



Puro.earth Standard

SDG Assessment Requirements

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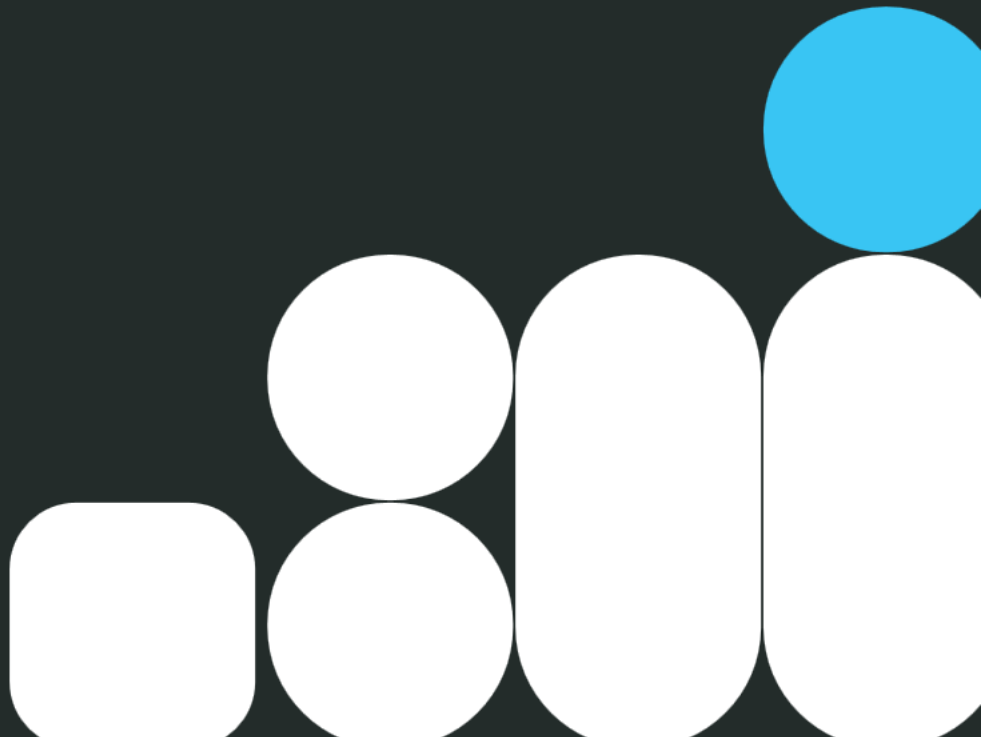


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1. Introduction

The Sustainable Development Goals (SDGs) represent a set of 17 global goals established by the United Nations in 2015, as a continuation of the Millennium Development Goals. These goals aim to address critical challenges and create a better world by 2030. They cover a wide spectrum of social, environmental, and economic aspects, including health, education, gender equality, clean energy, climate action, and biodiversity. By adopting the SDGs, countries and stakeholders commit to collective action for poverty eradication, environmental protection, and global well-being.

All projects certified under the Puro Standard actively contribute to SDG 13: Climate action. The certification process ensures that the climate benefit resulting from carbon removal is accurately quantified and certified as CO₂ Removal Certificates (CORCs). As climate change poses significant threats to both people and natural ecosystems, the indirect benefits of avoided climate impacts are crucial. However, it is essential to recognize that CO₂ removal activities may have trade-offs and synergies with other SDGs. Balancing these benefits and trade-offs is a critical consideration for sustainable development. It is also important to highlight the positive effects that some CO₂ removal activities may have.

The purpose of this document is to specify the rules that CO₂ Removal Suppliers must follow when reporting positive impacts on SDGs, as defined in the Puro Standard General Rules section 6.6. This document focuses on positive impacts and co-benefits from carbon removal activities, while the safeguards against negative impacts are addressed specifically at the methodology level.

This document includes the following parts:

- General principles of assessing positive impacts on SDGs
- Validation and verification of positive impacts on SDGs
- Process for suggesting new project-level indicators¹ for positive impacts on SDGs
- List of currently accepted project-level indicators for positive impacts and associated evidence requirements

¹ There are 231 official SDG indicators, but as most of them cannot be used at project-level, there is a need to define separate project-level indicators.

2. Rules for reporting, validation, and verification of positive impacts

2.1. General principles

- 2.1.1. CO₂ Removal Suppliers may only report positive impacts on SDGs for validation or verification based on the rules defined in this document, and more specifically the accepted project-level indicators for positive impacts listed in Chapter 4.
- 2.1.2. CO₂ Removal Suppliers reporting of positive impacts on SDGs consists of two parts:
- a) Qualitative descriptions of positive impacts with reference to the SDG objectives of the host country when available and relevant. These are validated by a validation and verification body (VVB) as part of a Production Facility Audit.
 - b) Qualitative and quantitative evidence to demonstrate the positive impact ex-post. The evidence is verified by a VVB as part of an Output audit.
- 2.1.3. The Puro Standard includes two categories of SDG claims for positive SDG impacts: Puro-approved SDG Descriptors and quantified Puro SDG Attributes².
- 2.1.4. Puro-approved SDG Descriptors refer to qualitative, informational, semi-quantified, or indirect positive impacts. For instance, such positive impacts may have a credible causal link to a specific SDG target but may not be precisely quantified.
- 2.1.5. In specific circumstances, issued CORCs may be labelled with a Puro SDG Attribute for the relevant SDG. This requires that the positive SDG impacts are direct, quantifiable, and not already claimed in other certification standards or as part of another Puro SDG Attribute.
- 2.1.6. SDG impacts are monitored and reported at the Production Facility level, meaning that all CORCs produced in a Production Facility in a given reporting period will receive the same Puro SDG Attributes³.
- 2.1.7. The CO₂ Removal Supplier must follow the requirements set in section 3.5 in Puro Standard General Rules to prevent double counting of positive SDGs, such as Renewable Energy Certificates (REC) or biodiversity credits.

2.2. Reporting, validation and verification of SDGs

- 2.2.1. The CO₂ Removal Supplier must compile the required evidence and submit it as part of the audit package for validation and verification by the VVB. The required evidence is further specified in Chapter 4 for each approved Puro SDG Descriptor or Attribute.
- 2.2.2. The VVB shall consider the evidence submitted in conjunction with any other necessary information available during the audit, to determine whether the positive impact is verified.
- 2.2.3. Verification of positive impacts on SDGs can only be done ex-post, after there is qualitative and quantitative evidence demonstrating the impact.
- 2.2.4. With some positive impacts on SDGs, the demonstration of impact may take more time, and thus evidence will be available later than the evidence on CO₂ removal. In such a case, the VVB will verify the impact when possible, and CORCs may be amended later with the Puro SDG Attribute. The VVB shall determine for which CORC vintages or reporting periods the attribute retrospectively applies.

2.2.5. The possibility to amend CORCs later with SDG Attributes is limited to the situation described in 2.2.4 and requires that the qualitative description of the expected positive impact prepared by the CO₂ Removal Supplier has been validated during a Production Facility Audit.

2.2.6. When a new Puro SDG Descriptor or Attribute has been approved using the process described in Chapter 3, a CO₂ Removal Supplier may report it in its next Output Audit where it will be validated and verified by the VVB.

3.Submission and approval of new SDG Descriptors and Attributes

3.1. Process description

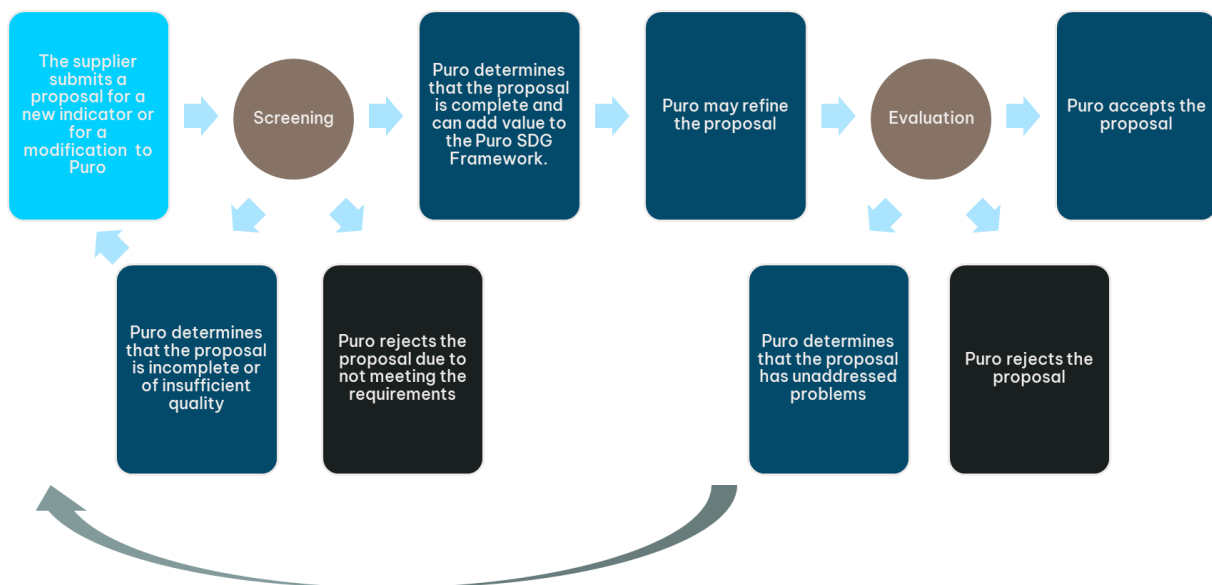


FIGURE 1. PROCESS FOR SUBMITTING AND APPROVING NEW SDG DESCRIPTORS AND ATTRIBUTES.

3.1.1. CO₂ Removal Suppliers and other relevant parties have the opportunity to propose new SDG Descriptors and Attributes within the Puro Standard to measure and report positive impacts on SDGs.

3.1.2. The process for proposal and approval of new project-level indicators for positive impacts includes the following steps (Figure 1):

- a. **Submission** of a proposal using standard template
- b. **Screening** of the proposal by the Issuing Body:

² Quantified Puro SDG Attributes follow the requirements set by IC-VCM for CCP Attribute 3: <https://icvcm.org/wp-content/uploads/2023/07/CCP-Section-4-R2-FINAL-26Jul23.pdf>

³ For various scientific, methodological and technical reasons, it is not possible at this stage to assign attributes at the individual CORC level, i.e. distinguishing between CORCs from a same issuance and reporting period.

After receiving a proposal for a new indicator for positive impact, the Issuing Body proceeds with an initial screening. The initial screening can result in one of the following outcomes:

- i. The proposal is incomplete, but relevant and potentially verifiable. The Issuing Body will provide feedback highlighting the unaddressed requirements and criteria in the proposal. The submitting party may amend the proposal once.
 - ii. The proposal is incomplete, of insufficient quality despite revisions, unverifiable within the scope of the Puro Facility and Output audit, or redundant with an existing positive impact. The Issuing Body will provide feedback and reject the proposal.
 - iii. The proposal is complete, relevant and its validation and verification reasonably align with the scope of the Puro Facility and Output audit.
- c. **Consideration** of proposal by the Issuing Body:

After the Issuing Body finds the proposal complete, relevant and verifiable in the screening phase, the Issuing Body may complete further analysis of the proposal and either refine the proposal with minor modifications or collaborate with the submitter to develop the proposal further. After further analysis, the Issuing Body may decide one of the following:

- i. Reject the proposal
- ii. Require modifications if the analysis shows that there are unaddressed problems with the proposal.
- iii. Approve the proposal. In this case, the Puro Standard will be updated.

3.2. Requirements and criteria for submission

3.2.1. Any party willing to submit a new project-level indicator for positive impact shall use the template provided by the Puro Standard, and provide the following information:

- a) Suggest a short name for the positive impact
- b) Select one or several methodologies from the Puro Standard for which this positive impact shall apply
- c) Select whether or not the positive impact attribute shall be Puro SDG Descriptor or Puro SDG Attribute.
- d) Suggest a list of requirements that must be met to consider the positive impact demonstrated
- e) Suggest a list of evidence to be provided, to enable the verification of the requirements
- f) Specify what evidence or information must at minima be made public
- g) If there is a positive impact in Table 1 that is closely related to the new one suggested, and applicable to the same methodology, provide a motivation for the added value of the suggested positive impact.
- h) Conduct an assessment against following criteria adapted from Day et al. 2020⁴:
 - i. Specific individual outcome: must refer to a specific individual outcome rather than being overly broad or abstract.

- ii. Cause-and-effect relationship: must establish a direct and inherently clear cause-and-effect relationship between the carbon removal activity and the impact, i.e., the impact should be additional and attributable to the CO₂ Removal activity.
- iii. Quantitative metric: Numeric measurement allows for objective assessment and comparison.
- iv. Accuracy: can be determined without relying heavily on input assumptions.
- v. Manageable monitoring, reporting and verification (MRV): Pragmatic MRV processes limit the costs of data collection.
- vi. Internally monitored: The CO₂ Removal Supplier can monitor the metric with own information and data.

3.2.2. The criteria **Accuracy**, **Manageable MRV** and **Internally monitored** shall be assessed for every proposal, while noting that there are unavoidable trade-offs between a clear cause-and-effect relationship and the ease of measurement. Puro Standard prioritizes the criteria **Specific individual outcome** and **Cause-and-effect** relationship to ensure credibility of the SDG assessment.

4. Puro SDG specific requirements for evidence

This section introduces the approved project-level indicators for positive impacts, first as a summary table (Table 1) and then by detailing each indicator in subsequent sections, grouped by SDGs. Whenever new indicators are approved by the Issuing Body, this section will be updated accordingly.

Table 1. Puro approved SDG Descriptors and Attributes.

Name	Applicable methodology	Category	SDG Target	Approval or update date
Improved agricultural productivity using biochar	Biochar	SDG Attribute	2.4	01/03/2024
Improved agricultural productivity using enhanced rock weathering	ERW	SDG Attribute	2.4	01/03/2024
Increase in renewable energy	Biochar, GSC	SDG Attribute or SDG Descriptor	7.2	01/03/2024
Increase in solar power	Any	SDG Descriptor	7.2	01/03/2024
Decarbonization of industry	Biochar, GSC	SDG Descriptor	9.4	01/03/2024
Decarbonization of district heating	Biochar, GSC	SDG Descriptor	11.6	01/03/2024

⁴ [Day, T., Schiefer T., Tewari R., Kachi, A., Warnecke C., Mooldijk S., Dransfeld B., Wehner S., and Brauhardt L. \(2020\). Indicators for the promotion of sustainable development in carbon market mechanisms. Final report. No. FB000345/1. Umweltbundesamt.](#)

They include in their criteria also 7: relating to specific targets of SDGs, and 8: relating to national legislation or international treaties. They see both as benefits to avoid political sensitivity. Puro requires a link to a specific SDG target though they are often broad. The suppliers must also consider how their activity relates to the host country targets, but as Puro suppliers operate globally, we have not adopted this criterion.

Treatment of municipal and assimilated waste streams	Biochar, GSC	SDG Attribute	11.6	01/03/2024
Increase in the buffer capacity of the ocean	ERW	SDG Attribute or SDG Descriptor	14.3	01/03/2024
Exports from least developed countries	Any	SDG Attribute	17.11	01/03/2024

4.1. Reserved for SDG 1 No poverty

4.2. SDG 2 End Hunger

SDG 2 aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture. Of Puro methodologies, biochar and enhanced rock weathering (ERW) are potentially linked to agriculture. SDG 2 includes important targets ensuring access to safe and nutritious food for all people, especially the poor and vulnerable; ending all forms of malnutrition, especially among children, women and older persons; as well as doubling the agricultural productivity and incomes of small-scale food producers and ensuring sustainable food production systems. Puro biochar and ERW suppliers may have a direct measurable impact on the latter targets on improving productivity, hence that is the focus of the SDG Attributes.

Agricultural use of biochar contributes to SDG 2 by enhancing soil fertility, water retention, crop yields and resilience to drought and pests. Biochar can also reduce the need for chemical fertilizers and pesticides.

Enhanced rock weathering (ERW) can improve soil quality and crop yields in several ways. ERW has benefits in reversing soil acidification, replacing P- and K- fertilizers and reducing N₂O emissions⁵. ERW material can also replace lime (CaCO₃), which increases soil pH, but releases CO₂ to the atmosphere^{6,7}. Another benefit of ERW is that it replenishes plant-available silicon in the soil, which improves crop resilience⁷. Swoboda et al. (2022) provide a comprehensive overview of the agricultural usage of silicate rock powders⁸.

Target 2.4: ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change

Improved agricultural productivity using biochar

Methodology	Biochar
Quantitative metric	% increase in yield

⁵ Kantzas, E.P., Val Martin, M., Lomas, M.R. et al. Substantial carbon drawdown potential from enhanced rock weathering in the United Kingdom. *Nat. Geosci.* 15, 382–389 (2022).

⁶ Kantola, I. B. et al. Potential of global croplands and bioenergy crops for climate change mitigation through deployment for enhanced weathering. *Biol. Lett.* 13, 20160714 (2017).

⁷ Beerling, D.J. et al. Farming with crops and rocks to address global climate, food and soil security. *Nat. Plants* 4, 138–147 (2018).

⁸ Swoboda, P., Döring, T. F., & Hamer, M. (2022). Remineralizing soils? The agricultural usage of silicate rock powders: A review. *Science of The Total Environment*, 807, 150976

Req. 1	The CO ₂ Removal Supplier shall be able to track biochar to its end-use, and can confirm that at least 50% of its total biochar production is used in agriculture.
Req. 2	The CO ₂ Removal Supplier shall be able to demonstrate that biochar improves productivity in its use case. This can be done by conducting trials with and without biochar in collaboration with biochar users. It is recommended to collaborate with a research institution to set up a high-quality trial.
Req. 3	The CO ₂ Removal Supplier shall be able to track min. 30% of its total biochar production to an end-use where they can demonstrate trials as in req. 2.
Req. 4	Trial results as per req. 2 must show statistically significant increase in productivity.
Category	Puro SDG Attribute
Information to be provided	Confirmation of end-use Trial plan Trial results in a report form including statistical analysis of results.
Information to be published	Productivity increase with confidence intervals Baseline Trial location, timing, scale, and plants grown.

Target 2.4: ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change

Improved agricultural productivity using enhanced rock weathering

Quantitative metric	% increase in yield
Methodology	Enhanced rock weathering (ERW)
Req. 1	The CO ₂ Removal Supplier shall be able to track that at least 50% of the rock it is spreading for ERW, is done on land used in agriculture.
Req. 2	The CO ₂ Removal Supplier shall be able to demonstrate that ERW improves productivity in its use case. This can be done by conducting trials in collaboration with landowners. It is recommended to collaborate with a research institution to set up a high-quality trial.
Req. 3	The CO ₂ Removal Supplier shall be able to track min. 30% of its total rock being spread to an end-use where they can demonstrate trials as in req. 2.
Req. 4	Trial results as per req. 2 need to show statistically significant increase in productivity.
Category	Puro SDG Attribute
Information to be provided	Confirmation of end-use Trial plan Trial results in a report form including statistical analysis of results.
Information to be published	Productivity increase with confidence intervals Baseline Trial location, timing, scale, and plants grown.

- 4.3. Reserved for SDG 3 Good health and well-being
- 4.4. Reserved for SDG 4 Quality education
- 4.5. Reserved for SDG 5 Gender equality
- 4.6. Reserved for SDG 6 Clean water and sanitation
- 4.7. SDG 7 Affordable and clean energy

SDG 7 aims to ensure access to affordable, reliable, sustainable and modern energy sources for all by 2030. Energy is essential for human and economic development, but also contributes to climate change and environmental degradation. SDG 7 has five targets and six indicators to measure progress. The targets include universal access to electricity and clean cooking fuels, increasing the share of renewable energy in the global energy mix, improving energy efficiency, enhancing international cooperation on clean energy technology and expanding energy infrastructure in developing countries.

Many CO₂ Removal Suppliers applying Puro Methodologies for biochar and BECCS (geologically stored carbon) can contribute to SDG 7, via the deployment of new facilities. Of the targets in SDG 7, increasing the share of renewable energy in the global energy mix is the most relevant for these CO₂ Removal Suppliers. The Puro SDG Attribute in the table below is applicable for all forms of energy that have a productive end use.

As per IEA Renewables 2022 report⁹, heating accounts for almost half of global final energy consumption and less than a quarter of global heat demand was met with renewable sources in 2021. Of heat, 53% is used in industrial processes and 44% is used in buildings for space and water heating and to a smaller extent in cooking. This links SDG 7 closely with SDGs 9 and 11, and there are also linkages in the Puro SDG framework.

Separately, some CO₂ Removal Suppliers may install solar panels to produce clean electricity either to their own use or to supply electricity to the grid. As this is not linked directly to the CO₂ removal activity, it is reported separately as a Puro SDG Descriptor for SDG 7.

Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	
Increase in renewable energy production	
Quantitative metric	MWh of renewable energy produced in a reporting period
Methodology	Biochar, BECCS
Req. 1	A CO ₂ Removal Supplier must be able to track any energy output it is providing for productive use. This can include electricity, and heat, biogas, biofuel, bio-oil, hydrogen, or any other energy carriers. Productive use can include use elsewhere in the same facility for an unrelated process, but not the part that is used in the carbon removal process itself (e.g. to sustain pyrolysis process, to dry the biomass).
Req. 2	A CO ₂ Removal Supplier must disclose whether they issue or generate renewable energy certificates or other certificates arising from the energy they produce. If this is the case, the CO ₂ Removal Supplier can only claim a

⁹ <https://www.iea.org/reports/renewables-2022/renewable-heat>

	Puro SDG Descriptor for SDG 7, and not a Puro SDG Attribute to avoid double-counting of the co-benefit.
Req. 3	A CO ₂ Removal Supplier shall claim only an increase in energy production relative to the baseline. In particular, if the CO ₂ Removal Supplier has retrofitted an existing facility with carbon removal technology, the energy byproducts do not count for this SDG, unless there is a net increase relative to the baseline.
Category	SDG attribute if the CO ₂ Removal Supplier does not benefit from other certificates from the energy they produce
Information to be provided	Amount of renewable energy produced and sold for each form of energy Information on how it is measured Name and amount of any certificates issued for the energy generated or sold
Information to be published	Form(s) of energy provided Amount of renewable energy provided to a productive use for each form of energy Name and amounts of any certificates issued for the energy generated or sold

Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix

Increase in solar power production

Quantitative metric	MWh of electricity in a reporting period
Methodology	All
Req. 1	A CO ₂ Removal Supplier shall be able to track the electricity produced by solar panels and how much is self-used or claimed.
Req. 2	A CO ₂ Removal Supplier shall disclose whether they issue or generate renewable energy certificates or other certificates arising from the energy they produce.
Req. 3	A CO ₂ Removal Supplier shall claim only an increase in energy production. If the solar panels were installed before investments into the carbon removal operations, they are not considered relevant.
Category	Puro SDG Descriptor. <i>A Puro SDG Attribute is not possible here, because installation of PV panels is not considered to be directly related to the removal activity.</i>
Information to be provided	Total amount of electricity from solar power. Amount of electricity from solar power that was self-used or claimed in CORC calculation. Information on how it is measured. Any certificates issued for the energy generated or sold.
Information to be published	Amount of electricity from solar power provided to a productive use or to the grid Amount of electricity from solar power that was self-used or claimed in CORC calculation Any certificates issued for the energy generated or sold

4.8. Reserved for SDG 8 Decent work and economic growth

4.9. SDG 9 Industry, innovation and infrastructure

SDG 9 aims to build resilient infrastructure, promote sustainable industrialization and foster innovation. These are essential for economic growth, social development and climate action. SDG 9 has eight targets and twelve indicators to measure progress. Some of the targets include developing quality, reliable and affordable infrastructure, increasing access to financial services and markets for small enterprises, upgrading industries and technologies for sustainability and efficiency, and enhancing research and innovation. SDG 9 also supports the development of infrastructure and technology in developing countries.

SDG 9 is closely linked to SDG 7, as energy is a key part of sustainable infrastructure and industry. Hence, we duplicate the SDG Attribute for increasing renewable energy from SDG 7, as a Puro SDG Descriptor for suppliers providing energy for industrial use.

Target 9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes

Decarbonization of industry

Quantitative metric	MWh of energy in a reporting period
Methodology	Biochar, BECCS
Req. 1	A CO ₂ Removal Supplier shall comply with the requirements for SDG 7
Req. 2	A CO ₂ Removal Supplier delivers energy to an industrial use, by direct supply or by integration of the removal process into another industrial process.
Req. 3	This indicator does not cover electricity supply to grid or heat supply to a network with both industrial and non-industrial users (see SDG 11).
Category	Puro SDG Descriptor, as this replicates the SDG 7 Attribute
Information to be provided	In addition to the requirements for SDG 7: Documentation on the energy delivered to industrial use
Information to be published	In addition to the requirements for SDG 7: Industry that is being decarbonized Amount of energy delivered to this use (if multiple uses)

4.10. Reserved for SDG 10 Reduced inequalities

4.11. SDG 11 Sustainable Cities and Communities

SDG 11 aims to make cities and human settlements inclusive, safe, resilient, and sustainable. It addresses a broad spectrum of issues ranging from transport to preserving cultural heritage. SDG 11 also aims to reduce the environmental impact of cities. One specific way of contributing to this is by improving waste management. SDG 11 incorporates the indicator *11.6.1 Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities*.

Certain CO₂ Removal Suppliers may contribute to in waste management efforts. For instance, biochar producers might utilize municipal green waste, and waste-to-energy

plants can use municipal solid waste as a feedstock. The definition of waste for the purpose of this SDG Attribute is in the requirement 1 below.

Another one of the many technologies contributing to the goal of sustainable cities and communities is district heating, which can be an efficient and cost-competitive solution particularly in cold northern cities. According to International Energy Agency (IEA)¹⁰ 9% of global heat demand was met through district heating in 2022. However, 90% of it was still produced with fossil fuels. By utilizing renewable energy sources for heat generation, district heating can reduce the adverse environmental impact of cities. CO₂ Removal Suppliers applying Puro Methodologies for biochar and BECCS (geologically stored carbon) and providing heat to a district heating network can report this Puro SDG Descriptor together with SDG 7 Clean energy.

To avoid negative impacts to SDG 11, it is of utmost importance that the facilities have adequate emissions control: Target 11.6 includes also the indicator 11.6.2 *Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)* highlighting the importance of emissions control.

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	
Treatment of municipal and assimilated waste streams	
Quantitative metric	Tonnes of waste treated in a reporting period
Methodology	Biochar, BECCS
Req. 1	Feedstock is categorized as waste based on the following list: <ol style="list-style-type: none"> 1. Mixed municipal solid waste (typically used in waste-CCS) 2. Post-consumer source-separated food waste, post-production food waste, expired food, residues from food processing, other industrial biowaste (e.g. sugar molasses, cooking oils), 3. Non-hazardous municipal green waste from urban or rural areas (e.g. park and garden green waste, urban tree cuttings) 4. Abattoir waste or animal manure (typically processed via biological treatment, anaerobic digestion or fermentation). 5. Sewage sludge and biosolids from municipal wastewater treatment
Req. 2	The treatment pathway must be environmentally safe and generate co-products, such as biochar and/or energy
Req. 3	The facility is newly built for carbon removal purpose.
Req. 4	The share of annual feedstock processed that is waste as defined in Req. 1 is at least 10%
Category	SDG attribute
Information to be provided	Traceability of feedstock and environmental impacts are covered in the methodology If the facility has already been issuing CORCs in the Puro Registry, evidence that the facility was built for carbon removal purpose (not a retrofit)
Information to be published	Types of waste treated Amount of waste treated for each type

¹⁰ <https://www.iea.org/energy-system/buildings/district-heating>

Target 11.6: By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Decarbonization of district heating

Quantitative metric	MWh of energy in a reporting period
Methodology	Biochar, BECCS
Req. 1	A CO ₂ Removal Supplier shall comply with the requirements for SDG 7
Req. 2	A CO ₂ Removal Supplier delivers energy to a district heating network.
Req. 3	Electricity sales to grid are not covered.
Category	Puro SDG Descriptor, as this replicates the SDG 7 Attribute
Information to be provided	In addition to the requirements for SDG 7: Documentation on the energy delivered to a district heating network
Information to be published	In addition to the requirements for SDG 7: District heating network that is being decarbonized Amount of energy delivered to this use (if multiple uses)

4.12. Reserved for SDG 12 Responsible consumption and production

4.13. SDG 13 Climate action

All projects certified under the Puro Standard actively contribute to SDG 13: Climate action. The climate benefit resulting from carbon removal is quantified and certified as CO₂ Removal Certificates (CORCs).

The projects may also yield additional co-benefits in reducing greenhouse gas emissions outside the LCA boundary as defined in the methodology. These co-benefits should be evaluated based on their impact on other SDGs, such as SDG 7, which aims to increase renewable energy.

However, it is worth noting that some suppliers may contribute to climate adaptation. Given that SDG 13 includes targets like *13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries*, Puro Standard is open to considering an adaptation descriptor or attribute. However, no such descriptors or attributes are currently approved.

4.14. SDG 14 Life below water

SDG 14 is about conserving and sustainably using the oceans, seas and marine resources for sustainable development. One of the major threats to the ocean is ocean acidification, which is caused by the absorption of carbon dioxide from the atmosphere by seawater. Ocean acidification reduces the pH of seawater and affects the availability of carbonate ions, which are essential for many marine organisms to build their shells and skeletons. Ocean acidification can have negative impacts on biodiversity, ecosystem structure and food security. SDG target 14.3 is about minimizing and addressing the impacts of ocean acidification.

Enhanced rock weathering involves silicate minerals reacting with carbon dioxide in soil, resulting in the formation of carbonates and bicarbonates. These bicarbonates dissolve in soil water and can leach out. They then flow with groundwater to rivers and

oceans, where they persist as stable bicarbonates or solid carbonate minerals, effectively neutralizing acidity in the ocean.

It is important to note that enhanced rock weathering is not sufficient on its own to counteract ocean acidification, and an increase in ocean alkalinity can also result in degassing of carbon dioxide counteracting the climate benefit.

All ERW suppliers can automatically report a Puro SDG Descriptor after a successful output audit. For a Puro SDG Attribute, they must demonstrate the increase in alkalinity with measurement results from the catchment area combined with modelling of ocean chemistry.

Target 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	
Increase in the buffer capacity of the ocean	
Quantitative metric	Weathering signal(s)
Methodology	Enhanced rock weathering (ERW)
Req. 1	The supplier must to comply with the requirements set in the ERW methodology and undergo a facility audit and output audit to demonstrate that weathering is taking place.
Req. 2	
Req. 3	
Req. 4	
Category	Puro SDG Descriptor
Information to be provided	
Information to be published	

Target 14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	
Increase in the buffer capacity of the ocean	
Quantitative metric	
Methodology	Enhanced rock weathering (ERW)
Req. 1	The supplier needs to comply with the requirements set in the ERW methodology, and undergo a facility audit and output audit to demonstrate that weathering is taking place.
Req. 2	The supplier needs to conduct measurements in the catchment area.
Req. 3	The supplier needs to provide results of modelling the ocean chemistry change with the increase in alkalinity.
Req. 4	
Category	Puro SDG Attribute
Information to be provided	Measurements and modelling results
Information to be published	Summary of measurements and modelling results

4.15. Reserved for SDG 15 Life on land

4.16. Reserved for SDG 16 Peace, justice and strong institutions

4.17. SDG 17 Partnerships for the Goals

SDG 17 is particularly significant for developing countries. It advocates for a global partnership that brings together governments, civil society, the private sector, and other actors, mobilizing all available resources. The goal emphasizes the need for international investments, fair trade, and market access, especially for developing countries. There are a total of 19 targets and 24 indicators. SDG 17 also underscores the importance of increasing support to developing countries, particularly the least developed countries. One of the targets of SDG 17 is increasing exports from least developed countries.

Target 17.11: Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020

Exports from least developed countries

Quantitative metric	Export sales (in a currency)
Methodology	Any
Req. 1	A CO ₂ Removal Supplier operates in any of the least developed countries. For full list, see here: https://www.un.org/ohrrls/content/list-ldcs
Req. 2	A CO ₂ Removal Supplier receives export revenues from the CO ₂ Removal activity, either via CORC sales or via exports of co-products associated with the removal activity.
Category	SDG Attribute
Information to be provided	Documentation on export sales Calculation of exports
Information to be published	Export sales, as a range if the precise information is confidential

5.Document History

The new version of the document is effective on Issue Date.

Version	Issue Date	Comment
V 1.0	1 March 2024	Initial version published



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Puro.earth is the world's leading market infrastructure provider for engineered carbon dioxide removal (CDR). We provide the certification frameworks, scientific standards, and digital systems that allow engineered CDR to scale as an investment-grade market.

At the core of this infrastructure is the Puro Standard - the world's first dedicated standard built for the needs of an engineered CDR market. We certify suppliers under the Puro Standard that durably store carbon dioxide for at least 100 years, and in many cases over 1,000 years. To date, we have certified over 100 engineered CDR projects, resulting in the issuance of over 1.5 million CO₂ Removal Certificates (CORCs) in the Puro Registry as verified, traceable, investable assets. Our infrastructure is trusted by over 700 companies worldwide to procure carbon removals with confidence.

Nasdaq has owned a majority stake in Puro.earth since 2021. This brings 50+ years of expertise in building and operating the world's most trusted markets, strengthening Puro.earth's ability to deliver the transparency, rigor, and operational capacity needed to make CDR an institutional-grade asset class.

Puro.earth is an ICVCM Eligible Carbon Crediting Programme.