

BACKGROUND PAPER

# Sustainability assessment of start-ups with the ESG Starter and the GHG & Impact Estimator

Status October 2024





*... did you know  
already?*

## The most important facts in brief

- ▶ Assessing the sustainability of start-ups is important for two reasons: Firstly, to create transparency at an early stage of the company's development regarding the status quo and potential for improvement in terms of ESG and impact. Secondly, to find out which start-ups have the greatest impact potential, e.g. in climate protection, in order to enable targeted investments in them.
- ▶ An ESG rating analyzes how well a company integrates environmental, social and governance aspects into its business processes to avoid risks and ensure financial stability, while an impact rating assesses the positive or negative effects of a company on society and the environment.
- ▶ With the „ESG Starter“ and the „GHG & Impact Estimator“, two digital tools have been developed that can be used to carry out a comprehensive sustainability assessment of start-ups.
- ▶ The „ESG Starter“ is a low-threshold ESG assessment that provides an overview of the current state of implementation of sustainability-related measures in the company.
- ▶ The „GHG & Impact Estimator“ enables start-ups to define the positive sustainability impacts of their products and services on people and the environment, set themselves measurable goals, and quantify their planned climate protection potential in a well founded manner.
- ▶ As our data shows, the climate protection potential of individual start-ups varies from just over a hundred to several hundred thousand tons of reduced CO<sub>2</sub>e emissions per year. For particularly impact- and growth-oriented, so-called transformation-oriented start-ups, an average annual climate protection potential of 30,000 tons of CO<sub>2</sub>e can be assumed.

### Background: Sustainability assessment of start-ups

Assessing the ecological and social impact of start-ups is associated with a high degree of uncertainty and considerable effort. As a result, sustainability-oriented aspects are often not given sufficient consideration in investment decisions.

As a result, promising start-ups with high sustainability potential and social benefits are often not recognized enough and do not receive sufficient financial support (Fichter et al., 2024), while capital may flow into less sustainable or less impactful companies or not into young innovative companies at all.

This misallocation of capital means that start-ups with high sustainability potential often face greater challenges in further developing and scaling their ideas and thus realizing their impact potential due to insufficient appreciation of their positive externalities.

A directionally sound sustainability assessment makes it possible to better channel capital towards social goals and innovation policy „missions“ (BMBF, 2023) and to increase the chances that innovative solutions for overcoming ecological and social challenges will successfully establish themselves on the market.

### Special considerations when evaluating start-ups

Start-ups are in the initial phases of company and business development. Their products, services and business models are usually still in their infancy and will change considerably in the future due to their innovative nature and the need to find the right „market fit“.

As a result, the impact on sustainability can often only be estimated on the basis of assumptions and plausible scenarios. Especially in the early phases, start-ups lack established value chains and historical data that can prove their performance and effects (outcomes and impacts). Compared to large companies or established SMEs, start-ups also have significantly fewer resources and capacities to deal intensively with sustainability issues and their evaluation.

Against this backdrop, there are three key peculiarities when assessing the sustainability impact of start-ups:

1. Firstly, the focus of the assessment cannot usually be on the impacts of a start-up that have already occurred and are measurable, but rather on the sustainability potential - i.e. the future contributions to ecological, social and economic sustainability.
2. Secondly, it is only practicable to integrate and evaluate sustainability aspects at an early stage if this is possible for both the start-up itself and external stakeholders (e.g. investors, start-up funding programs) with reasonable effort and provides information relevant to decision-making.
3. Thirdly, an approach is suitable for evaluating a start-up if it can be applied flexibly in different phases, sectors and situations (DIN SPEC 90051-1 consortium, 2020).

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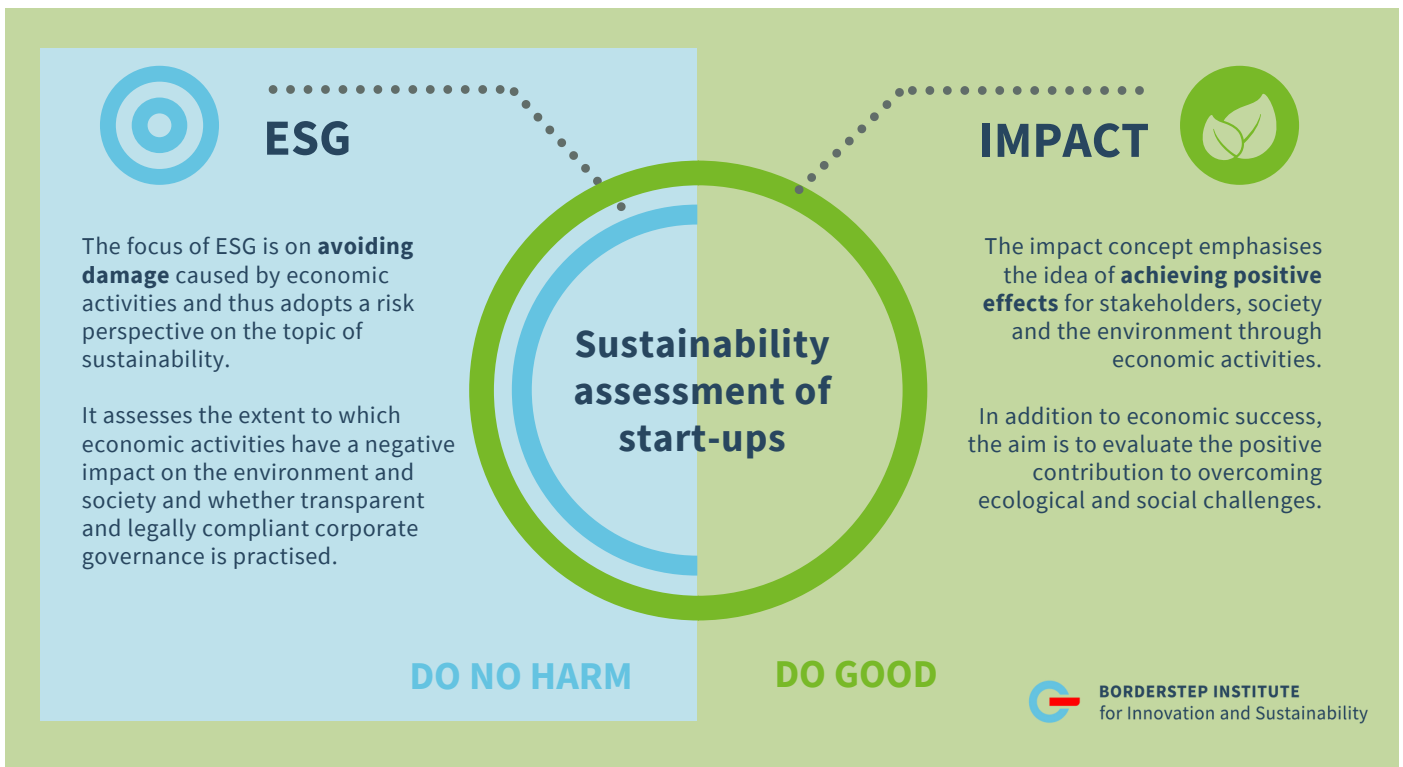


Figure 1: Two perspectives of sustainability assessment: ESG vs. impact

## Two sustainability perspectives: ESG vs. impact

When evaluating the sustainability of a company, a distinction can be made between two perspectives:

The **ESG assessment** originates from a risk perspective and focuses on the analysis of a company's environmental, social and governance risks. It assesses how well a company integrates these three aspects into its business processes in order to ensure long-term sustainability and financial stability.

ESG assessments are usually broad-based and take into account a variety of factors that are relevant to the company and its industry, such as resource consumption, working conditions, corporate ethics and diversity in management.

An **impact assessment** pursues an opportunity perspective and aims to measure the effects of a company on stakeholders, society and the environment.

It evaluates the specific results and changes generated by the company's activities, products and services, such as, the reduction of CO<sub>2</sub>e emissions, the creation of jobs or access to education.

The main aim of the impact assessment is to understand the extent to which a company contributes to solving social and environmental challenges. The focus here is on the potential and actual impact, not just the management of risks.

## Two digital tools for sustainability assessment

Against this background, the Borderstep Institute, together with ImpactNexus GmbH and SDG INVESTMENTS GmbH, has developed two digital tools for the sustainability assessment of start-ups:

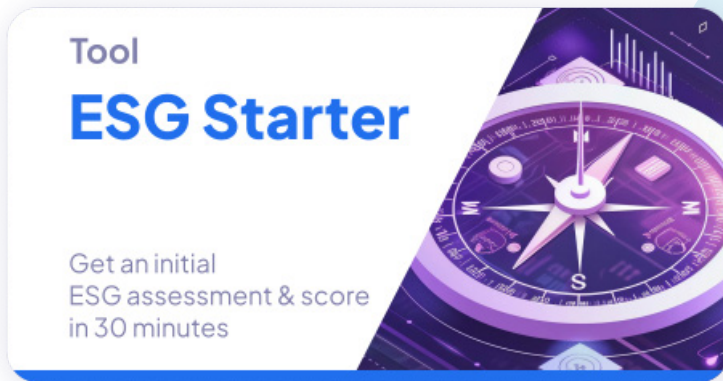


Figure 2

 [www.impactnexus.io/solutions-startups](https://www.impactnexus.io/solutions-startups)  
#ESG Starter-tool


*The tools can be used free of charge*



Figure 3

 [www.impactnexus.io/solutions-startups](https://www.impactnexus.io/solutions-startups)  
#ghg-impact-estimator-tool

These are available to start-ups free of charge in German and English and, in combination with optional portfolio functions of the ImpactNexus „Sustainability Management Platform“, offer a wide range of applications for start-ups, investors and start-up supporters.

The development was funded by the  Federal Ministry for Economic Affairs and Climate Protection as part of the National Climate Initiative. This background paper describes the methodology of both tools and shows the initial results, which can serve as important benchmarking data.

## Application and benefits of the tools

With the „ESG Starter“ and the „GHG & Impact Estimator“, both a standardized collection of ESG and impact data as well as a structured evaluation of this ESG and impact data is possible.

The tools can be used to efficiently map the monitoring and reporting processes relevant to investment and funding decisions between start-ups and investors or start-up supporters.

From the perspective of the respective target group (start-ups, investors, start-up supporters), there are therefore various possible applications, which are briefly described here.

The ▶ Discover the next ESG & Impact Champion brochure provides further insights into the possible applications and benefits of the two tools for start-ups, investors and start-up supporters.

### 1 Start-ups

**Start-ups can systematically record their ESG performance and impact, including their climate protection potential, and communicate this easily to all stakeholder groups.**

Start-ups use the „ESG Starter“ to obtain a structured assessment of their ESG performance in the shortest possible time.

The ESG report depicts the implementation status of corporate sustainability measures, shows the strengths and weaknesses of the start-up and provides a wide range of support and tips.

The „GHG & Impact Estimator“ can be used to describe ecological and social impacts and calculate the climate protection potential of products & services of start-ups.

As a result, start-ups receive clear PDF exports that can be used to communicate their sustainability performance to all interest groups (e.g. in the pitch deck).

### 2 Investors

**Investors can professionalize the collection of sustainability data from start-up investments and create a systematic monitoring and reporting infrastructure.**

Business angels, venture capital funds or capital management companies can use the tools to systematize and standardize the collection and analysis of ESG and impact data.

This creates the conditions for an efficient monitoring and reporting infrastructure that implements a high degree of transparency for both investors and start-ups.

In combination with optional portfolio functions on the Sustainability Management Platform from ImpactNexus, the data collected can be aggregated at portfolio level, enabling transparent and meaningful reporting to stakeholders.

### 3 Start-up supporters

**Start-up supporters can simplify the data collection processes for start-ups and optimize their workflows from the application to the awarding to the monitoring and reporting of the use of funds.**

Start-up supporters need simple methods for the sustainability assessment of start-ups to ensure that the funds are used in such a way that they serve the purpose of the funding.

By systematically implementing the „ESG Starter“ and the „GHG & Impact Estimator“ in the application process, an efficient, transparent and comparable data collection process is implemented for both the funding institution and the start-ups.

The tools also help with the identification and implementation of coaching and other support instruments. Additional optional portfolio functions on the ImpactNexus sustainability management platform enable structured management, monitoring and reporting of funding programs.

## ESG Starter

### Methodology

The „ESG Starter“ is a basic company-related assessment of environmental, social and governance issues (ESG assessment) with subsequent ESG reporting.

The tool is designed so that it can be used by all start-ups, regardless of their stage of development, business model or industry. It shows the current implementation status of key ESG measures in the company.

### Der ESG questionnaire

The core of the „ESG Starter“ is a questionnaire that comprises 15 different ESG categories and thus covers the most important topics in the areas of Environment, Social, and Governance (see Table 1).

The categories were derived from a comprehensive review of existing ESG standards, such as the Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB) or criteria from KfW Capital, for new and established companies.

The assessment also includes a query to disclose possible exclusion criteria, such as controversial business areas or legal controversies.



Addressing ESG issues in the early phases of a company lays the foundation for sustainable growth and strengthens investor confidence. The „ESG Starter“ offers an easy introduction to this.

Dr. Constanze Trautwein, ImpactNexus

Click once for if you are doing the measure already and twice if plan to implement it in the next 12 months. If you don't want to implement any measures click the checkbox at the bottom.

**Monitoring & Evaluation**  
Keep track of the status quo

- Monitoring energy consumption of suppliers ⓘ
- Monitoring energy mix ⓘ
- Monitoring energy related indirect GHG emissions (Scope 2) ⓘ
- Monitoring own energy consumption ⓘ

**Implementation**  
Improve the status quo by taking action

- Generating renewable energy ⓘ
- Implementing energy management system ⓘ
- Implementing waste heat recovery ⓘ
- Purchasing renewable electricity ⓘ
- Purchasing renewable heat ⓘ
- Reducing energy consumption ⓘ
- Using energy efficient components and devices ⓘ

**+ Additional measures**  
If your company implements additional ESG measures that are not listed above, you can define custom measures and associated activities here

Create new measure and press enter to confirm.

Figure 4: Selection of measures using the example of the energy category in the area of the environment



ENVIRONMENT


<b>Energy</b>	Measures to make energy consumption more sustainable, e.g. the use of renewable energies, improving energy efficiency, reducing energy-related greenhouse gas emissions.
<b>Transport</b>	Measures to make transport activities more sustainable. One example of this is the reduction of greenhouse gas emissions through transport activities or the reduction of business trips.
<b>Greenhouse gas emissions</b>	Measures to manage greenhouse gas emissions that are caused directly or indirectly by the company and cannot be clearly allocated to the areas of energy and transport.
<b>Resource consumption and utilisation</b>	Measures for more sustainable consumption and utilisation of resources within the company, such as reducing waste generation or water consumption.
<b>Pollution and environmental damage</b>	Measures that lead to the avoidance of negative environmental impacts that occur as a direct consequence of the provision of a service or the manufacture or delivery of a product. One example of this is the loss of biodiversity.



SOCIAL

<b>Work</b>	Measures to comply with labour and human rights laws for the company or key suppliers, e.g. no forced labour and compliance with local labour laws.
<b>Workplace</b>	Measures that ensure a high quality of work and a good working environment, such as fair wages, family-friendly workplaces, etc.
<b>Diversity and integration</b>	Measures to promote diversity and inclusion in the workplace, e.g. promoting gender and cultural diversity in the recruitment strategy, creating a disability-friendly workplace, etc.
<b>Social damage</b>	Measures to avoid negative social impacts that arise as a direct result of the provision of services or the manufacture/delivery of products, e.g. fair prices and marketing, offering good product quality, etc.
<b>Social responsibility</b>	Corporate social responsibility activities, e.g. local community development, community sustainability advocacy, philanthropy, public knowledge creation or open source tools, etc.





GOVERNANCE	
<b>Data</b>	Measures to comply with best practices and legal standards for the handling of data, e.g. compliance with the GDPR and transparency about data use.
<b>Involvement of stakeholders</b>	Measures that serve to actively involve stakeholders.
<b>Business ethics</b>	Measures that prevent unethical behaviour or ensure ethical behaviour within the company. Good business ethics include, for example, combating bribery and corruption, complying with tax regulations, respecting the intellectual property of others, etc.
<b>Management &amp; advisory board</b>	Measures to ensure a qualified and diverse management team.
<b>Regulations and standards</b>	Measures to comply with regulations (e.g. GDPR), quality and industry standards (e.g. HACCP, ISO standards) and ESG criteria that are relevant to the company.

Table 1: 15 categories in the ESG assessment of the „ESG Starter“

For each of the 15 ESG categories, a large number of specific measures are proposed that lead to sustainable action within a company.

Supplementary background information and good practice examples are provided for each proposed ESG measure.

The start-up must now select the implementation status of the measures in each category and can differentiate between three levels:

1. „Doing it!“
2. „Planned in the next 12 months!“
3. „Not planned!“

Categories that are not relevant for the start-up can be completely excluded and are not included in the evaluation. They are marked as excluded areas in the results report.

For example, measures in the area of „Pollution and environmental damage“ are usually not ESG-relevant for a software company, which often leads to the exclusion of this area among start-ups.



**SUSTAINABILITY ASSESSMENT OF START-UPS WITH THE ESG STARTER AND THE GHG & IMPACT ESTIMATOR**

**The ESG-Scoring**

DiThe evaluation of the 15 ESG categories is based on a scoring system and is given as a percentage at the end of the assessment. This is based on a points system. For implemented or planned measures within one of the 15 categories, the start-up receives points.

A maximum of 20 points can be achieved per category and a maximum of 100 points in each of the three ESG areas. In order to receive points in a category, a threshold value must be exceeded, i.e. a minimum number of measures must be selected.

Measures that contribute to an improvement of the status quo (e.g. purchase of renewable electricity) count more than measures that serve to monitor the status quo (e.g. monitoring of own energy consumption).

Measures that are planned to be implemented in the next 12 months count half as much as measures that have already been implemented. Measures that have not been planned or implemented do not score any points. Bonus points are awarded for specifying additional measures.

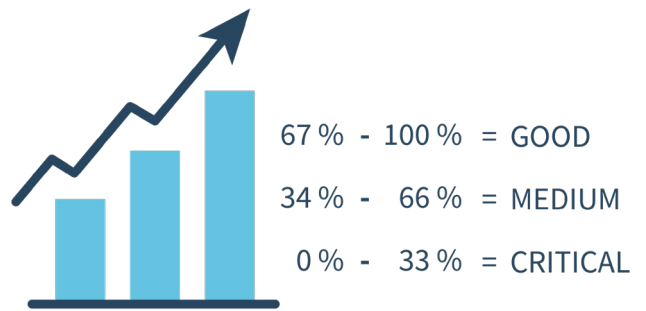
Taking into account any categories excluded by the start-up, a percentage is calculated for each ESG area (points achieved per ESG area / achievable points for the ESG area).

In the same way, an overall result for all three ESG areas is calculated as a percentage.

The result can lie between the lowest value of 0% and the highest value of 100%.

A higher value means that a particularly high number of sustainability measures have been implemented or are planned in the ESG categories relevant to the start-up.

The result is also evaluated as follows:



The start-up receives an overview with the results as well as the most important ESG risks and potentials in all areas and categories. The result can be exported as a PDF.

Further contextual information and extensive support for the implementation of individual sustainability measures help to improve ESG performance.

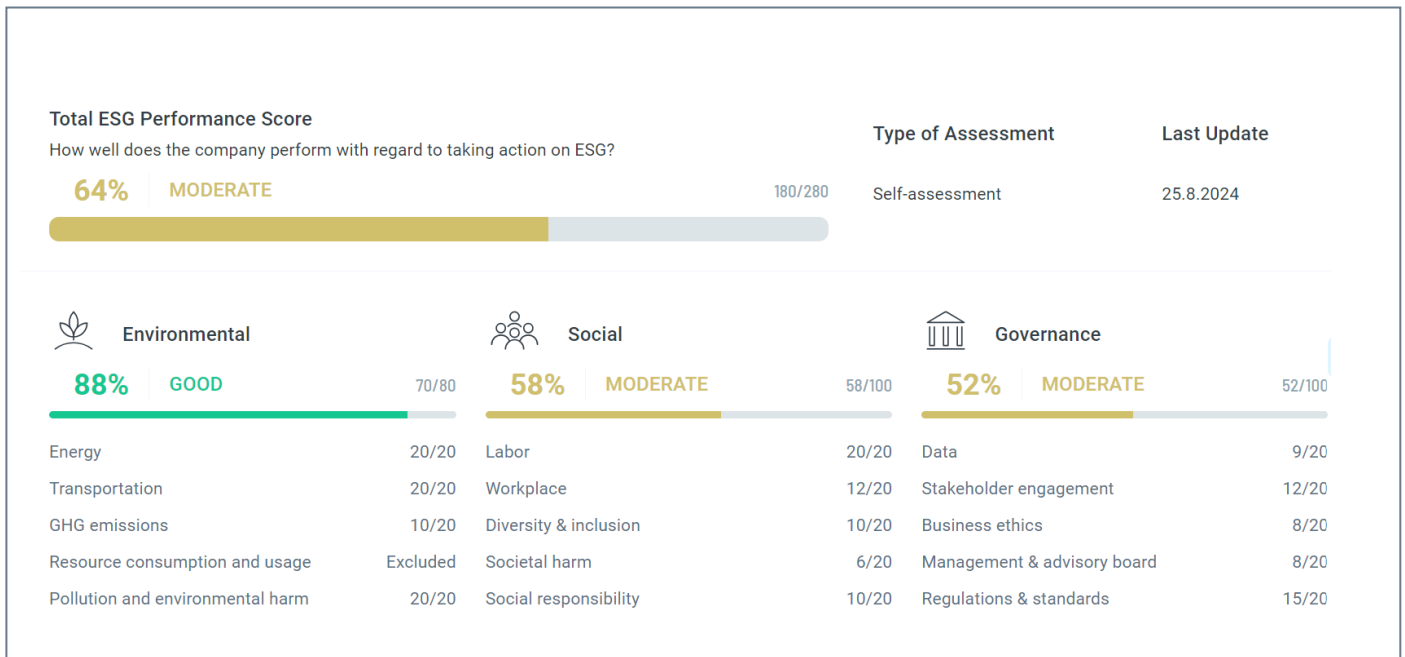


Figure 5: The ESG results report shows an overview of the scores achieved in all categories

### Benchmarking

A cross-industry ESG benchmark is calculated from the ESG scores of all start-ups (as of August 2024).

The start-ups have the opportunity to compare their ESG performance with this average ESG performance. The individual data entered by start-ups is securely protected through anonymization procedures and only anonymized data and aggregated results are used.

In future, more specific benchmarks will be created for individual sectors or business models and made available for comparison.

### Results & Benchmarking

Over 400 companies have already used the „ESG Starter“ to measure their ESG performance. Characteristics such as the age, financing phase, number of employees and business models of the companies assessed show that they reflect the typical characteristics of start-ups very well.

Meaningful results are now being derived for the first time from these more than 400 self-assessments carried out by the start-ups and used for benchmarking.

At 69 % for environment, 84 % for social and 76 % for corporate governance, the average scores of the start-ups assessed are all in the defined area of „Good“ (as of August 2024).

These values serve as an initial benchmark against which new self-assessments by start-ups can be measured. Nevertheless, there is considerable scope for enhancement across the range of areas.

The numerous examples of best practice and support for individual measures within the software provide an excellent foundation for start-ups to develop and refine their ESG performance in a tailored manner.

### Further results from the ESG Starter

The **Greenhouse gas emissions** category is particularly striking, with a below-average score, meaning that start-ups establish particularly few measures in this area. This may be due to the fact that start-ups do not yet consider it sensible to collect data on greenhouse gas emissions or reductions or to set internal CO<sub>2</sub> reduction targets due to their small size and age.

According to their self-assessment, start-ups perform quite well on average in the area of **social** issues, which could indicate trends such as New Work, which are established in young companies right from the start.

In the area of **governance**, some start-ups are not yet subject to certain legal requirements due to their size, so it can be expected that some measures have not yet been implemented. However, the self-assessment and the extensive further assistance prepare start-ups for the measures they may need to take.

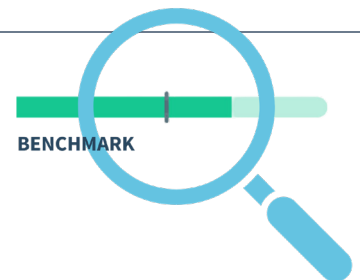
The aggregated data also shows that the average ESG score is slightly higher in later financing phases than at the beginning.



# SUSTAINABILITY ASSESSMENT OF START-UPS WITH THE ESG STARTER AND THE GHG & IMPACT ESTIMATOR



Abbildung 6: Exemplary ESG result of an individual start-up with benchmarking to the overall group of all assessed start-ups





**An efficient and transparent assessment of sustainability impacts makes it possible to identify those start-ups that can play a particularly promising role in the sustainability transformation. The „GHG & Impact Estimator“ provides start-ups, investors and start-up supporters with a methodical basis for planning, realizing and communicating the impact of their activities.**

**Tim Grothey, Borderstep Institut**

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## GHG & IMPACT Estimator

### Methodology

The „GHG & Impact Estimator“ is a digital tool for assessing the positive sustainability impact of start-ups on people and the environment.

Start-ups can use it to describe the ecological and/or social impacts triggered by their products and services („solutions“), classify them in international frameworks such as the Sustainable Development Goals (SDGs) and define indicators (KPIs) for setting and tracking targets.

While the „ESG Starter“ refers to the company as a whole, the „GHG & Impact Estimator“ focuses on the core performance of companies, their products and services.

A central feature of the „GHG & Impact Estimator“ is the quantification of the climate protection potential triggered by the start-up’s innovative products and services.

A fair and transparent comparison between the start-up solution and a conventional reference product is used to quantify the company’s planned climate protection potential.

The methodology used in the „GHG & Impact Estimator“ to quantify the climate protection potential is described below.

### The process in five steps:

- Solution
- Impact profile
- Comparison
- Emission data
- Sales forecast



### Description of the impact and the solution

The first step in the GHG & Impact Estimator is to define the impact created by the solution. This impact can also be linked to the UN Sustainable Development Goals and the IRIS+ impact categories. Several social and ecological impacts can be created if required.

#### Definition of Effects, impacts & outcomes

**Effects** are positive impacts and outcomes that are triggered by a company's products and services.

**Impacts** are the positive structural and/or systemic effects of a company's activities on people (from individuals to the wider society) and/or the natural environment. Example: slowing down global warming.

**Outcomes** are the specific benefits, values or changes at the level of the people reached (target groups and stakeholders) and/or the natural environment that contribute to achieving the desired impact. Example: Reduction of CO<sub>2</sub> emissions.

The innovative products and services („solutions“) that contribute to achieving this impact are added to each impact. Information such as the functionality and the customer group is also provided.

If there are several solutions in the business model that contribute to the same impact, several solutions can be created.

Evidence can be stored for both the description of the effects and the solutions to prove the relevance of the problem or the functionality of the solution.

For all impacts and solutions that are not considered for estimating GHG reductions, indicators (KPIs) can be set up to plan, measure and track the impact. For solutions that contribute to climate protection, the further steps help to quantify the planned GHG reductions (step 2-5).



### Selection of the impact profile

In principle, climate protection means either the reduction of greenhouse gas emissions or the removal of greenhouse gases from the atmosphere (greenhouse gas reduction). The different ways or mechanisms in which a company's products or services can contribute to climate protection can be divided into impact profiles.

#### Impact profiles: How do products and services trigger climate protection?

These six impact profiles were identified on the basis of an analysis of the products and services of around 60 start-ups:

- Raw material extraction and production
- Transportation and logistics
- Product application
- Customer empowerment
- Circular solutions
- CO<sub>2</sub> removal\*

The impact profiles consider various attributes of the impact mechanism, including life cycle phase, location and time of the relevant GHG emissions, business model, direct / indirect impact. Due to the diversity of business models and solutions, it is not always possible to clearly assign a solution to just one impact profile - solutions often have different levers and can therefore cover several impact profiles. To simplify matters and focus on materiality, start-ups should choose the impact profile where they expect the greatest effect.

\*The impact profile „CO<sub>2</sub> removal“ is currently not mapped in the „GHG & Impact Estimator“, but is planned!

By selecting the most suitable and relevant impact profile, individual assistance and examples for the next steps are provided.

The selection of an impact profile has no effect on the calculation, but it facilitates the complex impact assessment via specific individual assistance and examples, for example in data collection.



### Creating a fair comparison

A central assumption for quantifying the climate protection potential in the „GHG & Impact Estimator“ is that the startup’s new solution replaces an offer on the market that fulfills an equivalent function (substitution effect).

In order to define this comparison, the primary function of the solution is described and how this function is currently offered on the market. This allows a fair comparison scenario to be identified and defined. This must represent the realistic, established status quo - not the scenario with the worst climate performance.

A „cleanest-in-market“ approach is recommended in order to consider uncertainties regarding additionality and to counter accusations of greenwashing. Specific guidance for the selected impact profile helps to ensure a fair comparison.

In addition, a functional unit is determined, which is the central reference value for calculating the GHG reductions. All subsequent assumptions on consumption values and sales forecasts are based on this variable. Specific examples of functional units are proposed to match the impact profile in order to reduce the complexity of the definition.



### Making quantified assumptions for the emissions data

The main differences in emissions between the two scenarios are now identified and quantified on the basis of the functional unit.

Data is only entered for the main emission-relevant differences and any activities, processes, consumption or material requirements that occur in the same way in both scenarios are disregarded, as these do not influence the result.

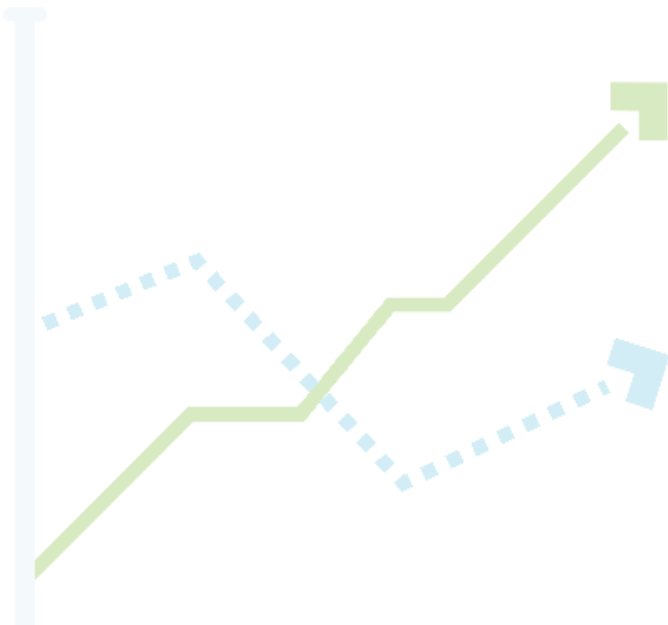
Consumption data and emission factors are selected for the relevant emission sources identified (processes, energy and material consumption, transportation routes, etc.). For this purpose, the start-up provides its own consumption data, if available, and makes assumptions.

In addition, reference values are determined for the comparative scenario for the consumption of energy, transportation, raw materials and/or materials. Guiding questions, impact profile-specific examples and references to external databases help to record all the necessary values.

The reference for consumption values is always the defined functional unit and, if applicable, is used for a time frame of one year. All consumption values are linked to the corresponding GHG factors, which are provided using the IDEMAT database of the University of Delft.

All data and assumptions must be explained transparently and supported with evidence. This requires the presentation of own calculations and the addition of evidence such as audit reports, studies or other sources. The data entered is used to calculate the difference in emissions between the solution and the reference product on the basis of a functional unit.

The data therefore does not represent the total GHG emissions of the product or the company, but only includes the GHG emissions for which the climate solution differs from the comparative scenario in a relevant way.





## The forecast

The „GHG & Impact Estimator“ is used to quantify the company’s planned future climate protection impacts on the basis of the substantiated assumptions.

In order to achieve this, the difference in emissions per functional unit must be offset against the company’s planned turnover. To do this, the start-up enters the annual turnover figures expected over the next five years based on the functional unit.

Some solutions lead to recurring GHG savings. This is the case when each implemented unit delivers its GHG reduction more than once during its lifetime.

A typical example is the installation of a PV system that produces green electricity for at least 20 years - and not just once - and thus reduces GHG emissions. A duration of effect in years can be specified for such recurring effects.



## Planned vs. potential impact

Planned and potential impacts differ in the way in which the difference in emissions per functional unit is offset against a forecast and are therefore not comparable (see Project Frame).

**Planned effects** are calculated using a bottom-up approach, i.e. a sales forecast expected by the start-up. This is particularly suitable for short- to medium-term forecasts of a start-up’s GHG reductions. The „GHG & Impact Estimator“ is used to determine planned impacts.

**Potential impacts** are based on a top-down approach in which market size, market trends and technology diffusion are considered. This leads to a rather long-term forecast of potential climate protection effects on a technology basis. As a result, calculations of potential impacts may well arrive at different and sometimes higher values.

30.000 t  
CO<sub>2</sub>

Transformation-oriented green start-ups have the potential to reduce 30,000 tons of CO<sub>2</sub>e annually.

This is equivalent to the emissions reduction achieved by seven modern wind turbines that supply 24,000 households with electricity.

**BORDERSTEP INSTITUTE**  
for Innovation and Sustainability

The infographic features a large wind turbine in the background and several smaller ones in the foreground. On the left, a group of four diverse people are climbing a set of blue stairs, holding hands. In the top left corner, there is a circular icon with '30.000 t' above it and 'CO<sub>2</sub>' inside, with a green arrow pointing downwards.



**The result**

For the result, the quantified emissions difference is multiplied by the forecast for each year and added together. It represents the climate protection potential of the product or service if the start-up is successfully scaled up.

**Various key figures can be calculated from this:**

- Total GHG reductions over the next 5 years [tons of CO<sub>2</sub>e]
- CO<sub>2</sub>e]
- Average GHG reductions per year [tons of CO<sub>2</sub>e]
- Annual GHG reductions in year 1-5 [tons CO<sub>2</sub>e]
- Monetized GHG reduction [€]
- Specific GHG reduction per functional unit [kg CO<sub>2</sub>e]
- Percentage reduction of material GHG emissions per functional unit [%]

These key figures can be found on a results page, which can also be exported as a PDF. All assumptions and limitations are transparently documented so that the result can always be read and interpreted in the context of the assumptions (impact profile, comparative scenario, consumption data, GHG factors, sales forecasts, etc.).

The climate protection potential quantified with the „GHG & Impact Estimator“ can be regarded as a high-quality and scientifically sound estimate of the start-up’s future planned climate protection impact.

However, some challenges and limitations must also be taken into account:

For example, it cannot be ensured that start-ups consider the additionality of the impact. It is therefore possible that assumptions about the company’s turnover or the definition and data collection of the comparison scenario may lead to an overestimation of the climate protection effects due to a lack of additionality.

There is no mandatory additionality factor as a further uncertainty factor (as of August 2024).

In addition, the question of who can take credit for how much of the achieved or potential impacts within a value chain with several participating implementers remains open. There is currently no standardized method for allocating impacts to the actors involved in achieving the impact.

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### Monetary value of the climate protection potential

With the aim of understanding the level of climate protection potential, the average annual amount of planned GHG reductions can be multiplied by the current CO<sub>2</sub> price of European emissions trading (83.24 €/t CO<sub>2</sub>, 2023).

This reflects the economic value of the potential climate protection achievement.

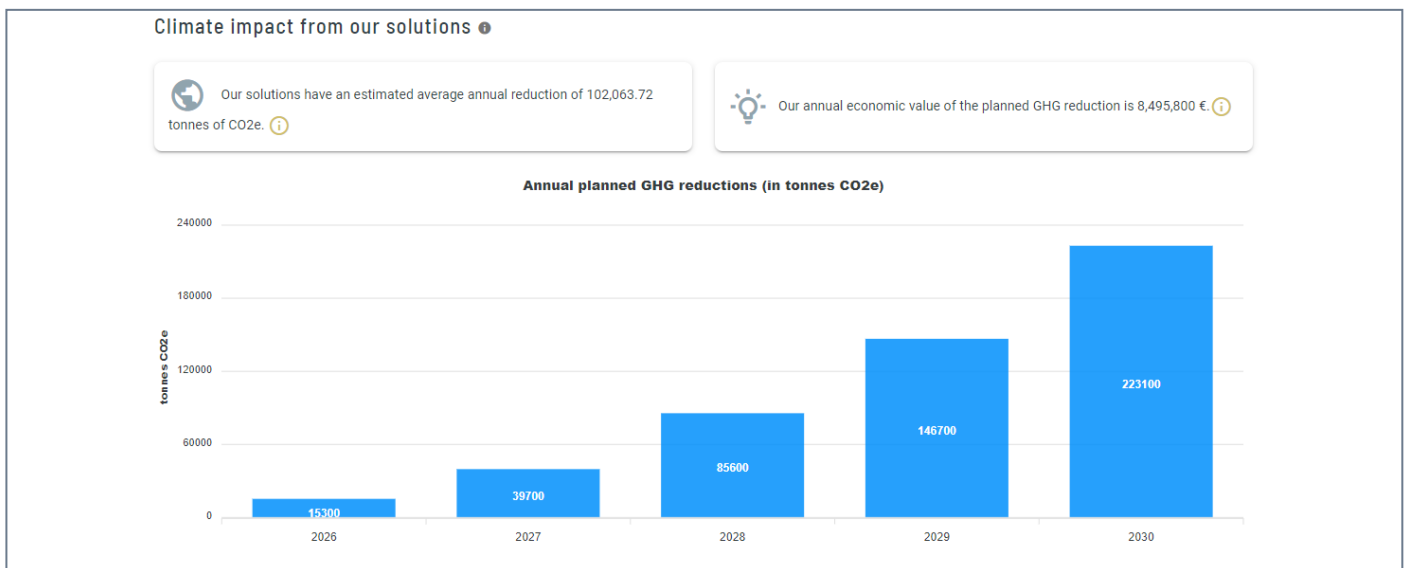


Figure 7: The climate protection potential on the results dashboard of the „GHG & Impact Estimator“

### Key assumptions in the GHG & Impact Estimator

- ▶ Substitution scenario
- ▶ No detailed comparative life cycle assessment (LCA) but estimation of significant differences in emissions
- ▶ Self-assessment of the start-ups with extensive assistance
- ▶ Planned effect for the next five years
- ▶ No temporal dynamization of consumption data or GHG factors
- ▶ CO<sub>2</sub> removals can be calculated, but the tool is not (yet) designed for this at the current time (as of August 2024).

Methodological ideas range from collaborative decision-making to equal distribution among all actors to a detailed distribution according to monetary value added. Each method has advantages and disadvantages, as a study shows (Grothey, Fichter, Roepke, & Pantermoeller, 2024).

The „GHG & Impact Estimator“ does not initially allocate the impact to different actors. Another factor not considered here are rebound effects caused by the introduction of new innovative products and services.

Likewise, there is no change over time in the consumption values and emission factors that could, for example, represent future efficiency gains. This is considered acceptable for a period of five years.

### Frameworks considered for impact and quantification of GHG reductions

- ▶ Impact Management Platform
- ▶ Project Frame
- ▶ UN Sustainable Development Goals
- ▶ IRIS+ Impact Metrics
- ▶ World Resource Institute / GHG Protocol
- ▶ DIN SPEC 90051-1

### Benchmarking

Benchmarking is relevant for the evaluation of the result, with which the climate protection potential can be compared.

There are currently no available data sources with meaningful data on the quantified climate protection potential of start-ups that can be used for benchmarking. This is now possible with data from the „GHG & Impact Estimator“.

The individual data entered by start-ups is securely protected under data protection law through anonymization procedures and only anonymized data and aggregated results are used.

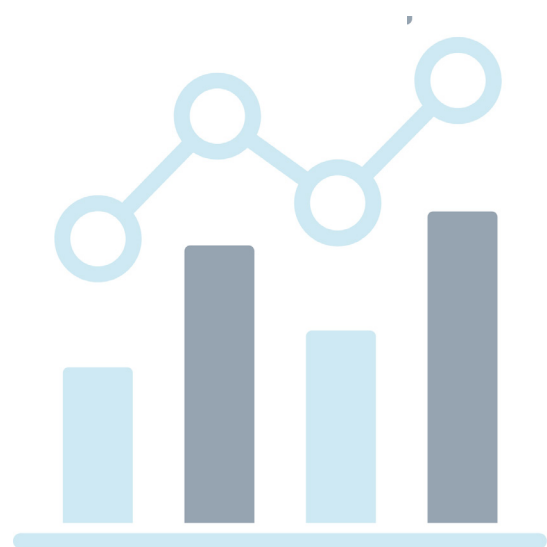
The results of the „GHG & Impact Estimator“ so far show a wide range of the climate protection potential of individual start-ups, ranging from just over 100 to several 100,000 tons of CO<sub>2</sub>e per year.

This reflects the diversity of innovations and business models of start-ups whose solutions contribute to climate protection in a wide variety of sectors with a wide range of impact levels.

A direct comparison of individual start-ups is only useful to a limited extent due to the limitations. However, an average potential can be calculated from all assessments.

An initial estimate of an average annual climate protection potential can be found in the next section.

In addition, a threshold value for the top 10 % will be a suitable indicator in future to identify so-called „high climate potential start-ups“.



### Results & Benchmarking

At the present time (August 2024), 240 companies have already described their sustainability impacts using the „GHG & Impact Estimator“. In the process, 339 impacts were created, of which over 70 % were linked to at least one of the 17 Sustainable Development Goals.

Just over a third of the impacts were linked to SDG 12 measures for climate protection and 43 % of the outcomes show a direct link to the area of climate protection (e.g. „reduction of CO<sub>2</sub> emissions“).

The start-ups that have quantified their planned climate protection potential using the „GHG & Impact Estimator“ can be used to make initial estimates of the climate impact of start-ups.

The quantified climate protection potential of individual start-ups ranges from just over one hundred tons to well over one hundred thousand tons of reduced GHG emissions per year. The majority of start-ups achieve a potential of between 5,000 and 50,000 tons of CO<sub>2</sub>e per year.

For particularly impact- and growth-oriented, so-called transformation-oriented start-ups (see Fichter, Olteanu, Hirschfeld, Walk, & Gilde, 2023, p. 22), an average annual climate protection potential of 30,000 tons of CO<sub>2</sub>e was determined.



**Green start-ups are an important building block for the sustainability transformation. If you translate their positive ecological impact into an economic value, by multiplying the climate protection potential with a current CO<sub>2</sub> price of € 80, green start-ups generate an average monetary added value of € 2.4 million per year through their impact per year.**

**Tim Grothey, Borderstep Institut**

### Further results from the „GHG & Impact Estimator“

- ▶ Over 70 % of the impacts created were linked to sub-goals of SDGs.
- ▶ The three most common SDGs whose sub-goals were linked to an impact are SDG 12 Sustainable Consumption and Production (42 % of impacts), SDG 13 Climate Action (37 % of impacts) and SDG 9 Industry, Innovation and Infrastructure (28 % of impacts).
- ▶ SDG 16 Peace, justice and strong institutions (3 % of impacts), SDG 17 Partnerships for the Goals and SDG 1 No poverty (5 % of impacts each) are chosen least frequently.
- ▶ 42 % of the impacts are linked to a single SDG, but often two (20 %) or three (16 %) SDGs are selected per impact. A good one in five impacts are even assigned to more than three SDGs.
- ▶ 2/3 of all impacts have „people and the natural environment“ as a stakeholder, while only „people“ was selected as a stakeholder for 18% of the impacts and only „natural environment“ for 17 %.
- ▶ For 64 % of the impacts, the start-up defined a KPI for measuring and tracking the impact, and additional target values were set for around a third of them.

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## Coverpicture

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