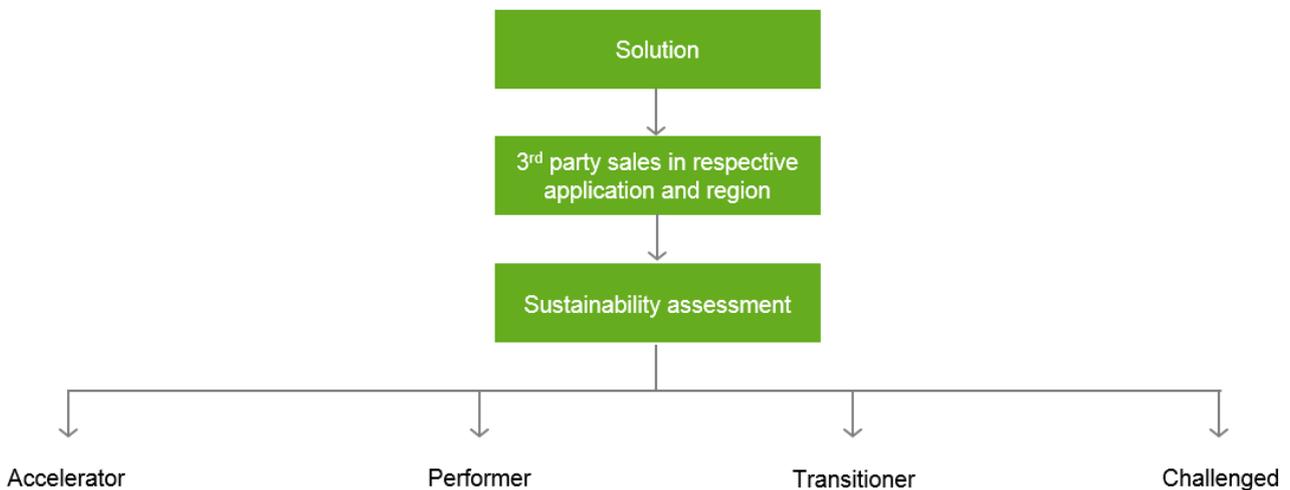
Figure 2: Sustainable Solution Steering Process Flow



3.3 Scope and Boundaries

The relevant portfolio of the Sustainable Solution Steering method covers BASF’s group-wide sales to third parties of BASF’s strategic portfolio in the respective fiscal year (see quality criterion “Completeness”):

Figure 3: Sustainable Solution Steering Logic



The following sales are therefore out of scope, either because they do not represent sales to third parties, stem from non-product related businesses or are considered not to be strategically relevant:

- Products for captive use within BASF’s Verbund
- Non-strategic ‘other operating activities’
- Non-strategic sales from ‘other businesses’
- Non-strategic trading activities

- Non-strategic solutions sold under license
- Non-strategic equipment sales
- Non-strategic phased-out / discontinued solutions where sales are accrued, but no further production is scheduled (only applicable if solution is not yet assessed)
- Tolling operations by BASF (BASF as Toller)
- Sale of remainders (only applicable if solution is not yet assessed)
- Raw materials with no value added by BASF (incl. non-strategic intermediates and transfer products)
- Samples / test products / prototypes
- Merchandise products
- Waste / scrap products
- Strategically non-relevant portfolio

The following sales are not considered in the result of the respective fiscal year (outlined as “not assessed”): Sales from strategically relevant portfolio which have not yet been assessed, e.g. newly developed products, recently acquired products.

The sustainability segmentation of the strategically relevant portfolio usually takes place on a PRD number level.

In case a PRD number is not available or appropriate for segmentation, the following numbers can be used:

- PBG
- ZPAR
- BZVLE
- X-products which are artificial numbers that are used if no suitable number in BASF’s IT systems is available for segmentation
- Other, not further specified but unique identical number given by SAP system

Please note: in case a solution is applied in different regions, applications, market segments or technologies that are assessed differently in terms of the solution’s sustainability contribution, the sales of the solution shall be split accordingly if material. A sales split is only required if it leads to different SD segmentations. If, for example two different applications lead to the same SD segmentation, a sales split is not required.

3.4 Check for Basic Sustainability Requirements

As global company with a focus on environment, health and safety, we advocate that chemical substances must not pose risks to human health or the environment. We therefore strive to adhere to the highest environment, health and safety (EHS) standards, and to procure that our solution portfolio complies with all applicable national, state and local legal requirements. In addition, each solution needs to contribute to our own economic goals.

However, a solution which is currently compliant with the applicable legislation in its respective application and region, and is also demanded from customers, may face stricter legal requirements in the future, or be subject to negative consumer perception or public pressure. To proactively identify solutions that are likely to be affected by a sustainability concern either immediately, or in the foreseeable future, we conduct our Check for Basic Sustainability Requirements.

Undergoing the Check for Basic Sustainability Requirements, BASF's solutions in their respective applications and regions are reviewed to evaluate their compliance with our corporate minimum requirements as well as stakeholder requirements (see 3.4.1 to 3.4.5):

Corporate minimum requirements:

- Corporate-wide minimum demands which BASF solutions across all regions are required to fulfill
- BASF's commitment to legal compliance and responsible business conduct
- Compliance with corporate minimum requirements is monitored by corporate functions and Corporate Sustainability.

Stakeholder requirements:

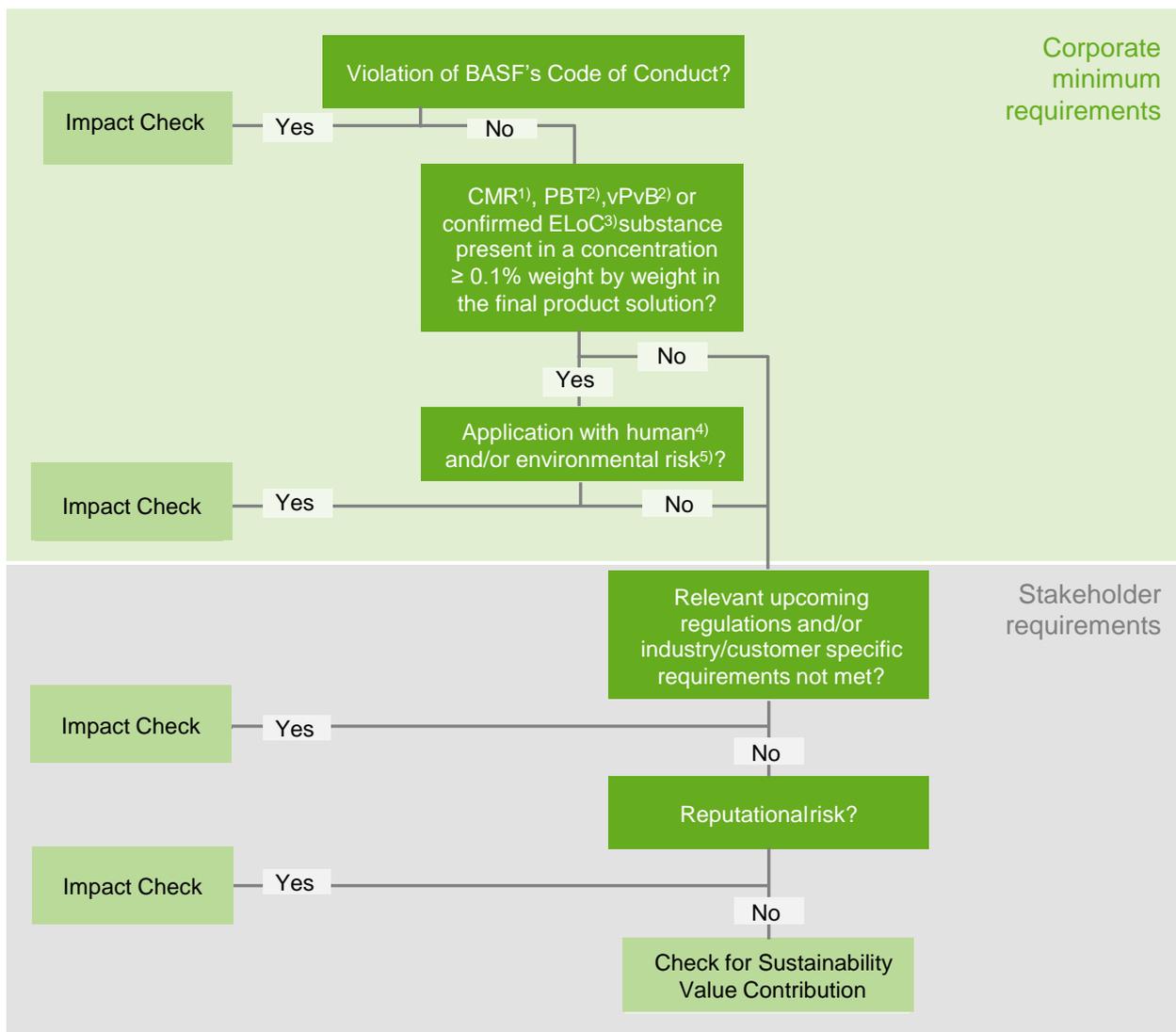
- Adapted to industry and regional demands
- Definition of requirements is proposed by respective business unit, corporate functions and Corporate Sustainability, decision on the fulfilment is made by corporate functions and Corporate Sustainability.

In case any sustainability issues are identified in the Check for Basic Sustainability Requirements, the solution is subsequently subject to the Impact Check (see 3.5) to assess the relevance of the sustainability topic.

If no sustainability issue has been identified within the Check for Basic Sustainability Requirements, the solution's sustainability contribution is subsequently evaluated within the Check for Sustainability Value Contribution (see 3.8).

Please note: due to the specifics of plant protection and the respective regional and/or country-specific approval obligations, the risk assessment of active ingredients in the areas of insecticides, herbicides and fungicides and adjuvants considers short- and medium-term approval expectations of BASF for the respective countries and regions. These expectations are considered BASF's business secret, rated as strictly confidential and if in the public domain this information can, with significant likelihood, lead to severe competitive disadvantage to BASF. Therefore, the risk assessment cannot be published. With Accelerator sales being one of BASF's most important non-financial key performance indicator, it is assured that the aforementioned risk assessment is available to the assurance company and part of the annual reasonable assurance engagement.

Figure 4: Check for Basic Sustainability Requirements



- 1) Substances classified as carcinogenic, mutagenic or toxic to reproduction (CMR) according to hazard categories 1A and 1B of the Harmonized Classification, Labelling and Packaging (CLP) Regulation
- 2) Substances classified as persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) according to Annex XIII of REACH Regulation
- 3) Substances with confirmed equivalent level of concern (ELoC) to CMR or PBT/vPvB according to Article 57(f) of the REACH Regulation
- 4) According to REACH Use Descriptor System; solution intended for consumer uses
- 5) Solution with potential release into the environment

Within the Check for Basic Sustainability Requirements, the following rules apply with regards to regional differences:

If a solution in its respective application fails to fulfill all stakeholder requirements in a specific region, this does not limit its performance assessment in other regions but would generally trigger a cross-check between the different regional assessments.

If a solution in its specific application fails to fulfill the corporate minimum requirement regarding (environmentally) hazardous substances for consumer uses in a specific region, this solution in the same application may be evaluated at best as a Performer [watch out long-term] in any other region.

3.4.1 Minimum Requirement: Compliance with BASF's Code of Conduct

BASF's Code of Conduct defines basic, globally applicable standards of conduct. It is a concise summary of legal and ethical principles, including fundamental international standards, local legislation, corporate policies and guidelines, that in many cases extend beyond applicable legal regulations.

Compliance with all legislation to protect humans and the environment is one of our basic tenets. This applies to our products as well as to our processes. BASF has been committed to the principles of Responsible Care since 1992. BASF's Responsible Care Management System comprises the global directives, standards and procedures for safety, security, health and environmental protection for the various stations along our value chain.

BASF is committed to upholding international labor and social standards, which we have embedded in our global Code of Conduct and embraced through our policy about "Respect for International Labor and Social Standards (ILSS)". This encompasses internationally recognized labor norms as stipulated in the United Nations' Universal Declaration of Human Rights, the OECD Guidelines for Multinational Enterprises, the International Labor Organization (ILO) and Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy. Moreover, BASF actively supports the UN Global Compact, a voluntary initiative based on company commitments to implement universal sustainability principles and to advance UN goals such as the Sustainable Development Goals (SDGs). In addition to social standards, occupational health and safety is of utmost importance to BASF. The ultimate goal is to provide safe working conditions and to ensure that the manufacturing and use of BASF products is safe and poses no health risks to operators. In conformity with the principles of Responsible Care, BASF continuously aims at acting responsibly in order to protect all BASF employees, contractors, business partners and neighbors against hazards inherent in BASF's processes.

With regards to economic aspects, a plurality of national and international laws applies to BASF's Code of Conduct, including embargo and trade regulations, regulations on money laundering, competition law and anti-corruption legislation.

To fulfill the corporate minimum requirement of compliance with BASF's Code of Conduct, a solution and/or its manufacturing shall be in accordance with:

- all applicable laws and regulations on environmental protection as well as guidance provided under BASF's Responsible Care Management System
- BASF's corporate principles regarding social standards and occupational safety
- all applicable embargo and trade regulations, regulations on money laundering and corruption.

If there is any indication that the solution and/or its manufacturing violate any of the above, it will be subject to the Impact Check (see 3.5).

3.4.2 Minimum Requirement: Eco-toxicity Risk and Human Toxicity Risk in Sensitive Applications

We work continuously to ensure that our products pose no risk to people or the environment when they are used responsibly and, in the manner, intended.

Substances with carcinogenic, mutagenic or reprotoxic properties (CMR substances) are of specific concern to human health due to the irreversibility and seriousness of the effects they may cause. Regulation (EC) No 1272/2008 on the Classification, Labelling and Packaging of Substances and Mixtures (CLP Regulation) classifies substances into different categories (category 1A to 2) according to their hazard potential for human health. Substances in categories 1A and 1B of the CLP Regulation are particularly critical as there is enough evidence to determine that these substances are “known” or “presumed to be” carcinogenic, mutagenic or toxic to reproduction (see Appendix 1).

Besides CMR substances, substances which are (i) persistent, bioaccumulative and toxic (PBT) or very persistent and very bioaccumulative (vPvB) according to Annex XIII of Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH Regulation) or (ii) of a confirmed equivalent level of concern (ELoC) according to Article 57(f) of the REACH Regulation may also have serious effects on human health. The REACH Regulation classifies substances as PBT/vPvB based on their persistence, tendency to bioaccumulate and toxicity (see Appendix 2). When evaluating whether our products might pose a risk to human health, considering the involved substances is thus a crucial step.

However, a risk to human health cannot solely be determined by the substance properties. Whether a hazard materializes rather depends on whether contact with chemicals i.e. exposure is possible. For evaluating the potential for human exposure, the intended uses of a substance must be taken into account. According to the REACH Use Descriptor System, the following main user groups can be distinguished:

- **Consumer use:** private households/general public, e.g. toys, cosmetics, food contact, cleaning agents, tensides, do-it-yourself products
- **Professional use:** public domain (administration, education, entertainment, services, craftsmen), e.g. painter, hairdresser, health & safety officer
- **Industrial use:** uses of substances as such, or in preparation at industrial sites (ECHA 2010).

In case of professional and industrial use, exposure scenarios (ES) represent the recommended operational conditions (OCs) and risk management measures (RMMs) for each scenario. These ES define the “conditions of use” of a substance assessed as being safe. Therefore, an intended professional or industrial use is not considered to be an application with human risk.

If a solution which is intended for consumer use with direct contact from the end user contains any

- CMR substance according to category 1A and 1B of the CLP Regulation
- PBT substance according to Annex XIII of the REACH Regulation, or
- confirmed ELoC substance according to Article 57(f) of the REACH Regulation

in a concentration of greater than or equal to 0.1% weight by weight in the final product, the solution shall be subject to the Impact Check (see 3.5).

Substances which can create adverse effects on environmental organisms and ecosystems are of foremost concern from an environmental perspective. PBT, vPvB as well as confirmed ELoC substances are particularly problematic. However, the effects of the solution on the environment do not only depend on the (hazardous) properties of the respective substance but also to the extent of release in, or exposure to, the environment. Thus, environmental properties of the substances/solutions must be assessed only in the context of actual or potential exposure of the environment.

If a solution which is intended for an application with a potential release into the environment contains any

- PBT/vPvB substance according to Annex XIII of the REACH Regulation, or
- confirmed ELoC substance according to Article 57(f) of the REACH Regulation

in a concentration of greater than or equal to 0.1% weight by weight in the final product, the solution shall be subject to the Impact Check (see 3.5),

Please note: In general, the CLP Regulation serves as basis for the identification of CMR substances. However, in case a solution's CMR categorization is higher in the region where the solution is sold than the European categorization, the respective national categorization forms the basis for the performance assessment. The same rule applies to substances categorized as PBT according to Annex XIII of the REACH Regulation. Besides the REACH Regulation, national regulatory schemes are implemented, sometimes using slightly different definitions and criteria for identifying PBT/vPvB properties. If a solution is sold in a country in which the legal framework concerning PBT/vPvB criteria is stricter than European law, the respective national regulation shall be taken as the basis for evaluation.

3.4.3 Stakeholder Requirement: Relevant Upcoming Regulations and Industry/Customer Specific Requirements

As well as complying with corporate values and (eco)-toxicological principles, a solution from BASF's portfolio is required to correspond to applicable stakeholder demands. Observing existing and upcoming legal regulations as well as customer or industry-specific requirements is of decisive importance to either remain competitive, gain a competitive advantage or successfully enter a market. In contrast to the corporate minimum requirements, the relevance of stakeholder specific demands for the portfolio assessment is determined by the respective business division, after consulting with the corporate functions from EHS and Corporate Sustainability.

The applicability of industry-specific regulations and requirements varies by application and the geographic region a solution is marketed in. Implications of changing regional requirements and regulations in other regions of the world (spill-over effect) are to be taken into consideration for a comprehensive assessment.

Different bodies, such as regulatory authorities, international conventions, industrial associations, trade unions, consumer associations and key players in the value chain, publish lists of substances of potential concern which may give indications on forthcoming industry-specific regulations.

Examples of such lists are:

- REACH Candidate List of Substances of Very High Concern for Authorization
- SIN (Substitute It Now!) List
- OSPAR list of chemicals of possible concern & priority action.

As well as complying with industry-specific upcoming regulations and requirements, the fulfillment of customer demands is of similar importance. BASF's wide-ranging portfolio of solutions is aimed at supporting customers by satisfying sustainability needs and providing solutions that meet end-consumer requirements both now and in the future. With growing public awareness of environmental issues, demands for eco-friendly solutions with an improved environmental compatibility are steadily on the rise. Responding to market requirements, BASF's customers increasingly call upon concentration thresholds

below those defined by law, for example to conform with the requirements of environmental labels (e.g. Blue Angel eco-label) or to achieve their specific corporate environmental targets.

Please note: All upcoming regulations and industry/customer specific requirements which may lead to a behavioral change or action by relevant stakeholders at present or in the foreseeable future should generally be considered in the segmentation process.

To pass this stakeholder requirement, a solution in its specific application must comply with applicable upcoming regulations and customer and industry-specific requirements.

If a solution fails to meet such regulations and requirements, it shall be subject to the Impact Check (see 3.5).

3.4.4 Stakeholder Requirement: Reputational Risk

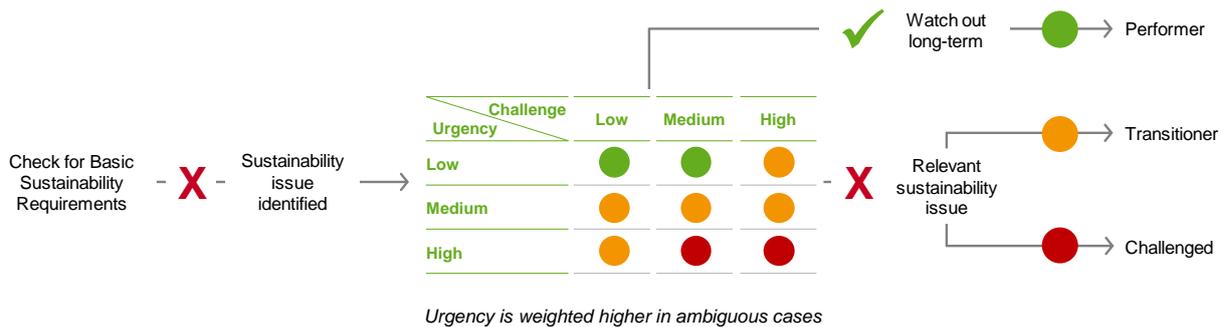
Despite compliance with legal, corporate and market/industry-specific requirements, a solution may face public rejection due to a specific sustainability topic. A solution affected by a sustainability topic for which there is a lack of acceptance among the general public harbors a reputational risk for BASF. The respective business units are asked to determine current or potential (foreseeable and upcoming) sustainability topics which are relevant for the sustainability performance assessment with the support of the EH&S, Corporate Communications and Corporate Sustainability divisions.

To pass this stakeholder requirement, a solution and its production process must not be exposed to reputational risks at present or in the foreseeable future. If a solution and/or its production process entail a risk to the company's reputation, the solution shall be subject to the Impact Check (see 3.5).

3.5 Impact Check

If a sustainability topic has been identified within the Check for Basic Sustainability Requirements, the solution will subsequently be subject to the Impact Check. The relevance of the identified topic is judged by an urgency and a challenge assessment. Both categories are evaluated using a traffic light system (green, yellow, red).

Figure 5: Impact Check



Urgency refers to the time span until/likelihood that a risk materializes:

- Low: No (time) pressure to solve the sustainability topic
- Medium: Medium (time) pressure to solve the sustainability issue
- High: High (time) pressure to solve the sustainability issue.

Challenge refers to the internal opportunities to mitigate the identified sustainability issue:

- Low: No mitigation measures needed or measures internally practicable with low effort
- Medium: Mitigation measures moderate (ranging from flagging of products to Product Stewardship up to substitution)
- High: Mitigation measures critical, significant effort needed (e.g. R&D).

The average of both categories is determined under consideration that urgency is weighted higher than challenge in ambiguous cases.

A solution marked by a green light is sorted into the Performer [watch out long-term] category showing that the evaluation of the identified sustainability topic has not resulted in any (market) relevant impacts in the foreseeable future. BASF uses the green marking as an early awareness for internal reasons.

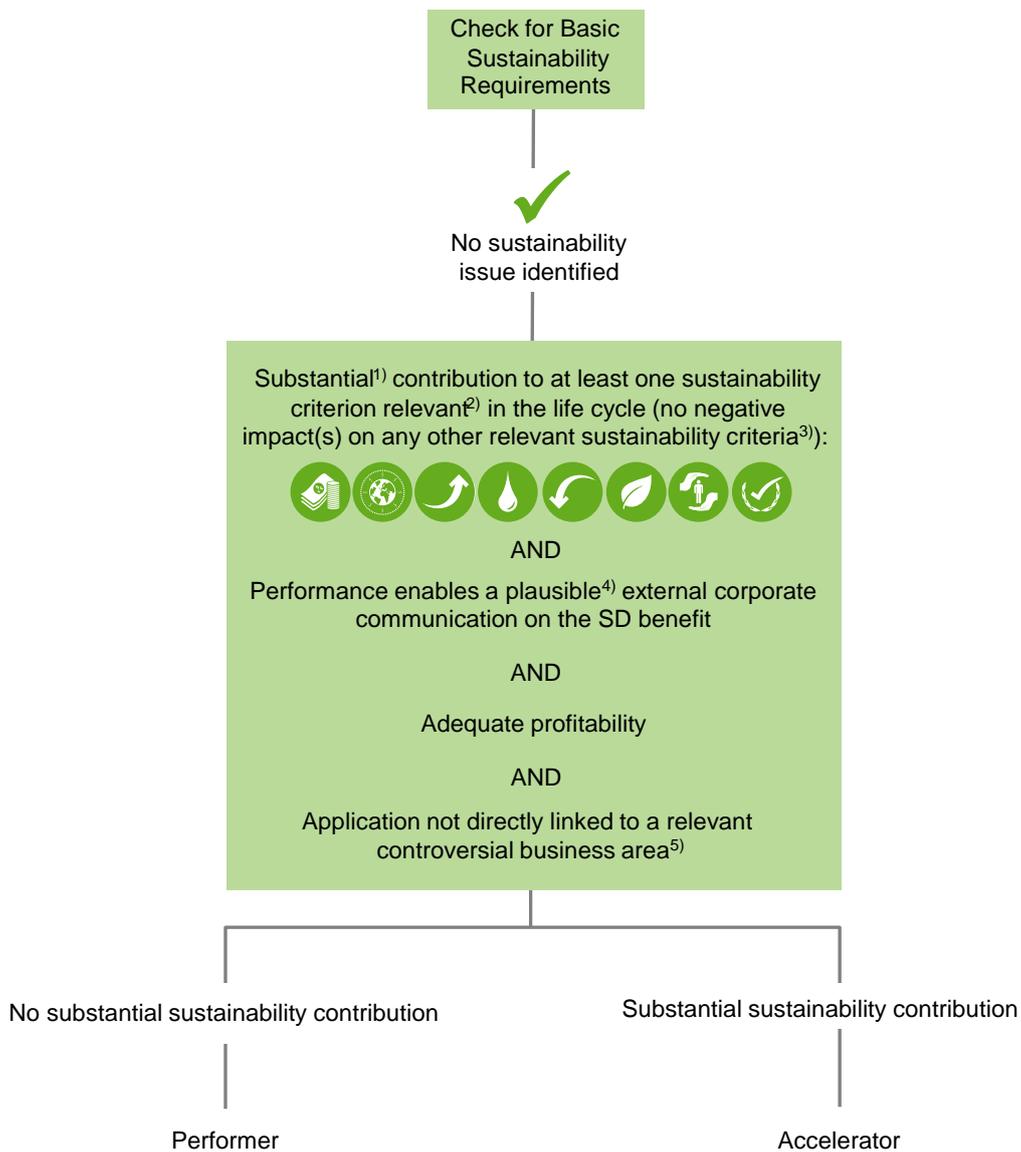
A solution marked by a yellow light is sorted into the Transitioner category indicating that the specific sustainability issue is actively being addressed and may be remedied in the foreseeable future.

A solution marked by a red light is assessed as Challenged indicating high urgency paired with a medium or major challenge in terms of remediation.

3.6 Check for Sustainability Value Contribution

Solutions with no sustainability issues are subject to the Check for Sustainability Value Contribution. Within the check, the significance of the solution’s sustainability contribution and the competitive environment are taken into consideration.

Figure 6: Check for Sustainability Value Contribution



- 1) Substantial: solution’s performance is essential for enabling the sustainability benefit in the life cycle
- 2) Relevant: addressing a sustainability issue that is reasonably considered important in the life cycle
- 3) Sustainability criteria from left to right: Cost savings downstream, Climate change and energy, Resource efficiency, Water, Emission reduction (air, noise, soil), Biodiversity and/or renewables, Health and safety, Hunger and poverty (see 3.6.1)
- 4) Prerequisite: solution’s sustainability contribution better than that of a sufficiently large share of alternative solutions (as a guidance e.g. combined market share of poorer alternative solutions ≥ 20% based on sales volume) or the non-use of the solution, and/ or performance is perceived as ‘enabling’
- 5) Tobacco and Controversial weapons (e.g. nuclear weapons, cluster munitions, anti-personnel landmine, biological weapons, chemical weapons, blinding laser weapons, incendiary weapons, non detectable fragments, depleted

uranium weapons, white phosphorus weapons); proposal for additional specific controversial business area(s) possible

To attribute a sustainable development contribution to a solution and categorize it as an Accelerator, the following conditions shall be fulfilled (see 3.6.1 to 3.6.3):

3.6.1 Substantial Contribution to Sustainability Criteria

Regarding the first condition, the solution shall make a substantial contribution to at least one sustainability criterion of relevance in the value chain, while simultaneously having no significant negative impacts on any other relevant sustainability criterion.

The following eight sustainability criteria are defined, based on the outcome of BASF's materiality analysis undertaken in 2010 (for details see Appendix 3, see quality criterion "Materiality"):

Sustainability pillar	Sustainability criterion	Solution description (exemplary)	Sustainability icon
Economy	Cost savings downstream	<ul style="list-style-type: none"> Enables cost savings downstream Increased quality of produce (e.g. mineral content, visual quality) 	Cost savings 
	Biodiversity and/or renewables	<ul style="list-style-type: none"> Enables conservation of biodiversity Higher compatibility with low-drift technologies Reduced environmental exposure due to optimized application technology (e.g. bait technology) With improved eco tox profile More favorable behavior (e.g. less leaching) Reduced risk for non-target organisms Enables the use of sustainably produced renewable raw materials Based on sustainably sourced renewable raw material 	Biodiversity 
Ecology	Renewables	<ul style="list-style-type: none"> Enables the use of sustainably produced renewable raw materials Based on sustainably sourced renewable raw material 	Renewables 
		<ul style="list-style-type: none"> With reduced carbon footprint in production Enables greenhouse gas savings downstream Enables use of renewable products downstream 	Climate change 
	Climate change and energy	<ul style="list-style-type: none"> With reduced energy consumption in production Enables energy savings downstream 	Energy 

	<ul style="list-style-type: none"> ■ Allows improved production of biomass as a feedstock/as biofuel 		
	<ul style="list-style-type: none"> ■ With reduced air pollutant emissions in production ■ Enables a reduction of air pollutants ■ Enables noise reduction ■ With reduced noise pollution in production ■ Enables a reduction of soil contaminants ■ Designed for biodegradability or compostability at end-of-life ■ Enables biodegradability or compostability in target application 	<p>Emissions</p> 	
	<ul style="list-style-type: none"> ■ Enables resource savings (e.g. phosphate) ■ Enables improved production/ yield/ harvest efficiency downstream ■ Reduced abiotic stress/ positive physiological effects ■ Integrated pest management: compatibility in mixtures or alternations, use in spray programs ■ Integrated resistance management: unique position with new mode of action, curative control of sudden disease outbreaks, disruptive/ shifting type/ multisite MOA ■ Incorporates and/ or based recycled materials ■ Enables less maintenance and avoids corrosion of final product ■ Enables reduction, reuse or recycling of waste ■ Enables prolonged life span of the final product 	<p>Resource efficiency</p> 	
		<p>Waste reduction</p> 	
Ecology		<p>Durability</p> 	

	Water	<ul style="list-style-type: none"> ■ Enables reduction of emissions into water ■ Enables water savings downstream ■ With improved aqua tox profile ■ With reduced water footprint in production ■ Enables water treatment and drinking water purification 	Water	
Society	Health and safety	<ul style="list-style-type: none"> ■ With improved human tox profile ■ Enables safer handling and use of chemical substances ■ Enables improved protection of worker health ■ Enables improved protection of public health ■ Enables reduction of nutrition deficiencies 	Health and safety	
	Hunger and poverty	<p>With focus on the advancement of developing countries</p> <ul style="list-style-type: none"> ■ Achieves food security and/or improves nutrition ■ Enables affordable housing ■ Improves sanitation ■ Helps reduce poverty 	Hunger and poverty	
	Additional market-specific criterion (optional)			

Please note:

- A solution may contribute to several sustainability criteria.
- If a solution contributes exclusively to the sustainability criterion “cost savings downstream”, the solution shall be categorized as a Performer.
- The contribution to a sustainability criterion can take place at any stage in the solution's life cycle.

A contribution is generally regarded as substantial if it is essential for enabling the sustainability benefit in the life cycle. A sustainability criterion is generally considered relevant if it addresses a sustainability issue that may reasonably be considered important in the solution's life cycle. If a solution has significant negative impacts in at least one relevant sustainability criterion along the value chain, the solution must not be assessed as an Accelerator but as a Performer. A negative impact is generally considered as significant if the negative effect outweighs the solution's positive sustainability contribution. In case of uncertainties concerning trade-offs, a Life Cycle Assessment (e.g. Eco-Efficiency Analysis) may help quantify benefits and harms.

3.6.2 Plausible External Corporate Communication on SD Benefit

The second condition to be fulfilled to categorize a solution as an Accelerator is that either the solution's sustainability contribution is better than that of a sufficiently large share of alternative solutions or the non-use of the solution, and/ or that the performance is perceived as 'enabling'. The market environment should be taken into consideration for the evaluation of the "sufficiently large" criterion. As a guidance, the share of alternative solutions will generally be deemed as sufficiently large if the combined market share is greater than or equal to 20 percent in the reference market based on sales volume. The relevant market shall be defined as the sum of products that show a physical-technical similarity (e.g. functionality, material) to the assessed solution, meaning the products within one market fulfill the same customer need and can therefore be replaced by each other from a functional perspective, for example: in case of the customer need for a seat cover, the relevant market may include seat covers made from synthetic rubber, synthetic leather and natural leather.

Please note: The aim of the second condition is to prevent a solution which tackles a sustainability issue that is no longer perceived as such by the public (e.g. due to legal regulations or market environment) or which has been on the market for a long time, being assessed as an Accelerator.

3.6.3 Adequate Profitability

As third condition, a solution shall contribute to the company's economic development and therefore be profitable at present or in the foreseeable future. For the assessment, the current and the two previous years shall be considered. The decision as to whether a solution's profitability is appropriate is entrusted to the respective business division(s). Within the decision-making process, exceptions shall be considered, e.g. solutions in the launch phase may not yet be sufficiently profitable. Yet, to pass the criterion, a solution shall, with a sufficient degree of likelihood, be profitable within a reasonable time frame after full-scale market introduction.

3.6.4 No Link to Relevant Controversial Business Area

A solution which is intended for an application in a relevant controversial business area which is directly linked to a relevant challenged or disputed societal license to operate, is recommended not to be categorized as Accelerator but as Performer.

The definition of business areas regarded as being controversial is based on exclusion criteria of defined rating agencies and investment banks of relevance to BASF. A relevance check was performed to identify such exclusion criteria of highest accordance amongst the defined agencies and banks. As outcome, the following two controversial business areas are defined:

- Tobacco
- Controversial weapons (e.g. nuclear weapons, cluster munitions, anti-personnel landmine, biological weapons, chemical weapons, blinding laser weapons, incendiary weapons, non detectable fragments, depleted uranium weapons, white phosphorus weapons).

The relevance check is reviewed and updated every two years.

Proposals for additional specific controversial business areas not mentioned above can be made by the responsible business divisions, while the final decision shall be taken by Corporate Sustainability.

Please note: If a solution cannot meet each of the four conditions mentioned above (3.6.1 - 3.6.4), it shall not be assessed as Accelerator, but rather as Performer.

4. Sustainable Solution Steering Key Processes in a Nutshell

The segmentation of the business portfolio is conducted in a workshop format. A briefing session and a preparatory phase precede a challenging session. The sustainability performance evaluation of solutions in their specific applications and regions is based on the expert judgement of a range of responsibilities, supported by scientific data, if available. The representatives of the Corporate Sustainability assume a leading role in challenging the assessment by the responsible business division and assuring consistency across all business divisions.

The composition of the participants involved in the segmentation process depends on the focus of the responsible business division (product vs. process orientation) and its regional structure (regional vs. global). In general, the following responsibilities and/or expertise are eligible for involvement (depending on companies' structure and organization):

Function	Expertise
Corporate Sustainability	Method owner, cross business division view, cross market- and region sustainability expertise
(BU) Sustainability Representative	Sustainability knowledge of the division and its markets
Product Steward/Regulatory	Product-specific ecological, toxicological, regulatory and stakeholder knowledge
Strategic Marketing / Technical Marketing/ Product Management/ Regional Product Management	Expertise on product performance, mid-term and long-term business division strategy and economical figures, market overview
Controlling*	Mid-term and long-term business division strategy and economical figures
Sales/Key-account Management*	Expertise on product performance and market demands
Research and Development*	Expertise on development of new products or improvements
Procurement*	Expertise in topics related to procurement of raw materials
Corporate Product Safety*	Expertise on corporate sustainability concerns regarding (eco-)toxicity
Operations/Technology*	Expertise on technology performance and benchmark
Regional Representative*	Expertise on regional market requirements, portfolio, regulations and customer requests

*if required

4.1 Kick-off and Briefing Session

Within each operating division, the portfolio segmentation starts with a briefing session.

The objective of the initial phase is to ensure a common understanding of the concept of sustainable development and the Sustainable Solution Steering methodology.

4.1.1 Roles and tasks

As a rule, the following tasks shall be performed by the designated functions:

Task description	Obligatory				Optional							
	Corporate Sustainability	(BU) Sustainability Representative	Product Stewardship/Regulatory	Strategic Marketing / Technical Marketing/ Product Management/ Regional Product Management	Controlling	Sales/Key-account Management	Research & Development	Procurement	Corporate Product Safety	Portfolio Management	Operations/Technology	Regional Representative
Initiate segmentation process (review/update)	R	C										
Appoint (obligatory) participants in segmentation process	C	R	I	I	I	I	I	I	I	I	I	I
Schedule briefing session	C	R	I	I	I	I	I	I	I	I	I	I
Conduct briefing session	R	C	I	I	I	I	I	I	I	I	I	I
Share Excel and briefing presentation to participants	I	R	I	I	I	I	I	I	I	I	I	I
Schedule workshop session	C	R	I	I	I	I	I	I	I	I	I	I

 Key step in the process

R – Responsible: role, which is assigned to do the work for achieving the task
A – Accountable: role, which makes the final decision and has ultimate ownership
C – Consulted: role, which must be consulted before a decision/action is taken (two-way communication)
I – Informed: role, which must be informed that decision/action has been taken (one-way communication)

4.1.2 Procedure and documents

To gain the full support of the management and the participants involved in the segmentation process and to ensure a common understanding of the methodology, in most cases the Sustainable Solution Steering process starts for each business division with a kick-off meeting including briefing session.

Prior to the meeting, the Sustainable Solution Steering approach for the individual business division including scope and timeframe is defined by the Sustainability Manager of the respective business division and the Corporate Sustainability representative.

After the briefing session, the Sustainable Solution Steering briefing document is provided to all participants and the workshop team starts with the initial segmentation (in case of very first segmentation)/portfolio review (review of already assessed solutions) while taking the defined criteria of the Check for Basic Sustainability Requirements and Check for Sustainability Value Contribution into account.

4.2 Preparation of Challenging Session

In the period between briefing session and challenging session (Sustainable Solution Steering workshop), the SBU representatives perform an initial portfolio evaluation. The initial assessment serves as the basis for the subsequent challenging session. Therefore, the preparatory phase is essential for an efficient conduction of the workshop session. After the initial assessment by the SBU, the representative from Corporate Sustainability may already review and challenge the segmentation of each product presupposed that the SBU documentation enables so. In case of agreement to the initial assessment, the respective product is not required to be further challenged within the Challenging session. As documentation, the agreement is to be documented in the respective columns of the Excel workbook.

Check initial portfolio assessment on completeness		R										
Mark each reviewed line with a “yes”		R										
Provide Excel file containing initial assessment and respective documentation to Corporate Sustainability in due time		R										
Review/challenge all lines marked by a “yes” and outline agreement with a “yes”	R											

4.2.2 Procedure and documents

In the period between briefing session and challenging session, the business division representatives and the Product Steward in particular perform the initial portfolio evaluation/portfolio review.

4.3 Challenging Session

Following the preparatory phase, the initial portfolio assessment is challenged by representative(s) of the Corporate Sustainability team during the workshop session (face-to-face or virtual meeting).

Performers [watch out long-term]												
Review mitigation actions for Challenged solutions, Transitioners, Performers [watch out long-term]	R	C	C	C			C				C	
Challenge initial performance assessment of Accelerators (all lines w/o “yes”)	R			C								
Review rationales and benchmarks for Accelerators	R			C								
Approve final portfolio categorization from workshop session	A	R	C	C								
Identify tasks remained open during workshop session	A	R	C	C								
Assign persons responsible for open tasks	C	R	C	C								
Agree on period/ deadline for completion of open tasks	A	R	C	C								
Finalize Excel file after Challenging session**	C	R	C	C								

*not mandatory, **case by case in agreement between Corporate Sustainability and Sustainability Representative, in case not all information is available by the end of the challenging session, final completeness of data can be done latest before system upload.

Please note: only valid for products without an agreement beforehand

4.3.2 Procedure and documents

Following the preparatory phase, the (initial) portfolio assessment/review is challenged by representatives of the Corporate Sustainability during the workshop session (face-to-face or virtual meeting).

Ideally, the challenging session is conducted either by one or two representatives from Corporate Sustainability. Ideally, of the two representatives, one has expert knowledge on the business division with the other member providing knowledge on the business specific value chains. As a rule, the challenging session is carried out within a cross-functional workshop framework.

During the workshop session, the Corporate Sustainability representative(s) challenge the initial/reviewed portfolio evaluation conducted by the business division, for those products without an agreement (indicated by “no” from Corporate Sustainability) beforehand. During a joint discussion, the sustainability categorization of these solutions is reviewed successively, with the defined segmentation criteria being considered. As well as scrutinizing the rationale behind each solution segmentation, the defined Accelerator benchmarks and mitigation actions for Challenged, including action owner and due date shall be reviewed and challenged by Corporate Sustainability.

Modifications to the portfolio assessment during the challenging session shall be documented in the Excel spreadsheet. If no agreement on the categorization is reached, the Corporate Sustainability representative has the final decision-making authority.

4.4 Final Documentation

After the portfolio assessment, the finalized segmentation results are uploaded to the respective IT system and summarized in an Executive Summary (see 4.4.2).

4.4.1 Roles and tasks

As a rule, the following tasks shall be performed by the designated functions:

Task description	Obligatory				Optional							
	Corporate Sustainability	(BU) Sustainability Representative	Product Stewardship/ Regulatory	Strategic Marketing / Technical Marketing/ Product Management/ Regional Product Management	Controlling	Sales/Key-account Management	Research & Development	Procurement	Corporate Product Safety	Portfolio Management	Operations/Technology	Regional Representative
Provide finalized Excel file to Corporate Sustainability**		R										
Review finalized Excel file for completeness, accuracy, validity	R											
Upload of finalized Excel file in IT system	R	I										
Review data after upload in IT system	I	R										
Finalize Executive summary including Action plans after workshop session	C	R	C	C								

*not mandatory, **case by case in agreement between Corporate Sustainability and Sustainability Representative

4.4.2 Procedure and documents

After the portfolio assessment, the segmentation results are documented in the Executive summary report.

This entails defining measures and milestones for Accelerators and Challenged solutions as well as the finalization of the Sustainable Solution Steering standard report, which consists of the following three documents:

- Overview of the segmentation result (share per Sustainable Solution Steering category), measures and milestones as well as strengths and weaknesses.
- Sustainable Solution Steering Workshop Report including Action Plans for all identified Challenged solutions

Attention: With the transfer of the finalized Executive Summary from the Sustainability Representative (BU) to Corporate Sustainability, the Sustainability Representative confirms irrevocably the manually updated TripleS data in the IT system as well as the data and information written in the Executive Summary.

A detailed description of the control procedures, frequencies and control owners is documented in an internal Financial Control System and not part of the manual.

5. Sustainable Solution Steering Business Approach

Since 2013, Sustainable Solution Steering allows the evaluation, interpretation and segmentation of the business portfolio on a regular basis (see quality criterion “Timeliness”).

To date, the annual results are included in the controlling report (e.g. Strategic Controlling Report). It is also possible to use the tool during the regular portfolio management every year if desired by the responsible business division.

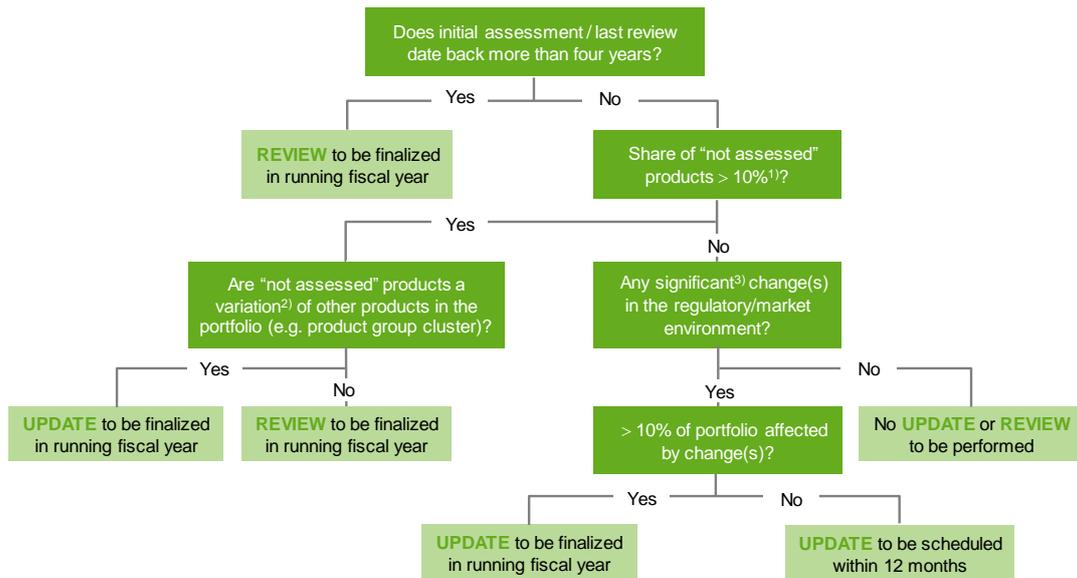
A review of the categorization of the portfolio shall be done at least every four years which includes the check of the entire portfolio in a workshop format. Exceptional changes of this review period (e.g. business division’s strategy development is upcoming or in process, structural changes) needs to be discussed and confirmed by the Corporate Sustainability division to ensure a portfolio steering according BASF’s strategic path to a more sustainable solutions portfolio.

In general, a distinction shall be made between an update and a review:

Update: Performed on a case-by-case basis, assessment of selected products, performed by the Sustainability Manager of business division and other functions if required (e.g. Product Stewardship, R&D, Marketing and Controlling, optional involvement of Corporate Sustainability).

Review: Performed on a regular basis, assessment of entire portfolio, obligatory involvement of the following functions: Product Stewardship, Marketing, Sustainability Manager(s) of business division, Corporate Sustainability.

Figure 7: Portfolio Update and Review Cycle



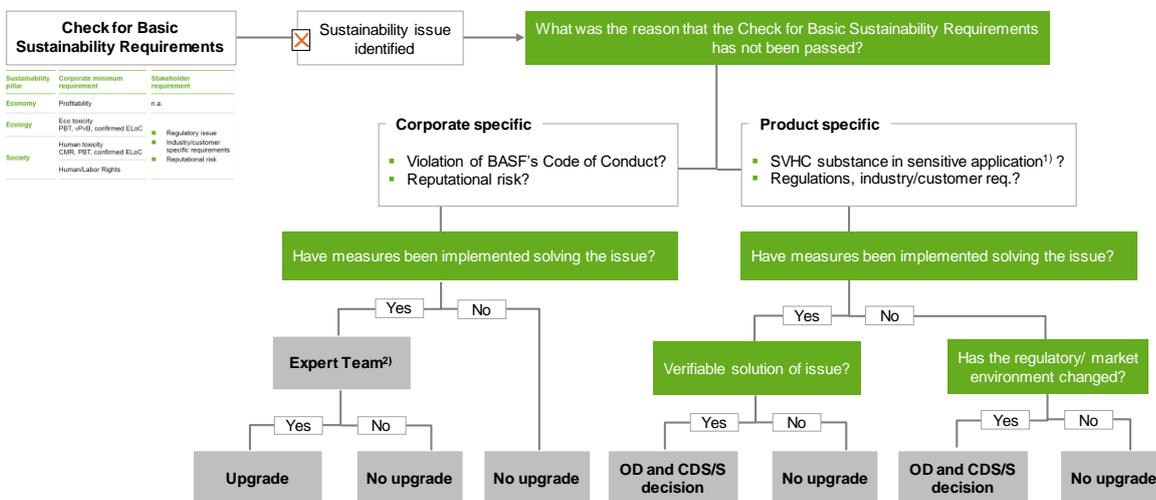
- 1) E.g. in case of new product launches;
- 2) Remark: no reason to suppose that the sustainability category may negatively or positively differ e.g. due to ingredients
- 3) E.g. new important regulation, break-through innovation of competitors

In case of M&A the first segmentation will be conducted within the following fiscal year, provided the technical feasibility.

In case a business unit strategy is scheduled, a separate update- or review cycle could be applied to ensure that the new strategy considers an up-to-date portfolio assessment. Corporate Sustainability decides, based on discussions with the business division, whether an update or a review should be done.

In case of a segmentation upgrade for Performer [watch out long-term], Transitioner or Challenged, the process looks as follows:

Figure 8: Upgrade process



- 1) Product with the same PRD# as product under SD concern, e.g. formulation has changed
- 2) Expert Team: representatives from Corporate Sustainability as well as representatives from functions affected (e.g. Procurement, CCO)

In case the reason why the Check for Basic Sustainability Requirements was not passed is corporate specific, meaning that either a Violation of the BASF Code of Conduct or a Reputational Risk was identified, an expert meeting is required. The expert meeting is initiated by the applicable OD with the (BU) Sustainability Representative submitting an application for upgrade. The decision about an upgrade is taken in the expert meeting.

Appendix 1:

CMR 1A and 1B criteria according to CLP Regulation

Carcinogens, hazard categories 1A and 1B

Category 1A: Category 1A, known to have carcinogenic potential for humans, classification is largely based on human evidence, or

Category 1B: Category 1B, presumed to have carcinogenic potential for humans, classification is largely based on animal evidence.

Germ cell mutagens, hazard categories 1A and 1B

Category 1A: The classification in Category 1A is based on positive evidence from human epidemiological studies.
Substances to be regarded as if they induce heritable mutations in the germ cells of humans.

Category 1B: The classification in Category 1B is based on:

- positive result(s) from in vivo heritable germ cell mutagenicity tests in mammals; or
- positive result(s) from in vivo somatic cell mutagenicity tests in mammals, in combination with some evidence that the substances have potential to cause mutations to germ cells. It is possible to derive this supporting evidence from mutagenicity/genotoxicity tests in germ cells in vivo, or by demonstrating the ability of the substance or its metabolite(s) to interact with the genetic material of germ cells; or
- positive results from tests showing mutagenic effects in the germ cells of humans, without demonstration of transmission to progeny; for example, an increase in the frequency of aneuploidy in sperm cells of exposed people.

Reproductive toxicants, hazard categories 1A and 1B

Category 1A: Known human reproductive toxicant
The classification of a substance in Category 1A is largely based on evidence from humans.

Category 1B: Presumed human reproductive toxicant
The classification of a substance in Category 1B is largely based on data from animal studies. Such data shall provide clear evidence of an adverse effect on sexual

function and fertility or on development in the absence of other toxic effects, or if occurring together with other toxic effects the adverse effect on reproduction is considered not to be a secondary non-specific consequence of other toxic effects. However, when there is mechanistic information that raises doubt about the relevance of the effect for humans, classification in Category 2 may be more appropriate.

Appendix 2:

PBT and vPvB criteria according to Annex XIII of REACH Regulation

PBT substances

- Persistence:**
- the degradation half-life in marine water is higher than 60 days
 - the degradation half-life in fresh or estuarine water is higher than 40 days
 - the degradation half-life in marine sediment is higher than 180 days
 - the degradation half-life in fresh or estuarine water sediment is higher than 120 days
 - the degradation half-life in soil is higher than 120 days
-

- Bioaccumulation:**
- bioconcentration factor in aquatic species is higher than 2.000
-

- Toxicity:**
- the long-term no-observed effect concentration (NOEC) or EC10 for marine or freshwater organisms is less than 0,01 mg/l
 - the substance meets the criteria for classification as carcinogenic (category 1A or 1B), germ cell mutagenic (category 1A or 1B), or toxic for reproduction (category 1A, 1B, or 2) according to regulation EC No 1272/2008
 - there is other evidence of chronic toxicity, as identified by the substance meeting the criteria for classification: specific target organ toxicity after repeated exposure (STOT RE category 1 or 2) according to regulation EC No 1272/2008
-

vPvB substances

- Persistence:**
- the degradation half-life in marine, fresh or estuarine water is higher than 60 days
 - the degradation half-life in marine, fresh or estuarine water sediment is higher than 180 days
 - the degradation half-life in soil is higher than 180 days
-

- Bioaccumulation:**
- bioconcentration factor in aquatic species is higher than 5.000
-

Appendix 3: Materiality Analysis

In 2010, a materiality analysis was conducted to identify environmental, social and governance issues of high relevance for society and BASF. Based on the evaluation of more than 300 stakeholders, including representatives from academia, non-governmental organizations, customers, corporate managers and BASF's Sustainability Council, 44 important issues were initially identified. In a further step, the identified issues were positioned in the materiality matrix according to their strategic importance for stakeholders and BASF's business. Seven sustainability priority issues which are most important for stakeholders and BASF were identified: energy and climate, water, renewable resources, product stewardship, human capital development, human and labor rights and biodiversity.

These issues provided the foundation for defining the sustainability criteria of the Check for Sustainability Value Contribution (see quality criterion "Materiality").

Although all three dimensions of sustainability are reflected within the materiality analysis, the social and ecological dimensions are addressed directly, whereas the economic dimension is approached indirectly. As a result, none of the defined priority issues has a direct connection to the economic dimension. Furthermore, unlike Sustainable Solution Steering, the identified sustainability priority issues are not focused on individual product or process solutions, but rather on the strategic relevance for BASF and its stakeholders. Consequently, the sustainability priority issue of "human capital development" is not applicable to the Sustainable Solution Steering methodology.

The sustainability priority issues are translated as follows:

- "Energy and climate" correspond to the sustainability criterion "climate change and energy"
- "Water" is reflected in the sustainability criterion "water scarcity and pollution"
- "Renewable resources" and "biodiversity" are represented in the Sustainable Solution Steering sustainability criteria "biodiversity and renewables" and "emission reduction (air, noise, soil)"
- "Product stewardship" and aspects of "human and labor rights" are both reflected in the sustainability criterion "health and safety"
- "Resource efficiency" was supplemented to outline solutions contributing to resource savings
- The economic dimension is considered in the sustainability criterion "cost savings downstream"
- At the UN summit in September 2015, the United Nations have announced the SDGs. A comparison between the existing sustainability criteria and the SDGs showed a high coverage, yet the sustainability criterion "hunger and poverty" was supplemented to outline solutions' contributing to the advancement of developing countries. This criterion replaced the former sustainability criterion "UN Millennium Development Goals".

One additional market-specific criterion may be added to the given set of sustainability criteria to allow for consideration of upcoming sustainability topics and/or for individual business division specifications.

Figure 9: Derivation of the Sustainable Solution Steering Sustainability Criteria

Sustainability priority issues derived from the materiality analysis (2010):

- Energy and climate
- Water
- Renewable resources
- Biodiversity
- Product stewardship
- Human and labor rights
- Human capital development



Sustainable Solution Steering Check for Sustainability Value Contribution – sustainability criteria:

- Climate change and energy
- Water scarcity and pollution
- Biodiversity and or renewables
- Emission reduction (air, noise, soil)
- Cost savings downstream
- Health and safety
- Resource efficiency
- Hunger and poverty
- Additional market-specific criterion (optional)

In 2013, the materiality analysis was updated. The following eight material aspects were identified for BASF based on the results of the stakeholder survey and internal workshops: Energy & Climate, Water, Resources & Ecosystems, Operational Excellence, Products & Solutions, Responsible Partnering, Employment & Employability, and Food. A review of the material aspects in 2013 led to the conclusion that these aspects are in accordance with the sustainability criteria of the Sustainable Solution Steering methodology.

A strategic evaluation process in 2015 and 2016 built upon this materiality analysis from 2013 to define new focus topics along the value chain. It provides strategic orientation for BASF's corporate commitments along the value chain:

- We source responsibly.
- We produce safely for people and the environment.
- We produce efficiently.
- We value people and treat them with respect.
- We drive sustainable solutions.

Relevant topics resulting from these commitments, such as supply chain responsibility, responsible production, resource efficiency, energy and climate protection, water, product stewardship, employment and employability, and portfolio management are all still the basis for integrating these topics into our long-term steering processes to ensure our societal license to operate and take advantage of business opportunities.

In 2019, we updated our materiality analysis. Based on this analysis, our material topics include climate and energy, health and safety/product stewardship, and human rights, which are all in accordance with the sustainability criteria of the Sustainable Solution Steering methodology.

Appendix 4

Year-end closing and reporting

Year-end closing procedures

Key figures of Sustainable Solution Steering are part of BASF's annual report. BASF's third party auditor conduct a reasonable assurance of all disclosures on accelerator sales, one of BASF's most important nonfinancial key performance indicator. Accelerator sales are a steering-relevant indicator and their forecast is part of the Management's Report and are thus covered by the annual audit.

Scope

The scope of the relevant non-financial reporting figures regarding Sustainable Solution Steering is described in 3.3.

In comparison to the BASF SE consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) which is also valid for the Sustainability Solution Steering statement, the consolidated statement of net sales of Accelerator sales is not on company but on product level.

The related net sales volume data on product level are summarized and reported for each category (Accelerator, Performer, Transitioner and Challenged) whereby the net sales of Accelerator solutions which are defined as "most important nonfinancial key performance indicator" require the reasonable assurance level by an external auditor.

Reporting content

Besides the net sales of solutions classified as Accelerator, BASF SE discloses the net sales volume of all categories given in the present manual whereby the Performer segment is reported as consolidated sales figure of Performer and Performer [watch out long-term].

In addition, BASF discloses the net sales volume in scope which, as written above, can differ from the net sales of BASF SE, number of assessed products in their applications as well as the percentage rate assessed comparing to the sales in scope (relevant portfolio for Sustainable Solution Steering).

The disclosed data of the year-end Sustainable Solution Steering results are on BASF Group level. External reporting on BASF segment or regional level is not provided. A forecast for Accelerator net sales is provided on BASF Group level.



We create chemistry

BASF SE
Corporate Sustainability

67056 Ludwigshafen, Germany
www.basf.com/sustainability
