Baidu operates the largest search engine in mainland China. The company sees itself as a "leading AI company with a strong internet foundation".

Baidu Core, predominantly an AI-driven online marketing service, generates 60% of the company’s revenue, while iQIYI, China’s most popular online video website, generates the remaining 40%.

**FINANCIAL OVERVIEW**

- **Revenue and profit**
  - Revenue: CNY124bn (y/e 31st Dec 2022)
  - Net income: 13% of revenue

- **Revenue by segment**
  - Online marketing services: 60%
  - Others: 40%

- **Assets**
  - Investments: 20%, 10% other assets
  - Cash & equiv: 14%
  - Other current assets: 16%
  - ST investments: 31%
  - Other non-current assets: 16%

**AT-A-GLANCE OWNERS & LIABILITIES**

- **Shareholders by location**
  - US: 49%
  - China: 7%
  - Unknown: 15%
  - Luxembourg: 9%
  - Other: 4%

- **Top 5 shareholders**
  - BlackRock: 13%
  - BBH & CO: 5%
  - Vanguard: 3%
  - China Asset Management: 1%
  - Krane Funds Advisors: 1%

- **Liabilities**
  - Other ST liabilities: 17%
  - Accounts payable and accrued liabilities: 25%
  - Notes payable, ST, 5%
  - Convertible notes, ST: 5%
  - Other LT liabilities: 7%
  - Convertible notes, 6%
  - Notes payable, 26%
  - Long-term loans, 9%

**CLIMATE PLEDGE OVERVIEW**

- **GHG emissions**: 2.1MtCO₂e (Scope 1+2+3) – comparable to Maldives’ annual emissions
- **Carbon intensity**: 17.2tCO₂e/CNYmn revenue (119tCO₂e/US$mn revenue) – 65% higher than that of Tencent
- **Climate pledge**: achieving net zero emissions in Scope 1+2 by 2030
- **Clean energy target**: achieving 100% renewable energy in data centres (no timeline provided)
- **Temperature rise alignment**: 3.2°C (insufficient disclosure; a default value is applied)
- **Power usage effectiveness (PUE)**: 1.16 (annual average), 1.08 (best-performing data centre unit)
  - Baidu’s net zero commitment only covers Scope 1+2 emissions – since the pledged year 2021 these have grown by 30% & 33% year-on-year. However, in March 2022, it signed a 1TWh green power procurement contract, enough to meet the entire company’s annual electricity consumption – yet, it’s unclear whether it is a one/multi-year contract.
  - Besides a short announcement and an extremely brief outline of six decarbonisation pathways, Baidu has not published an indicative roadmap for its emission trajectory towards 2030 nor an official carbon neutrality strategy.
  - The easy wins for Baidu are: putting out a comprehensive net zero strategy with measurable targets; and enhancing the fundamentals of carbon disclosure, including avoiding typesetting errors on essential emission data and improving the transparency on GPPA and other trading activities.
BAIDU

KEY ENERGY STATS

Emission & energy intensity

<table>
<thead>
<tr>
<th>Year</th>
<th>Emission intensity (tCO₂/CNYmn)</th>
<th>Energy intensity (MWh/CNYmn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2020</td>
<td>0.02</td>
<td>1.3</td>
</tr>
<tr>
<td>FY 2021</td>
<td>0.80</td>
<td>1.1</td>
</tr>
<tr>
<td>FY 2022</td>
<td>1.30</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Electricity mix

<table>
<thead>
<tr>
<th>Category</th>
<th>Operations</th>
<th>Data centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable energy</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Fossil energy</td>
<td>99.4%</td>
<td>99.4%</td>
</tr>
</tbody>
</table>

Energy efficiency

<table>
<thead>
<tr>
<th>Year</th>
<th>PUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2020</td>
<td>1.1</td>
</tr>
<tr>
<td>FY 2021</td>
<td>1.3</td>
</tr>
<tr>
<td>FY 2022</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Baidu has briefly communicated six "strategic pathways" to reach its carbon-neutral goal on a dedicated "2030 carbon neutralisation" web page but provides little detail. The six pathways are:

i. Building green data centres
ii. Constructing smart office buildings
iii. Carbon offsetting
iv. Whole-chain carbon reduction technologies empowered by intelligent transportation
v. Energy-efficient and carbon reduction technologies empowered by Baidu AI Cloud
vi. Partnership mechanisms for green supply chain

Baidu has not published an indicative roadmap illustrating the company’s emission trajectory towards and beyond 2030.

Greenhouse gas emissions

<table>
<thead>
<tr>
<th>Scope</th>
<th>Emissions (MtCO₂e)</th>
<th>YoY Change (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.02</td>
<td>+24%</td>
</tr>
<tr>
<td>2</td>
<td>0.80</td>
<td>+33%</td>
</tr>
<tr>
<td>3</td>
<td>1.30</td>
<td>+11%</td>
</tr>
</tbody>
</table>

* Emission intensity: Total GHG emissions per unit of revenue (tCO₂/CNYmn)
* Energy intensity: Total energy consumption per unit of revenue (MWh/CNYmn)

Latest green investments

- **Renewable assets:** Unknown
- **On-site renewable energy generation:** 6,074MWh
- **Green Power Purchase Agreement (GPPA):** 1,005,080MWh
- **Green electricity certificates (GEC):** Not found
- **Carbon offsets:** Not found

* Due to limited disclosure, the above may not cover all investment activities that occurred in the reporting year.

Latest sustainability financing products raised

- **2021:** US$1bn sustainability bond, 100% allocated as of July 2022.

Note: Financial data reflects the 2022 fiscal year (FY2022), which ends on December 31, 2022, and so does energy, emission and investment data. 30 June was used as the cut-off for all new information related to the companies.

Source: CWR, Company disclosure and Bloomberg.

This factsheet is a part of CWR’s Report “China ICT transition - The good, bad & ugly of 5 HKEX ICT listco’s net zero pledges & climate action” 2023 and should be read in conjunction with this report.

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BAIDU

WHAT IS AND ISN'T INCLUDED IN BAIDU'S CARBON NEUTRALITY TARGETS?

#1: Group-wide carbon neutrality by 2030

- Set a mid-term (“by 2030”) absolute emission target (“carbon neutrality”);
- Specified the scopes (“with reference to Scope 1 and Scope 2”) and fields of activities covered by the target (data centres, office buildings, carbon offset, transport, cloud, supply chain);
- Outlined the circumstances to adopt carbon offset (“areas of operation where it is difficult to achieve zero carbon emissions”);
- Outlined emission reduction tactics (“six strategic pathways”), such as energy saving and efficiency improvement;
- Outlined tactics to “enable” Scope 3 emission reductions in the supply chain, as well as clients and partners, through Baidu’s technical solutions in intelligent transport and Baidu AI Cloud.

#2: “Baidu Data Centers will […] eventually achieve the goal of 100% renewable energy”

- Set an absolute target (“100%”) on renewable electricity consumption, per its mid-term carbon neutrality target by 2030;
- Specified the activity (“Baidu Data Centres”) covered by the target;
- Outlined the technical solutions to achieve the target (e.g., “technological innovation” for self-build data centres, “technology export and migration of computing power” for leased data centres, and building new data centres in areas with rich renewable energy sources);
- Incorporated relevant measures into corporate Climate Risk Management Framework (e.g., committing to “maximise the consumption of renewable energy” in data centres and providing customers with “100% renewable energy AI cloud services”).

✗ No roadmap towards net zero nor illustrative emission reduction trajectory, in addition to a brief announcement of less than 500 words;
✗ No absolute nor relative targets for Scope 3 emissions, which accounted for two-thirds of its all-scope emissions in 2021, and 61% in 2022;
✗ No specification on Scope 2 emission accounting (location- or market-based calculation);
✗ No quantitative assessment on either “positive” or “negative” emissions in the target year, including but not limited to avoided emissions from active emission reduction measures, remaining emissions in each scope, and the amount and types of carbon offsets required to achieve net zero;
✗ No sub-targets on how to meet the target via the outlined initiatives: energy saving and efficiency improvement, renewable energy, technology upgrades, and carbon offsets;
✗ No assessment of the pledge’s alignment with the 1.5°C target of the Paris Agreement;
✗ No mention of carbon removal;
✗ No cost assessment or plans for financing the necessary transition to achieve the target;
✗ No emission data from overseas operations and value chains in the baseline year or current year despite the current target covering “group-wide” emissions.

✗ No timeline mentioned on goalposts and final achievement of “100% renewable energy”
✗ No mention of the actual consumption nor energy sources of “renewable energy” consumed in the baseline or current year at the group level or in its primary electricity-consuming activities, particularly data centres;
✗ Unclear whether the 100% renewable energy target under “group-wide carbon neutrality by 2030” will also apply to the energy consumption of leased data centres in Scope 3, which emitted nearly two-thirds of its Scope 1+2+3 emissions in 2021, according to CWR estimation;
✗ No mention of the company policy towards overseas data centres and other energy-intensive activities;
✗ No quantitative sub-targets on the outlined measures, such as energy efficiency improvement in data centres, nor guidelines for implementation, in particular, on improving energy efficiency and reducing energy consumption in leased data centres;
✗ Limited information on the conditions for “maximising” renewable energy in data centres nor roadmap, timeline or interim targets towards delivering the commitment of providing “100% renewable energy AI cloud services”;
✗ No cost analysis or capital expenditure evaluation of the required transition to reach the target.

Note: Baidu announced its climate commitment of “achieving carbon neutrality in Scope 1 and 2 by 2030” in text format on the company’s ESG page without publishing a report on carbon neutrality strategy or roadmap, as Alibaba or Tencent have done. Several months later, the company mentioned briefly that, per its 2030 net zero pledge, Baidu Data Centres will “eventually achieve the goal of 100% renewable energy,” but did not specify the year. 30 June was used as the cut-off for all new information related to the companies.

Source: CWR, Company disclosure.

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## Baidu

### How can Baidu improve its carbon disclosure?

#### Greenhouse gas emissions
- [✓] Disclosed carbon emissions: total emissions and emissions in scope 1, 2, and 3 (MtCO₂e);
- [✓] Provided carbon intensity of the past three years (tCO₂e/CNY mn);
- [✓] Disclosed GHG categories covered by the inventory and accounting methodology;
- [✓] Expand the boundary of carbon emissions to overseas activities;
- [✓] Expand Scope 3 categories in the upstream and downstream (currently only two categories);
- [✓] Disclose the Carbon Usage Effectiveness (CUE) of self-built and leased data centres;
- [✓] Provide a breakdown of GHG emissions by major activities, in particular, data centres and office buildings.

#### Energy consumption
- [✓] Disclosed final energy consumption (MWh) by source (gasoline, diesel, gas, electricity, purchased heat and renewable energy);
- [+ ] Disclose total, direct and indirect energy consumption (MWh);
- [+ ] Disclosed averaged and best-performing Power Usage Effectiveness (PUE) in self-built data centres;
- [+ ] Disclose PUE and electricity consumption by type (renewable or not) in leased data centres;
- [+ ] Disclose LEED certification: office space (m²) and number of data centres (#);
- [+ ] Disclose energy intensity: total, direct and indirect energy use per unit of revenue (MWh/CNY mn);
- [✓] Provide a breakdown of total energy consumption (MWh) by energy source (renewable or not) and source of provider (e.g., grid, self-built renewable power stations, captive fossil power stations) from major activities, in particular, offices and data centres; ideally, list such information for each building and data centre parks;
- [+ ] Detail average PUE in self-built and leased data centres by location.

#### Carbon neutrality pledges

**#1: Group-wide carbon neutrality by 2030**
- Set absolute or relative emission reduction targets for Scope 3 emissions, which accounts for the absolute majority of its self-reported Scope 1+2+3 emissions (65% in 2021, and 61% in 2022);
- Develop a decarbonisation roadmap or indicative emission trajectory towards 2030;
- Provide quantitative measurements of the outlined tactics in reducing Scope 1+2 emissions and “enabling” reductions in Scope 3 emissions;
- Provide a traffic-light progress tracker in the reporting year detailing achievement and gaps.

**#2: 100% renewable electricity in data centres**
- Clarify the timeline to achieve the target;
- Explain whether the target covers leased data centres;
- Provide the percentage of renewable electricity consumption in self-built and leased data centres;
- Provide renewable electricity consumption at the group level, in addition to data centres;
- Provide sources of renewable electricity (e.g., grid, self-built power stations, procurement via GPPA and GEC);
- Offer a one-stop tracker of the progress towards “100% renewable electricity,” as well as annual investments in renewable energy generation and procurement, R&D and energy infrastructures such as storage and microgrids.

#### Renewable energy procurement
- Disclosed green power contracts to power Baidu Data Centres (MWh) and green power transactions;
- Provide a detailed breakdown of renewable energy procurement by energy source (wind, solar, and hydro), market mechanisms (e.g., direct power purchasing, GEC, over-the-fence renewable trading), suppliers, location and activity to avoid double-counting;
- Provide accounting on the renewable energy balance between production, procurement and consumption in the reporting year, and the remaining balance for the next year, if eligible (MWh).

#### Renewable energy investment
- Disclose total renewable assets (CNY) and list renewable power generation capacity (MWh) by source and location;
- Provide renewable energy output (MWh) from self-built power stations by source, technology, and grid connection;
- Disclose information on energy infrastructure, e.g., energy storage capacity by technology (MWh).

#### Carbon offset and removal
- Set targets, strategies and roadmaps for offset, as well as standards for quality offset projects;
- Disclose considerations for carbon removal, even if no solid actions will be taken by 2030;
- Provide total offset emissions and net emissions in the reporting year (MtCO₂e);
- Detail trading records in voluntary carbon markets (e.g., China Certificated Emission Reduction) to avoid double-counting;
- Detail the portfolio of offset and removal by project, country, type, vendor and emissions.

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**Source:** CWR, Company disclosure.

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