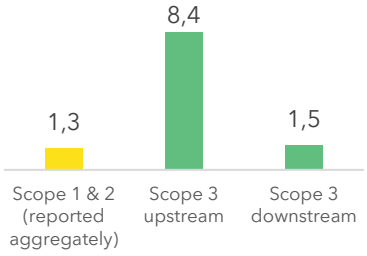
DSM

Sector	Revenue	Emissions	Pledge	Transparency	Integrity
Nutrition, health & materials industry	€ 8.4 bn (2022)	11.2 $MtCO_2e$ (2022)	Net-zero GHG emissions by 2050	Reasonable	Moderate

1. Tracking & disclosure of emissions

11.2 $MtCO_2$ (2022)	Subsidiaries are covered	
Major emissions sources	Purchased goods and services (69%, S3 upstream), end-of-life treatment of sold products (8%, S3 downstream), and operational emissions (12%, S1 & S2).	
Disclosure	DSM's annual report discloses only aggregate S1 and S2 emissions using the lower S2 estimate and a limited breakdown of S3. A dedicated DSM webpage and its CDP Disclosure on 2021 emissions are more comprehensive, including breakdowns for each scope.	

Transparency & Integrity



2. Setting emission reduction targets

			Transparency	Integrity
Headline target or pledge	Net-zero emissions across operations and value chains by 2050			
Short- & medium-term targets (up to 2030)	S1 & S2 GHG emissions: - 59% absolute reduction by 2030 (vs. 2016) S3 upstream cat. 1, 4 & 5 (~83% of 2021 S3) GHG emissions: - 28% intensity reduction by 2030 (vs. 2016)		High	Low
Scope coverage	1 2 3	Announced absolute reduction target for S3 to be published. Currently, overall absolute reductions not aligned with global and sectoral 1.5°C benchmarks.		
Own emission reductions (compared to full value chain in 2019)	**17%** by 2030			
Long-term vision (beyond 2030)	Net-zero GHG emissions across operations and value chains (S1, S2 & S3) by 2050, with at least 90% absolute reductions. No base year disclosed.		Moderate	High
Scope coverage	1 2 3	Presumably a 90% reduction against a 2016 baseline. DSM does not disclose all S3 categories for 2016. Deep reduction likely to be aligned with 1.5°C trajectory.		
Own emission reductions (compared to full value chain in 2016)	**>90%** by 2050 (2016 baseline)			

3. Reducing own emissions

		Transparency	Integrity
Emissions reduction measures	Reduction measures for all scopes, with energy decarbonisation and efficiency being the most specific. Further details on the timing and expected reductions per measure and scope required to track progress and sufficiency. The CDP Disclosure lists detailed initiatives implemented in 2022 adding up to annual savings of 36.8 $ktCO_2e$.	Moderate	Moderate
Renewable electricity procurement	78% of electricity consumption is renewable, with western operations being fully green. Procurement includes some PPAs with GOs, such as Dutch consumption being fully covered by wind power PPAs, but lacks granularity.	Moderate	Low

4. Climate contributions & offsetting		Transparency	Integrity
Responsibility for unabated emissions	Climate contributions without neutralisation claim, lacking detailed disclosure.	Moderate	Low
Climate contributions	- Like last year, DSM is "exploring" making additional contributions beyond its value chain without claiming neutralisation of its own emissions. However, no details on the volume or type of projects are disclosed.	Moderate	?
Offsetting claims today	- No current offsetting claims identified.	N/A	N/A
Offsetting plans for the future	No reliance on offsets to achieve 2030 targets. To achieve net zero by 2050, a maximum of 10% of residual emissions may be neutralised, but criteria to be applied are not (yet) specified. DSM claims to apply the "highest quality criteria and social and environmental safeguards".	Moderate	?

RATINGS **Transparency** refers to the disclosure of information. **Integrity** refers to the quality and credibility of the approach.
Overall Average of sections 1-4 ■High ■Reasonable ■Moderate ■Low ■Very Low;
Sections 1-4 Average of criteria in each section ■■■■■; **Rating criteria** See methodology for rating criteria ■■■.

Source: SEO Amsterdam Economics' interpretation of identified public documentation from DSM

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Royal DSM is multinational chemical company specialised in nutrition, health and materials. Emissions are primarily from purchased goods and services (69 percent), operations (S1 and S2, 12 percent), and end-of-life treatment of sold products (8 percent). DSM has committed to reaching net-zero emissions across its operations and value chains (S1, S2 and S3), with absolute reductions of at least 90 percent by 2050. Remaining emissions are to be offset using "permanent carbon removals". By 2030, DSM aims to have reduced its operational emissions by 59 percent and the intensity of selected S3 emissions by 28 percent (both against a 2016 baseline). DSM's public reporting and commitments could be further improved in terms of transparency and integrity by disclosing complete base year emissions as well as annually disclosing all broken-down GHG Protocol categories.

Note: In May 2023, Royal DSM N.V. merged with Firmenich SA to form the Swiss multinational company dsm-firmenich AG, headquartered in both the Netherlands and Switzerland. This assessment considers the former Royal DSM N.V. as currently available public documentation on emissions and climate plans covers only the Dutch multinational company.

About the tracking and disclosure of the GHG emissions of DSM

Public reporting by DSM (2023a, pp. 69, 74-75, 303) discloses only aggregate S1 and S2 emissions and selected S3 emissions, with the remainder being reported as other upstream or other downstream emissions. DSM further discloses both a market- and location-based estimate, but uses the lower of the two as its main estimation for aggregate total emissions. Full value chain emissions equal 11.2 MtonCO_2e in 2022. Further transparency is provided through its CDP Disclosure, which does provide separate S1 and S2 estimations – broken down per GHG, country, and business division – as well as broken-down estimations for all relevant S3 categories (DSM, 2022c). Operational S1 and S2 emissions in the Netherlands equal 0.15 MtonCO_2e (DSM, 2022c, C7.2, C7.5). Nevertheless, only disclosing detailed emissions through the CDP leads to a lag in reporting and an untransparent overview of year-to-year emissions. Main emission sources are purchased goods and services (69 percent, S3 upstream), operational emissions (12 percent, S1 & S2), and end-of-life treatment of sold products (8 percent, S3 downstream).

About emission reduction targets

DSM's (2023a, p. 71) headline pledge is to have net-zero GHG emissions across its operations and value chains (S1, S2 and S3), with absolute reductions being at least 90 percent and the rest being neutralised through "permanent carbon removals". The long-term ambition is supported by two intermediate targets: to reduce operational emissions by 59 percent and to reduce the emission intensity of selected S3 categories by 28 percent by 2030 (against a 2016 baseline). The selected categories are purchased goods and services (cat. 1), upstream transportation and distribution (cat. 4), and waste generated in operations (cat. 5), which represent 83 percent of 2021 S3 emissions. In August 2022, along with its more ambitious reduction targets, DSM (2022d) announced an absolute reduction target, to be finalised in 2023. With S1 and S2 representing 12 percent of the full value chain emissions, DSM's medium-term targets translate to an overall reduction of 17 percent – well below both global and sectoral benchmarks to limit global warming to 1.5°C. Further intermediate targets for 2030 include 100 percent renewable electricity procurement, deforestation-free primary supply chains, and 50 percent absolute landfill reductions. DSM does not explicitly specify whether the absolute reductions of at least 90 percent are also against a 2016 baseline nor whether it covers all S3 categories (unlike DSM's 2030 intensity target). The company has not disclosed all S3 emissions of 2016, which makes a comparison along the full value chain impossible. Nevertheless, it is likely that the long-term targets are aligned with a 1.5°C trajectory.

Reducing own emissions

DSM (2023a, pp. 73-77) has published a range of reduction measures across all scopes, with energy decarbonisation and efficiency (S1 and S2) being the most specific. Regarding S3 emissions, DSM has an engagement programme for its suppliers called CO2REDUCE, which includes supplier selection, alternative feedstocks, circularity of materials, and 'end-of-pipe' solutions (e.g., CCS). However, the reduction measures lack overall detailing, such as the expected reductions per initiative and per emissions scope and the timeline for implementation. Without this information, it is difficult to evaluate and track both the progress and sufficiency of DSM's measures. Furthermore, the company puts a price of 100 euro per tCO_2e carbon on investment and acquisition valuations, but this does not lead to real costs in terms of, for example, additional climate contributions (DSM, 2023a, p. 70). Also, since 2019, "business growth projects must either be GHG-neutral or else be compensated for within the same site/business" (DSM, 2023a, p. 70).

DSM's (2023a, pp. 73-74) electricity consumption in 2022 was 78 percent renewable, with European and North American operations being fully renewable. Its CDP Disclosure details the procurement constructs, generation technology and location for virtually all electricity consumption, while its annual reports disclose some new contracts (DSM, 2022c, C8.2, 2023a, p. 74). In 2021, on-site generation accounted for only a small share of renewable electricity usage with less than 1 percent (4.100 MWh) globally. In the Netherlands, all 140 GWh of consumed electricity was purchased through wind power PPAs with GOs.

Climate contributions and offsetting claims

Since 2022, DSM (2023a, p. 70) is exploring "additional contributions to accelerate global net-zero transition beyond [its] own value chain such as high-quality carbon credits or increasing the avoided emissions for [its] customers." Such contributions would not be offsetting DSM's own emissions. A position paper from January 2022 mentions that it will "include a mix of GHG reduction/avoidance projects critical in the short term to scale up innovations, and selected nature-based projects" (DSM, 2022b). However, like in last year's assessment, further disclosure of the exact scale or the principles applied is missing. DSM (2022c, C4.2) "aims to disclose further details on [its] contribution actions within 2023". In addition, DSM (2022b) rules out using any offsets to neutralise emissions in the short term. To achieve its headline pledge of net-zero emissions by 2050, DSM (2022b, 2023a, p. 70) will neutralise a maximum of 10 percent of residual emissions. This is to be achieved through "permanent carbon removals" that "meet the highest quality criteria and social and environmental safeguards". At present, DSM does not provide further specific information on these criteria.

Sources:

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DSM

Low **Integrity assessment for short- and medium-term target(s) towards 2030**

What do the short- and medium-term targets actually mean?

What are the targets for the short to medium term?

S1 and S2 emissions:

- 59 percent absolute reduction by 2030 (2016 baseline; last year 50 percent targeted)

S3 emissions per tonne of product, across categories 1. purchased goods and services, 4. upstream transportation and distribution, and 5. waste generated in operations (~83 percent of S3 emissions):

- 28 percent intensity reduction by 2030 (2016 baseline)

Absolute reduction target for S3 announced for 2023.

Furthermore, DSM aims for:

- "double-digit reductions" for on-farm livestock emissions by 2030 (no base year provided);
- "deforestation-free primary supply chains" by 2030;
- average energy efficiency improvement of more than 1 percent per year;
- 100 percent renewable electricity purchased by 2030 (last year 75 percent targeted); and
- 50 percent absolute landfill reduction by 2030 (versus 2020 baseline).

How do these targets equate to emission reductions across the value chain (compared to a 2019 baseline)?

With S1 and S2 representing almost 12 percent of the full value chain emissions, a 59 percent absolute reduction of operational emissions equals a reduction of over 17 percent of absolute emissions compared to 2019. The S3 emission intensity target is not quantifiable in absolute terms. The selected S3 categories cover around 83 percent of S3 emissions in 2021.

Do these targets cover both the short term (within 5 years) and medium term (up to 2030)?

No earlier short-term targets are specified by DSM.

Do these emission reduction commitments align with a 1.5°C trajectory for the sector according to available literature?

Global benchmarks: The IPCC's Sixth Assessment Report stresses that global CO_2 emissions must be reduced by net 48 percent by 2030, compared to 2019 levels, to stand a reasonable chance of limiting global warming to 1.5°C (IPCC, 2022). In the same period, global GHG emissions must decrease by 43 percent. The Sixth Assessment Report thus reaffirms the findings of the IPCC's Special Report on 1.5°C (IPCC, 2018). Based on the scientific insights from the latter report, the Hague District Court ordered Shell to reduce CO_2 emissions across all emission scopes by net 45 percent by 2030 below a 2019 baseline (The Hague District Court, 2021). DSM does not meet these global benchmarks across its full value chain.

Sector-level benchmarks: Sectoral benchmarks for chemical industries require a 52 percent reduction by 2030 across S1, S2 and S3 compared to a 2019 baseline (Teske, 2022, p. 322). Specifically for operational emissions across S1 and S2, Teske (2022) finds a required reduction of 52 percent as well. Apart from this study, there are few benchmarks specifically for the chemical industry as reported last year by NCI (2022). We conclude that DSM's medium-term targets are most likely not aligned with the sector-level benchmarks as S3 emissions are not targeted in absolute terms. The Science Based Targets initiative (SBTi) has assessed DSM's operational targets (S1 and S2, covering 12 percent of the total value chain emissions) to be consistent with limiting global warming to 1.5°C.

UNFCCC (2021, p. 12) considers a renewable electricity use of 60 percent by the global chemicals sector by 2030 a 'breakthrough outcome'. DSM's recently increased target of 100 percent renewable electricity usage by 2030 is therefore fully aligned with this sectoral finding.

High Integrity assessment for long-term target(s) (post-2030)

What do the long-term targets actually mean?

What are the targets for the long term beyond 2030?

Emissions across operations and value chains (S1, S2 & S3):

- Net zero by 2050, with absolute reductions of at least 90 percent (no base year provided). Neutralisation through "permanent carbon removals" with "highest quality criteria and social and environmental safeguards" without further details. Presumably, this target covers all S3 categories.

How do these targets equate to emission reductions across the value chain (compared to a 2019 baseline)?

DSM does not specify whether the absolute reductions of at least 90 percent are also against a 2016 baseline, nor does the company disclose all S3 categories for 2016. Therefore, we cannot calculate the targeted emission reductions against 2019 emission levels. Emissions in the categories tracked in 2016 (S1, S2 and S3 upstream categories 1, 4 and 5) seem to have increased in 2019 (as well as in 2021), but we cannot verify whether this is due to actual higher emissions or due to adjustments because of improved estimation methods. Given that emissions seem to have increased since 2016, we have no reason to believe that choosing an earlier base year would be less ambitious.

Do these emission reduction commitments align with a 1.5°C trajectory for the sector according to available literature?

Sector-level benchmarks: Teske (2022, p. 322) considers an 85 percent reduction across the full value chain for the chemical industries by 2050 sufficient to limit global warming to 1.5°C (compared to 2019 levels). Specifically, operational emissions across S1 and S2 should reach zero by 2050. We therefore consider the deep emission reduction of at least 90 percent to be aligned with a 1.5°C trajectory (in line with the Methodology by NCI, 2023b, see Section 2.2.2). Moreover, DSM plans to neutralise any remaining emissions with additional offsets.