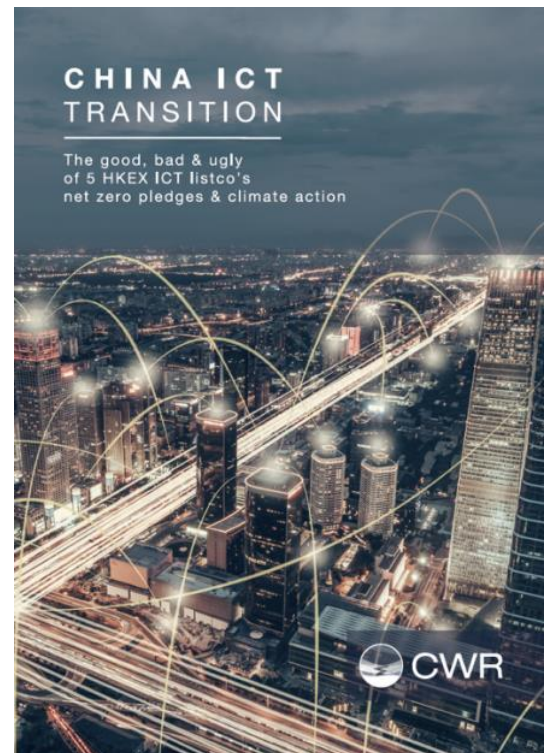


Media Pack:

China ICT transition: The good, bad & ugly of 5 HKEX ICT listco's net zero pledges & climate action

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Press Release

NEW REPORT! China ICT transition

A new report by CWR that unpacks the good, bad & ugly of 5 HKEX ICT listco's climate pledges

Hong Kong, 7th September 2023 – CWR releases a new report, [*“China ICT transition: The good, bad & ugly of 5 HKEX ICT listco's net zero pledges & climate action”*](#), which highlights tremendous opportunities in carbon cuts and green finance. It revealed that emission cuts from just five companies listed on the Hong Kong Stock Exchange (HKEX) can be as much as 2.5x Hong Kong's annual greenhouse gas emissions and green finance to be tapped for this transition can amount to billions of dollars.

The five ICT giants analysed by CWR – Alibaba, Baidu, China Mobile, Tencent and Xiaomi – are not just listed on the HKEX but are also an integral part of the Hang Seng Index, comprising over a fifth of the index. However, the think tank said that these five ICT giants lag their Silicon Valley counterparts of Alphabet, Amazon, Apple, Meta and Netflix in the race to net zero.

To provide perspective, the report noted that the combined market cap of the five HKEX listco's of US\$880bn is only a 1/7th of their five NASDAQ counterparts, whereas the combined all-scope emissions of the five HKEX listco's of 87 million tonnes of greenhouse gas emissions (MtCO₂e) are 3/4th of their five NASDAQ counterparts (see infographic below).

“China ICT can certainly step up renewable sourcing and deliver massive carbon cuts” said Dharisha Mirando, CWR's Finance Lead and co-author of the report. *“For the five HKEX ICT listco's, the highest renewable energy sourcing rate is around 7%, whereas Alphabet, Apple, Netflix and Meta have already achieved 100% through a combination of on-site and off-site renewable production, green power purchase agreements, and carbon credits”* she added.

The ICT sector is an “enabler” for efficient and effective climate actions, but not many people realise the sector itself has grown into a sizeable contributor to global emissions. Hongqiao Liu, China carbon expert and co-author of the report explains, *“data centres, the 'brains' and telco networks, the 'veins' of the ICT sector, are particularly power hungry. Together, their soaring energy demand can consume almost 60% of global ICT's electricity by 2030 without adequate mitigation actions”*.

“Global ICT accounts for 2-4% of global greenhouse gas emissions annually. This might not sound like a lot, but the magnitude is sobering – at 4%, it's equivalent to the combined annual greenhouse gas emissions of Japan & Germany” said Debra Tan, Director & Head of CWR. The ICT sector is also water intensive and faces material water risks which are amplified and accelerated by the sector's own significant carbon contributions. Tan said that this was why CWR felt compelled to write a report to accelerate sizeable emissions cuts and green finance innovations to facilitate them.

CWR's report is especially topical and timely with the rise of AI, ChatGPT, and the launch of China chatbots. Unless reined in, ICT sector emissions will only track global ICT sector growth, which is expected to be exponential. In China, where the ICT sector is already outpacing the country's annual GDP growth as well as global ICT sector growth, it is even more important to fast track transition.

Already, the report noted that data centre emissions in China grew by 41% in just one year to 135MtCO₂ in 2021. This y-o-y increase of 39MtCO₂ is more than Hong Kong's annual greenhouse gas emissions. *“If left unchecked, carbon emissions from data centres in China are projected to balloon to 340MtCO₂ by 2030 – this is comparable to the energy-related carbon emission of the UK today”* warned Liu.

The good news is that three of the companies analysed by CWR – Alibaba, Baidu, and Tencent – already have net zero pledges in place; whereas the other two – China Mobile and Xiaomi – have made various carbon pledges. However, these ICT giants can do much more. According to Mirando, *“only 12MtCO₂e of the total all-scope emissions of 87MtCO₂e is actually under a net zero pledge, but this could almost double to 21MtCO₂e if Baidu & Alibaba also included their Scope 3 emissions in their net zero commitments”*. CWR's Mirando is confident that China ICT can deliver: *“There's no reason why the five HKEX ICT listco's cannot catch up with their Silicon Valley counterparts, because if they tackled Scope 2 emissions from electricity use, this can negate up to 41MtCO₂e – this is equivalent to the annual emissions of Switzerland.”*

Ultimately, these companies may not have a choice as China is tightening climate regulations for the sector to bring it in line with national dual-carbon goals of peaking carbon before 2030 and carbon neutrality by 2060. According to Liu, *“China now classifies data centres as a “dual high” industry due to its high energy use and high emissions. This means that ICT will be regulated alongside steel and cement. Shockingly, these hard-to-abate sectors have plans to*

peak emissions ahead of ICT!" The report noted that to accelerate sector decarbonisation, the government has this year, launched a public sector pilot to procure from data centres powered by 100% renewables by 2032.

However, the ICT sector cannot transition without finance. Although China topped the 2022 global green bond issuance with US\$76bn raised, ahead of Germany and the US, CWR believes that China ICT can bring more to the table. *"There is a big upside for green finance – Alphabet & Apple raised US\$8bn in green/sustainability bonds in the past few years and allocated over US\$2bn of this to renewables; on the other hand, Alibaba, Baidu and Xiaomi only allocated US\$40mn to renewables out of the US\$2bn of green bonds raised."* enthused Mirando. She added that *"More green bonds and higher allocations to renewables will fast track Scope 2 emission cuts. Banks, especially those which have pledged net zero, should not miss out on supporting these large ICT players with their net zero journey."*

Unpacking the good, bad and ugly of the HKEX ICT listco's transition has not been without challenges. Disclosure can certainly be improved: the think tank cited reporting discrepancies from multiple reporting outlets, inconsistent definitions and Scope 3 accounting and even year-on-year definition changes within one company without clarifications. However, CWR remains hopeful – as Tan said, *"Deciphering the five HKEX ICT listco's climate actions has certainly been challenging, but worth it if the report and company factsheets can help investors, bankers and other stakeholders not only get up to speed with China's ICT sector transition but also see the massive green energy procurement, efficiency retrofitting, green financing and carbon market opportunities within the sector."*

Such actions, are welcomed, and especially urgent after this summer of record-breaking heatwaves and deadly floods, typhoons and fires which forced hundreds of thousands of people to flee their homes. In China alone, this summer's floods have displaced over a million people. *"This summer's glimpse of 'climate hell' means that we need sizeable emissions cuts and we need them fast, way ahead of 2050"* urged Tan. *"Our report shows that the five HKEX listco's have the size and means to deliver this by 2030"* she added. Indeed, Alibaba and Tencent's Hang Seng Index weighting is similar to that of HSBC and AIA.

If these five listco's sped up their race to net zero, other ICT heavyweights like Meituan, JD, Bytedance and Huawei will follow. Already, ByteDance has recently committed to reduce at least 90% of operational emissions and achieve operational carbon neutrality by 2030. Let's see if the rest will follow suit. *"If all of the five HKEX ICT listco's fully commit to the race to net zero, we can decarbonise over a fifth of the Hang Seng Index. Now, that's something the exchange and Hong Kong's financial industry should throw their weight behind"* said Mirando.

For more information on the China ICT sector's transition and the net zero pledges of Alibaba, Baidu, China Mobile, Tencent and Xiaomi, please see the **full report** [here](https://chinawaterrisk.org/notice/new-cwr-report-china-ict-transition-the-good-bad-ugly-of-5-hkex-ict-listcos-net-zero-pledges-climate-action/).

Report Link:

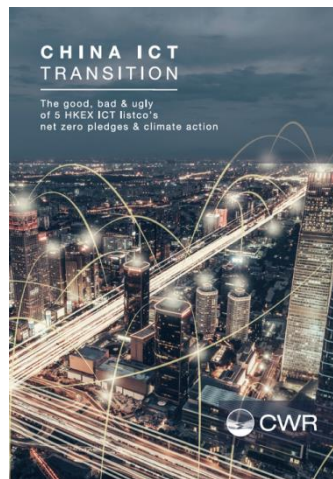
<https://chinawaterrisk.org/notice/new-cwr-report-china-ict-transition-the-good-bad-ugly-of-5-hkex-ict-listcos-net-zero-pledges-climate-action/>

This report was funded by the European Climate Foundation.

Media

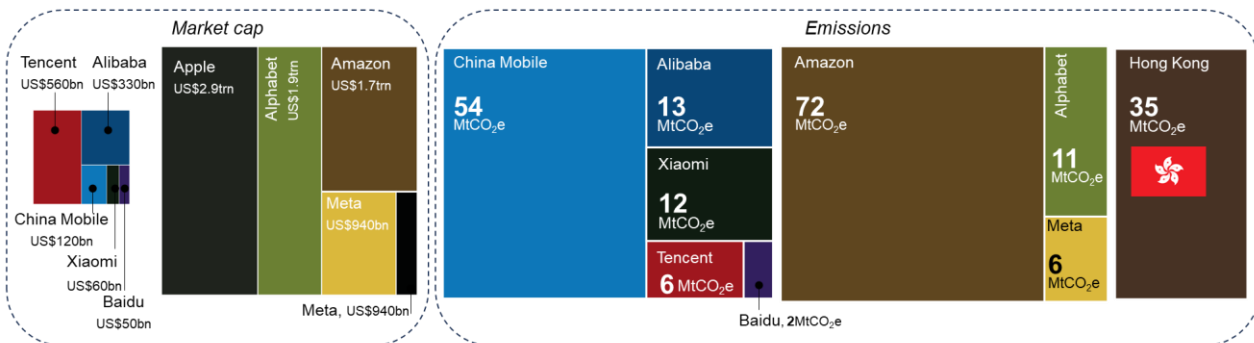
For more information, please contact: Dharisha Mirando

Email: dmi@chinawaterrisk.org



CWR

RACE TO NET ZERO: 5 HKEX ICT LISTCO'S LAG THEIR NASDAQ COUNTERPARTS
3/4th EMISSIONS BUT 1/7th MARKET CAP



Note: All company data is at 31st December 2021 except for Alibaba's emissions, which is at 31st March 2022.
Source: CWR, Company disclosure, Bloomberg, Carbon Neutral @ HK.

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About CWR

CWR (China Water Risk) is a non-profit think tank that aims to create a world where water and climate risks are embedded in business & finance. Since its launch in 2011, it has worked from its Hong Kong base to engage with global business and investment communities in understanding and managing various types of water risks in China and across Asia. CWR's collaborative reports with financial institutions, IGOs, scientists as well as government related bodies have been considered ground-breaking and instrumental in understanding Asia's water challenges. They are widely cited by the media, academia, IGOs and finance as well as the IPCC. CWR also works with corporates and the financial sector to help them assess, strategize and adapt to water-related climate risks. Together, we can make better decision-making today for a water secure tomorrow.

Join the conversation at www.chinawaterrisk.org

ASSESS

Understand the new risk landscape | Assess water & climate threats | Identify clustered risk hotspots & compound risks

STRATEGIZE

Align ESG & risk strategies | Plan sensible net zero & resilience strategies | Leverage risks to identify opportunities

ADAPT

Protect & prepare for locked-in climate impacts | Ideate flexible innovations | Be ready to survive & thrive



Contact us: info@chinawaterrisk.org
We drive the global water & climate risk conversation with...



Acknowledgements

CWR is grateful to the European Climate Foundation for providing the grant to fund this report.



CWR is also delighted to continue our collaboration with independent consultant and award-winning journalist Hongqiao Liu, who has been tracking China's environmental crisis and decarbonisation since 2010. This is CWR's fourth report collaboration with Hongqiao. Previous collaborations with CWR include ground-breaking reports exposing [toxic pollution from rare earths mining & processing](#) and [pollution tied to the rise of bottled water in China](#) as well as documenting [China's long march to safe drinking water](#).

Born and raised in China, she is committed to bringing evidence, nuances, and context to the heated debate over China's role in the climate crisis. Hongqiao is a two-time TED speaker, and Vox recognised her as a "visionary change agent". Hongqiao was the lead researcher and co-author of this report.

Disclaimer

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Infographics & Quick Stats

- ICT perspectives: Global, China & the HSI 5
- 5 Reasons China ICT is ripe for green investment
- 5 Reasons why China ICT will face more regulations
- 5 Reasons why the HSI 5 can & must catch up
- Catch up offers billion \$\$\$ green finance opportunity
- Overview of HSI 5 climate pledges across Scope 1, 2 & 3
- BAT Climate Pledges & Action Factsheets
- Engage now!

Quick Abbreviations:

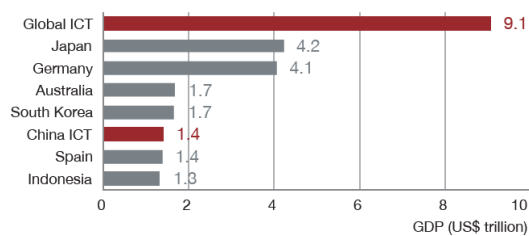
HSI 5	5 HKEX ICT listco's of Alibaba, Baidu, China Mobile, Tencent & Xiaomi
FAANG	5 prominent NASDAQ ICT listco's of Meta (Facebook), Amazon, Apple, Netflix and Alphabet (Google)
BAT	Baidu, Alibaba & Tencent
MtCO ₂	million tonnes of carbon dioxide
MTCO _{2e}	million tonnes of carbon dioxide equivalent

ICT perspectives: Global, China & the HSI 5

The ICT sector is BIG & power hungry

- Global ICT listco's US\$9.1trn revenue in 2022 dwarfs many economies.
- China ICT listco's US\$1.4trn revenue comparable to Spain and Indonesia.
- Since ~7% of global electricity consumed by global ICT, sector should set tougher net zero targets.

Global ICT vs. top 20 countries by GDP (2022)

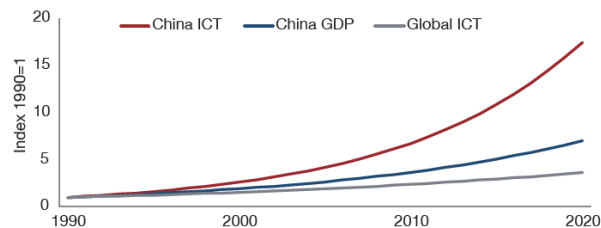


Source: CWR, World Bank, Bloomberg.

Exponential growth expected for Global & China ICT = ballooning emissions

- China ICT growth is projected to be explosive – maintained an average double-digit annual growth of 10% since the 1990s.
- China ICT growth outpacing both the country's annual GDP growth (6.7%) & global ICT sector (4.4%).
- Emissions from China data centres could balloon 2.5x in next decade.

China's ICT growth outpaces China's own GDP & global ICT

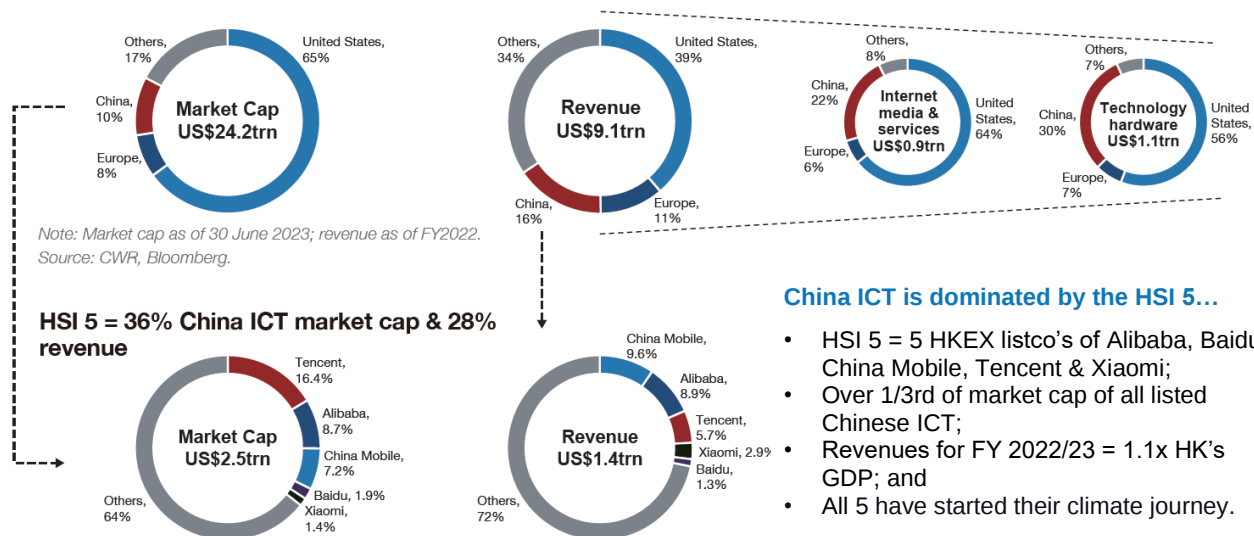


Source: CWR, National Bureau of Statistics of China, Roland Berger and the Emlyon Business School.

China ICT is globally significant = HSI 5 must play a lead role in accelerating net zero transition

- China's listed ICT sector =
 - over 10% of the sector's listed global market capitalisation;
 - 16% of listed global revenue;
 - 22% in "internet media & services"; and
 - 30% in "technology hardware".

Global ICT: Market capitalization and revenue (2022)



Note: Market cap as of 30 June 2023; revenue as of FY2022.
Source: CWR, Bloomberg.

HSI 5 = 36% China ICT market cap & 28% revenue

Note: Market cap as of 30 June 2023; revenue as of 31 December 2022 except for Alibaba (31 March 2023).
Source: CWR, Bloomberg, Company disclosure.

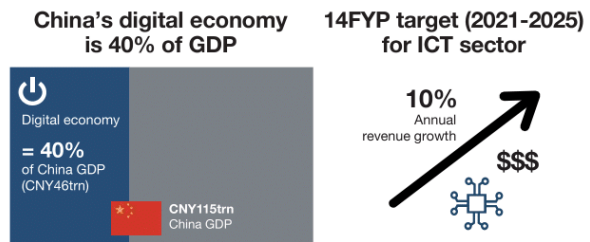
China ICT is dominated by the HSI 5...

- HSI 5 = 5 HKEX listco's of Alibaba, Baidu, China Mobile, Tencent & Xiaomi;
- Over 1/3rd of market cap of all listed Chinese ICT;
- Revenues for FY 2022/23 = 1.1x HK's GDP; and
- All 5 have started their climate journey.

This is extracted from the report. Access full overview:
[ICT perspectives: Global, China & the HSI 5](#)

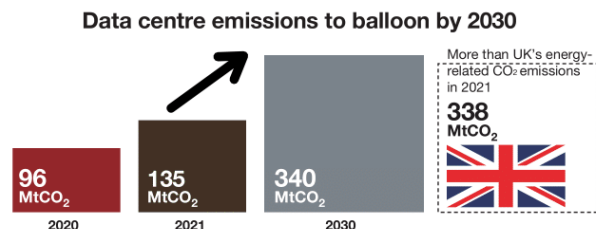
5 Reasons China ICT is ripe for green investment

1. **China ICT is big & booming!**
It's 40% of China's GDP & 14FYP sets annual revenue growth at 10%...



Source: CWR, NSSC, CAICT, Bloomberg.
Infographic © China Water Risk 2023, all rights reserved.

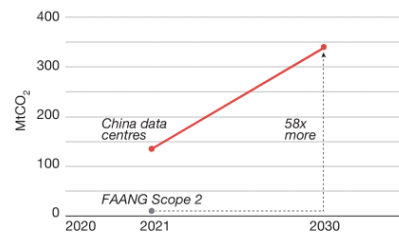
2. **Large carbon cuts for the taking!**
If unchecked, emissions will balloon 2.5x in next decade...



Source: CWR, CAEP, BP's Statistical Review of World Energy 2022 (71st edition).
Infographic © China Water Risk 2023, all rights reserved.

3. **It's embarrassing!**
By 2030, China's data centre emissions can be 58x FAANG's total 2021 Scope 2 emissions...

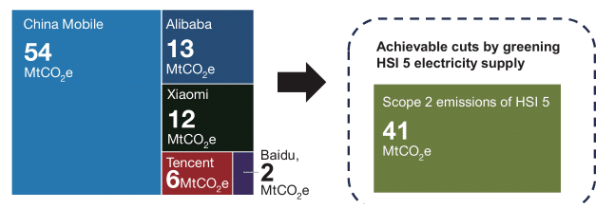
By 2030, China's data centre emissions = 58x FAANG's 2021 Scope 2



Source: CWR, CAEP, FAANG disclosure.

4. **Low hanging fruits!**
Almost 50% of the HSI 5's GHG emissions of 87MtCO₂e are achievable cuts from greening HSI 5's electricity supply...

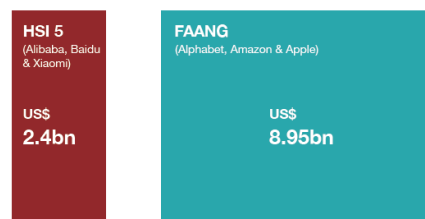
HSI 5's total emissions (FY2021/22): 87MtCO₂e (Scope 1+2+3)



Source: CWR, Company disclosure.
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5. **Massive upside!**
Opportunities in green investment & financing on the back of China ICT growth...

HSI 5 vs. FAANG: Green bond perspective



Note: All sustainability/green bonds issued by FAANG and HSI 5 from 2019-2023 were analysed and updated as of 30 June 2023.

Source: CWR, Company disclosure.
Infographic © China Water Risk 2023, all rights reserved.

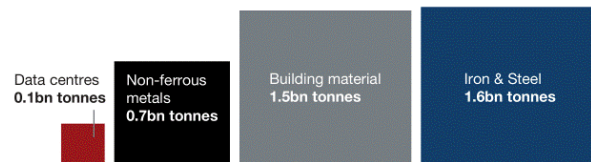
This is extracted from the report. Access full overview:
[5 Reasons China ICT is ripe for green investment](#)

5 Reasons why China ICT will face more regulations

1. It's carbon intensive!

China now classifies ICT as a “dual high” industry along with cement & steel...

China ICT now a "dual high" industry despite small share of CO₂

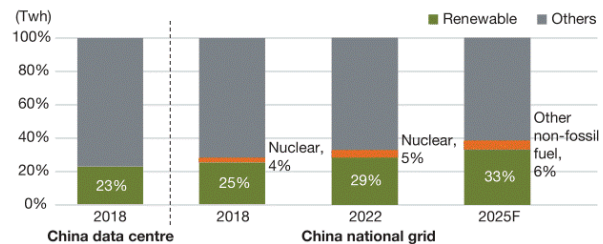


Source: CWR, China Metallurgical Daily, China Building Material Association, North China Electric Power University & Peking University (2021).
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2. It's underperforming the grid!

China's data centres' electricity mix has less renewables...

Renewable power! China data centres are underperforming the national grid

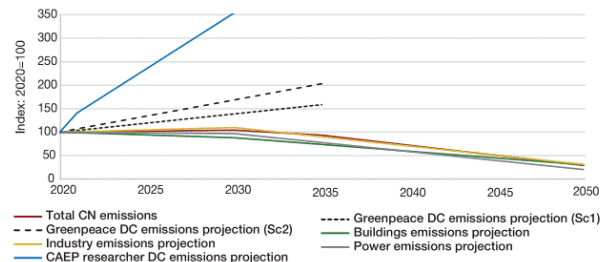


Note: Renewables include hydro, wind & solar. There is no information available regarding the proportion of nuclear-generated electricity used for China's data centers
Source: CWR, CEC, NBSC, NDRC.

3. Digital ≠ low carbon!

Data centres are not aligned with China's 2°C emissions trajectory...

China's data centres are not aligned with nation's 2°C-aligned emissions trajectory

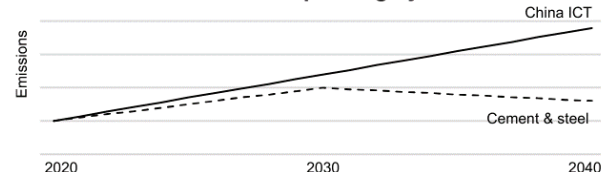


Note: See the complete note of this chart in Section 1 : Page 29.
Source: Tsinghua ICCSD (2020), Greenpeace, CEPREI Calibration & Testing Centre (2021).

4. It's bad!

Even cement & steel will peak emissions before ICT...

China's ICT emissions expected to grow compared to cement & steel peaking by 2030



Note: The graphic is for illustrative purposes based on CAEP research, and MIIT, NDRC, & MEE.
Source: CWR.

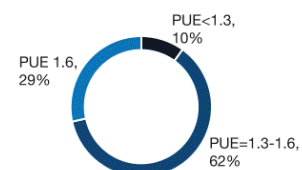
5. 14FYP new targets!

At least 7.6x increase in high-efficient data centres; only 10% meets Grade I/II standards now...

Merely 10% of surveyed data centres had PUE lower than 1.3 (Grade I/II)

China PUE standards

PUE ≤ 1.2 (Grade I)
1.2 < PUE ≤ 1.3 (Grade II)
1.3 < PUE ≤ 1.5 (Grade III)
PUE > 1.5 (Above allowed level)



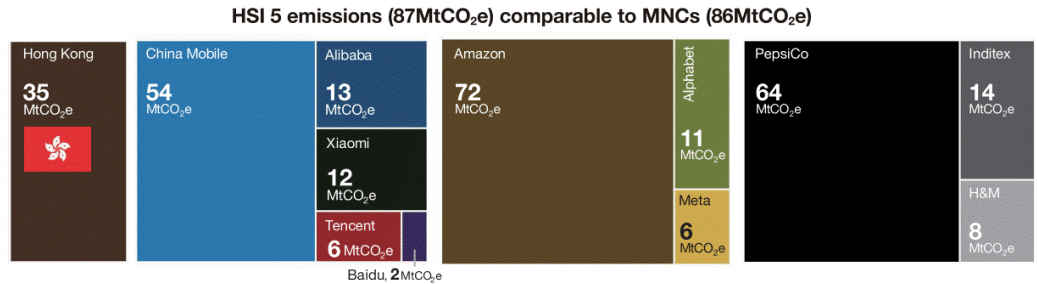
Source: CWR, China SAMR-SAC (2021).

This is extracted from the report. Access full overview:
[5 Reasons why China ICT will face more regulations](#)

5 Reasons why the HSI 5 can & must catch up

1. Total HSI 5 emissions of 87MtCO₂e = 2.5x HK's annual GHG emissions...

comparable to the emissions of Amazon, Alphabet & Meta...

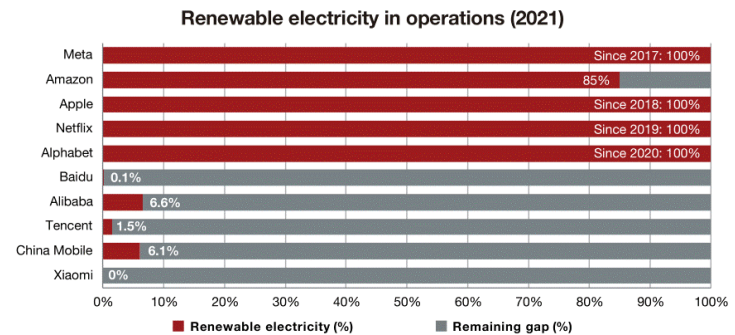


Note: All company data are at 31st December 2021 except for Alibaba's emissions, which are at 31st March 2022.
Source: CWR, Company disclosure, Climate Market Watch, Carbon Neutral @HK.
Infographic © China Water Risk 2023, all rights reserved.

2. At best ~7% of operational electricity of the HSI 5 is sourced directly from renewables...

whereas FAANG (except Amazon) has been operating on 100% renewables for a few years...

Note: As Baidu and Tencent do not disclose the percentage of renewable electricity in their corporate electricity & energy consumption, we estimate this using the following assumptions: assume all "clean energy consumption" disclosed refer to "renewable electricity consumption", excluding clean fuels; and that all renewable energy generation and purchases disclosed in the reporting year are consumed by operational activities that year. Notably, if renewable energy from grid electricity is considered, BAT's clean energy consumption in the electricity mix may rise to 35-39%. In addition, China Mobile's electricity mix is calculated based on its CDP response, as this is not disclosed in its ESG report.

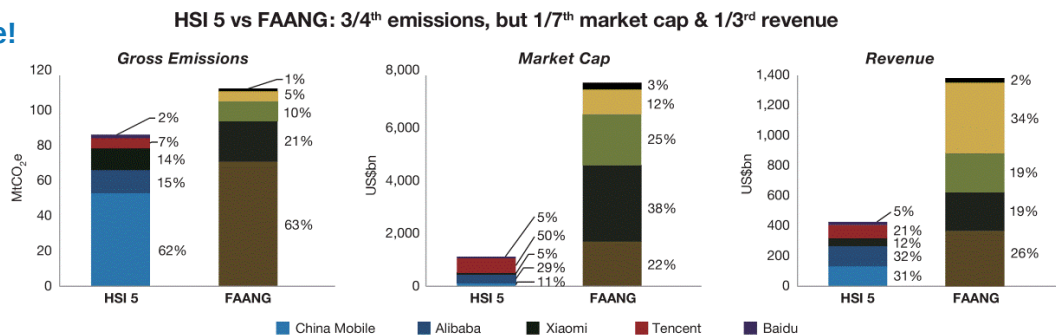


Source: CWR, Company disclosure.

3. Clear room to improve! HSI 5 significantly lags FAANG in net zero transition...

HSI 5 market cap & revenues are 1/7th & 1/3rd FAANG's...

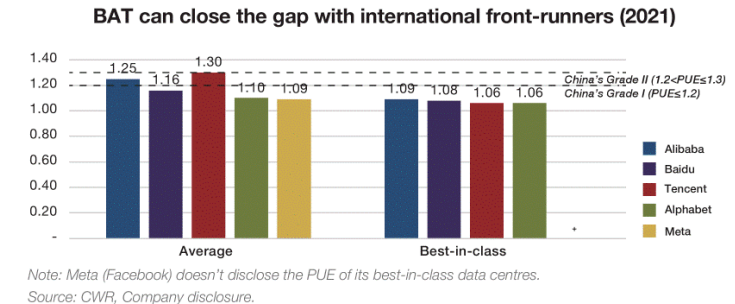
but all-scope emissions are 3/4th FAANG's...



Note: All company data are at 31st December 2021 except for Alibaba's emissions and revenue, which are at 31st March 2022.
Source: CWR, Bloomberg, Company disclosure.

4. It's possible to up energy efficiency! The HSI 5 can lead, BAT already have units that are world-class...

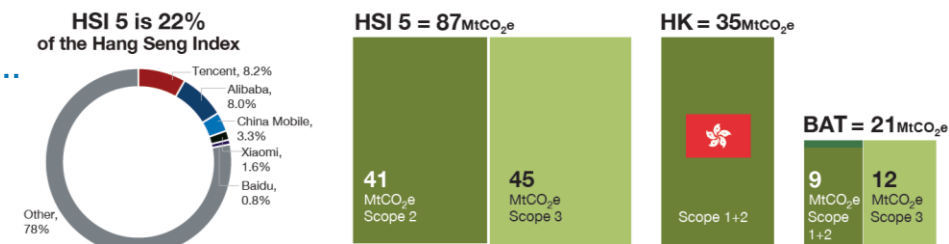
This is extracted from the report. Access full overview: [5 Reasons why the HSI 5 can & must catch up](#)



Note: Meta (Facebook) doesn't disclose the PUE of its best-in-class data centres.
Source: CWR, Company disclosure.

5. Opportunity to decarbonise over 1/5th of the Hang Seng Index...

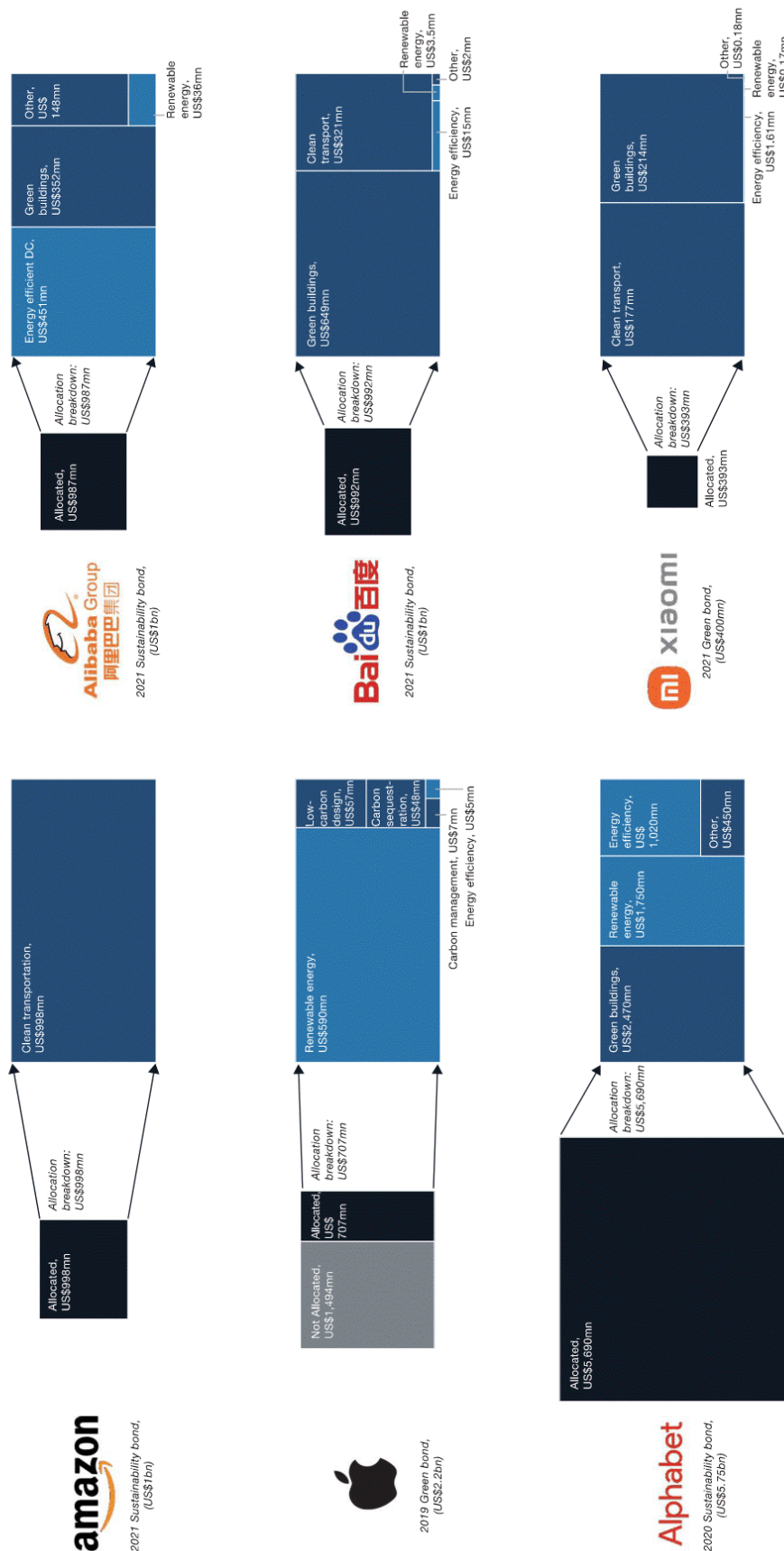
... easy-to-achieve Scope 2 emission cuts are equivalent to 1.2x HK's annual GHG emissions of 35MtCO₂e – BAT can lead!



Source: CWR, Hang Seng Indexes (June 2023), Bloomberg, Company disclosure (FY2021/22), Carbon Neutral @HK.
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Catch up offers billion \$\$\$ green finance opportunity

CWR | SIGNIFICANT GREEN FINANCE OPPORTUNITY IN CHINA ICT: FAANG SPENDING BILLIONS ON RENEWABLE ENERGY COMPARED TO <US\$40MN BY CHINA ICT



Note: All sustainability/green bonds issued by FAANG and HSI 5 from 2019-2023 were analysed and updated as of 30 June 2023. Allocated/not allocated figures calculated from net proceeds.
Source: CWR, Company disclosure.
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This is extracted from the report. Access full overview:
[Catch up offers significant green finance opportunities](#)

