

A decorative graphic element consisting of a green L-shaped bracket with a white shadow effect, positioned above the word "Portfolio".

Portfolio

Sustainability Framework

Handbook for Crop Protection

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Sustainability at Syngenta Group



A pioneer in sustainability

In 2013, Syngenta Group was one of the first companies in the industry to launch a sustainability plan. Since then, the Good Growth Plan (GGP) successfully served as the organization's sustainability compass. Initial targets were achieved and updated in 2020.

The GGP is the foundation of Syngenta Group's sustainability journey. Assessing the company's impact from all perspectives, listening to stakeholders, and identifying areas where a meaningful difference can be made while capitalizing on opportunities, enabled Syngenta Group to place sustainability at the core of its strategy. Setting clear targets and an ambition that guides innovation will help integrate sustainability on a strategic and operational level whilst creating long-term value.

To realize this ambition, Syngenta Group has set four sustainability priorities.

The four Syngenta Group Sustainability Priorities

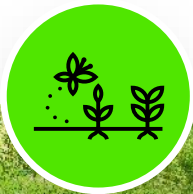
Priority 1



**Higher yields,
lower impact**

Accelerate crop productivity of the agricultural sector while reducing the impact on the planet through more sustainable technologies

Priority 2



**Regenerate soil
and nature**

Enable the adoption of regenerative agriculture practices to help farmers improve productivity, soil health, biodiversity and climate

Priority 3



**Improve rural
prosperity**

Improve the prosperity of low-income and under-served farmers by improving their access to inputs, knowledge, finance and markets

Priority 4



**Sustainable
operations**

Reduce the environmental impact of Syngenta Group operations and supply chain, strengthen the diverse and inclusive company culture and ensure the health and safety of employees

Read more about the Sustainability Priorities and respective targets on www.syngentagroup.com

Three key enablers of the Syngenta Group Sustainability Priorities

1

Leveraging the **power of innovation**

Invest USD 2 billion in sustainable agriculture breakthroughs (2020 – 2025)

2

Working in **partnership with others**

For example, work with **The Nature Conservancy**

3

Establishing a **strong tool** to steer our portfolio towards increased sustainability

Portfolio Sustainability Framework



Contribution to the United Nation's Sustainable Development Goals

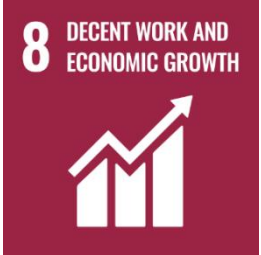
Syngenta Group Sustainability Priorities will accelerate Syngenta Group contributions to the United Nation's Sustainable Development Goals.

Empowering farmers with high-quality seeds, effective crop protection, and efficient fertilizers, drives agricultural productivity, uplifts livelihoods, ensures reliable food supplies, and improves global nutrition—all while limiting the land footprint requirements for agriculture.

Commitment to doing this in the most sustainable way is the guiding principle.

<https://www.un.org/sustainabledevelopment>

SUSTAINABLE DEVELOPMENT GOALS



Introduction to the PSF

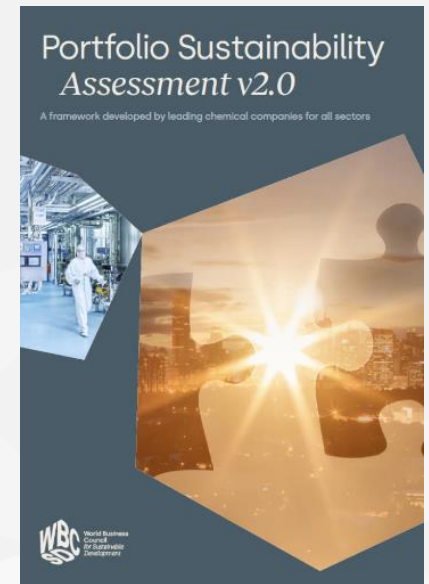


Sustainability at the core

- Syngenta Group has developed a Portfolio Sustainability Framework (PSF) to provide increased transparency to external stakeholders on the ongoing sustainability profile of the portfolio and to facilitate internal decision-making.
- Given the absence of a standardized framework for the agricultural input industry, the PSF was proactively developed considering characteristics and requirements specific to the sector.
- The PSF is a systematic and fact-based framework designed to rate a given formulated product, in a particular crop and specific geography.
- Utilizing predefined criteria for sustainability benefits and stakeholder alignment within the PSF, portfolio sales are categorized into three tiers.

Inspired by the framework in the chemical industry

Inspiration for the design of the PSF was taken from the Portfolio Sustainability Assessment **guidelines** set forth by the World Business Council for Sustainable Development (WBCSD), a framework widely embraced by many chemical companies, reporting tangible business benefits and progress.





The Portfolio Sustainability Framework (PSF) is a clear demonstration of how we place sustainability at the core of our business. As we gradually embed this framework into our decision-making processes, it will help us direct resources on the most needed and promising technologies to support our customers and address the global challenges in agriculture. It underpins our business performance and long-term growth.

Jeff Rowe

Chief Executive Officer, Syngenta Group



Methodology: An overview

This section describes the methodology for the Portfolio Sustainability Framework (PSF) as applied to the Syngenta Crop Protection Business Unit.



Implementing the Portfolio Sustainability Framework

Starting with Syngenta Crop Protection

The PSF was launched in 2024 for the Crop Protection business unit to provide transparency on the full scope of sales in 2023.

As the framework gets embedded into the business, data is refined and additional benefits are documented, targets for Crop Protection are expected to be set after the first year of adoption.

Adaptation and roll-out across other business units is planned for the foreseeable future.



As a global market leader in crop protection products, the Syngenta Crop Protection business unit offers farmers an extensive toolbox of solutions to counter the threats of crop pests to ensure enough safe, nutritious, affordable food for all while minimizing the use of land and other agricultural inputs. Alongside its main business (Weed Control, Disease Control, Insect Control), Syngenta Crop Protection also operates three specialist businesses: Seedcare, Biologicals, and Professional Solutions.

PSF tool and methodology: Data-driven, automated and auditable

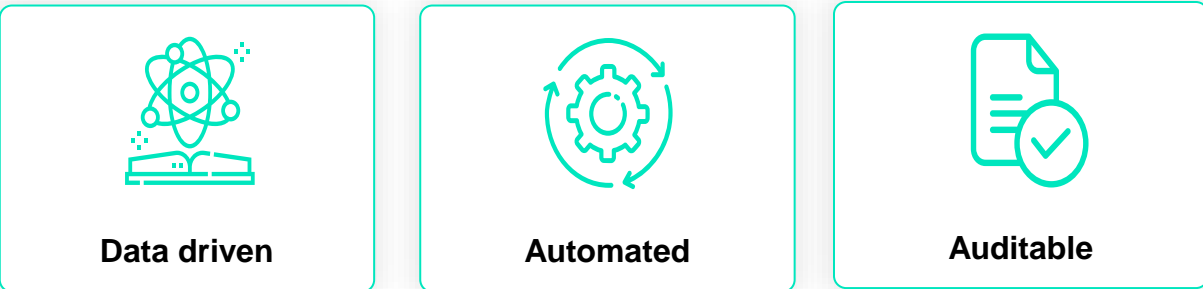
The model

The PSF tool is data-driven, automated, and auditable.

Scoring relies on quantitative data and thresholds resulting in an efficient and straightforward process.

Digital technology

By leveraging digital technology, the PSF provides a transparent, scalable and credible foundation for both internal and external stakeholders to understand and monitor performance against portfolio sustainability targets.



Mapping sustainability metrics across two dimensions

The purpose of the PSF is the continuous development of products and solutions that not only offer increased sustainability benefits to customers but also prioritize the improvement of the ecological score and carbon footprint of products, as expected by a broader set of stakeholders, such as food value chain players, ESG rating agencies, and financial institutions.

To measure progress, the portfolio will be systematically mapped across two key dimensions – sustainability benefits on one side and stakeholder alignment on the other.

Sustainability Benefits

Products are primarily purchased for the benefits they provide to customers – crop protection that controls weeds, insect pests and diseases. This protection leads to more resilient crop yields, which, in turn, reduces the need for additional land resources to sustain a growing global population.

Next to the core focus on crop yield, Syngenta Group consistently innovates and delivers products and solutions that provide additional sustainability benefits, such as professional pest management against home pests or malaria-transmitting pests, or products with particularly positive impact on climate and soil. In addition, Syngenta Group implements programs which are specifically designed to directly enhance rural prosperity in regions where farmers face barriers in accessing modern technology, financing, knowledge or produce markets.

Crop yield resilience and additional benefits combined reflect the overall sustainability rating of products within the portfolio.

Crop yield resilience

Additional benefits

Stakeholder Alignment

Every operation leaves a carbon and ecological footprint. The effort of Syngenta Crop Protection to improve its footprint is both in the interest of the business and also aligns with the expectations of a broad range of stakeholders.

The PSF allows quantification of how close the portfolio aligns with factors relevant to stakeholders to foster stronger relationships, create transparency and build trust.

For products, two main stakeholder sustainability metrics are monitored for the crop protection industry, i.e., carbon footprint (cradle-to-gate) and ecological score.

Carbon footprint

Ecological score

Effective portfolio segmentation

The Crop Protection portfolio is segmented based on the formulated product, country, and crop.

This detailed segmentation, yielding around 20,000 combinations, is essential to ensure relevant PSF scores that capture the unique features of each crop protection product within its specific application context.

This level of consideration is crucial due to the variations in crop pests, product application rates, ecological score, and carbon footprint across diverse regions and crops.

Product-Crop-Geography Combination

ELATUS® for soybeans in Brazil (example)



Crop

Products are designed to control certain pests. The importance of a particular pest control varies by crop.



Geography

Country where a product is used is considered due to regional differences in pest pressure.



Formulated product

Formulated products have different concentrations of active ingredients (AIs) and co-formulants applied at different dose rates.

Ratings for sustainability benefits and stakeholder alignment are systematically assigned

Data collection

The PSF allows rating of a given formulated product, in a particular crop, in a specific geography across two dimensions: sustainability benefits and stakeholder alignment



- Formulated product
 - Geography
 - Crop
- +**

Sustainability benefits

- Crop yield resilience
- Additional benefits

Stakeholder alignment

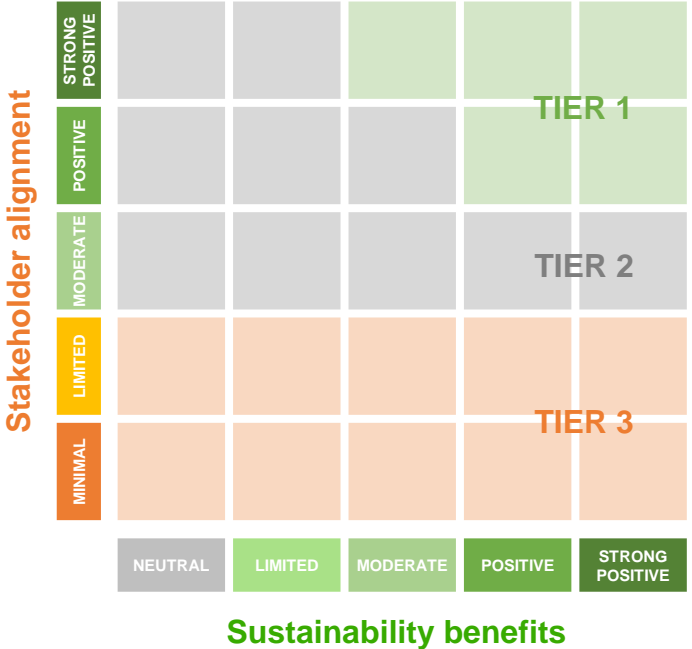
- Carbon footprint
- Ecological score

Product rating

Ratings for sustainability benefits and stakeholder alignment are systematically assigned to each product and service, facilitating the classification into one of the three sustainability categories:

1. **TIER 1** – leading with both high sustainability benefits and strong stakeholder alignment
2. **TIER 2** – moderate or higher stakeholder alignment
3. **TIER 3** – limited or minimal stakeholder alignment

Positioning on the matrix



As the tool develops, the PSF will support business leaders make long-term decisions for sustainable growth

Portfolio

The PSF stands as a reliable and evidence-based guide to provide increased transparency to external stakeholders on the ongoing sustainability profile of the portfolio and to facilitate internal decision-making.

The tool helps to identify priorities for sustainable growth.

R&D and Innovation

The PSF empowers the development of innovative products and solutions that strongly support crop yield resilience, contribute to additional sustainability benefits and closely align to external stakeholder expectations.

CAPEX and M&A

The PSF supports well-informed investment decisions and is a valuable tool for evaluating the future potential and long-term viability of M&A opportunities.

Reporting

The PSF provides credible reporting on portfolio sustainability performance, enabling effective communication on progress to stakeholders.

It increases transparency and fosters stronger customer and stakeholder relationships.



The Portfolio Sustainability Framework (PSF) gives us a unique perspective of our portfolio in relation to farmer benefits and stakeholder expectations. The PSF combines data analytics and science-based metrics to support long-term decision-making, empowering efforts towards more sustainable solutions. This will be the tool through which we transparently and credibly report on our sustainability performance to our stakeholders.

Alexandra Brand

Executive Vice President Sustainability & Corporate Affairs, Syngenta Group



Methodology: Sustainability benefits



Crop yield resilience calculation based on pest pressure

Rationale and approach

Crop protection products are vital to protect crop yields. Without crop protection, potential crop losses can range from 50% to 82%¹, depending on the crop.

Higher yields are critical contributors to food security, reduced land and water requirements, and farmer incomes. Furthermore, with a projected global population of 9.7 billion by 2050, demand for food is set to increase by over 50%² while area expansion is not a sustainable option.

Products sold are scored based on the significance of the pest they control for in each country and crop combination. The significance of a pest is determined by the number of hectares treated to control it, sourced from external panel data available to the industry. The higher the pest significance controlled, the greater the product yield resilience benefit.

Crop protection products receive at least a moderate benefit score. Growers would not generally apply products unless there is a material yield (and economic) benefit.

¹ Source: E-C Oerke, Journal of Agricultural Science; ² WRI, World Bank, UNEP et al. (2019), ibid.

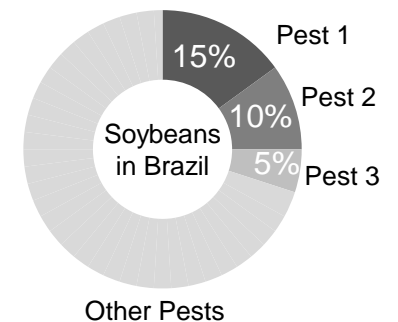
Portfolio scoring model

For crop yield resilience benefits, the following scoring thresholds apply for every Product-Crop-Geography combination:

NEUTRAL	LIMITED	MODERATE	POSITIVE	STRONG POSITIVE
Products that do not provide yield resilience benefits		Products that control ≤10% of pest area treated	Products that control >10% of pest area treated	Products that control >25% of pest area treated

Pest pressure panel data (example)

In this example, a formulation for soybeans in Brazil that addresses Pest 1, 2 and 3 is scored '**STRONG POSITIVE**' (pest coverage 30%), while a formulation for soybeans in Brazil that addresses only Pest 2 & 3 is scored '**POSITIVE**' (pest coverage 15%)



Note: A small portion of products provide crop yield resilience benefits unrelated to pest control (i.e. abiotic stress management, plant nutrition) and are rated as Moderate.

Monitoring additional sustainability benefits for non-crop yield products

Non-crop yield products groups



VECTOR CONTROL

Vector Control products are a highly effective way to reduce transmission of malaria.



PROFESSIONAL PEST MANAGEMENT

Professional pest management solutions protect society from pests and pest-related diseases.



AVOIDED FOOD WASTE

Some products are used for post-harvest protection to avoid food waste.



WELL-BEING¹

Products aimed at garden, landscaping and ornamentals support well-being of society across the globe.



PUBLIC SAFETY¹

Products used for vegetation management around public transportation to enhance user safety.



ADDITIONAL SUSTAINABILITY BENEFITS

Additional benefits may be added to the matrix as the tool is implemented across the business

1) Well-being and public safety products are never considered Tier 1 in the PSF matrix unless they have additional sustainability benefits

Portfolio scoring model

For each Product-Crop-Geography combination that does not provide yield resilience benefits, the following scoring thresholds apply:

NEUTRAL	LIMITED	MODERATE	POSITIVE	STRONG POSITIVE
Other products where benefits have not been documented	Well-being & public safety products	Pest management products, avoided food waste products	N/A	Vector control products

Non-crop yield product (example)

Vector Control products, which are a critical and effective tool to protect from malaria, are scored '**STRONG POSITIVE.**'

Evaluating additional sustainability benefits

Additional sustainability benefits



CLIMATE & NATURE

Certain products help to avoid or sequester greenhouse gas emissions, reduce water consumption or improve soil health.



RURAL PROSPERITY

Programs including MAP¹ and CENTRIGO™ have been initially launched in China and Southeast Asia to support under-served farmers by lowering access barriers to increase their incomes.



OTHER SUSTAINABILITY BENEFITS

Additional benefits may be added to the matrix as the tool is implemented across the business and as new products are developed.

1) MAP = Modern Agriculture Platform

Portfolio scoring model

Additional benefits that are assessed to be **direct**, **measurable** and **significant**, are awarded bonus points for Product-Crop-Geography combinations:

+ 1 point awarded for each additional benefit



Additional sustainability benefit (illustration)

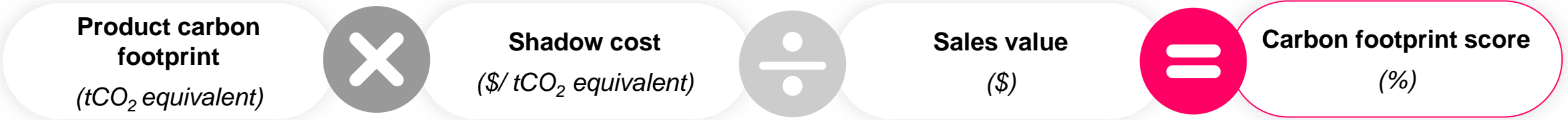
For example, the sales of a biostimulant product that has a **'MODERATE'** yield benefit and is awarded +1 additional point for Climate & Nature, results in a **'POSITIVE'** overall benefit score

Methodology: Stakeholder alignment



Balancing economic value and the climate costs of products

From cradle-to-gate



The life cycle assessment (LCA) scope for product carbon footprints is from cradle-to-gate, following ISO 14040 and ISO 14044 standards.

Active ingredient (AI) carbon footprint is derived by adding together the CO₂ of all AIs included in a formulation, based on volumes and concentrations.

Carbon footprint of other components and activities is calculated by allocating the remaining LCA emissions (scopes 1-3 upstream) based on formulation volumes.

Shadow cost is an estimation of the true “climate cost for the planet”, based on prevention / avoidance costs.

Syngenta Crop Protection uses a CO₂ shadow price of USD 200 per ton, reflecting a realistic cost essential for meeting the goals outlined in the Paris Agreement. This amount surpasses the industry's average internal CO₂ prices.

Actual product sales for a specific Crop-Region-Combination in a calendar year.

Sourced from Syngenta Crop Protection financial data.

The ratio of the monetized carbon emissions impact divided by the economic revenues is used as an indicator. The following scoring thresholds apply:

VERY LOW	≤5%
LOW	>5-10%
MEDIUM	>10-20%
HIGH	>20-30%
VERY HIGH	>30%

Ecological score considers all active ingredients (AI) in a formulation

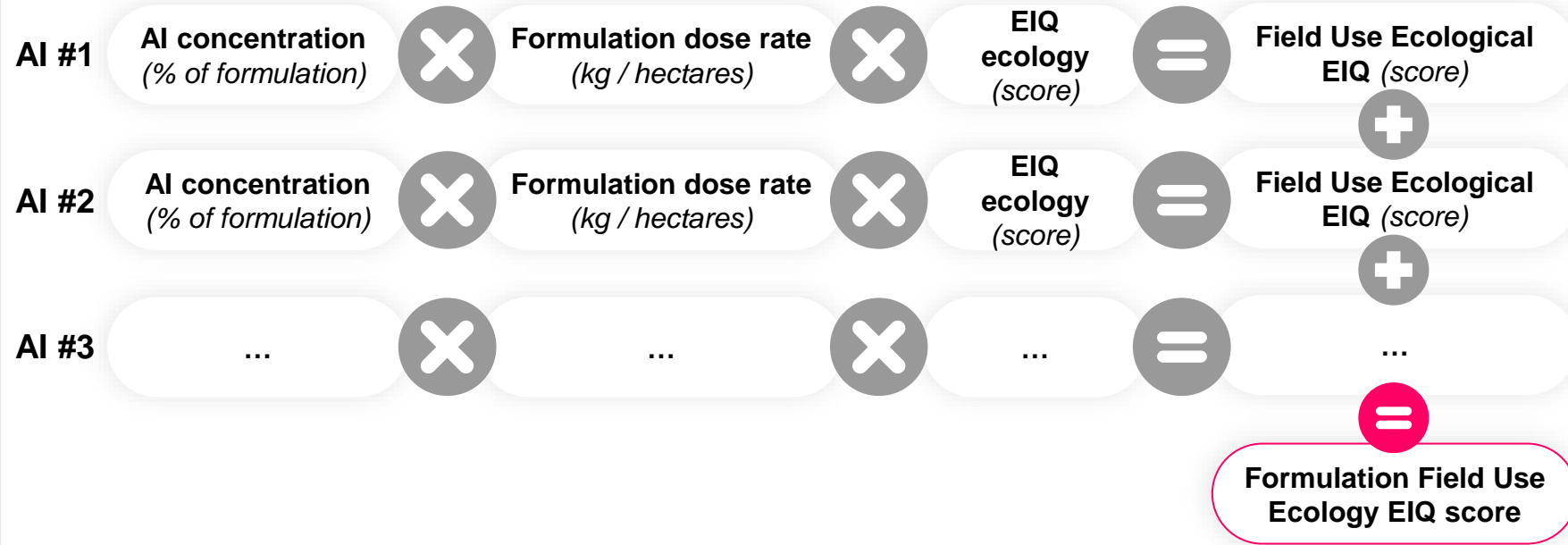
Recognized methodology

The PSF relies on the Environmental Impact Quotient (EIQ) developed by Cornell University, a globally recognized methodology designed to assign an ecological score to crop protection products. Specifically, the PSF utilizes the ecology EIQ score, which considers the toxicity and proxies of exposure to give a score of potential risk to fish, birds, bees, and other beneficial organisms.

Approach

For each AI in a formulation, its Field Use Ecological EIQ score is calculated based on its EIQ ecology score, its concentration and dose rate. The Formulation Field Use Ecology EIQ score is the sum of the Field Use Ecological EIQ score for each AI.

Field Use Ecological EIQ score calculation



The Formulation Field Use Ecology EIQ score is used as an indicator. The following scoring thresholds apply:

VERY LOW	≤25
LOW	>25-50
MEDIUM	>50-100
HIGH	>100-150
VERY HIGH	>150

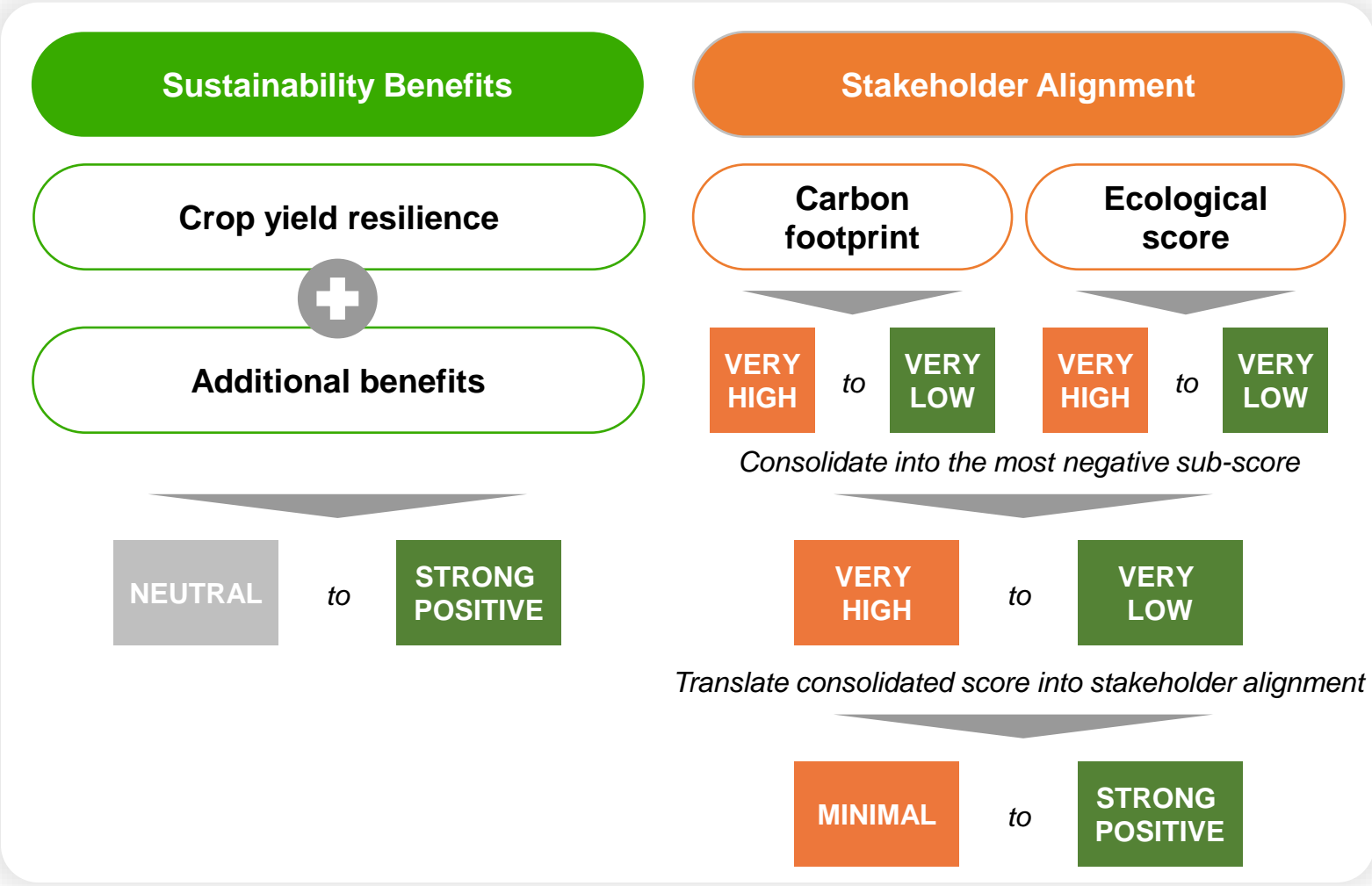
Note: While widely recognized, the Environmental Impact Quotient (EIQ) tool continues to be updated by Cornell University, and has acknowledged methodological limitations. Therefore, it cannot be considered a substitute for the detailed risk assessments and risk management decisions taken by regulators in relation to safety. As such, the use by Syngenta Group of the Ecological component in relation to non-target organisms cannot be considered an endorsement of this approach in a regulatory setting. All Syngenta Group products are safe for use as registered, including in relation to non-target organisms.

Methodology: Scoring and process



The PSF scoring algorithm is both transparent and conservative

Scoring algorithm



Process

The method is data-driven and therefore highly scalable. Scoring relies on quantitative data and thresholds resulting in an efficient and straightforward process for both sustainability benefits and stakeholder alignment.

A product that scores a strong positive on sustainability benefits but minimal or limited on either carbon footprint OR ecological score, will be assigned to Tier 3 within the PSF matrix.

Data outliers or gaps in the model trigger manual review by multidisciplinary experts.

Periodic review

An audit on the PSF process and results is performed annually. In addition, any methodology changes / expansion (for example, to accommodate the other business units or include other sustainability benefits) will be subject to audit as applicable.

External review



External PSF review

The overall Syngenta Crop Protection PSF methodology and a sample of products in the 2023 baseline were subject to review by external consultants, Arthur D. Little (ADL). ADL was one of the co-authors of the Portfolio Sustainability Assessment methodology published by the World Business Council for Sustainable Development (WBCSD) in 2018.

ADL's overall judgement regarding Syngenta's PSF methodology design



“Arthur D. Little conducted an audit of the Portfolio Sustainability Framework (PSF) methodology design of Syngenta Crop Protection (CP), reviewing the selected signals (i.e. sustainability benefits and stakeholder alignment), the scoring mechanism and its implementation¹.

Our audit concluded that Syngenta has developed a methodology (PSF) that aligns to the specific needs of Syngenta's business and industry, providing a robust foundation for scoring the sustainability performance of Syngenta CP's portfolio. The approach is inspired by the philosophy and principles outlined by the WBCSD PSA framework for the chemicals industry. A tailored methodology for the agricultural inputs industry is deemed necessary, given the inherent sector differences with the chemicals industry (e.g., regulatory requirements and customer dynamics).

The PSF is a well-balanced framework that supports internal portfolio steering while providing a solid basis for credible reporting to stakeholders through a transparent, auditable and verifiable methodology:

- Syngenta decouples sustainability tailwinds from headwinds in the assessment, resulting in detailed insights into its portfolio's performance. The scoring algorithm further ensures that products facing sustainability headwinds are automatically excluded from being labeled as 'leading products', adhering to the overarching principles of the WBCSD methodology.*
- The framework covers carbon footprint, ecology scores, crop yield resilience and additional sustainability benefits. Arthur D. Little recognizes this as a good starting point and has provided recommendations for further expansion of signals. At its core, the PSF relies on quantitative and verifiable data. Crop yield resilience and ecology scores are based on credible external sources, and internationally accepted standards are followed for carbon footprint calculations. Additional sustainability benefits within the PSF follow a similar approach as downstream sustainability signals in the WBCSD PSA, requiring them to be direct, measurable, and significant.*

The data-driven modeling approach enables automated and fact-based assessments, ensuring fast and reliable implementation. Arthur D. Little performed a limited sample review of the results and found that the PSF system had scored the individual products in accordance with the methodology.”

ARTHUR D. LITTLE

¹) Arthur D. Little has not validated the calculations of underlying data of the PSF signals (e.g., pest pressure, carbon footprint and environmental impact quotients) and PAC chemical composition (e.g., active ingredient composition, product label database)

Glossary



Active ingredient	Chemical compound or substance responsible for the pesticidal properties and intended biological effects
Biological	Substance with biological origin
Cradle-to-gate assessment	The assessment of a partial product lifecycle, starting from extraction / harvesting of raw materials (cradle) and ending at the factory gate (before transport to the customer)
Crop pests	Crop pests includes weeds, diseases and insects
Ecological score	Equivalent to the 'Formulation Field Use Ecology EIQ score' as defined within this handbook
Environmental Impact Quotient (EIQ)	EIQ is a numerical indicator used in agriculture to assess and compare the potential ecological score of different pesticides. Ecology EIQ considers various factors such as the toxicity and proxies of exposure to fish, birds, bees, and other beneficial organisms
Formulation	Specific composition and physical arrangement of the active ingredients and other components in a crop protection product
Pest coverage	From external market panel data, pests (i.e. weeds, diseases, and insects) are ranked for importance based on % of area treated to control each pest by country & crop
Product Application Combination (PAC)	The combination of a product and one of its market applications as seen by the final user (e.g., fungicide formulation for soybeans in Brazil). The PAC is the key element of the assessment
PSF	Portfolio Sustainability Framework
Rural prosperity programs	Syngenta Crop Protection product or service intervention focused on under-served farmers, that either targets an increase in farm profitability or addresses systemic access barriers for farmers regarding inputs, knowledge, finance, and produce marketing
Shadow costs	The shadow costs are the conversion factor (in USD per unit of impact) for monetizing the overall cost for the community of individual impacts on the surrounding ecosystems, e.g., for ozone depletion in USD/kg CFC11 equivalent
Vector control	Systematic efforts and measures taken to manage or eliminate the population of organisms, typically arthropods like mosquitoes or ticks, that can transmit diseases to humans
Yield resilience	Ability of a crop or agricultural system to maintain or recover its productivity in the face of various stressors or challenges, such as adverse weather conditions, pests, diseases, or other environmental factors

