

# Brookfield's Climate Paradox: Climate Pledges vs. Fossil Fuel Reality

## Methodology and Research Process

### *Portfolio Company Verification (Deals and Companies)*

Since private equity firms do not provide comprehensive disclosures of current or former investments, the research team built a data set based on a variety of sources. First, we conducted an initial query of energy holdings from January 1, 2013 to September 1, 2023 via the private markets data provider Pitchbook.<sup>1</sup> Researchers collected additional sources to build a data set of verified Brookfield or Oaktree current portfolio company investments that included company websites, press releases, SEC and other regulatory filings, and news articles.

Private equity firms invest in portfolio companies through a variety of strategies including leveraged buyouts, majority stake investments, minority stake investments, control or non-control investments, credit or lending investments, joint ventures, via intermediaries or directly, and others. The precise nature of each investment arrangement is often not disclosed, but these investments all provide capital to portfolio companies that enables their operations and the associated emissions and environmental impacts. Brookfield or Oaktree's current energy portfolio reflects the private equity firms' financial interests via any one or more financial strategies listed above to "invest in" or "own" or "back" each portfolio company, thereby facilitating the activity of the company and its assets.

The data set of current portfolio companies and assets was shared with Brookfield and Oaktree in advance of publishing this report, and neither provided specific feedback or clarifications on the companies and assets listed or shared requested data on emissions related to the assets, beyond citing the Brookfield *2022 Sustainability Report* and the Oaktree *2022 Responsibility Report*.<sup>2</sup>

### *Asset Verification*

Once the deal and company information were verified, the next step of the process was to identify the assets currently owned by portfolio companies. This was accomplished by searching through a variety of online sources including: company websites, news articles, press releases, corporate financial reports, and government databases including those from the Environmental Protection Agency (the

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<sup>1</sup> Pitchbook. "About." Accessed July 2023 through November 2023. Available at: <https://pitchbook.com/about>

<sup>2</sup> October 27, 2023 email communication from Brookfield, Oaktree. The reports are available, respectively, at: <https://www.brookfield.com/responsibility/2022-sustainability-report> and [https://www.oaktreecapital.com/docs/default-source/default-document-library/2022-oaktree-responsibility-report.pdf?sfvrsn=76c75266\\_6](https://www.oaktreecapital.com/docs/default-source/default-document-library/2022-oaktree-responsibility-report.pdf?sfvrsn=76c75266_6)

FLIGHT tool and the ECHO database), the Energy Information Administration (Form 860), and the Pipeline and Hazardous Materials Safety Administration.

*Fields collected/calculated:*

- Deal/Company information
  - Company
  - Parent Company
  - Company Energy Sector (e.g., upstream, midstream, downstream)
  - Company Energy Source (e.g., oil, gas, solar, etc.)
  - Deal Description/Synopsis
  - Company Role
  - Deal Date
  - Private Equity Investors
  - Deal Type (e.g., leveraged buyout, joint venture, private equity growth, etc.)
  - HQ Location
  - Area of Operations
  
- Asset information
  - Asset Name
  - Unit/Phase Name
  - Asset Energy Sector
  - Asset Energy Source/Fuel
  - Asset Energy Type (e.g., technology)
  - Asset Role
  - GEM.wiki page<sup>3</sup>

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<sup>3</sup> Available at: [https://www.gem.wiki/Main\\_Page](https://www.gem.wiki/Main_Page)

- Capacity/length
- Capacity Units
- Technical specifications
- Specific and general location information
  - Lat/Long
  - Address details (where applicable)
  - Region
  - Country
  - Basin (if applicable)
- EPA
  - FRS ID (EPA)
  - Enforcement Violations
  - ECHO URL(s)
  - Quarters Noncompliance (Last 3 Years)
  - Quarters Significant Violation
  - Informal Enforcements
  - Formal Enforcements
  - EPA Cases
  - Penalties from Formal Enforcements
  - Percent People of Color (5 Mile Radius)
  - Percent Low Income (5 Mile Radius)
  - State Average: percent People of Color
  - State Average: percent Low Income
  - Population w/in 5 Mile Radius

Categorization

### *Downstream*

The Downstream sector was broken down into fossil and renewable energy categories. Within the fossil category, we included coal, gas, oil, refined petroleum (gasoline, diesel, etc.), and biomass. Although biomass is not a traditional fossil fuel, we included it in the fossil category based on perspectives from the National Renewable Energy Laboratory, which notes that “burning biomass releases about the same amount of carbon dioxide as burning fossil fuels.”<sup>4</sup>

In the renewable category, we included utility-scale energy generation technologies that utilize solar, wind, and hydropower.

### *Midstream*

In the midstream category, we documented assets responsible for storing, transporting, and processing fuels. This included assets like pipelines, terminals, storage containers/facilities, refineries, and cryo facilities responsible for converting natural gas from a gaseous form into a liquid form. These assets spanned gas, coal, oil, refined petroleum, and biomass fuel types.

### *Upstream*

The upstream sector included assets responsible for the original extraction of oil and natural gas from the earth, both onshore and offshore. Many of the upstream assets in this study were not specifically named like other assets in this study, such as power plants or pipelines, because a given company might own a large number of assets but without detailed identifying information. For example, researchers working on this project could usually find naming documentation of specific power plants, terminals, or pipelines, but when reviewing upstream assets, listings could be described as: “Chesapeake Energy (West Texas and New Mexico Assets).” Because of these complications, for upstream assets, we made note of oil/gas production levels from the entire group of assets owned by one company in one area/basin.

### Emissions calculations methodologies

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<sup>4</sup> The quote from National Renewable Energy Laboratory in full reads:

The use of biomass energy has the potential to greatly reduce greenhouse gas emissions. Burning biomass releases about the same amount of carbon dioxide as burning fossil fuels. However, fossil fuels release carbon dioxide captured by photosynthesis millions of years ago—an essentially “new” greenhouse gas. Biomass, on the other hand, releases carbon dioxide that is largely balanced by the carbon dioxide captured in its own growth (depending how much energy was used to grow, harvest, and process the fuel). However, studies have found that clearing forests to grow biomass results in a carbon penalty that takes decades to recoup, so it is best if biomass is grown on previously cleared land, such as under-utilized farmland.

See: National Renewable Energy Laboratory. “Biomass Energy Basics.” Accessed November 29, 2023. Available at: <https://www.nrel.gov/research/re-biomass.html>

## *Emissions Scope*

Private equity firms like Brookfield have impacts on the climate through both their corporate operations and their investment portfolios through direct and indirect emissions. The investment portfolio typically has far greater impacts, and accounts for around 99 percent of emissions, as seen in Figure A, developed by the UN Initiative Climat International.<sup>5</sup> In order to capture the entire emissions footprint of private equity firm activities, Scopes 1, 2, and 3 emissions should be disclosed both at the firm level and across the full investment portfolio.<sup>6</sup>

In the iCI framework corporate operations fall under the Scope 1 direct and Scope 2 indirect categories which combined make up 0.19 percent of emissions in the example firm seen in Figure A below.<sup>7</sup>

### **Figure A. Example GHG emissions inventory for an average private equity firm invested in fossil fuel infrastructure (iCI)**

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<sup>5</sup> Initiative climat international. “Greenhouse Gas Accounting and Reporting for the Private Equity Sector.” Accessed March 14, 2023. Available at:

<https://www.unpri.org/private-equity/greenhouse-gas-accounting-and-reporting-for-the-private-equity-sector/937.article>

<sup>6</sup> Americans for Financial Reform Education Fund, Public Citizen, the Sierra Club, the Ocean Conservancy, and the Sunrise Project. “The Enhancement and Standardization of Climate-Related Disclosure for Investors.” Comment on the proposed rule by the Securities and Exchange Commission. 87 FR 21334, Docket ID: SEC-2022-06342, File No. S7-10-22. June 16, 2022. At pp. 139-141. Available at:

[https://ourfinancialsecurity.org/wp-content/uploads/2022/06/SEC\\_Technical-Comment\\_June-16.pdf](https://ourfinancialsecurity.org/wp-content/uploads/2022/06/SEC_Technical-Comment_June-16.pdf)

<sup>7</sup> Initiative climat international. “Greenhouse Gas Accounting and Reporting for the Private Equity Sector.” Accessed March 14, 2023. Available at:

<https://www.unpri.org/private-equity/greenhouse-gas-accounting-and-reporting-for-the-private-equity-sector/937.article>



Source: Initiative climat international (see footnote 54).

In order to capture the climate impacts from Brookfield’s most carbon-intensive activities, this report focused on a subset of the investment portfolio—the fossil fuels assets of portfolio companies. We looked at the emissions associated with upstream, midstream, and downstream energy infrastructure, including stationary combustion, fugitive emissions, and process emissions from portfolio companies. This means that there are elements of Scope 1 and 2 emissions from portfolio companies not included here, such as the emissions associated with electricity and HVAC in their offices, and that we also exclude Scope 3 emissions related to the downstream portfolio. Thus, the emissions from Brookfield’s energy and infrastructure portfolio companies calculated in this report do not represent their total emissions, but more than likely represent the *vast* majority of portfolio company emissions.

### Downstream

For downstream power plants, we collected plant capacity from public sources (such as news articles, financial reports, and company websites) and then applied average emissions factors by plant type from EIA’s Electric Power Monthly’s “Chapter 6. Capacity” data.<sup>8</sup> This resulted in estimated generation values, which were then used in conjunction with the EPA eGRID emissions factors based on plant type.

### Midstream

<sup>8</sup> US Energy Information Administration. “Electricity Power Monthly.” Accessed August 2022. Available at: <https://www.eia.gov/electricity/monthly/>

By definition, the midstream sector does not include points of fuel extraction (upstream) or points of fuel combustion/primary use (downstream). Given this, when making emissions calculations, we do not include the emissions produced when burning the fuels themselves, and instead focus on the process and fugitive emissions associated with transporting, storing, and processing the fuels. That is, it takes energy to transport a fuel such as gas, and gas also leaks during this process, and both of these factors result in emissions attributable to the midstream sector. The utilization factor for midstream assets (e.g. pipelines, storage containers, refineries) was not always a discoverable fact throughout the research process. To make an estimate, several sources were consulted, several of which pointed to an annual utilization factor of 70 percent,<sup>9,10</sup> which was applied across midstream assets where utilization factors were not found.

When calculating fugitive emissions from midstream assets, wherever possible the emissions factors from the *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Chapter 4: Fugitive Emissions* were used.<sup>11</sup> The emission factors from this source can be seen in Table A below. The specific emissions factors that were used in this study include those for oil and gas gathering pipelines, gas processing, and oil refining.

Additional emissions factors outside of the IPCC table were used when necessary. For LNG terminals, the emissions factor for the LNG liquefaction process was an average of five emissions factors from a 2020 NRDC study on lifecycle emissions of LNG.<sup>12</sup> For marine tankers, the Annual Efficiency Ratio<sup>13</sup> formula was utilized to calculate emissions from fuel used to power the ship.<sup>14</sup> Deadweight tonnage and nautical miles traveled per year per ship were sourced from VesselFinder.<sup>15</sup> AER-specific data was sourced from the annual ESG reports of those portfolio companies owned by Brookfield. For coal

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<sup>9</sup> Kelly, Stephanie. "About half of U.S. oil pipeline space is empty after boom time building spree." *Reuters*. December 16, 2021. Accessed November 29, 2023. Available at: <https://www.reuters.com/markets/commodities/about-half-us-oil-pipeline-space-is-empty-after-boom-time-building-spre-2021-12-16/>

<sup>10</sup> US Energy Information Administration. "Coal Data." Accessed September 2022. Available at: <https://www.eia.gov/coal/data.php#stocks>

<sup>11</sup> Intergovernmental Panel on Climate Change. "2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories." Chapter 4: Fugitive Emissions. 2019. Accessed November 29, 2023. Available at: [https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2\\_Volume2/19R\\_V2\\_4\\_Ch04\\_Fugitive\\_Emissions.pdf](https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2_Volume2/19R_V2_4_Ch04_Fugitive_Emissions.pdf)

<sup>12</sup> Swanson, Christina and Amanda Levin. "SAILING TO NOWHERE: LIQUEFIED NATURAL GAS IS NOT AN EFFECTIVE CLIMATE STRATEGY". Natural Resources Defense Council. December 2020. Accessed November 29, 2023. Available at: <https://www.nrdc.org/sites/default/files/sailing-nowhere-liquefied-natural-gas-report.pdf>

<sup>13</sup> Annual Efficiency Ratio (AER) is defined as "The CO<sub>2</sub> emissions of a ship per unit of nominal transport work (the product of a ship's deadweight capacity and total distance traveled in nautical miles), in gCO<sub>2</sub>/dwt.nm." See: Boekhoff, Jessica. "Understand your shipping emissions." Carbon Chain. November 1, 2022. Accessed November 29, 2023. Available at: <https://www.carbonchain.com/blog/understand-your-shipping-emissions>

<sup>14</sup> International Maritime Organization (IMO). "Fourth IMO GHG Study 2020." 2021. Accessed November 29, 2023. Available at: <https://wwwcdn.imo.org/localresources/en/OurWork/Environment/Documents/Fourth%20IMO%20GHG%20Study%202020%20-%20Full%20report%20and%20annexes.pdf>

<sup>15</sup> VesselFinder website. "Vessels" section. Accessed November 29, 2023. Available at: <https://www.vesselfinder.com/>

storage, the emission factor for fugitive methane was an average from 52 coal sources across the United States and Canada (annual average = 0.74 cubic meters CH<sub>4</sub>/tonne coal/year) as calculated within a 2012 study conducted by Canada's Ontario Ministry for the Environment.<sup>16</sup> For biomass storage, the emissions factor was sourced from a 2018 article on the subject published in *Renewable Energy and Sustainable Energy Reviews*.<sup>17</sup> For cryo gas facilities, the emissions factor used was calculated in 2012 by Ken Chow at energy consultancy Muse, Stancil & Co.<sup>18</sup>

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<sup>16</sup> Ontario Ministry of the Environment. "Guideline for Greenhouse Gas Emissions Reporting." February 2012. Accessed November 2023. Available at:

<https://dr6j45jk9xcmk.cloudfront.net/documents/812/2-2-1-greenhouse-gas-emissions-reporting-en.pdf>

<sup>17</sup> Kamalakanta Sahoo, E.M. (Ted) Bilek, and Sudhagar Mani. "Techno-economic and environmental assessments of storing wood chips and pellets for bioenergy applications." *Renewable and Sustainable Energy Reviews*. Volume 98, December 2018, pp. 27-39. Accessed November 29, 2023. Available at:

<https://www.sciencedirect.com/science/article/pii/S1364032118306397>

<sup>18</sup> K. Chow. Gulf Publishing Holdings. "Benchmarking GHG emissions from cryogenic gas processing." Accessed January 2022. Available at:

<https://web.archive.org/web/20220121223902/http://www.gasprocessingnews.com/features/201412/benchmarking-ghg-emissions-from-cryogenic-gas-processing.aspx>



Table A. IPCC Fugitive Emissions for Oil and Gas assets, 2019<sup>19</sup>

Fuel	Segment	Subsegment	CH4 Value	CO2e from CH4 (20yr)	CO2 Value	Units of measure
Oil	Transport	Pipelines	0.005	0.443	0.000	Tonne per thousand cubic meters of oil transported
Oil	Transport	Tanker trucks/rail cars	0.025	2.050	0.002	Tonne per thousand cubic meters of oil transported
Oil	Transport	Storage tanks/terminal	0.002	0.164	n/a	Tonne per thousand cubic meters of oil fed
Oil	Refining	Refinery	0.030	2.460	5.850	metric tons per thousand cubic meters oil refined
Gas	Production	Gathering	3.200	262.400	0.350	metric tons/million cubic meters onshore production
Gas	Processing	Processing	0.750	61.500	9.450	metric tons/million cubic meters gas processed
Gas	Processing	Processing	0.570	46.740	7.210	metric tons/million cubic meters gas produced
Gas	Transmission/storage	Pipeline	1.290	105.780	0.150	metric tons/million cubic meter gas consumption
Gas	Transmission/storage	Pipeline	2.080	170.560	0.250	metric tons/kilometer pipeline
Gas	Transmission/storage	Storage	0.290	23.780	0.040	metric tons/million cubic meter gas consumption
Gas	Transmission/storage	LNG import/export	1,660.000	136,120.000	14,687.000	metric tons/station

<sup>19</sup> Intergovernmental Panel on Climate Change. "2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories." Chapter 4: Fugitive Emissions. 2019. Accessed November 29, 2023. Available at: [https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2\\_Volume2/19R\\_V2\\_4\\_Ch04\\_Fugitive\\_Emissions.pdf](https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2_Volume2/19R_V2_4_Ch04_Fugitive_Emissions.pdf)

Gas	Transmission/storage	LNG Storage	22.000	1,804.000	277.000	metric tons/station
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### *Upstream*

The upstream emissions were calculated utilizing RMI’s OCI+ database on oil and gas supply chain emissions.<sup>20</sup> Upstream and embedded fuel emissions factors by basin were utilized. Where a specific basin was not available in the database, we sourced the closest nearby basin that was in the OCI database. When we did not have information on a particular basin owned by the portfolio company, an average of all upstream emissions factors for Brookfield basins was applied. Additional upstream data was cross-referenced from Carbon Tracker Initiative using Rystad Energy data, which reportedly uses emissions factors that are broadly in line with the IPCC’s Guidelines for National Greenhouse Gas Inventories.<sup>21,22,23</sup>

### *Comprehensive (Upstream, Midstream, and Downstream)*

In order to calculate a comprehensive emissions number, steps were taken to avoid double counting emissions associated with upstream and downstream emissions. Upstream emissions calculations incorporated the emissions content of the fuels themselves. If these emissions were then counted again in the downstream sector, this would be a double count. To avoid this when calculating the comprehensive total, the difference between downstream and upstream emissions was only added to the total when downstream values exceeded the upstream emissions values. After that, upstream emissions exceeded downstream, so no downstream emissions counted towards the total.

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<sup>20</sup> Rocky Mountain Institute. “Oil Climate Index Plus Gas.” Last updated April 2023. Accessed November 2023. Available at: <https://ociplus.rmi.org/>

<sup>21</sup> Carbon Tracker Initiative. “About Us.” Available at: <https://carbontracker.org/>

<sup>22</sup> Intergovernmental Panel on Climate Change. “Emission Factor Database.” Available at: <https://www.ipcc-nggip.iges.or.jp/EFDB/main.php>

<sup>23</sup> Rystad Energy. “About Us.” Accessed April 2022-March 2023. Available at: <https://www.rystadenergy.com/>