Supplementary Methods

Compilation of company data

To calculate the global share of renewable capacity owned by the fossil fuel industry, the largest 250 oil and gas companies by hydrocarbon production (hereafter "companies") were considered representative of the fossil fuel industry as they are collectively responsible for 88.1% of global hydrocarbon production. The selection was based on Urgewald's Global Oil & Gas Exit List 2023 (GOGEL; Urgewald, 2024). GOGEL entries in the "Financial" primary business were not considered in this study.

Large multinational companies, among them big fossil fuel companies, can have complex corporate structures that complicate tracking their asset ownership. In order to systematise the ownership trees of the selected companies, Refinitiv Eikon, one of the market-leading data products to track corporate ownership, was employed. The tree structure for each of the 250 companies was downloaded from Refinitiv Eikon including tens of thousands of subsidiary entities (see Table S3 for methodological definitions and Extended Data Figure 6 for a schematic methodology). The subsidiary list was subsequently filtered selecting the entities classed in sectors containing the words "Power", "Renewable", "Electricity", or "Utility". Additionally, the Refinitiv Eikon Screener app was used to identify all acquisitions by the companies filtered for the target entities belonging to the "Power" or "Alternative Energy Sources" industries, and the shares obtained being larger than 0.01%. Finally, each of the 250 companies' shareholding profile was searched in Refinitiv to identify any controlling entity with more than 50% of the shares. A total of 25 controlling entities were identified for 34 of the oil and gas companies, mostly government entities. All subsidiaries and acquisitions of these controlling entities were downloaded and labelled as sister companies to the respective oil and gas company.

In order to avoid double counting and streamline the subsequent search of renewable energy asset ownership, the filtered set of acquisitions, subsidiaries and sister companies were manually inspected to exclude entities which: a) were holding companies for individual power plants (e.g. "Lucerne Valley Solar One LLC"), b) were subsidiaries containing the company name (e.g. "Shell Energy Ghana Ltd"), c) included the name of other subsidiaries or acquisitions (e.g.

"Lightsource Renewable Energy Netherlands Development BV"), or d) were clearly not related to renewable energy generation (e.g. "Advanced Thermal Batteries Inc"). The exclusion was necessary to significantly reduce the number of queries that would increase the computational effort and induce false positives without yielding additional searching power in the renewable energy project identification described subsequently. For each of the remaining entities (193 acquisitions, 344 subsidiaries, 172 sisters), the ownership share of its respective parent company was annotated when known, and if unknown it was assigned full ownership (see Table S4, column E).

Identification of renewable energy projects owned by the oil and gas industry

With a list of the largest 250 oil and gas companies and their relevant affiliates, it was now possible to identify the renewable energy projects they owned thanks to the Global Energy Monitor Wind (February 2025 version), Solar (February 2025 version), Hydropower (April 2024 version) and Geothermal Trackers (September 2024 version). Global Energy Monitor Trackers (GEM) are publicly accessible databases that map and document utility-scale wind power plants over a capacity of 10MW, solar power plants over 20MW, hydropower plants over 75MW and geothermal plants over 30MW. Each of the 53,054 projects documented in GEM Trackers includes information on the capacity of the project, the owners, the operators, its location, and its status. Only the projects with the status "Operating", "Under construction", "Pre-construction" or "Announced" were analysed. When a project did not have a known owner, but it had a listed operator, the operator was also assigned as owner.

To conduct the search of each of the corporate entities against the GEM renewable energy projects ownership data we developed a code for R version 4.2.3 and RStudio version 2023.03.0+386. To minimise the occurrence of false negative hits from corporate entities with generic names, we first manually defined a search term for each of the companies to be searched. The search term excluded the generic words in the company name (ie. "Occidental" from "Occidental Petroleum Corporation") (Table S4, column D). If necessary, alternative search terms are added in brackets (ie. "Abu Dhabi National Oil Company (ADNOC)" for Abu Dhabi National Oil Company). The search term for each of the companies is then queried for an exact word match against the "Owner" field of all GEM projects. Every project with a matching owner is compiled in a table alongside its respective owner (Table S5, column O), and its ultimate oil

and gas company parent (Table S5, column S). To avoid double-counting, each of the projects' capacity is multiplied by the ownership percentage held by the owning company (Table S5, column P), and by the share that the ultimate parent company held in the subsidiary or acquisition directly owning the project to yield the figure referred to as “equity-based capacity” or “ownership-adjusted capacity” (Table S4, column E). When the project share ownership was unknown, the project was assumed to be equally owned by each of the project owners. Only 49 of the largest 250 oil and gas companies appeared as owners of operating projects in GEM, including through their subsidiaries and acquisitions, but excluding the sister companies which they do not control.

Next, we tested the completeness of our project list by comparing the aggregated operational renewable energy capacity found with the operational capacity reported in the 2024 annual reports for each of the 49 companies with renewable assets found (Table S2, columns T-AC). When 2024 annual reports were missing, 2023 annual reports were used, and when these were also missing or did not contain the information sought, sustainability reports, factsheets, or press releases were used (Table S2, columns AN-AO). For the companies that showed a large deviation between the operational capacity listed in GEM and the reported capacity (Table S2, columns AN-AO), we searched for missing projects, subsidiaries or acquisitions in their annual reports and press releases using the key search words “acquisition”, ”subsidiary”, ”wind”, ”solar”, ”photovoltaic”, ”MW”, ”GW”, “capacity”. We updated the GEM database to reflect reported current information on operating projects (see R Script), and added newly-found subsidiaries and acquisitions to our company search list (Table S4).

The search algorithm was iteratively run with the updated project information and newly-found subsidiaries and acquisitions until an acceptable divergence between the GEM-listed operating capacity and the operating capacity reported by the companies was attained. In addition, we noted that 5 of the companies reported distributed renewable energy operating capacity (Table S2, column J). We added this data to the total GEM operating capacity, given that distributed projects are not listed in GEM trackers (Table S2, column K). Finally, we identified three companies that did not account for some of their affiliate companies in their aggregated reporting (Table S2, columns AB). We added the operating capacity of those affiliates as listed in GEM to the company's reported operating capacities. In the end, we considered the final 2.35%

shortfall between the aggregated GEM-listed operating capacity we report in this study and the aggregated operating capacity reported by the companies themselves as acceptable (Table S2, company-specific deviations ranging from 0.53 to -0.54 GW are provided in columns AH-AI). The difficulty of tracking down renewable energy ownership is compounded by a lack of transparent and interoperable listing of all renewable energy assets by oil and gas companies (with the exception of Osaka Gas and ENEOS), which contrasts with their openness in reporting their aggregated renewable capacity figures.

After the iterative addition of newly found subsidiaries and acquisitions, the final total number of corporate entities (parents, subsidiaries, acquisitions and sister companies) searched was 959 (Table S4). Of these, 225 had at least one project listed in GEM (Table S5, column O). Together they held shares in 9,269 unique projects, 3,166 projects excluding sister companies (Table S5). For each of the 116 subsidiaries and acquisitions that were found to own operating projects, the share ownership by the parent company was manually validated by press releases or annual reports of the companies and amended when Refinitive data was not updated (Table S4, columns E,G).

To calculate what percentage of the global renewable energy capacity was owned by fossil fuel companies, the equity-adjusted capacity of all identified projects was aggregated by technology and status of deployment and divided against the respective global aggregates listed in GEM trackers. Since GEM trackers do not account for distributed renewable energy, we searched the 49 oil and gas companies annual reports with known renewable energy assets with the key word “distributed”, and added the distributed operating capacity they reported to the GEM-listed capacity. We then compared the total aggregated renewable operating capacity (utility + distributed) of the oil and gas companies against the global data collected by the UN International Renewable Energy Agency (IRENA, 2024) (Table S2, columns L-Q). IRENA figures are collected yearly based on “the IRENA questionnaire; official statistics; industry association reports; and other reports and news articles” and include distributed energy capacity, but unlike GEM it only accounts for projects in operation (IRENA, 2024:7).

Calculation of share of renewable energy in primary energy production

In order to estimate the share of the total primary energy produced from renewable energy sources by the oil industry we needed to generate energy figures for hydrocarbon generation and renewable energy in the same units. The annual oil and gas production for the 250 companies was retrieved from Urgewald's GOGEL in million barrels of oil equivalent per year units (Table S2, column S). The production, which we give in thousands of barrels of oil equivalent per day (kboe/d; Table S2, column S) was converted to the International System Unit of energy, petajoules (PJ), with the conversion factor 1 kboe/d = 2.189 PJ/y (US Energy Information Administration, 2024) (Table S2, column AK).

In parallel, we estimated the renewable energy generation for each of the 43 companies with operating renewable assets. If the company reported generation figures in their annual reports, those were assigned (Table S2, column AE, in GWh). If the company reported installed renewable capacity figures broken down by type of technology, technology-specific capacity factors were applied to estimate the respective aggregated renewable energy generation (Table S2, column AF, in GWh). The technology-specific capacity factors (generation [GWh]/capacity [GW]) were calculated as the ponderated average of the capacity factors of all companies that reported both technology-specific generation and operating capacity figures (Table S2, cells U273, U269, U281, U286). If the company did not report renewable energy generation nor capacity figures, the capacity factors were applied to the capacities of their operating projects identified in GEM aggregated by technology (Table S2, column AF, in GWh). Finally, the estimated generation figures were converted to petajoules (PJ) using the physical energy content method (1 GWh = 0.0036 PJ; International Energy Agency, 2024; Table S2, column AJ).

The ratio of renewable energy over the total primary production was calculated as the ratio between renewable energy generation and the sum of hydrocarbon and renewable energy production, both in petajoule units (Table S2, column AM).

Assumptions and estimate ranges

Like all studies of this magnitude, our methodology has to take a number of assumptions to estimate the figures reported. We transparently list and justify all methodological assumptions

taken in this study in Table S6. In addition, we have taken a series of mitigation measures to limit the extent to which the assumptions affect the headline results of this study (Table S6, column E). Despite the assumptions and limitations of the study, we are satisfied that the data we report is globally representative, and indeed the operating renewable energy capacity we report is only 2.35% lower than the self-reported operating capacity by the 49 companies we have found to own renewable energy assets. That is to say that a more optimistic estimate (in favour of the "part of the solution" argument) would only report very small deviations from renewable energy shares than we report in Figure 1 and 2 (up to 1.45% and 0.13%, respectively). There are larger deviations for specific companies that can affect their standing in the company rankings offered in Figures S1 and S5, and which are transparently acknowledged in Table S2, column AH.