

Environmental Performances of China's Leading E-commerce Platforms (2023)



Executive Summary

Background

China's e-commerce industry has reshaped the way hundreds of millions of Chinese consumers shop. According to the China Internet Network Information Center, the number of Chinese online shoppers grew to 884 million by June 2023, meaning that four in every five people in China were online shoppers by that time.¹ In 2022, online retail sales in China reached 13.8 trillion yuan, or \$1.9 trillion USD.² In many ways, online shopping has become the norm, and leading retail e-commerce platform companies in China, such as Alibaba, Pinduoduo, and JD.com, manage extensive value chains and the broader business ecosystems including merchants, manufacturers, logistics service providers, and shoppers.

Although not classified as major polluters by traditional standards, large e-commerce platforms have extensive environmental impacts. To power online markets, e-commerce platforms employ significant computing power via data centers and cloud services, consuming huge amounts

of electricity³. With a large chunk of China's electricity still generated by burning fossil fuel, the intensive operation of online markets and related digital services inevitably results in significant carbon emissions. Some of the other main environmental impacts include carbon emissions from transportation, packaging waste, toxic chemicals contained in products, and online markets' facilitation of trade in illegal or problematic wildlife products, or tools and chemicals that are used to harm wildlife.

As the builders and gatekeepers of large-scale Internet platforms with hundreds of millions of users, China's leading retail e-commerce platform companies should take stock of their widespread environmental impacts that extend from their own operations to their value chains and vast business ecosystems, and actively respond to them.

In short, a retail e-commerce platform's environmental responsibilities should cover

1 China Internet Network Information Center. 2023.08. The 52nd Statistical Report of China's Internet Development. <https://cnnic.cn/NMediaFile/2023/0908/MAIN1694151810549M3LV0UWOAV.pdf>

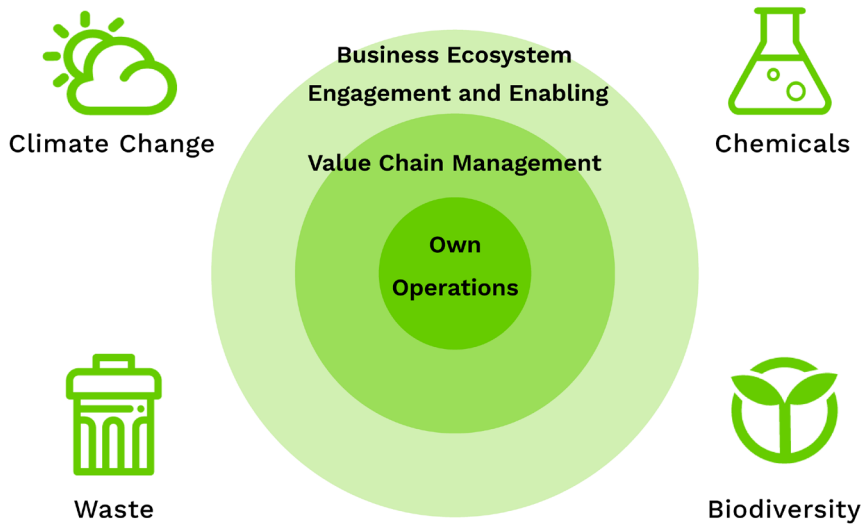
2 The State Council, the People's Republic of China. 2023.01.31. National Online Retail Sales Reached 13.79 Trillion Yuan. https://www.gov.cn/xinwen/2023-01/31/content_5739339.htm

3 Greenpeace East Asia. Electricity consumption from China's digital sector on track to increase 289% by 2035: Greenpeace. 2021.05.28. <https://www.greenpeace.org/eastasia/press/6608/electricity-consumption-from-chinas-digital-sector-on-track-to-increase/>

multiple environmental issues including climate change, chemicals management, biodiversity protection, and waste management. Since a platform company not only produces environmental impacts from its own operations but also from its value chain and business ecosystem, its environmental responsibilities should also be upheld on all three layers of the companies' influence landscape, as is shown in Figure 1.

By actively transitioning to more environmentally friendly business models, China's leading retail e-commerce platforms will generate far-reaching impacts. With the huge numbers of users that do business on their platforms, these companies have the opportunity to shape a new earth-friendly norm in consumption behaviors of online shoppers, as well as in merchants, brands, express delivery companies, and manufacturers.

Figure 1
Mapping the environmental responsibilities of retail e-commerce platform companies



In addition, as Chinese e-commerce brands eye overseas markets as a crucial space for future growth, it is critical that Chinese cross-border e-commerce platforms such as AliExpress, Temu, TikTok and Shein uphold high standards of climate and environmental protection. Potential environmental problems from cross-border e-commerce include carbon emissions from long-haul transport, overconsumption and waste associated

with ultra-cheap product offerings, and a lack of effective oversight in the use of chemicals in products sold on international online markets. Effective green transitions also dictates the global image of Chinese businesses, including but not limited to the long-standing criticism on the environmental risks brought about by companies expanding overseas under the "Going Out" policy.

Building on the previous edition of "Climate Action and Environmental Performance of China's Retail E-commerce Platform Companies (2021)" ranking report, released in January 2022, Greenpeace East Asia analyzed the performances of leading Chinese retail e-commerce platform companies, namely Alibaba, JD.com, Pinduoduo⁴, ByteDance, Kuaishou, and Vipshop, and ranked them using an updated set of scoring criteria. Compared to the 2022 edition, the new scoring criteria cover companies' commitments and actions on the four environmental issues stated above, highlighting the range of coverage of multiple environmental issues by the companies. The criteria consist of three pillars, corresponding to the three important aspects in a company's environmental management, namely "Strategy, policy and objectives", "Action and performance", and "Disclosure and auditing", while problems such as lack of an ESG or environmental management team in the corporate structure and environmental scandals will result in deductions. To reflect the unique environmental impacts of platform companies, the scoring criteria differentiate between a company's work on business operations under its direct control or influence, namely its own operations and value chain, and its work in managing and influencing the participants of its platform ecosystem.

The authors scanned for and collected publicly available information regarding the environmental performance of the

six companies on the four environmental issues, released between September 1, 2020 and August 31, 2023, and scored their performances using the scoring criteria, shown in a separate section below.

⁴ Pinduoduo is a Chinese e-commerce platform company controlled by PDD Holdings, headquartered in Dublin, Ireland. PDD Holdings also controls Temu, an e-commerce brand specializing in cross-border e-commerce.

Key findings

🕒 **China's leading e-commerce platforms are finally warming up to climate action.**

Having a climate commitment is no longer an exception, but an increasingly standard practice, as half of the six major e-commerce brands we ranked have set climate commitments at the group level. JD.com, which does not have a group-level climate commitment, has nevertheless made a company-level climate commitment for its wholly-owned subsidiary JD Logistics. Therefore, four out of the six leading e-commerce platform companies we scored have made some kind of climate commitment, compared to two as recorded in the 2022 edition of the ranking.

🕒 **Pinduoduo sits on the bottom for the second time. The company must act now.**

Pinduoduo, which demonstrated almost no action and disclosed no information on environmental issues, sat again on the bottom of the ranking and was the only brand that received a below zero score - due to involvement in environment scandals and lack of corporate governance structure dedicated to climate and environmental issues. PDD Holdings, the parent company of both Pinduoduo and Temu, is still growing at break-neck speed, and the impact of its climate and environmental inaction is also

growing. Pinduoduo and PDD Holdings must act now.

🕒 **Progress on biodiversity, waste, and hazardous chemicals is hit and miss situation.**

While five out of the six companies have disclosed some information on their response to climate change in both strategy/objectives and action/performance categories, on the other environmental issues including chemicals, biodiversity and waste, less information was available. For example, the report authors could not find any strategy from the six companies dedicated to the reduction and elimination of harmful chemicals contained in the products sold on the platforms. Another example is that although many companies tried to demonstrate some quantitative performance indicators such as using 100% "recyclable" plastic bags, some of the information disclosed proves not relevant or significant enough to qualify as effective action⁵. Therefore, four out of the six companies did not score any point in the action/performance category on the waste management issue.

🕒 **As the rule makers and gatekeepers of their platform ecosystems, platforms have yet to fully unleash their power in tackling climate change.**

Of the six companies, only Alibaba has

⁵ A Greenpeace USA investigation in 2020 found that only a small part of plastic items labeled as "recyclable" were actually recycled at material recovery facilities, and that most types of plastic packaging are economically impractical to recycle. For more information, refer to: <https://www.greenpeace.org/usa/news/u-s-companies-use-misleading-recyclable-labels-on-hundreds-of-plastic-products/>

a strategy for tackling climate change through its platform participants using engagement and enabling approaches. In contrary, five companies have some

kind of policy or strategy on biodiversity protection, while three companies have some kind of policy or strategy on waste management.

Scoreboard

Company		Alibaba	VipShop	JD.com	ByteDance	KuaiShou	Pinduoduo
Rating Section							
	Base Score ⁶ (10)	10	10	10	10	10	0
Strategy, Policy and Objectives (40.5)	Climate Change (28.35)	20.83	5.77	4.08	3.79	0.89	0
	Chemicals (4.05)	0	0	0	0	0	0
	Biodiversity (4.05)	1.69	0.68	0.68	0.68	0.68	0
	Waste Management (4.05)	1.52	3.03	2.01	0	0	0
Action and Performance (45)	Climate Change (31.5)	20.82	2.95	2.95	3.45	2.36	0
	Chemicals (4.5)	0.19	1.13	0	0	0	0
	Biodiversity (4.5)	3.38	0	2.53	0.84	1.01	0
	Waste Management (4.5)	1.13	1.13	0	0	0	0
Quality of Disclosure and Auditing (4.5)		3.15	4.5	3.71	0	2.03	0
Total Score		63	29	26	19	17	0
Deduction (up to 5.5)		-1	0	-1	0	0	-5.5
Final Score		62	29	25	19	17	-6

Overview of companies' performances

Of the six companies evaluated, Alibaba lead the pack, and was the only company that scored above 60 out of 100. Vipshop has

secured the second position, four points ahead of JD.com. In fourth and fifth place, ByteDance and Kuaishou's scores were

⁶ Base score: Companies that take any climate action, such as having made carbon reduction commitments or disclosing carbon emissions, will receive a 10% base score.

not far apart. Pinduoduo, due to the lack of disclosure of relevant information and deductions, ultimately receives a below-zero score.

Compared to the 2021 edition of the report, **Alibaba** still ranked first, more than 30 points ahead of the second highest performer. This is largely due to Alibaba's innovative concept of Scope 3+, which makes Alibaba the only company among its peers that has carbon reduction goals covering the entire platform ecosystem⁷.

Vipshop ranks second largely thanks to its climate commitment to achieving Scope 1 and 2 carbon neutrality and reducing Scope 3 carbon emissions intensity by 50% by 2030, released in August 2023. However, regarding the use of renewable energy, Vipshop only mentioned plans to achieve 100% use of green electricity in its headquarters building by 2023 without setting targets for the ratio of renewable energy use on the group level. Vipshop is also the only company that got full marks on information disclosure.

JD.com has not yet released climate commitments at the group level this year. So far, JD.com's climate actions and commitments are still limited to JD Logistics. For example, by 2025, it aims to encourage 50% of JD Logistics suppliers to join the "Science-based Targets" initiative and commit to increasing the proportion of renewable energy purchased by JD Logistics from 0% in 2019 to 100% in 2030 and so on. At the same

time, JD Group's combined Scope 1 and 2 carbon emissions have increased.

ByteDance and Kuaishou have performed similarly, with final scores of 19 and 17, respectively. As the parent company of TikTok and Douyin, ByteDance announced its climate commitments in March 2023, committing to achieving operational carbon neutrality by 2030, through reducing at least 90% of operational emissions and offsetting the remaining 10%. It also aimed to achieve 100% use of renewable energy for global operations by 2030. Kuaishou has yet to set carbon reduction targets. For renewable energy consumption, Kuaishou promised to reach 100% clean energy use in self-built data centers by 2030. It is worth noting that neither of the two companies scored in the chemical and waste management aspects.

With continuous double-digit revenue growth, **Pinduoduo** has become China's second-largest e-commerce platform in terms of total users on the platform. However, as a leading player in the retail e-commerce industry, it has not disclosed any information related to climate change and environmental action. For the second time, Pinduoduo ranks last and significantly lagging behind other companies.

⁷ Alibaba, China United Environmental Certification Center and Carbon Trust. Scope 3+ Emissions Reduction: A New Methodology for Corporate Climate Actions Beyond Value Chains. 2022.08. <http://www.mepcec.com/images/xwzx/gsxw/2022/08/09/1660036461434040781.pdf>

Analyses of companies' performances on specific environmental issues

Climate Change

Companies have established relatively more strategies and goals in the area of climate change, compared to the other three environmental issues. Four of the six evaluated companies have established carbon reduction targets. Notably, both Vipshop and ByteDance announced their carbon neutrality goals in 2023. JD.com has not set a group-level target, however, and its JD Logistics subsidiary continues to be the only subsidiary with climate commitments.

Alibaba is the only company with emission reduction targets and outlined pathways to achieve the targets for its platform ecosystem. It is also the only company that has disclosed the carbon emissions reduction figure from its platform ecosystem.

Except for Pinduoduo, all the other five companies have set goals regarding renewable energy use. However, Alibaba and Kuaishou both used the term “clean energy” in their commitments, while a clear definition of what counts as clean energy was not provided in either case. Nevertheless, having procured 1,101,705 megawatt-hours of renewable energy in the fiscal year of 2023, Alibaba is the clear winner in this respect.

On the actual performance in carbon reduction, Alibaba is the only company that has achieved a decrease in carbon emissions

across scope 1, 2, and 3. Kuaishou's combined scope 1 and 2 carbon emissions decreased, but the company did not disclose its scope 3 carbon emissions figure.

Chemicals

No company mentioned in the report has established strategy, policy or objectives regarding chemicals management. In contrast, some internationally renowned retail companies (such as Amazon, IKEA, Target, etc.) have made progress on this front, such as publishing Restricted Substance Lists (RSLs), to reduce harmful chemicals in their products.

Despite not having clearly-stated strategies or policies, Alibaba and Vipshop have taken some actions on chemicals, including ad hoc sample testing of products sold on the platform. The other four companies did not disclose information about any such measures.

Biodiversity

In China, third-party sellers are known to use e-commerce platforms to sell illegal wildlife products as well as products that pose a threat to wildlife, such as hunting tools and chemicals marketed for killing wildlife. The E-commerce Law of China mandates that e-commerce platforms must take measures

and report to authorities when they discover information on illegal commodities or services, and it is standard practice for platforms to screen product descriptions with a set of keywords. All the companies assessed in this report except for Pinduoduo have incorporated some kind of biodiversity-related policies.

Among them, Alibaba is the only company that actively uses users' searches of banned keywords as opportunities to educate users, by not only hiding search results but also showing pop-up alerts to educate users about the environmental problems related to the keywords. JD.com, ByteDance, and Kuaishou have reported taking measures to remove products sold by platform merchants that pose threats to biodiversity, including illegal wildlife products and hunting tools that may be used for capturing wildlife. However, it is still possible to find prohibited items such as Tridacna products, Hexazinone (often clearly stated by the sellers as intended for killing trees), bird traps, electric earthworm harvesters, and other tools used for illegal hunting and fishing on some of the platforms assessed in this report, including the popular livestream shopping platforms Douyin, a subsidiary of ByteDance, and Kuaishou.

Waste Management

The six companies did not demonstrate effective actions to significantly reduce the amount of packaging waste generated from fulfilling orders. Although Chinese e-commerce regulations demand that platform operators take action to document

plastics use and adopt a series of measures to make the packaging more environmentally friendly, none of the six selected companies have gone the extra mile by establishing a packaging waste reduction target that has a timeline and a target percentage of reduction in materials used.

Pinduoduo, Kuaishou, and ByteDance have not disclosed any information regarding packaging reduction, reuse, or recycling. Alibaba and JD.com have disclosed the quantity of recycled paper boxes but have not provided the overall packaging quantity, making it impossible to determine the percentage of recycled paper boxes against the total number. Only Vipshop has provided detailed information on the total usage of various types of packaging materials and reduction figures.

On consumer engagement and enabling, although some companies have adopted earth-friendly alternative packaging equipment such as tape-free boxes at limited scales, none of the companies proactively have made green packaging, such as reusable packaging or minimal packaging, as options along with the default business-as-usual packaging for consumers to choose. There is an overall missed opportunity to tap into consumers' power of choice to speed up the green transformation of the product packaging scene.

Environmental impacts of a cross-border e-commerce boom

On top of the huge domestic market, China's e-commerce sector is proactively expanding into the overseas market. According to Chinese customs data, the total cross-border e-commerce import and export revenue (including B2B e-commerce) reached 2.11 trillion yuan, or 288 billion USD, 71% of which was generated by export. Breaking away from the global expansion of some state-owned enterprises under the support of the Belt and Road Initiative and the "Going Out" policy, Chinese e-commerce majors are winning overseas consumers over through their own efforts that often include promotional activities offering super low prices. As an example, Temu, the sister company of Pinduoduo that conducts cross-border e-commerce exclusively, was launched in September 2022. Within a year, it has expanded to forty countries/regions.

On top of the environmental impacts listed above concerning the operations of domestic e-commerce businesses, cross-border e-commerce brings several additional environmental concerns. First, with consumers increasingly demanding quick deliveries, the long-haul transport of products could put pressure on global climate action. According to the International Air Transport Association (IATA), 131 billion

parcels or 80% of cross-border e-commerce are now transported by air, while the figure could reach 95% by 2040⁸. With air freight emitting significantly more carbon dioxide than shipping, cross-border e-commerce's carbon emissions must be taken seriously by companies and regulators.

On another front, with small-value parcels not being systematically regulated by quality watchdogs, how cross-border e-commerce companies can effectively keep their products safe from hazardous chemicals is unclear. A Greenpeace Germany investigation found that of the 47 SHEIN products tested, seven of them (15%) contained hazardous chemicals that break EU regulatory limits, while about a third of the products contained hazardous chemicals at levels of concern⁹. Last but not least, given the ultra-low price offerings of some of the cross-border e-commerce platforms, overconsumption and waste loom large as a concern, as it is commonplace for retailers to destroy new and returned goods.

8 IATA. Value of Air Cargo. 2022.06. <https://www.iata.org/contentassets/62bae061c05b429ea508cb0c49907c4c/voac-fact-sheet-ecommerce.pdf>

9 Greenpeace International. Taking the shine off SHEIN: Hazardous chemicals in SHEIN products break EU regulations, new report finds. 2022.11.23. <https://www.greenpeace.org/international/press-release/56979/taking-the-shine-off-shein-hazardous-chemicals-in-shein-products-break-eu-regulations-new-report-finds/>

Recommendations

We recommend the following measures for China's leading retail e-commerce companies:

- ① Set comprehensive environmental goals as soon as possible:
 - a.** Set a carbon emissions reduction goal as soon as possible for the entire value chain (Scope 1, 2, and 3) at the group level that is in line with keeping global temperature rise within 1.5°C, and clarify the emission reduction path and timeline. Companies that have already set carbon reduction goals need to further refine their goals to project clear carbon reduction pathways, such as setting renewable energy goals instead of using obscure terms such as “clean energy”, setting goals for key performance indicators such as the proportion of zero-emission orders and zero-emission transportation vehicles, and setting goals for supplier engagement. Other companies that have not yet set group-level climate targets should do so as soon as possible.
 - b.** In addition to climate change, take action on environmental issues related to the retail e-commerce industry, including biodiversity, waste, and hazardous chemicals.
 - c.** For the Chinese e-commerce platform companies that have overseas operations, include global operations in their environmental goals.

- ② Take full advantage of the power of platform companies over their ecosystems, by establishing climate and environmental goals, policies and strategies covering participants. Examples include establishing an environmental performance assessment mechanism for merchants, and providing consumers with more green options not only in product selection but also modes of transportation and packaging.
- ③ Strengthen environmental information disclosure and regularly communicate the progress of corporate environmental management with the public, investors, policymakers, and other stakeholders.

Scoring Criteria

		Management of the company's own operations and value chain	Platform ecosystem engagement and enabling
Strategy, Policy and Objectives	Climate Change	Group-wide carbon reduction/net-zero targets for scopes 1, 2, and 3.	Establishment of carbon reduction targets and pathways within the platform ecosystem.
		Renewable energy consumption targets for the group and its supply chain.	
		Targets for reducing carbon intensity per order/percentage of zero-emission orders	
	Chemicals	Having a strategy on chemicals management. Setting reduction targets for chemicals in products and the supply chain.	Having a management system, including entry permits, rewards, penalties, and elimination, for chemical management performance of merchants on the platform.
	Biodiversity	Establishment of strategies, policies, and objectives for biodiversity protection, encompassing own operations, suppliers, third-party merchants, and consumers.	
Strategy, Policy and Objectives	Waste Management	Establishment of waste reduction or circular economy strategies.	Developing platform rules to encourage vendors to reuse, reduce, and/or recycle packaging.
		Setting packaging reduction targets.	
Action and Performance	Climate Change	Changes in carbon emissions for scopes 1, 2, and 3 compared to the previous year.	Emissions reduction measures and disclosure in the business ecosystem.
		Renewable energy consumption.	
		Percentage of zero-emission self-fulfillment orders/percentage of zero-emission transport vehicles.	
	Chemicals	Disclosure of chemical management status and progress, including testing results of goods and types and quantities of harmful chemicals or plastics eliminated within the supply chain.	Regular monitoring of merchants' chemical management performance. Providing chemical risk alerts to consumers and assisting victims of chemical-related incidents in reporting and seeking compensation.

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		Management of the company's own operations and value chain	Platform ecosystem engagement and enabling
Action and Performance	Biodiversity	Evaluation of suppliers' performance in biodiversity conservation, elimination of non-compliant suppliers, and disclosure of relevant information.	Regular self-auditing and self-correction regarding the sale of threatened wildlife, problematic animal products, hunting tools, etc. on the platform; development of comprehensive standards for controversial wildlife-related products; measures for handling businesses that harm biodiversity; feedback mechanism for consumer reports and disclosure of outcomes. Educating consumers through pop-up windows, etc. when searching for tools that harm wildlife, plant materials, invasive species, and banned wildlife products that threaten biodiversity, including code words for these products.
	Waste Management	Reduction in packaging materials used, increased portion of reusable packaging, or increased portion of recycled packaging materials.	Providing green packaging options to consumers.
Quality of Disclosure and Auditing		Comprehensive coverage of various environmental issues in ESG/Sustainability reports. Conducting independent audit of ESG/Sustainability reports by professional organizations. Disclosure of sustainability information based on "double materiality" (financial materiality and impact materiality).	
Deduction		Environmental scandals. Lack of governance framework for climate change and environmental protection at the board level.	

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Liangdian Creative Park Room 201, Dongsishitiao 94, Dongcheng District, Beijing, China 100007

Tel : +86 (0)10 6554 6931

Fax : +86 (0)10 6408 7910



www.greenpeace.org.cn