

# SURVEY ON LOW CARBON CONSUMPTION AWARENESS AND BEHAVIOURS OF THE CHINESE HOUSEHOLDS

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Co-initiated by  
Energy Foundation China  
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Survey Support  
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## Notes on Reading the Report

● Data with significant differences are marked with:  

● The analysis dimensions covered in this Report include: age, city function level

This Report divides interviewees into three age groups: people born between 1990s–2000s, in 1980s, and between 1950s–1970s. Because the interviewees in this survey are 18–70 years old, which does not cover all ages of interviewees born after 2000, therefore, the characteristics of interviewees born after 2000 are for reference only.

According to the city function level, the cities of interviewees in this Report are divided into: super first-tier cities, first-tier cities, second-tier cities, third and fourth-tier cities

● This research investigated the low carbon behavior of respondents through interviews and questionnaires, and used the content of the interviewees' expressions and choices as the information source of the Report. Among them, there were 3,500 samples of quantitative questionnaires divided in 8 groups and qualitative symposiums in four cities respectively: Beijing, Hangzhou, Wuhan, and Haikou. Each group consisted of 7 people.

● This research focuses on the family lifestyle and consumption of clothing and footwear, daily diet, home appliances, transportation, and other aspects. Through the studies on above five aspects, the current situation of low-carbon life and low-carbon consumption in respondent' s households is demonstrated.

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## Research Retrospect

### Quantitative research



#### Quantitative research

Quantitative data is adopted to view respondents' awareness of low-carbon related topics, current status of values, low-carbon behaviors and causes in clothing and footwear, daily diet, home appliances, and transportation, as well as the current status of influence on surrounding people, future trends and so on.



#### Qualitative research

Combining quantified data, qualitatively analyzes the deep causes and challenges, so as to get a comprehensive understanding of respondents' carbon capacity status.

## Quantitative research

- Sample size: N=3500
- Visiting time: August 30 ~ September 15, 2019

### • Screening conditions

- A. Interviewees aged 18-70
- B. Personal disposable income: RMB8000 or more (super first-tier cities), RMB6000 or more (new first-tier cities), RMB5000 or more (second-tier cities), RMB4000 or more (third and fourth-tier cities)
- C. Personal consumption expenditures : RMB3,000 or more (super first-tier cities), RMB2500 or more (new first-tier cities), RMB2000 or more (second-tier cities), RMB1500 or more (third and fourth-tier cities)
- D. Education level is above high school (based on data from the National Bureau of Statistics of China: In 2019, China's population with high school diploma or higher accounts for about 15% of the total population. The purpose of setting the threshold for academic qualifications is to provide guidance in promoting low-carbon related topics in China through the understanding of such people.)

### Age sample size

18-25 years old	400
Interviewees born between 1990s-2000s	1000
Interviewees born in 1980s (30-39 years old)	1000
Interviewees born in 1970 (age 40-49)	1000
Interviewees born in 1950s & 1960s (age 50-70)	100

#### \*Notes for reading the data of quantitative report

The percentage data in this Report are rounded off, therefore, for the single choice questions, it may be not 100% after plus and rounded up.

For example, 45.5%+54.5% = 100%, but the data is rounded to 46%+55%

### Region and city-level sample sizes

	Super first-tier cities n=1000	Sample size	New first-tier cities n=1600	Sample size	Second-tier cities n=450	Sample size	Third and fourth-tier cities n=450	Sample size
East China n=950	Shanghai	250	Nanjing	150	Hefei	50	Third and fourth-tier cities in East China	100
	/	/	Hangzhou	150	Fuzhou	50		
	/	/	Ningbo	150	Nanchang	50		
South China n=950	Guangzhou	250	Dongguan	150	Foshan	50	Third and fourth-tier cities in South China	150
	Shenzhen	250	/	/	Zhongshan	50		
	/	/	/	/	Nanning	50		
Middle and west China n=600	/	/	Chengdu	150	Kunming	50	Third and fourth-tier cities in middle and west China	200
	/	/	Wuhan	150	Lanzhou	50		
North China n=1000	Beijing	250	Tianjin	150	Changchun	50	Third and fourth-tier cities in North China	350
	/	/	Shenyang	150	Shijiazhuang	50		

## Qualitative research

### Research contents

- Residents' tendency and knowledge on carbon emissions: carbon values, consumption status
- Residents' behavioral status (low carbon actions vs high carbon actions) in terms of low-carbon concepts, clothing and footwear, daily diet, home appliances, and transportation consumption
- How to influence residents' low-carbon consumption philosophy
- Premium space for low-carbon consumption



### Cities in research: Beijing, Hangzhou, Wuhan, Haikou

- In each group of city: Group 1 is the younger group (22-33 years old); Group 2 is the older group (34-50 years old)
- The male:female ratio is 3:4
- Personal monthly income: RMB8,000 yuan or more for Beijing, RMB6,000 yuan or more for Hangzhou, RMB5,000 yuan or more for Wuhan, RMB4,000 yuan or more for Haikou
- One group of each age group for four cities respectively, 7 people for each group



### Interviewee conditions

- Have certain consuming ability
- The interviewees in each group covered different living conditions: living alone; 2 people living together; 3 people and above living together
- At least one interviewee in each city lives together with 4 or more people
- College diploma or above
- In each group, there will be at least one interviewee with strong consumption, one "moonlight clan" (a Chinese term for those who expend their entire salary before the end of each month), and one frugal interviewee.





## Respondents' Consumption Choices and Low Carbon Actions

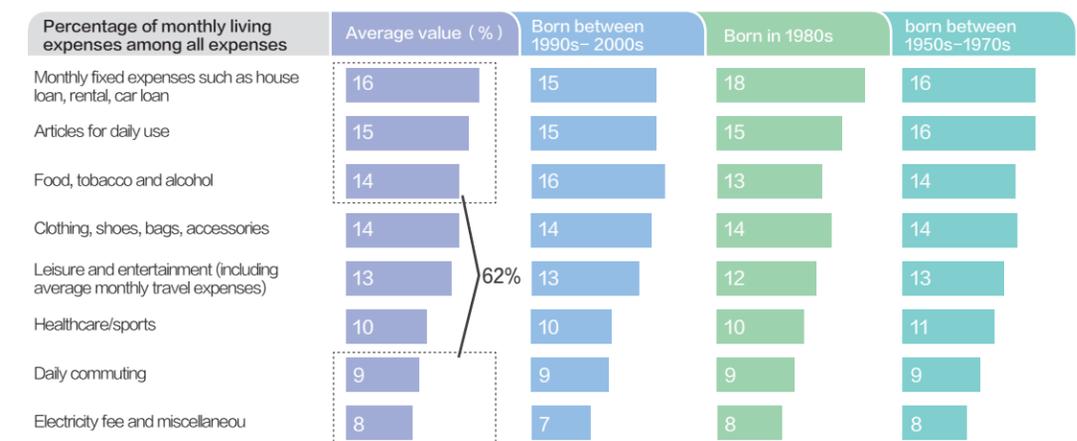


### Current consumption status

60% of expenses are monthly fixed expenses and daily consumer goods, 40% of expenses are related to fashion, leisure and entertainment, and the consumption structure is more diverse; 72% of the respondents have a means of spending within their income, and has a surplus of monthly income.

### Percentage of monthly living expenses among all expenses

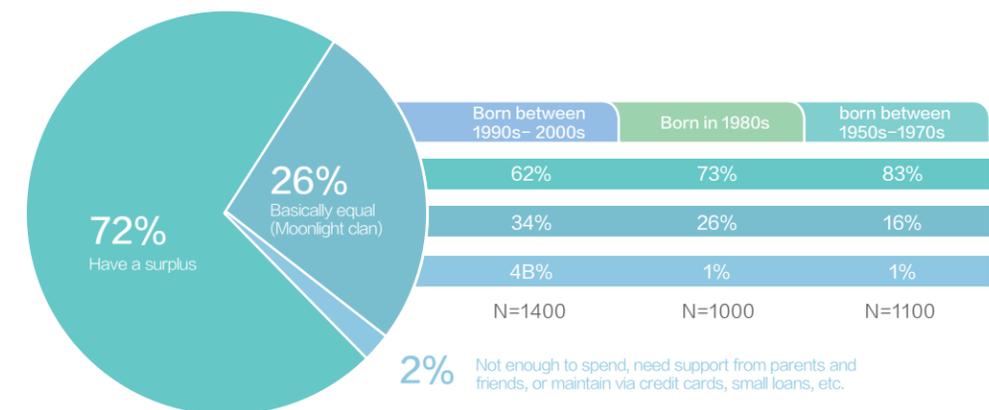
On average, 62% of monthly expenses are fixed expenses and articles for daily use, including house loan/rental/ car loan, articles for daily use, food/research, commuting, electricity fee, etc. The other 40% is related to fashion, leisure and entertainment.



Sample size: N=3500

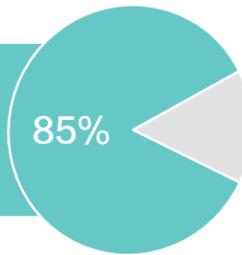
### Monthly income and expense ratio in the past year

More than 70% of the respondent has a surplus of monthly income. The moonlight clan accounts for 26%, and the excess consumption is rare, only 2%.



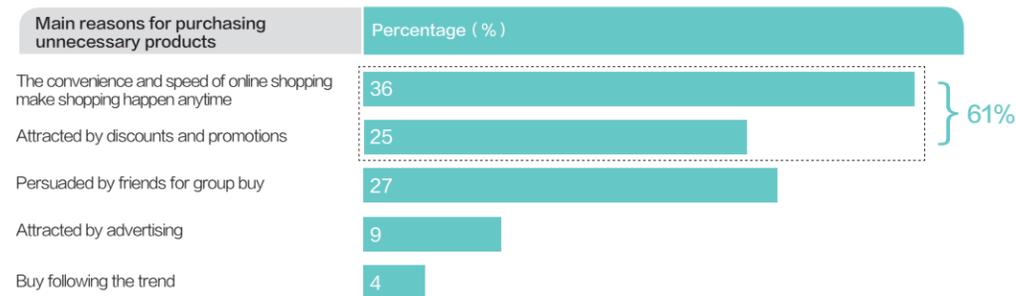
Source: A2. Percentage of various expenses in monthly living expenses; A3. Monthly income and expenses in the past year

85% of the respondents purchase online every month, and nearly 30% of them purchase online 1–3 times a week. Convenience of online shopping contributes to 36% of unnecessary shopping.



### Main reasons for purchasing unnecessary products

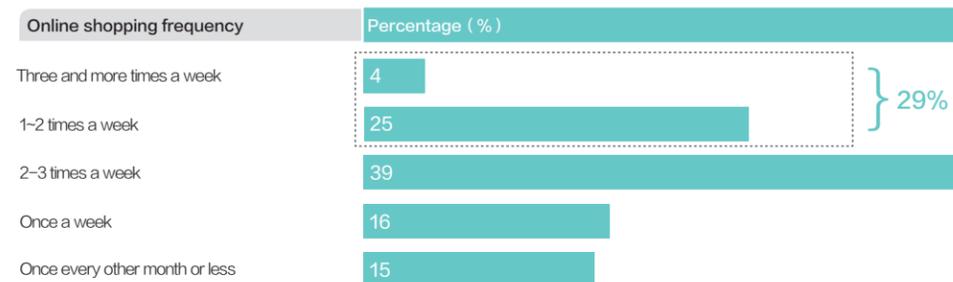
The convenience of online shopping has led to 36% of unnecessary shopping. The other two main reasons are discounts and group buying. Therefore, 61% of unnecessary shopping is directly related to online shopping.



Sample size: N=3500

### Online shopping frequency

Nearly 30% of the respondent purchases online 1–3 times a week; 85% of the respondent purchases online at least once a month.



Sample size: N=3500

Source: C1. Factors of purchasing unnecessary products; C2. Frequency of online shopping



## Respondents' Low Carbon Awareness

## Low-carbon topics recognition status quo



The respondents generally think that they are concerned about the information on global warming and climate issues, and also recognize the impact of global warming, but they don't have enough knowledge about how to reduce greenhouse gas emissions.



### Recognition of global warming/climate issues

- The respondent's recognition of global warming and climate issues is relatively high, and the average score of each sub-item is above 4.1 points (out of 5 points), indicating that the respondent generally believes that they are more concerned about this information, and also aware of the impact of global warming issues on life;

- However, the item with the lowest average score and the lowest degree of recognition is "I know how to reduce greenhouse gas emissions", which shows that although the respondent is aware of related topics, they don't clear know how to reduce greenhouse gas emissions since they don't have the knowledge reserve that can support the practical action.

Recognition of global warming/climate issues	Average score (points)	Strongly agree (%)
I have always been very concerned about global warming	4.36	43
Global warming issues have affected our daily life	4.32	43
There are many reasons for global warming, mainly the human factors	4.29	42
I know "low carbon actions" mean reducing greenhouse gas emissions such as carbon dioxide, and it is an important way to relieve global warming	4.36	45
I know how to reduce greenhouse gas emissions	4.16	33
I am willing to contribute to low carbon actions, even if it means paying a certain price for it (such as time, money)	4.32	43

Sample size: N=3500

Source: A4. Recognition of low-carbon related topics

In the self-assessment, 47% of the respondents have heard of low-carbon lifestyle and consumption, but the recognition is decreased for the specific implementation.

At present, the respondents are most confused about how to identify and implement low carbon actions, and the calculation method of carbon emissions. Secondly, they have doubts about the impact of low carbon actions. At the same time, they have questions about the possible negative effects that low carbon actions may have on life, and worry about that they will increase living costs and reduce the quality of life.

## Recognition of low-carbon lifestyle and low-carbon consumption topics

47% of the respondent thinks that they have heard of low-carbon lifestyle and low-carbon consumption, which is the highest among all the questions. The recognition starts to decrease for the specific implementation of low-carbon actions. They don't know how to identify the low-carbon products, and have doubts about whether the low-carbon lifestyle will reduce the quality of life.

Acceptance of low-carbon claims	Strongly agree (%)
I have heard of low-carbon lifestyle and low-carbon consumption	47
I understand low-carbon lifestyle and low-carbon consumption	43
I believe that it will help reduce carbon emissions to reduce unnecessary consumption	43
I can distinguish low-carbon goods	34
It will help reduce carbon emissions to choose low-carbon goods	44
It will help reduce carbon emissions to prolong the service life of goods	39
It will help improve the environment to improve the recycling rate of waste and old goods	44
I think low-carbon lifestyle and low-carbon consumption will not reduce my quality of life	37
I think low carbon actions bring a good living environment, which makes my life more high-quality	43

Sample size: N=3500

## Low-carbon lifestyle and low-carbon consumption troubles

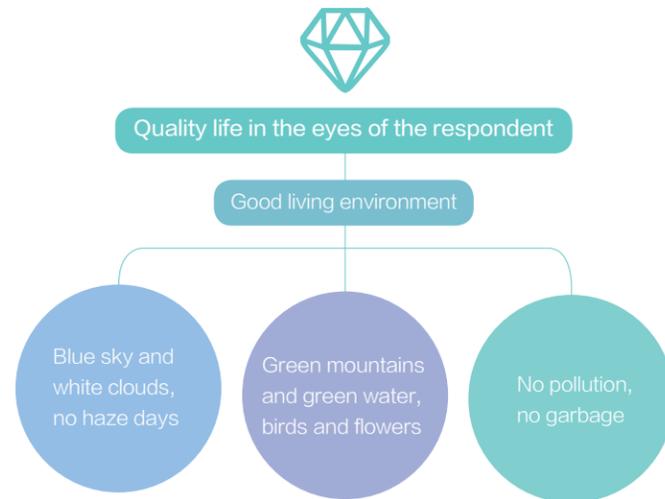
Troubles ranked TOP3 have 4 items, of which 3 are about the implementation of low-carbon lifestyle and low-carbon consumption, which shows that the respondent has the highest doubt rate on how to identify and implement low-carbon actions and how to calculate carbon emissions. Worry about the negative impact of low carbon actions on life, increase living costs and reduce quality of life.

Classification of low-carbon lifestyle and low-carbon consumption troubles	Average ratio (%)	Low-carbon lifestyle and low-carbon consumption troubles	Percentage (%)
Difficult to identify	29	Without the logo, I can't judge whether an item is low-carbon or high-carbon	31
		I don't know how the product's carbon emissions are calculated. Are low-carbon products really low-carbon?	28
		Low carbon actions are a relative concept. Whether they are low carbon actions or not depends on how it compares	28
Doubt on function	27	Compared with the government and enterprises, can individual actions really bring positive effects of carbon reduction?	30
		Will low carbon actions and environmental protection be a gimmick for businesses	24
Fear of affecting quality of life	23	Will low carbon actions increase my cost of living	24
		Will low carbon actions affect my quality of life	22

Sample size: N=3500

Source: A4. Acceptance of low-carbon claims; C6. Low-carbon life and low-carbon consumption troubles

The respondent believes that quality life includes sufficient money, time, and good ecological environment. Although there is no direct connection with low-carbon lifestyle, their demands on environment are consistent with the overall direction of low-carbon development, and they are willing to accept "low-carbon lifestyle" under the precondition of not affecting the current life quality.



Acceptance of low-carbon claims	Strongly agree (%)
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Sample size: N=3500

### The link between quality life and low-carbon life

- Most respondents associate the quality life with abundant money, time, and good ecological environment;
- The respondent does not directly equate quality life with low-carbon life, but it can also be seen from the data that the respondent has high recognition of the concept of good ecological environment brought by low-carbon life, thereby improving the quality of life, but the respondent is more worried about whether low carbon actions will affect the quality of life;
- Therefore, the respondent generally believes that: In order to enjoy high quality of life in the future and for future generations, we need to start with environmental protection and low carbon lifestyle;
- The respondent states that they will be happy to accept the concept of "low-carbon lifestyle" under the precondition of not affecting the current life quality.

The respondents' recognition of the significance and impact of low-carbon lifestyle is more about reducing waste, sustainable development, and healthy living.

It is generally believed that low carbon development is not a personal matter, but the relatively macro-level social responsibility. Therefore, low-carbon is more viewed from the perspective of altruism and responsibility.



### Respondents' recognition of the significance and impact of low-carbon lifestyle

- In quantitative research, it is found from the recognition of the significance and impact of low-carbon lifestyle that the respondents' understanding of low-carbon lifestyle is more about reducing waste and being responsible for the earth, sustainable development and being responsible for future generations; the recognition of economic benefits and personal pleasure of low-carbon lifestyle is relatively low, reflecting that most people view low carbon actions from the perspective of altruism and responsibility, and it still needs to strengthen the link between low carbon actions and self-benefit;

- Although on the whole, the respondent has not regarded low-carbon lifestyle as a new fashion/vogue, it is found from the focus groups that young people are more inclined to consider "low-carbon lifestyle" as a "ideological fashion trend" and the spiritual improvement; in addition, they also believe that "healthy life", "extensive mass fitness" and "minimalism" are also the recent fashion trends.

Significance and impact of low-carbon life	Percentage (%)
Make the best use of goods, reduce waste, and be responsible for the earth we live in	41
Benefit the future generations through sustainable development	33
Make my life healthier	33
Reduce air pollution	32
Curb the trend of global warming	32
Set a good example for me to educate juniors	27
Benefit the high-quality economic development	25
Make life easier and make me happier	25
It is a new fashion and the trend of vogue	21

Sample size: N=3500

Source: C7. Significance and impact of low-carbon life



# Household Behaviors on "Clothing and Footwear"

## Description on research scope

The focus of this research on "clothing and footwear"

- ① When to buy new clothes/shoes
- ② The frequency of purchasing new clothes/shoes
- ③ Considerations for purchasing new clothes/shoes
- ④ Disposal of used clothes/shoes

The conclusions in this report on households' "clothing and footwear" behaviors will be given based on the above data and contents.



## "Clothing Footwear"

When buying new clothes/shoes, 46% of the respondent starts from the rational demand scenario, and 60% buy new clothes and shoes every month.

### When to buy new clothes/shoes

When the respondent purchases new clothing/shoes, nearly 50% of the purchase consideration is actually necessary, but it also means that 50% of the clothing/shoe consumption is not necessary at present, such as: Buy when the price is suitable, buy when they like it.

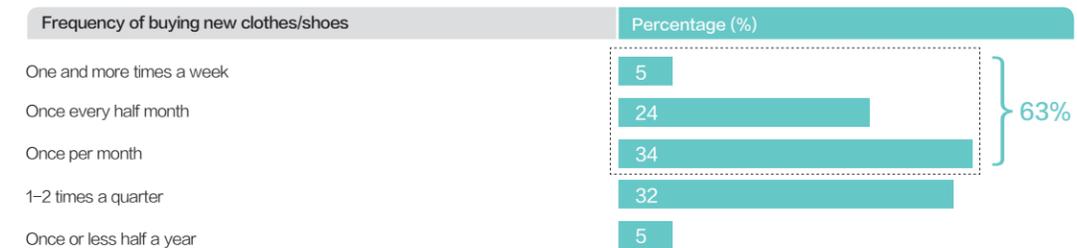


Sample size: N=3500



### Frequency of buying new clothes/shoes

60% of the respondent buys new clothes/shoes every month. Among them, half of the respondent buys more than once a month.



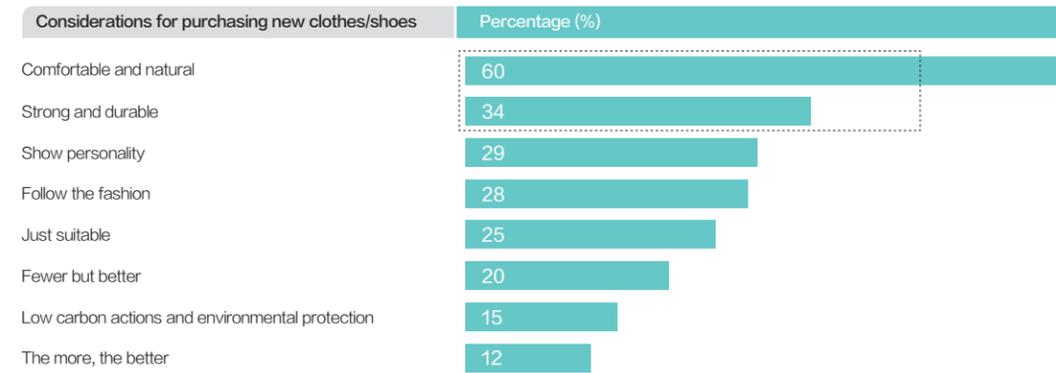
Sample size: N=3500

Source: B1. Scenario of buying clothes; B3. Frequency of buying clothes/shoe

When buying new clothes/shoes, the respondent first considers the experience of actual wear, and then pays attention to personality and fashion. The attention to low carbon actions ranks relatively low (seventh). When disposing of used clothes/shoes, more than 90% of the respondent will consciously reuse/recycle the used items through different channels.

### Considerations for purchasing new clothes/shoes

When the respondent purchases new clothes/shoes, TOP2 considerations are related to the experience of actual wear (comfortable and natural, strong and durable), and then the personality and fashion. But little consideration is given to low carbon development and environmental protection.

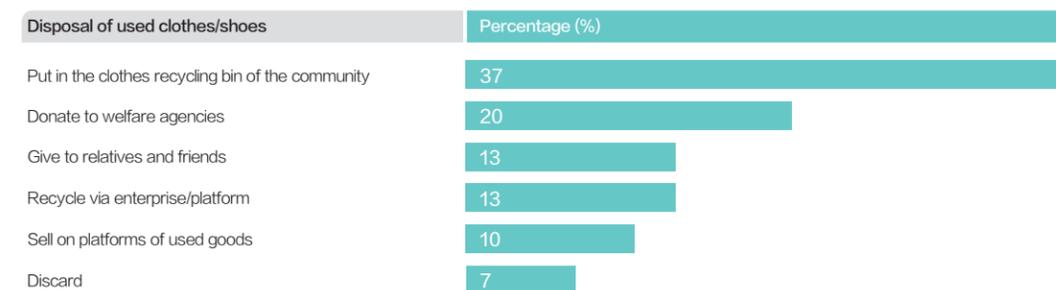


Sample size: N=3500



### Disposal of used clothes/shoes

In terms of the disposal of used clothes/shoes, the respondent has better performance in recycling, and the discard rate is only 7%, while 93% of the respondent will reuse/recycle the used clothes/shoes through different channels such as community recycling bins, donations, and sales.



Sample size: N=3500

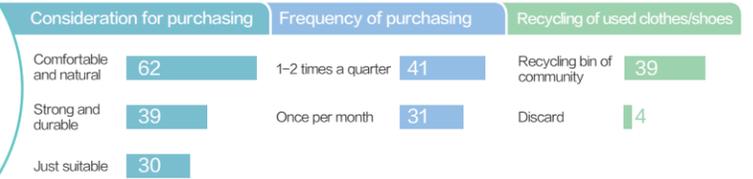
Source: B2. Considerations for purchasing new clothes/shoes; B4. Disposal of used clothes/shoes

In terms of clothing and footwear, no matter for what the reason, low carbon development and environmental protection are not among the important considerations. Those who buy if they like have the characteristics of impulse consumption, their purchasing frequency is the highest, and the disposal rate of the used items is also the highest.

#### Practical first

This group has the lowest consumption frequency, they mainly consider the practicability.

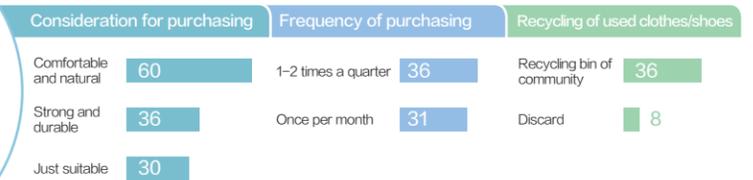
Sample size: N=1634



#### Attracted by price

When such groups consume, in addition to considering the price, they also pay attention to their personality, and the frequency of consumption is relatively high.

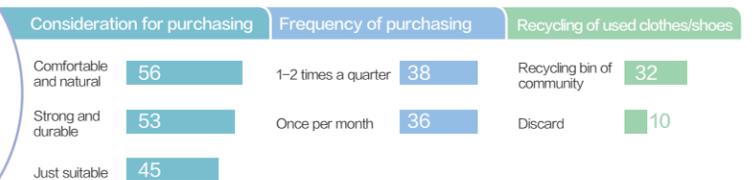
Sample size: N=1176



#### Buy if they like

This group has the highest frequency of consumption, and have the characteristics of impulse consumption. They buy whenever they like, and have the highest discard rate.

Sample size: N=688





## Household Behaviors on "Daily Diet"

### Description on research scope

The focus of this research on "daily diet"

The situation of leftovers, the disposal of leftovers and the reasons in the three scenarios of work meal, family/friend dinner, and business dinner.

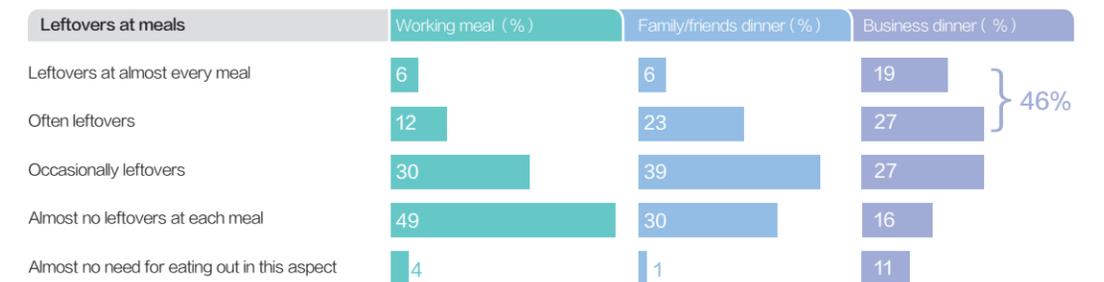
The conclusions in this report on the households' "daily diet" behaviors of will be given based on the above data and contents.

The rate of leftovers for business dinner is the highest, and the leftovers are not packed and taken away due to the fear of losing face, which results in high frequency of waste.

Secondly, the family/friend dinner has higher leftover rate, but nearly 80% of which will choose to pack and take away the leftovers. The rate of leftovers for working meals is lowest, but often results in waste frequencies as high as 62% because they are not delicious or troublesome.

### Leftovers at meals

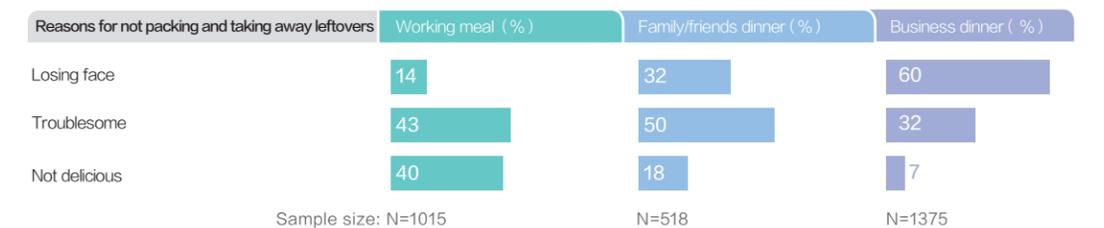
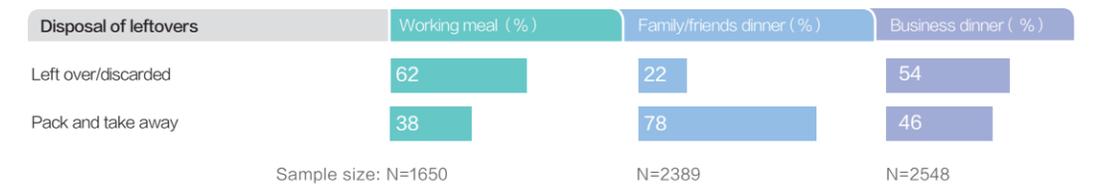
On the whole, for reasons of face, ostentation, etc., the leftover rate of business dinners is generally higher than that of working meals and family/friend dinners, and the probability leftovers is as high as 46%, which is 1.5–2.5 times than that of the other two cases.



Sample size: N=3500

### Disposal of leftovers and reasons for not packing and taking away

When there are leftovers, it has the highest packing and taking away rate (78%) for the leftovers of family/friend dinners. The reason for not packing and taking away is troublesome. The working meal is mostly fast food, which is not delicious and is not convenient to take back, therefore, the leftovers are mostly discarded. For business dinners, it is more a matter of considering face and leftovers are not packed and taken away.



Source: B7. Leftovers at meals; B8. Disposal of leftovers B9. Reasons for not taking away leftovers

In terms of daily diet, the respondents' low-carbon behavior will be different under different dining scenarios: the rate of leftovers for working meals is the lowest, but the rate of waste is highest; the rate of leftovers for family and friend dinners is high, but the packing rate is highest; the rate of leftovers and waste are both high for business dinners.

### Working meal

- In this scenario, the meal is mostly for one person, or takeaway, or canteen, has the lowest leftover rate;
- But the waste rate is highest, the leftovers are often discarded because of troublesome packing or bad taste.



### Friends and friends dinner

- In this scenario, the rate of leftovers is also high, since it is a meal with close people and more favorable dishes are ordered;
- Although the leftover rate is high, the leftovers are usually to be packed and taken away, and the packing rate is high. However, some people think that packing is troublesome and they choose to discard the leftovers.



### Business dinner

- The highest rate of leftovers in this scenario is due to the following reasons: the purpose of business dinner is not to eat, but to talk about work and cooperation, therefore, it is easy to have leftovers; excessive dishes are ordered for ostentation or to meet the meal standard;
- Therefore, business dinner has a high probability of not packing the leftovers. It is thought that they shall not let family members eat leftovers of others, or they feel that packing is very humiliating.



(The content of this page is summarized based on the leftovers of the interviewees' meals and the disposal of leftovers.)



## Household Behaviors on "Home Appliances"

### Description on research scope

#### The focus of this research on "home appliances"

- ① Considerations of purchasing home appliances, energy efficiency label, reasons for not buying products of high energy efficiency class
- ② Use information of air conditioner in summer
- ③ Disposal of old home appliances
- ④ Low-carbon and energy-saving behaviors willing to be tried by home

The conclusions in this report on households' home appliances behaviors will be given based on the above data and contents.

## "Home Appliances"



With regard to the willingness to purchase energy-saving appliances, the respondent makes decisions mainly based on energy saving /low use-cost low carbon development and environmental protection, and the difference among city function levels are small, and the recognition reaches about 50% in the third and fourth-tier cities.



### Considerations for purchasing home appliance

On the whole, when buying home appliances, energy saving/low cost of use and low-carbon development and environmental protection are the two main factors considered by the respondent, both of which are 54%. low-carbon development and environmental protection is the second major consideration, which shows that the respondent has better practiced the integration of knowledge and action in home appliances, and this is related to energy efficiency labeling, subsidies, and adequate publicity.

Among different city function levels, the differences are small. The main considerations when purchasing are the use-cost and environmental protection factors.

Considerations for purchasing home appliance	Total samples (%)	Super first-tier cities (%)	New first-tier cities (%)	Second-tier cities (%)	Third and fourth-tier cities (%)
Energy-saving/low cost of use	54	59	55	51	47
Low carbon actions and environmental protection	54	61	50	57	50
Economic	38	37	37	40	38
Comfortableness during use	36	34	38	37	37
Functions	32	35	32	30	31
Convenience of use	32	27	34	31	34
Appearance design	24	20	27	22	27

Sample size: N=3500      N=1000      N=1200      N=500      N=800



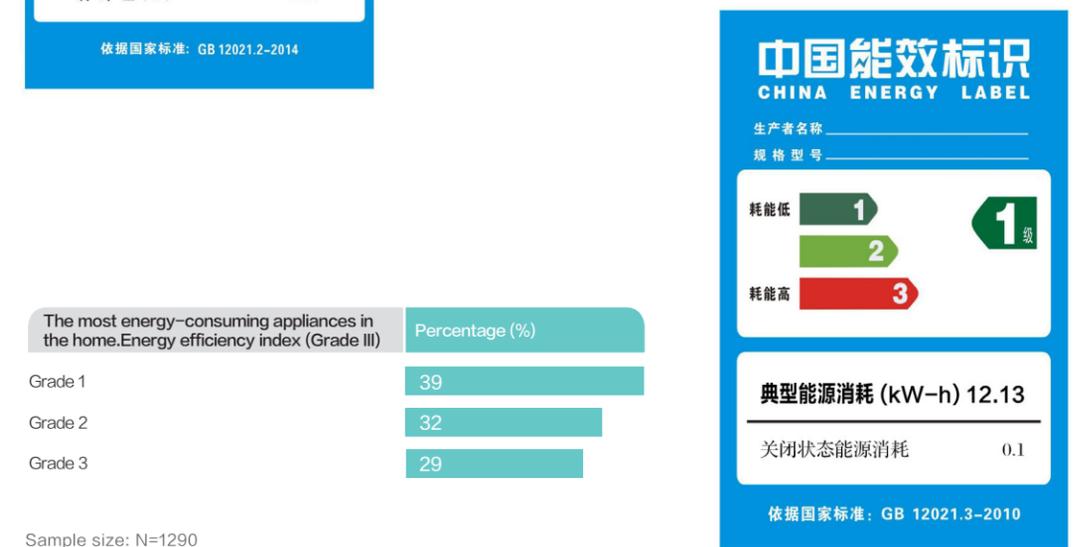
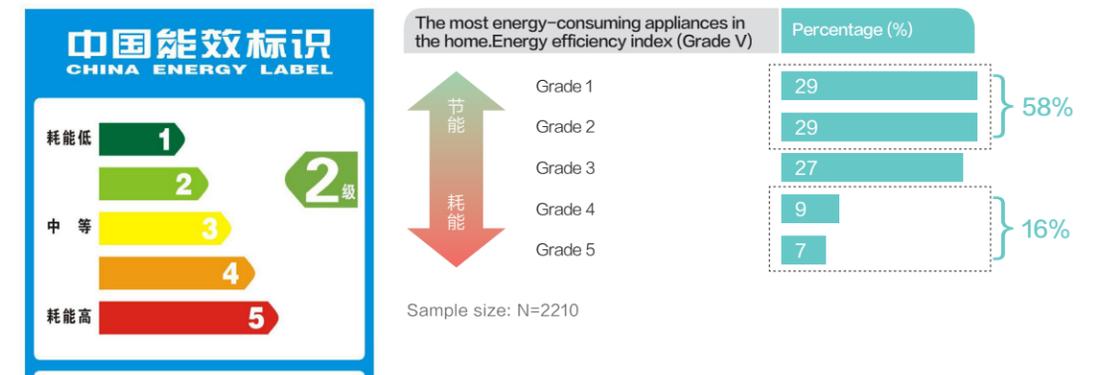
Source: B10. Considerations for buying home appliances

In the actual purchase behavior of home appliances, the purchase rate of high-efficiency appliances is still dominant;

However, there are also 20-30% of the respondent who choose low-energy-efficiency appliances. The reason why this part of the respondent does not buy high-efficiency appliances is worth paying attention to.

### Energy efficiency label of electric appliances

In fact, base on the China Energy Label with 5 classes, the most energy-consuming applicants of 58% of the respondents fall into high energy efficiency class 1-2, and low energy efficiency class of 4-5 are very low, accounting for only 16%. Based on the the updated China Energy Label with 3 classes, 39% of residents chose class 1 appliances.



Source: B11. Energy efficiency index of the most energy-consuming appliances in the home (Grade V/Grade III)

The respondent has a high recognition of energy efficiency label for home appliances and will pay attention to it when purchasing. The main reason for not buying products with high energy efficiency is that these respondents are not sure whether it is really energy saving, followed by the price factor.



### Reasons not to buy electric appliances of higher energy efficiency

The main reason is that it is not sure if the products with high energy efficiency are very energy-saving. This feature is most obvious in third and fourth-tier cities, reaching 33%, which is significantly different from that of other large-scale cities, followed by the price factor. The reason for nearly one-fifth of the respondent who is "not paying attention to the energy efficiency label" indicates that the respondents' attention to product energy efficiency needs to be further improved, and it also reminds E-commerce companies to clearly label the energy efficiency class of home appliances on the product pages.



Reasons not to buy products of higher energy efficiency	Total samples (%)	Super first-tier cities (%)	New first-tier cities (%)	Second-tier cities (%)	Third and fourth-tier cities (%)
They think that products with high energy efficiency class may not really save a lot of electricity	29	27	29	29	33
Products of higher energy efficiency class are more expensive	26	23	26	33	27
Some functions of the products with high energy efficiency class are not needed	25	28	24	23	23
Not paying attention to energy efficiency label	19	21	21	15	17
Sample size:	N=2362	N=658	N=820	N=324	N=560

Source: B12. Why not buy more energy efficient products

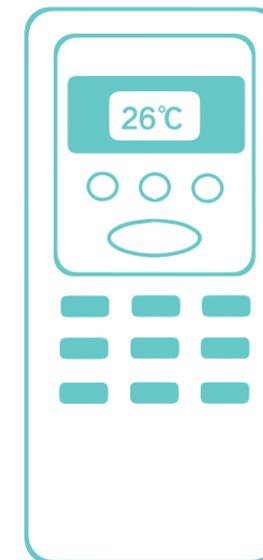
In the use of air conditioners in summer, thanks to long-term media advocacy, over 50% of the respondent will set the air conditioners at 26°C or above.



### Air-conditioning temperature in summer

Take the use of air conditioners in summer as an example. Thanks to long-term advocacy, the respondent generally sets the temperature at 26°C. The proportion of no less than 26°C is 59%. In the aspect of city function levels, there is a higher proportion of the respondent in the super first-tier cities who set the air-conditioning temperature at 26°C.

Air-conditioning temperature in summer	Total samples (%)	Super first-tier cities (%)	New first-tier cities (%)	Second-tier cities (%)	Third and fourth-tier cities (%)
Below 20°C	2	2	1	2	3
21-23°C	10	8	10	9	15
24-25°C	29	27	30	29	30
26°C	41	45	39	43	38
27-28°C	18	19	20	17	14
Sample size:	N=3500	N=1000	N=1200	N=500	N=800



Source: B13. What temperature is set for air conditioner in summer; B14. How many clothes are washed by washing machine

On the whole, the idle (10%) and discarded (8%) rates of old appliances are low, and the respondent will recycle them through different channels. The rate of the respondent using formal recycling channels in the first-tier cities is obviously the highest, while the idle and discard rates of the third and fourth-tier cities are relatively the highest.



### Disposal of home appliances (proportion in recent 3 years)

In terms of the disposal of old home appliances, the respondent will recycle them through different channels and methods. Idle (10%) and discarded (8%) account for a relatively low rate. The most important disposal channels include trade-in (43%), sell to waste collecting personnel (39%), and waste recycling stations (36%). On the whole, the rate of the respondent to use formal recycling channels (trade-in, waste recycling stations, corporate recycling, selling to the platforms of second-hand appliances) in the first-tier cities is significantly higher than other cities, while the idle and discard rates are relatively higher in the third and fourth-tier cities.



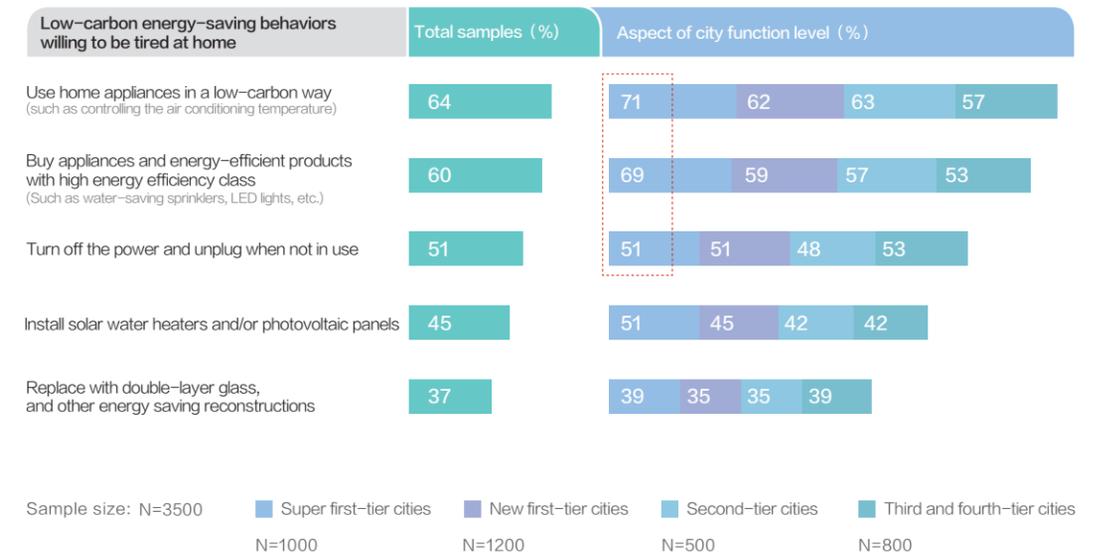
Source: B15. Disposal of home appliances (in recent 3 years)

In the aspect of home, the respondent is more willing to adopt low-carbon and energy-saving behaviors, which are generally around 50-60%. The highest willingness is to use home appliances through low-carbon ways or purchase products with high energy efficiency, especially in super first-tier cities.



### Low-carbon and energy-saving behaviors willing to try at home

On the whole, the respondents' willingness to implement below five low-carbon and energy-saving behaviors at home is relatively high. It can be found that the respondent is more willing to control the temperature of air conditioners, purchase energy-efficient and low-energy consuming products, timely unplug the power supply which are the low-carbon and energy-saving behaviors advocated in recent years, but their willingness to adopt behaviors such as replacing with double-layer glass or other energy saving reconstructions is relatively low. In the aspect of city function levels, there is no significant difference except the super first-tier cities.



Source: B16. Low-carbon energy-saving behaviors willing to be tried at home



## Household Behaviors on "Transportation"

### Scope of research on "Transportation"

#### Focus of this research on "Transportation"

- ① Commuting mileage, commuting method, and considerations when choosing commuting transportation
- ② Private car ownership and driving time
- ③ Reasons to give up driving to work

The conclusions in this report on households' "transportation" behaviors are given based on the above data and contents.

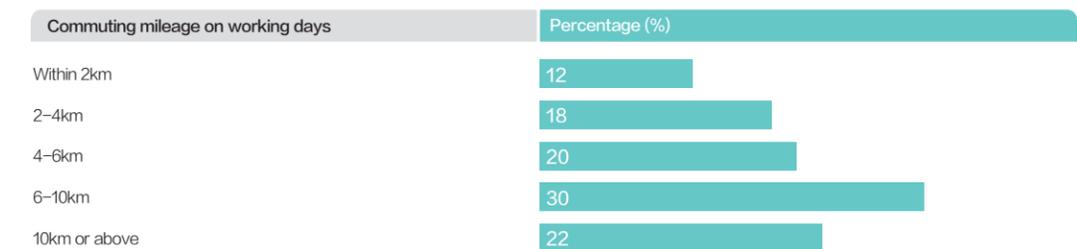


### "Transportation"

Driving, public transportation, and bicycle/e-bike are the main commuting methods. That is to say, 50% of people commute within 6km, which is in the range of half an hour by bike. When the distance of commuting exceeds 2km, the proportion of driving increases gradually.

### One-way mileage for working days

On the one-way distance of daily commuting, 30% of the respondent is within 4km and 70% exceeds 4km.



Sample size: N=3500

### Public transportation modes of different commuting mileage

On a whole, driving, public transportation, and bicycle/e-bike are the main commuting methods for the respondent. Those who commute within 1-2km mainly take public transportation, bicycle/e-bike and walking. When commuting mileage is more than 2km, the proportion of driving is positively related to commuting distance, and the proportion of public transportation and bicycles/e-bike decreases accordingly.

Public transportation modes of different commuting mileage	Overall (%)	Within 2km (%)	2-4km (%)	4-6km (%)	6-10km (%)	10km or above (%)
Driving	38	12	26	34	44	56
Public transportation	34	26	42	37	35	29
Bicycle/e-bike	17	27	23	21	11	9
Walking	6	29	4	3	3	2
Company shuttle bus	3	3	2	3	4	3
Taxi	2	1	1	1	2	1
Motorcycle	1	2	2	0	0	0

Sample size: N=3500    N=392    N=620    N=700    N=1055    N=733

Source: B20. Commuting mileage on working days, B21. Method of daily commuting/transportation

The proportion of the respondent owning private car is relatively high, and the car ownership in the first-tier cities is the highest. Of the "car-owned respondents", 1/3 of them drive for daily commuting, 1/3 are traveling on weekends, and 10% of the respondent do not usually drive after buying a car.



### Whether bought a private car

On a whole, private car ownership is around 60–80%. The car ownership in the super first-tier cities is the highest.

Whether bought a private car	Total samples (%)	Super first-tier cities (%)	New first-tier cities (%)	Second-tier cities (%)	Third and fourth-tier cities (%)
Yes	73	84	74	65	64
No	27	16	27	35	36

Sample size: N=3500      N=1000      N=1200      N=500      N=800



### Driving time

The use of private cars is frequent, and only 9% of the respondent express that they do not drive for commuting on working days or traveling on weekends.

Driving time period	Percentage (%)
When commuting from Monday to Friday	37
Traveling on weekends	35
Both are frequent	18
Both are not frequent	9

Sample size: N=2561

Source: B18. Whether have a private car; B19. When usually drive

Responding to green and low-carbon travelling advocacy, avoiding traffic jam and time consuming are the two main reasons why the respondent is willing to give up driving to work. This feature is more obvious in super first-tier cities and new first-tier cities. "Green and low carbon actions" have a strong convincing effect on changing commuting behavior.

### Reasons to be willing to give up driving to work

Responding to green travelling advocacy, public transportation takes less time are the two major reasons why the respondent is willing to give up driving to work. In the aspect of city function levels, the respondent in super first-tier cities and new first-tier cities are more likely to suffer from traffic congestion and parking inconvenience, therefore, they are more willing to give up driving to work.

Reasons to be willing to give up driving to work	Total samples (%)
In response to green and low-carbon travelling advocacy	57
Traffic jams, public transportation (such as subway) is faster than driving	53
Inconvenient and expensive parking	40
Private car restriction days	37
Bad weather, which is suitable for driving	30

Sample size: N=1318

Reasons to be willing to give up driving to work	Super first-tier cities (%)	New first-tier cities (%)	Second-tier cities (%)	Third and fourth-tier cities (%)
In response to green and low-carbon travelling advocacy	60	59	54	52
Traffic jams, public transportation (such as subway) is faster than driving	63	52	50	45
Inconvenient and expensive parking	42	41	30	39
Private car restriction days	39	35	39	39
Bad weather, which is suitable for driving	28	31	28	32

Sample size: N=365      N=514      N=193      N=246

Source: B23. Reasons to give up driving to work

In terms of transportation, based on respondents' transportation considerations, it can be divided into five categories. It can be seen that the proportion of low carbon development and environmental protection is the highest (N=1080), among which the proportion of public transportation is the highest (47%). But no matter what the reasons are, commuting mileage and the transportation methods have the highest correlation. Even people who consider low-carbon and environmental protection, they also choose to drive because of the long distance.

	Commuting methods (%)		Commuting mileage (%)	
	Percentage (%)		Percentage (%)	
Consider the cost	Public transportation	51	1-2km	12
	Driving	18	2-4km	19
	Bicycle/e-bike	16	4-6km	22
			6-10km	30
			10km or above	16

Sample size: N=453

	Commuting methods (%)		Commuting mileage (%)	
	Percentage (%)		Percentage (%)	
Consider the commuting time	Public transportation	25	1-2km	9
	Driving	54	2-4km	17
	Bicycle/e-bike	11	4-6km	19
			6-10km	32
			10km or above	22

Sample size: N=550

	Commuting methods (%)		Commuting mileage (%)	
	Percentage (%)		Percentage (%)	
Consider the convenience/flexibility	Public transportation	22	1-2km	12
	Driving	50	2-4km	17
	Bicycle/e-bike	17	4-6km	20
			6-10km	28
			10km or above	23

Sample size: N=873

	Commuting methods (%)		Commuting mileage (%)	
	Percentage (%)		Percentage (%)	
Consider the commuting comfort	Public transportation	24	1-2km	9
	Driving	54	2-4km	16
	Bicycle/e-bike	13	4-6km	23
			6-10km	32
			10km or above	20

Sample size: N=541

	Commuting methods (%)		Commuting mileage (%)	
	Percentage (%)		Percentage (%)	
Consider low-carbon development and environmental protection	Public transportation	47	1-2km	13
	Driving	20	2-4km	19
	Bicycle/e-bike	21	4-6km	18
			6-10km	30
			10km or above	21

Sample size: N=1080

Source: B21. Methods of daily commuting; B22. Main reasons to consider when choosing commuting methods



## Household Behaviors on "Other Aspects"

### Scope of research of "Others"

The focus of this research on "Others"

- ① Frequency of replacing electronic entertainment equipment and disposal of old equipment
- ② Garbage classification and express packaging treatment
- ③ Use of disposable goods
- ④ Attitude of the sharing economy

The conclusions in this report on households' behaviors on "Others" aspects are given based on the above data and contents.

## Electronic entertainment equipment

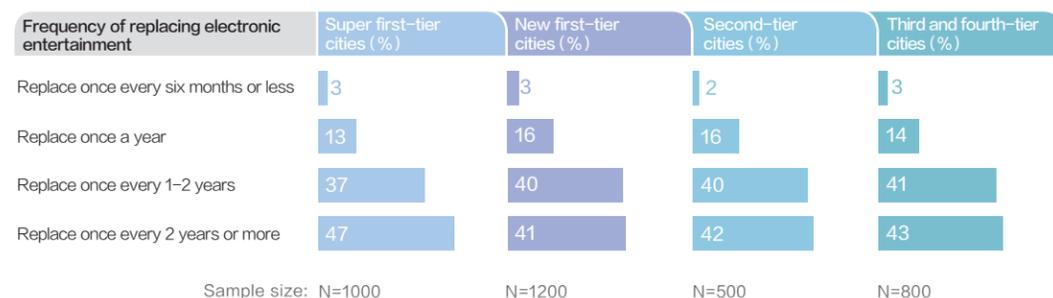
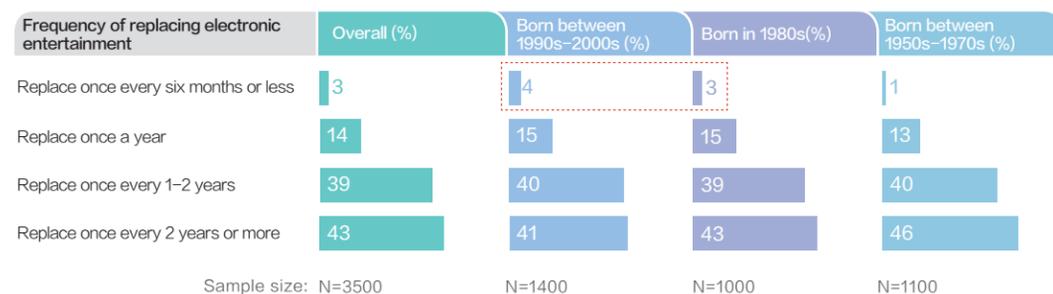


Respondents generally replace the electronic entertainment equipment once every 1-2 years or more than 2 years, but the replacement frequency of younger groups will be slightly higher, and the replacement frequency of super first-tier cities is lower than other cities. (\*Electronic entertainment equipments refer to game players, mobile phones, computers, tablets, etc.)



### Frequency of replacing electronic entertainment

40% of respondents replace the electronic entertainment equipment only once every 2 years or above, and another 40% replace it once every 1-2 years. In general, the service life of electronic entertainment equipment is more than 1 year. However, from the perspective of age, there will be "fans of electronic entertainment equipment", whose replacement frequency is higher, but the overall proportion is not high. In terms of city function levels, the replacement frequency in the super first-tier cities is slightly lower than others.



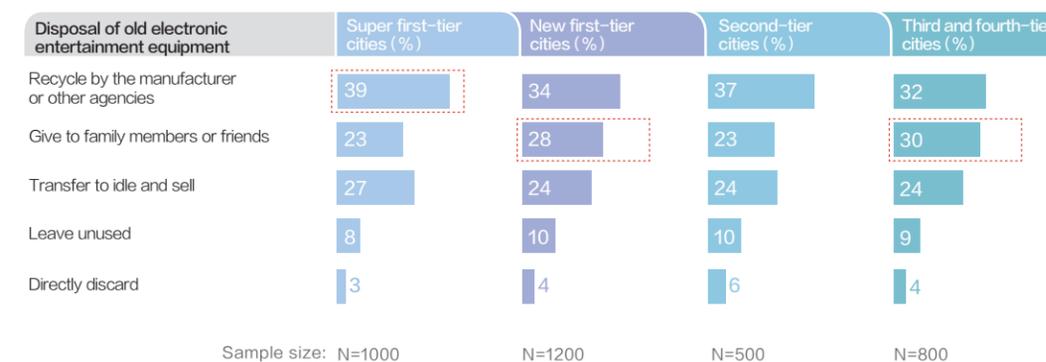
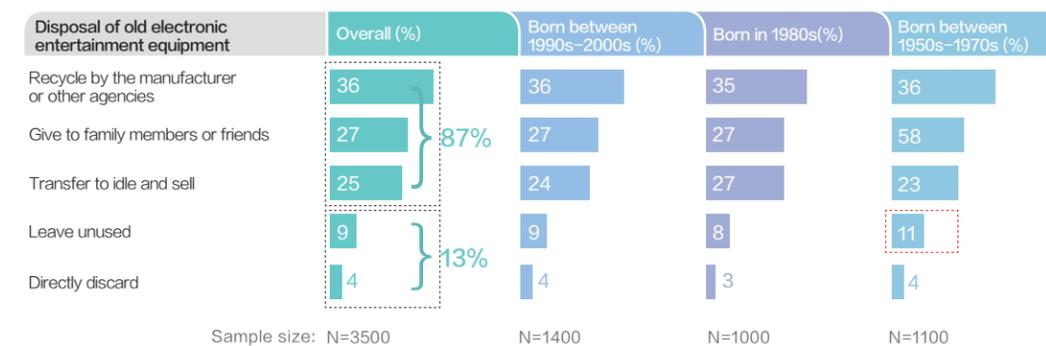
Source: B32. Frequency of replacing electronic entertainment equipment; \* Electronic entertainment equipment: Refer to electronic devices such as game players, mobile phones, computers, and tablet computers.

On the whole, the recycling rate of old electronic entertainment equipment is high, reaching 87%. Among them, 50% of them are through non-merchant/agency channels, such as giving to others or transferring to idle. The idle rate of people born between 1950s-1970s is slightly higher compared with the other two age groups, and the merchant/agency channel recycling rate in super first-tier cities is higher.

87%

### Disposal of old electronic entertainment equipment

On the whole, respondents have a high recycling rate of used electronic entertainment equipment, and the idle and waste rate is only 13%. 36% of them are recycled through the formal channels of manufacturers or agencies, and 52% of respondents will choose to give it to others, or leave it idle. From the perspective of age, the idle rate for people born between 1950s-1970s is slightly higher. Possible reasons include the lack of awareness of the recycling channels or the fear of trouble; and from the perspective of city function levels, the recycling rates of manufacturers or agencies in super first-tier cities are higher, but the proportion of giving to others in other cities is slightly higher.



Source: B33. Disposal of old electronic entertainment equipment



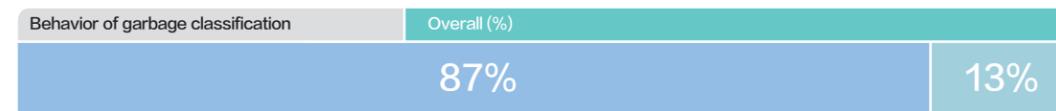
## Garbage classification

In the self-assessment, 80% of respondents usually perform garbage classification, which has significant characteristics in super first-tier cities.

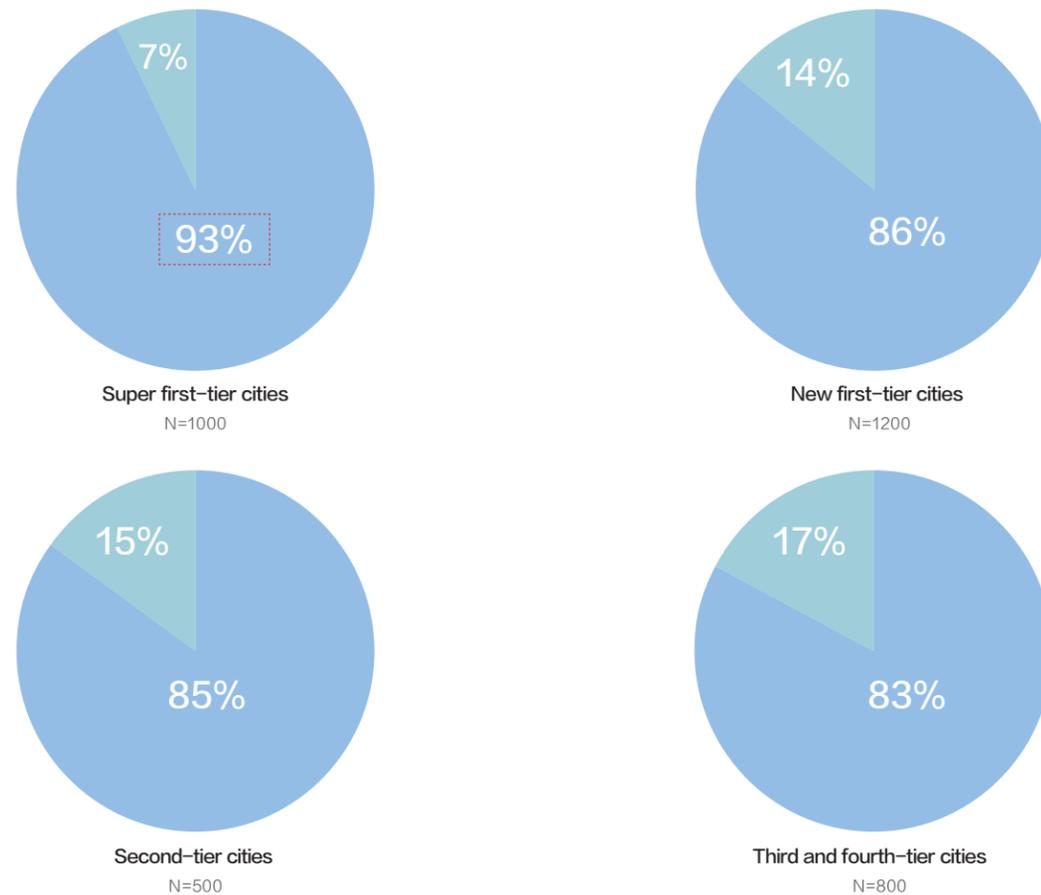
### Behavior of garbage classification

Through the self-assessment of respondents on their garbage classification behaviors, it can be found that more than 80% of respondents claim that they perform garbage classification in daily life. This proportion has significant characteristics in super first-tier cities, but there is no significant difference among the new first-tier cities, second-tier cities, third and fourth-tier cities.

● Carry out garbage classification ● Do not carry out garbage classification



Sample size: N=3500

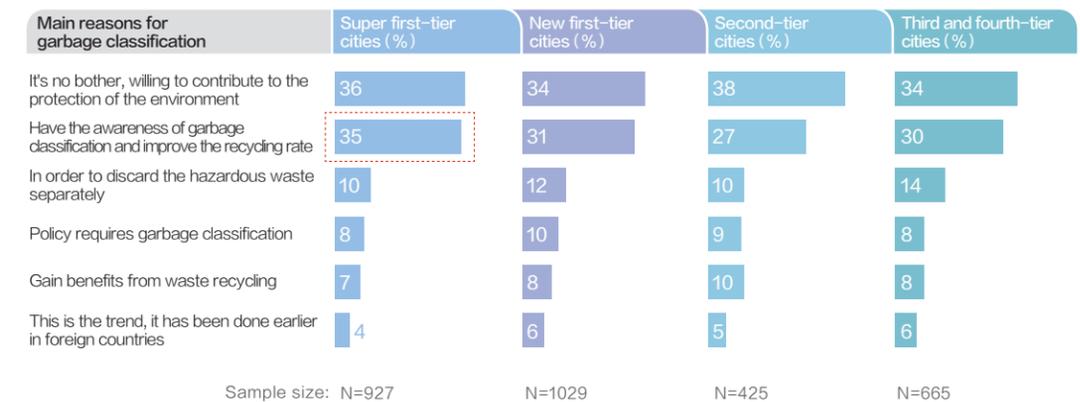
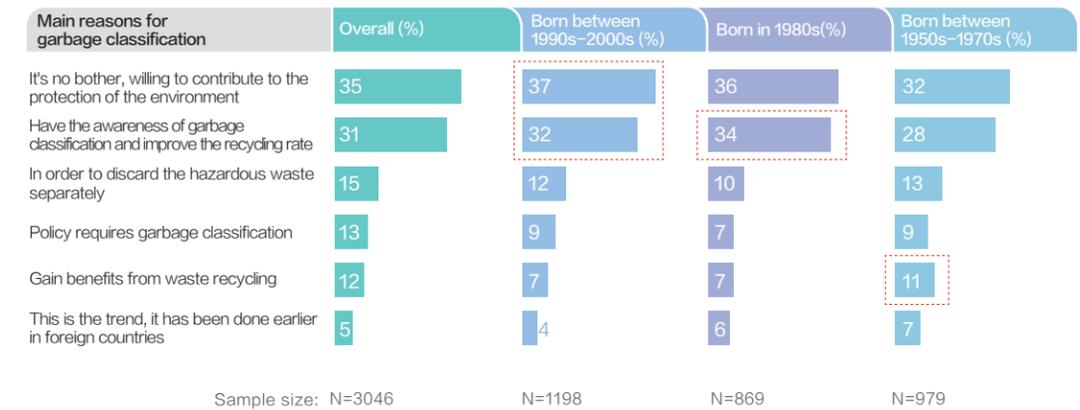


Source: B28. Whether garbage classification or not

The main reason for respondents to carry out garbage classification is to hope that they can contribute to environmental protection and improve the recycling rate of resources. This feature is most obvious in super first-tier cities and respondents born between 1990s–2000s.

### Main reasons for garbage classification

- For respondents who claim they carry out garbage classification in daily life in the self-assessment, they mainly think that they are willing to contribute to protecting the environment and have the sense of recycling resources;
- From the perspective of age, respondents born between 1990s–2000s and in 1980s are more willing to carry out garbage classification for environmental protection, however, the proportion of respondents born between 1950s–1970s who hope to obtain income through waste recycling is higher;
- From the perspective of city, the awareness of garbage classification in the first-tier cities is significantly higher than in other cities.

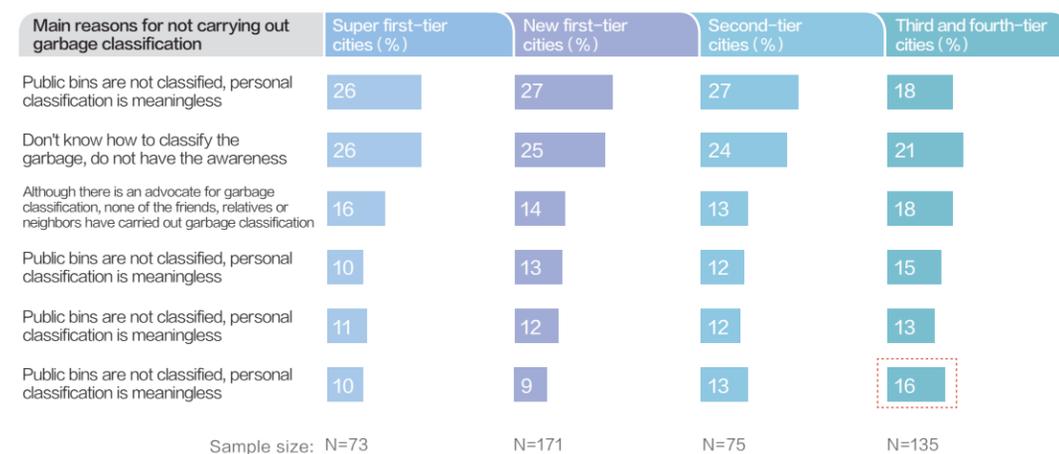
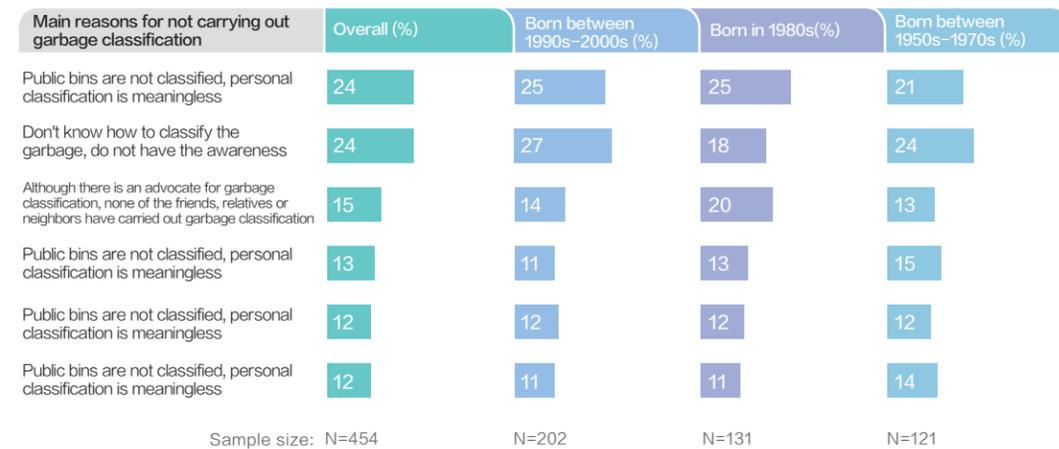


Source: B29. Main reasons for garbage classification

The main reasons why respondents does not classify garbage are the lack of the social environment for garbage classification and the lack of understanding of how to classify the garbage.

### Main reasons for not carrying out garbage classification

For respondents who do not carry out garbage classification in daily life in self-assessment, the main reasons are doubts about the implementation of garbage classification and skepticism about the significance of individual garbage classification; this characteristics exists in different age groups and in different city function levels. The proportion of respondents in the third and fourth-tier cities who believe that "relevant departments and personnel instead of the ordinary people should classify the garbage" is higher than other cities.



Source: B29. Main reasons for garbage classification



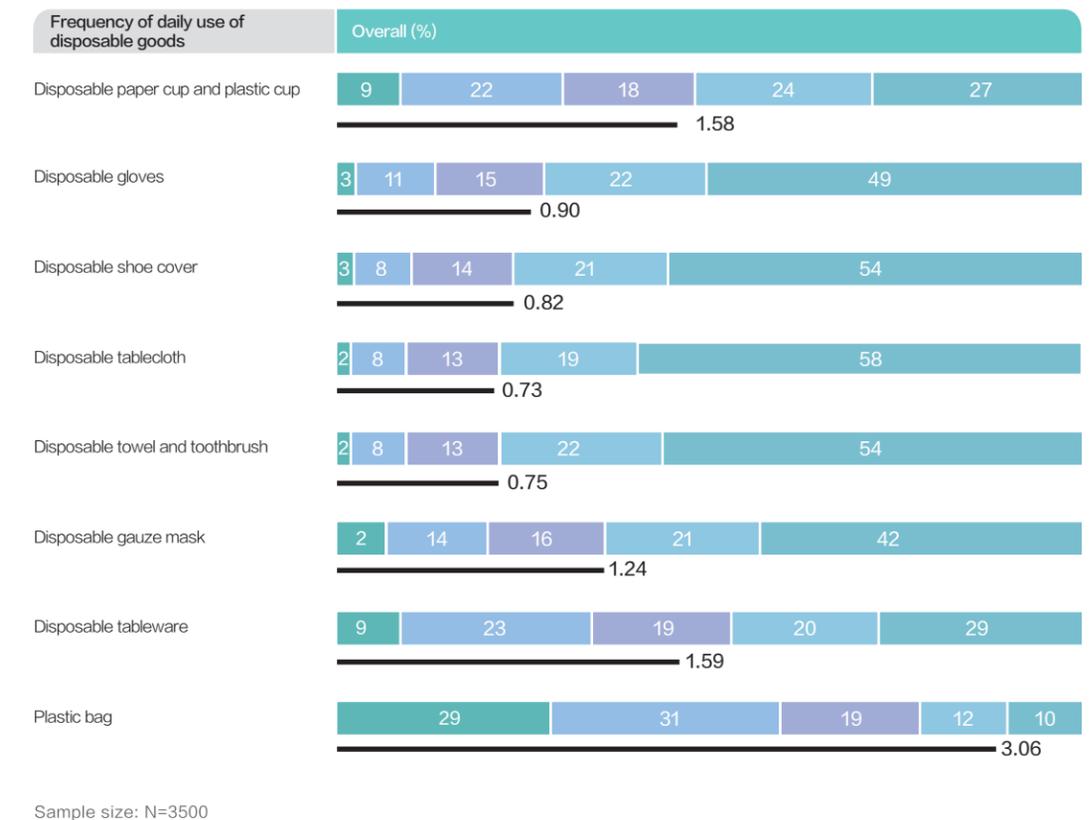
### Disposable goods

Respondents use common disposable items frequently, especially plastic bags, disposable tableware, and disposable paper cups.

### Frequency of daily use of disposable goods

The frequency of respondents using common disposable goods is about 1-3 times a week. The most frequent items are plastic bags (3 times/week), followed by disposable tableware (2 times/week) and disposable paper cups (2 times/week).

● At least once a day    ● 2-3 times a week    ● Once a week  
 ● 2-3 times a month    ● Once a month or less    — Average weekly usage times

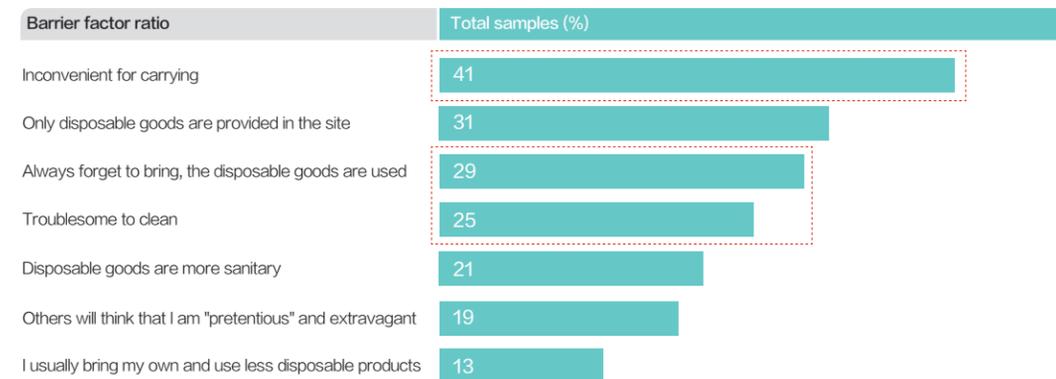


Source: B26 Frequency of using disposable goods

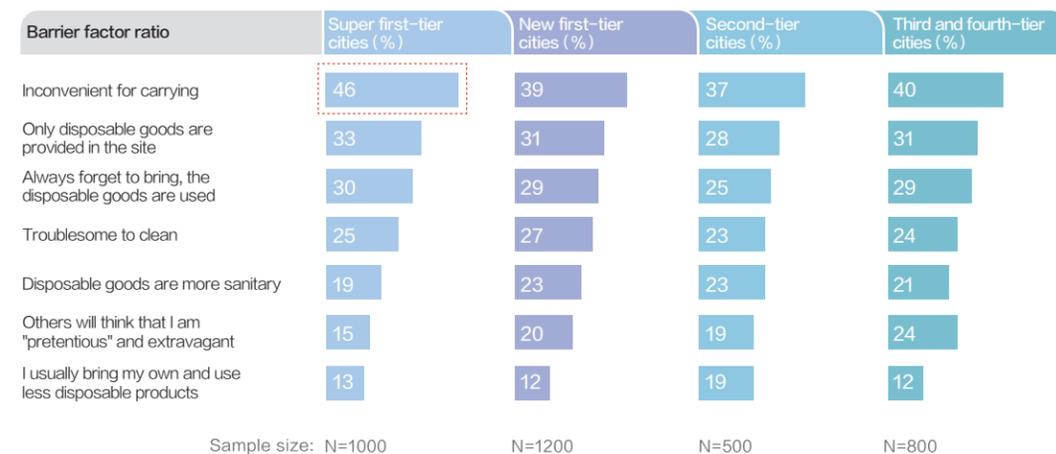
The biggest obstacle for respondents to bring own non-disposable products is the inconvenience of carrying. Among the TOP4 obstacles, three are related to "troublesome" and "forget to bring", which shows that respondents have not developed habits, formed ideas, and made determination to reduce the use of disposable products.

### Obstacles to bring own non-disposable goods

- "Inconvenience" is the most important reason for respondents' unwillingness to bring own non-disposable goods. It has the highest proportion in the first-tier cities and the most obvious characteristics;
- Among the 7 obstacles listed, "inconvenience", "troublesome", and "forget to bring" ranked TOP4, which shows that respondents have not developed habits and formed inherent concepts in reducing the use of disposable goods, and choose convenience over the environment. It ranks the second that the site does not provide multiple-use appliances, indicating that the supply side of disposable goods also increases the probability of using disposable goods.



Sample size: N=3500



Source: B27. Barriers to the use of disposable goods

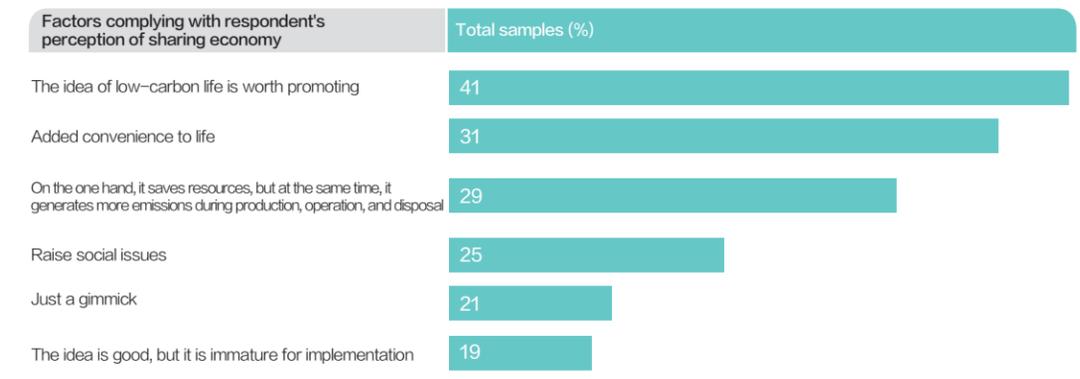


### Sharing economy

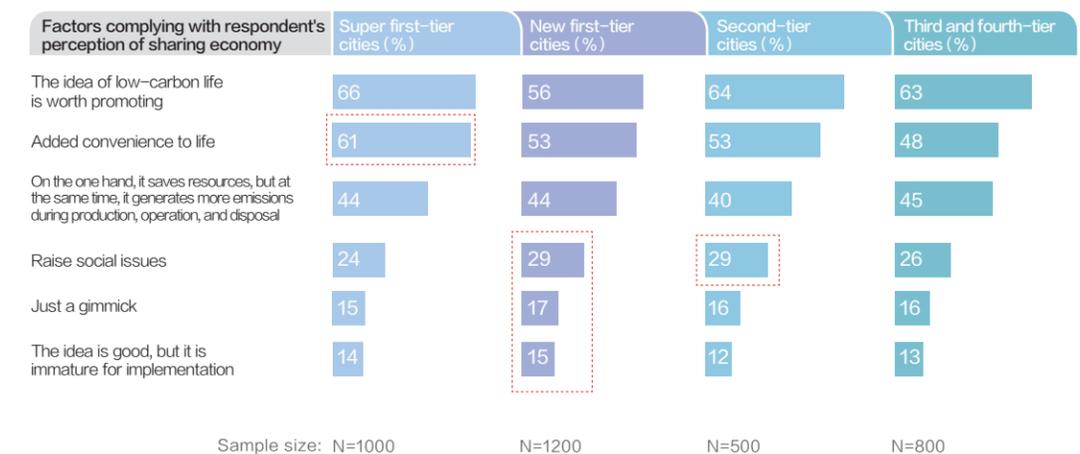
Respondents generally believe that the sharing economy is worth promoting and can bring some convenience to life, especially for respondents in super first-tier cities. The negative attitudes of respondents on the sharing economy in other cities are relatively high.

### Respondent's attitude on the sharing economy

- On the whole, respondents still believe that the sharing economy is worth promoting and brings convenience to life; however, it also holds certain critical views on the current situation of the sharing economy, such as: generate more emissions, cause social problems, etc.;
- In the aspect of city, the super first-tier cities may have more diversity and infrastructure of the sharing economy, and starts earlier, so respondents have the highest recognition of the convenience brought by the sharing economy, while respondents of other cities have some negative views due to insufficient facilities, management and other reasons.



Sample size: N=3500



Source: C9. Views on the sharing economy



## Respondents' Carbon Capacity and Suggestions for Improvement



### Low carbon values

Respondents' Low Carbon Awareness and Suggestions

High attention but lack of in-depth knowledge;  
A social responsibility rather than personal benefits;  
Lack of deep understanding of how to implement;  
Doubts about whether low carbon actions will compromise the quality of life;  
Not yet trending as a lifestyle, thus further intervention is required.

Current Situation

Low carbon knowledge advocacy

When promoting low carbon actions, combine with concepts such as health and money-saving, emphasizing that "low carbon lifestyle" and "the life we want" are actually not contradictory, but complementary to each other.

Specific behavioral guidance

Put low-carbon lifestyle into actionable practices, make it traceable and instructive. "I know what to do when I want to be low carbon".

Low carbon awareness improvement

Concepts of "saving" and "eco-friendliness" are often the starting points why respondents value low carbon products, but low carbon actions should not stop there. Benefits brought by low carbon actions should be promoted. Although low carbon lifestyle is a "responsibility", people can also benefit from it. It should be shaped as a new trend that everyone is pursuing for a better life.  
Low carbon lifestyle cannot conflict with "high quality of life".



## Low-carbon behavior

Base on the difficulty of practicing low carbon actions, above mentioned four major aspects of respondents' life are raked as following, from easy to difficult: home appliances, transportation, daily diet, clothing and footwear

### Home appliances

Many respondents choose low-carbon products (high energy efficiency and low energy consumption), but these are passive actions for the purposes of saving cost.

### Transportation

- Travelling modes are affected by many factors, such as travelling mileage, traffic congestion, and the number of occupants, thus might lead to forced high carbon behaviors;
- But respondents will also actively respond to relevant policies, such as green travelling, etc.

### Daily diet

- Health is valued higher than low carbon development and environment protection;
- However, respondents will actively respond to relevant policies or trends, such as "clearing your plate" campaign, and no excessive business dinners.

### Clothing and footwear

High consumption frequency  
 Respondents don't consider low carbon development or environment protection when buying;  
 The acceptance of buying less is low, but the feasibility of recycling is high.

Relatively easy

Buy energy-saving home appliances  
 Recycle home appliances  
 Save energy when use air conditioners, etc.

Select green travelling options  
 Use new energy vehicles

Reduce waste in business dinners and increase reuse of leftovers

Buy clothes that are made of eco-friendly materials and with lower carbon footprints  
 Buy less clothes (less buying)

Relatively difficult

Compared to buying less, respondents are more willing to conserve resources after they buy the products, such as extending product lifecycle, less usage of resources, and reducing using frequency.

## Lifestyle of reducing carbon emissions

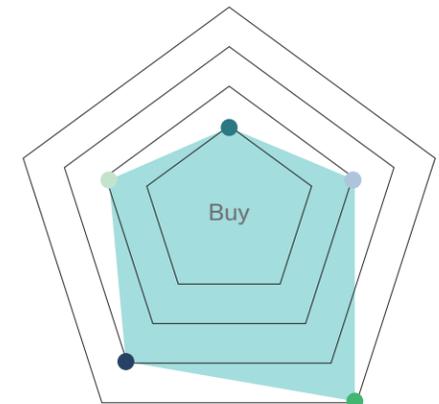
- Conserving resources is the carbon emission reduction behavior that respondents are most willing to accept.
- Viewing from the overall trend, the respondents' acceptance of conserving resources after they buy the products—such as extending product lifecycle, less usage of resources, and reducing using frequency—is generally higher, while the acceptance of consumption reduction is the lowest, indicating that people are more likely to choose the benefits of purchase over low carbon development and environment protection.

Lifestyle of reducing carbon emissions	Total samples (%)
Conserving resources	53
Buy and use emerging low-carbon products and services	45
Pay attention to reducing energy consumption when using the product	44
Buy products with high energy efficiency class	43
Provide more convenient product recycling/disposal platform	43
Green travelling	39
Consumption reduction, do not buy if it is possible	32

Sample size: N=3500

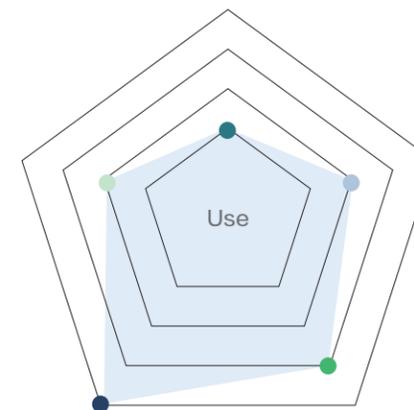
In purchase, use, and disposal stages, respondents take more low carbon actions in transportation and home appliances than other aspects.

- Clothing and footwear
- Daily diet
- Home appliances
- Transportation
- Others



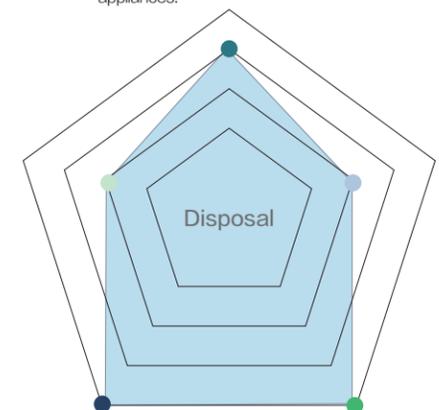
Have been practicing, higher probability of realization

The motivation of most respondents is "saving money", and "eco-friendliness" is also an important motivation in the aspect of home appliances.



Respond to advocacy, make actual efforts

Obvious regional differences exist. When local environmental protection campaign is done well, respondents' sense of responsibility is high, and environmental protection factors are also mentioned.



Have been practicing, yet there are still challenges in implementation

Motivation is still based on benefits as a prerequisite, such as "no waste", "making money", "also helping environmental protection at the same time".

- Low-carbon awareness and identification need to be upgraded to make low carbon actions more visible and accessible.
- In different aspects of life, respondents have different low-carbon choices and actions. In terms of clothing and footwear as well as daily diet, low-carbon choices and actions are less; in terms of home appliances, respondents have some spontaneous low-carbon behaviors, but lower low carbon footprint is only one of the motivations; in terms of transportation and entertainment, there are more prerequisites for implementation.
- In many aspects, respondents value more of their needs, such as healthy food and comfortable clothing. We need to let the public know that low carbon actions do not conflict with their needs. Instead, they can bring immediate benefits. We should make the public more willing to accept low carbon actions by combining low carbon and health, energy saving, and comfort concepts, etc.

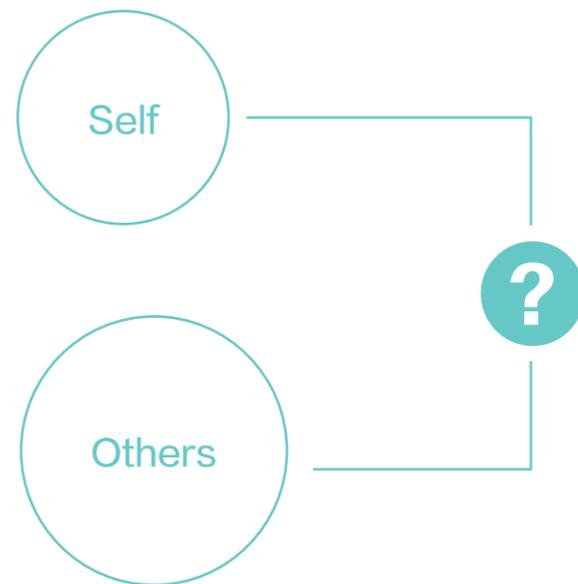


### Low carbon influence

In terms of low carbon actions, respondents generally believe that their influence on others is very low. They are unwilling to preach low carbon actions and interfere others' life, and tend to influence others through their behaviors. In fact, respondents are mostly influenced by relatives and friends, so there is great potential of increasing personal influence.

### In terms of low carbon actions, respondents' influence on others

- Respondents generally believe that their influence on others is low.
- They are unwilling to preach low carbon actions and interfere others' life.
- They tend to influence others through their behaviors, and don't know if the latter will follow their example or not. They think they don't have the right to interfere.



In the survey, respondents mention that they are most influenced by family, relatives, and friends in terms of low-carbon actions, and there is great potential of increasing personal influence. At the same time, the respondents influence others through specific actions. Therefore, we need to help them form a correct understanding of low carbon development, develop a low-carbon lifestyle and consumption behaviors, so as to influence surrounding people subtly through their daily behavior.



## Main Conclusions

### 1. Awareness on climate change

The respondents are very concerned about global warming, but they are still lack of sufficient knowledge on how to reduce carbon emissions.

### 2. Current consumption status

The respondents' consumption behaviors show that they value convenience and practicality, have a diversified consumption structure, and would adjust expense to income. Online shopping is an important channel of consumption, which brings convenience but also generates a lot of unnecessary consumptions.

### 3. Viewpoint on low carbon lifestyle

The respondents are familiar with the term "low carbon", and their understanding focuses more on "reducing waste" and "sustainable development", etc. They value the low-carbon lifestyle more from the perspective of reducing waste and benefiting future generations, which reflect the sense of altruism and responsibility. In the aspect of understanding the relevance of a low carbon lifestyle to themselves, further guidance is still required, such as establishing the connection between "low carbon lifestyle" and "high-quality of life".

### 4. Implementation of low carbon lifestyle

The most acceptable practice of reducing carbon emissions to the respondents is to conserve resources after they buy the products, such as extending product lifecycle, less usage of resources, and reducing product using frequency, rather than buying less. The public need further guidance on how to implement low carbon lifestyle and consumption, including how to identify low carbon products, how to calculate their carbon emissions, and whether individual low carbon actions can bring positive effects.

### 5. Low carbon influence

The respondents are more inclined to influence others around them by their specific low carbon actions subtly rather than directly preaching them.

## 6. Low carbon actions in clothing, diet, housing and transportation

#### PART 1



#### Less low-carbon considerations in "Clothing and Footwear" and "Daily Diet"

The respondents have considered less of low carbon implications, and are lack of related knowledge in above mentioned areas.

#### PART 2



#### High willingness to take low carbon actions in "Transportation" and "Household Appliances"

The respondents are more likely to change their behaviors to reduce carbon emissions, and the willingness to take low carbon actions when they purchase, use, and disposal products is higher.

#### PART 3



#### Challenges of implementing low carbon actions in "Home Appliances", "Transportation", "Disposable Goods"

The respondents have high awareness and high "willingness to take low carbon actions", but there are still challenges in implementation, such as doubts in whether the energy efficiency label is significant, public transportation infrastructure for long-distance commuting, and the fact that disposable goods are actively provided by merchants.

#### PART 4



#### Weak influence on others

The respondents generally believe that their influence on others in terms of low carbon actions is very low. They are unwilling to preach about them, and are more inclined to influence others by their behavior subtly. However, respondents of all ages are greatly affected by relatives and friends. In fact, there is possibility of influencing others through action.

#### PART 5



#### The most acceptable/common low-carbon actions are related to "Home Appliances" and "Transportation"

The most acceptable (or most common) low-carbon actions are the purchase, use, and disposal of home appliances, and choice of transportation. The least acceptable actions are in the purchase and use of clothing and footwear, and the choice and disposal of daily diet.

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