Royal Schiphol Group

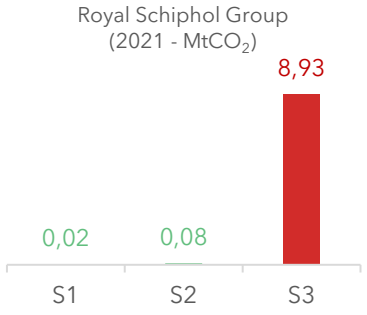
Sector	Revenue	Emissions	Pledge	Transparency	Integrity
Aviation	€ 1.5 bn (2022)	9.02 $MtCO_2$ (2021) (excl. non-CO_2 climate forcers)	Net-zero carbon emissions aviation by 2050 and zero-emissions airports by 2030	Moderate	Low

1. Tracking & disclosure of emissions

Transparency & Integrity

9.02 $MtCO_2$ (2021) — Subsidiaries are covered

Major emissions sources	The majority of Schiphol's CO_2 emissions are caused by third-party activities, such as aircraft landings and take-offs as well as aircraft handling and road traffic around the airport site (2022a, p.38).
Disclosure	The company discloses 2022 data on S1 and S2 only for Amsterdam Schiphol Airport. RSG discloses an overview of the full value chain emissions for the Schiphol Group (2022a, p. 141). Non-CO_2 climate forcers are acknowledged but not disclosed. All scopes are reported using both location- and market-based accounting methods.



2. Setting emission reduction targets

		Transparency	Integrity
Headline target or pledge	Net-zero carbon emissions aviation by 2050 and zero-emissions airports by 2030		
Short- & medium-term targets (up to 2030)	Several targets identified (see text below).	Moderate	Low
Scope coverage	1 2 3		
Own emission reductions (compared to full value chain in 2019)	**~4.5%** by 2030		
	Intermediate term: - Zero-waste airports - Zero-emission airports - Reduce in-sector carbon emissions of international aviation to 2005 levels, or lower, by 2030 in the Netherlands.		
Long-term vision (beyond 2030)	Several targets identified (see text below).	Moderate	Low
Scope coverage	1 2 3		
Own emission reductions (compared to full value chain in 2019)	**~43%** by 2050		
	Long term: - Energy-positive airports - Net-zero carbon aviation sector - No carbon emissions from surf. access Schiphol Group plans to use carbon emissions (<10%) for hard-to-abate emissions.		

3. Reducing own emissions

		Transparency	Integrity
Emissions reduction measures	Several measures to reduce emissions are identified. RSG subsidises and invests in SAF production, but no demonstrated flagship projects or good practise emission reduction measures are presented. Also, no further details regarding the targeted or expected reductions.	Moderate	Low
Renewable electricity procurement	Procurement is through long-term PPAs, including GOs, from Dutch wind electricity; developing on-site solar PV installations; green gas as a transition and back-up energy source.	High	High

4. Climate contributions & offsetting		Transparency	Integrity
Responsibility for unabated emissions	No assumed responsibility for its unabated emissions	Moderate	Low
Climate contributions	- No financial contributions were identified.	N/A	Low
Offsetting claims today	- Schiphol Group regards offsets as an interim solution in terms of its own operations - Offset credits procured for S1, employee commuting, and business travel emissions. Details on volume and project types are disclosed.	Moderate	Low
Offsetting plans for the future	Schiphol Group plans on using carbon dioxide removal to reach its goal of net-zero-carbon aviation by 2050. This concerns the 'hard-to-abate' last 8-10% of emissions by outbound flights. No offsets to achieve the energy-positive target. Details on future projects or removal technologies are not specified.	Low	?

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 Royal Schiphol Group (RSG)

Royal Schiphol Group

Royal Schiphol Group (RSG) is an independent commercial enterprise, with as its shareholders the State of the Netherlands (69.77%) and the municipalities of Amsterdam (20,03%) and Rotterdam (2,2%). The remaining shares (8%) are held by RSG.[1] RSG owns and operates Amsterdam Airport Schiphol, Rotterdam The Hague Airport and Lelystad Airport. Furthermore, it holds a majority share in Eindhoven Airport (51%) and a minority share in Maastricht Aachen Airport (40%). Also, the group has an interest in several international airports such as Brisbane and Hobart. RSG aims for net-zero carbon emissions aviation by 2050 and zero-emissions airports by 2030. In its 2022 annual report, RSG discloses data on the GHG emissions of Amsterdam Airport Schiphol (S1, S2 for 2022 and S3 for 2021). Furthermore, it discloses data on the full value chain GHG emissions of RSG for 2021 (2022a, p. 141). The scope of the GHG reduction targets for RSG contains S1, S2 and multiple elements from S3 and involves only airports based in the Netherlands. RSG plans on using offsetting (through carbon dioxide removals) for its hard-to-abate emissions to achieve its net-zero targets.

About the tracking and disclosure of the GHG emissions of RSG

- No actual (2022) data on the full emissions of RSG have been found. For 2021, RSG published its full value chain emissions (2022b, p.54). In that year, S1 was estimated at 0.02 $MtCO_2e$ (location based), S2 at 0.08 $MtCO_2e$ using a location-based approach, and S3 at 8.93 including 8.7 $MtCO_2e$ from kerosene tanked in the Netherlands (outbound flights) and excluding emissions from inbound flights (2022a, pp.141-142). To put things in perspective, this means that over 96 percent of all reported emissions of RSG are indirect and caused by the use of kerosene for outbound flights (S3). Given the presented emissions it is important to show a trend over time. The disclosed years 2021 and 2022 are most likely not the most representative years (due to a COVID effect). In the annual report, such an annual disclosure for the full value chain emissions is missing.
- In its most recent annual report, we found 2022 data for the emissions of Amsterdam Airport Schiphol for S1 (0.18 $MtCO_2e$), S2 (0.09 $MtCO_2e$ using a location-based accounting approach and 0 $MtCO_2e$ using a market-based accounting approach) and 2021 data for S3 (8.9 MtCO2e). Regarding S1, we note that this category includes only the emissions that are in scope for its Top Performance Indicator. This means that for S1, RSG monitors the natural gas and fuels used by its own vehicle fleet (2022a, p.26). It is unclear how these S1 emissions relate to the total S1 emissions from Amsterdam Airport Schiphol. Regarding S3, the company mentions that it reports with a one-year delay (Schiphol, 2022a, p.38).
- For the other regional airports (Eindhoven Airport, Rotterdam The Hague Airport and Lelystad Airport) RSG discloses reductions in CO_2e compared to 2021, without a breakdown and only what is in scope for its Top Performance Indicator (2022a, p. 81-83).
- Lastly, the reported emissions only include CO_2 emissions (Schiphol, 2022a, p.38). Non-CO_2 climate forcers from aviation are acknowledged, but not disclosed. These climate forcers account for an estimated two-thirds of the sector's climate impact (Schiphol, 2022a, p.38).

[1] See Schiphol (2023a)

The reported total emissions of RSG are an underestimation.

- RSG mentions that its CO_2 emissions are likely to reflect 1/3 of the climate impact of aviation. The non-CO_2 emissions are not quantified yet. Given that the total emissions of RSG are estimated at 9.02 $MtCO_2$ (see previous page), this would mean that the total aviation emissions impacting the climate would be 27.06 $MtCO_2e$. Furthermore, we note that RSG only includes kerosine for outbound flights (estimated at 8.7 $MtCO_2e$).[2] If the kerosine for inbound flights would equal the kerosine for outbound flights, the total estimation would be 53.15 $MtCO_2e$ (calculated by adding 8.7 $MtCO_2e$ from inbound flights to the previously reported total of 9.02 $MtCO_2e$ and then multiplying this amount by three). RSG mentions that it only reports on CO_2 because further reflection on how to best address non-CO_2 climate impacts is required. We did not find any public information on why RSG does not disclose emissions from inbound flights.

About emission reduction targets

- *Long term:* The long-term targets of RSG are to have *i)* a net-zero-carbon aviation sector, *ii)* no carbon emissions from surface access, and *iii)* energy-positive airport operations by 2050 (Schiphol, 2022b, p.53). Regarding the first target, the company mentions that it will use offsets (through carbon dioxide removals) for hard-to-abate emissions (<10 percent). The scope of this first target only covers the kerosene for outbound flights (S3) and not the kerosene for incoming flights. We note that about 96 percent of RSG's reported total emissions come from kerosine fuelled outbound flights (Schiphol, 2022a, p.38). RSG's target for kerosine related emissions is a reduction of 90 percent, implying that the last 10 percent will be offset (Schiphol, 2022b, p.53). This means a reduction of over 86 percent (96 percent of 90 percent) of the GHG emissions of RSG. This reduction percentage is roughly in line with the global benchmarks (CAT) for the sector, according to available literature. However, if one adds the S3 indirect emissions from incoming flights, this percentage is almost halved to 43.2 percent (assuming that the emissions from kerosene for inbound flights roughly equal those from outbound flights).[3]
- *Intermediate targets:* Concerning its intermediate targets, RSG aims for *i)* zero-emission airports, and *ii)* zero-waste airports by 2030 (Schiphol, 2022b, p.19 & p.41). Furthermore, *iii)* RSG commits to the target of reducing in-sector carbon emissions of international aviation to 2005 levels, or lower, by 2030 in the Netherlands. This target is comparable to a 10 percent reduction by 2030 (vs 2019 levels) (Schiphol, 2022b, p.53). For the first target (zero-emission airports) the following sub-targets have been identified: *i)* phase out natural gas by 90 percent compared to 2019 and replace the remaining 10 percent by green gas, *ii)* phase out fossil fuels in ground handling and own vehicle fleet by 85 percent compared to 2019 and replace the remaining 15 percent by Hydrotreated Vegetable Oil (HVO100), *iii)* generate 10 percent of electricity (solar) needed at the airport location, and *iv)* make all commuter traffic of own employees emission free.
- *Short-term targets:* Schiphol has some short-term targets (sooner than 2030). The first one is a 2,000 tonne CO_2 emissions reduction by 2026 as a result of the zero-emissions zone for terminal logistics (Schiphol, 2022b, p.53). The second target is that 50 percent of Origin-Destination (OD) passengers use public transport or car sharing to travel to and from Schiphol by 2027 (Schiphol, 2022b, p.53). Furthermore, it aims for a 2 percent reduction of carbon emissions because of 2 percent so-called sustainable aviation fuels (SAF) uptake at RSG airports (in line with ReFuel EU). It also wishes to phase out natural gas in its own buildings at Schiphol by 40 percent in 2027 (base year 2019). Lastly, it has set a sustainability Top Performance Indicator for 2023 of a 62 percent reduction of S1 emissions (natural gas and fuels used by own vehicle fleet) and a selection of S3 emissions, compared with 2019 levels.
- The targets of RSG do not account for non-CO_2 climate forcers and exclude emissions from incoming flights.

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2 In their feedback RSG mentions that they report according to the requirements of Level 4+ of the ACI ACA manual.

3 This percentage is calculated by 50 percent * 96 percent * 90 percent.

Reducing own emissions

In its 'Sustaining your world' roadmap (Schiphol, 2022b), RSG identifies several efforts to reduce emissions. They are divided in two parts, related to the two main, long-term goals; net-zero-carbon aviation and energy-positive Dutch airport operations by 2050.

RSG's pathway towards its sustainable aviation goal includes multiple actions. Schiphol Airport stimulates fleet renewal to reduce emissions through more efficient aircraft, it aims to introduce sustainable aviation fuels (SAF) at scale at its airports as soon as possible, reaching 14 percent SAF or more by 2030; it stimulates innovation to introduce zero-emission aircraft (battery electric, hydrogen); and it aims to optimise airside procedures. However, there are no demonstrated flagship projects or good practise emission reduction measures presented. We would like to mention that RSG's contributions are still in the research phase, such as its participation in the TULIPS consortium (Schiphol, 2023b). Furthermore, RSG mentions that it is investing in Europe's first sustainable aviation fuel refinery in Delfzijl. The plant is being built by SkyNRG, a manufacturer of sustainable aviation fuel, and will be ready in 2025/2026. Also, no further details are given regarding the targeted or expected reductions per action (Schiphol, 2022b, p.27 & 28).

About renewable energy

According to 'Sustaining your world', all RSG airports in the Netherlands have been powered by newly built Dutch wind farms located both onshore and offshore since 2018. Procurement runs through a 2018 – 2032 PPA with Eneco. Eneco annually provides RSG with 200 GWh of green energy (Schiphol, 2022c). This PPA includes Guarantees of Origin (GO) certificates for all electricity used by RSG's own operations, as well as all ground operations at airside and all buildings leased to third parties (Schiphol, 2022b, p.54). Furthermore, Schiphol Airport plans to significantly expand its PV capacity for solar power generation. However, the required investments and carbon reduction potential have not yet been quantified (Schiphol, 2022b, p.56).

Climate contributions and offsetting claims

- RSG does not assume responsibility for its unabated emissions through climate contributions.
- RSG's current emissions from natural gas and other fossil fuels (S1, S2 plus commuter traffic and business trips of own employees in S3) have been offset since 2012. The group regards offsets as an interim solution in terms of its own operations. The zero-emission 2030 goal does not include any offsets. However, it does plan on using carbon dioxide removal to reach its goal of net-zero-carbon aviation by 2050. This concerns the 'hard-to-abate' last 10 percent of emissions by outbound flights (Schiphol, 2022b, p.53). There is no further information given regarding this offsetting in the future, i.e. the decision process for choosing methods, the corresponding adjustments, the likeliness of permanence or the scarcity of the means of removal and storage nor the environmental costs. However, in its annual report the company mentions that it participates in Destination 2050 and the commitment of the International Air Transport Association (IATA) to achieve net-zero carbon emissions by 2050 and the Fit for 55 package.[4] RSG presents an overview of its current offsets, which shows that all offsets for Schiphol Airport regard solar (thermal) power projects in India (2022b, p.63).

[4] IATA mentions that its strategy to net zero relies (for 19 percent) on offsetting and carbon capture technologies (2023c)

Sources:

- Schiphol (2022a). Royal Schiphol Group. Annual Report 2022. Obtained from: https://www.schiphol.nl/en/schiphol-group/page/annual-reports/
- Schiphol (2022b). Sustaining your World. *Vision and Strategy towards the most sustainable airports.* Obtained from: https://www.schiphol.nl/en/schiphol-group/page/road-to-the-most-sustainable-airports/
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- Schiphol (2022c): "Royal Schiphol Group fully powered by Dutch wind farms from 2018". Available at:
- Schiphol (2023a): "Aandeelhoudersinformatie Schiphol Group" https://www.schiphol.nl/nl/schiphol-group/pagina/aandeelhoudersinformatie/
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- IATA (2023c). Our Commitment to Fly Net Zero by 2050. Obtained from: https://www.iata.org/en/programs/environment/flynetzero/

Royal Schiphol Group

Very 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?

RSG has set a target to reduce in-sector carbon emissions of international aviation to 2005 levels, or lower, by 2030 in the Netherlands. This target is comparable to a 10 percent reduction by 2030 (vs 2019 levels) (Schiphol, 2022b, p.53).

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

In 2021, circa 96 percent of the full value chain emissions of RSG were due to the use of kerosine. Assuming that this percentage will be reduced by 9 percent (accounting for a maximum of 10 percent in offsets), the targets equate to a reduction of circa 9 percent (96 percent times 9 percent) of the full value chain. However, the company does not target S3 emissions from incoming flights. Therefore, we halve this percentage to 4.5 percent. Furthermore, the target excludes non-CO_2 emissions, which means that this percentage is an overestimation.

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

Yes, RSG has set short- and medium-term targets.

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 and global methane emissions by 34 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). Given that RSG's interim targets translate to a 4.5 percent carbon emission reduction by 2030 below 2019 levels across (almost) the entire value chain, the company is not likely to meet these global benchmarks.

Very low 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?

RSG commits to reducing its carbon emissions by at least 90 percent by 2050, in addition to the target of a net-zero-carbon aviation sector by 2050. For the remaining 10 percent, RSG aims to use offsets (through carbon dioxide removals).

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

We note that about 96 percent of RSG's reported total emissions come from kerosine-fuelled outbound flights (Schiphol, 2022a, p.38). RSG's target for kerosine-related emissions is a reduction of 90 percent, of which the last 10 percent will be offset (Schiphol, 2022b, p.53). This means a reduction of over 86 percent (96 percent of 90 percent) of the GHG emissions of RSG. However, the company does not target S3 emissions from incoming flights. Therefore, we halve this percentage to 43.2 percent. Furthermore, the target excludes emissions from non-CO_2 emissions, which means that this percentage is an overestimation.

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

Global and sector-level benchmarks:
The IEA's Net Zero by 2050 report shows that CO_2 emissions from aviation should decrease by 80 percent between 2019 and 2050 (IEA, 2021, p. 199). The CAT's fair share pathway shows that the global aviation sector as a whole needs to reduce CO_2 emissions by around 90 percent between 2019 and 2050 to be in line with global 1.5°C-aligned scenarios and reach zero CO_2 emissions shortly after 2060 (CAT, 2022). Furthermore, the ICCT has found that cumulative emissions from international aviation will break the sector's 1.5°C carbon budget even under scenarios that assume widespread investments in reduction technologies and a peak in fossil jet fuel by 2025. The ICCT's most ambitious scenario shows a reduction of 94 percent in the aviation sector's CO_2 emissions between 2019 and 2050 and is compatible with a 1.75°C target (Graver et al., 2022). RSG's target will lead to a reduction of over 86 percent.