

Xu, Yalin et al.

Article — Published Version

Can carbon labels shift consumers towards sustainable food? Evidence from Chinese consumers

Sustainable Futures

Provided in Cooperation with:

Leibniz Institute of Agricultural Development in Transition Economies (IAMO), Halle (Saale)

Suggested Citation: Xu, Yalin et al. (2024) : Can carbon labels shift consumers towards sustainable food? Evidence from Chinese consumers, Sustainable Futures, ISSN 2666-1888, Elsevier, Amsterdam, Vol. 8, pp. 1-13,
<https://doi.org/10.1016/j.sftr.2024.100363> ,
<https://www.sciencedirect.com/science/article/pii/S2666188824002120>

This Version is available at:

<https://hdl.handle.net/10419/306867>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<http://creativecommons.org/licenses/by-nc/4.0/>

Supplementary Material: Original Questionnaire in English

Section I: Awareness of Carbon Labels for Agricultural Products

1. Which processes in the production of agricultural products do you think generate carbon dioxide?

(Multiple choices allowed)

A. Sowing

B. Irrigation

C. Fertilization, Pesticide Use

D. Harvesting

E. Storage

F. Processing and Transportation

G. Other (please specify): _____

2. Are you aware of the specific meaning of the national “Dual Carbon” targets?

A. Yes

B. No-The “Dual Carbon Policy” refers to “Carbon Peaking” and “Carbon Neutrality”. “Carbon peaking” means that our country has committed to reaching a peak in carbon dioxide emissions before 2030, after which they will gradually decrease; by 2060, all emitted carbon dioxide will be offset by measures such as afforestation and energy conservation, achieving “carbon neutrality.”

3. Are you familiar with the relevant information about carbon labels?

A. Yes

B. No-A carbon label indicates the amount of greenhouse gas emissions produced during a product's production process, informing consumers of the product's carbon footprint and promoting low-carbon consumption. For example, in 2022, SATINE released China's first “carbon-neutral milk,” which achieved “net-zero emissions” by offsetting the carbon emissions produced during the milk production process and the carbon emissions reduced by using clean energy in factories and recyclable packaging.

Section II : Opinions on Carbon-Labeled Agricultural Products

Statement No.	Item	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
1	I understand the concept of carbon-labeled agricultural products (such as "zero-carbon" vegetables, carbon-neutral milk, etc.).					
2	I understand the quality characteristics of carbon-labeled agricultural products (such as "zero-carbon" vegetables, carbon-neutral milk, etc.).					
3	I am familiar with the costs associated with carbon-labeled agricultural products (such as "zero-carbon" vegetables, carbon-					

	neutral milk, etc.).					
4	When shopping, I keep plastic shopping bags and reuse them.					
5	When printing, I actively use both sides of each sheet of paper.					
6	I often pay attention to articles or reports related to environmental issues.					
7	Purchasing high carbon dioxide emissions from agricultural products will cause serious pollution and environmental damage.					
8	Purchasing carbon-labeled agricultural products can reduce environmental pollution.					
9	Purchasing carbon-labeled agricultural products can ensure the quality and safety of agricultural products, which benefits us all.					
10	I believe that purchasing carbon-labeled agricultural products is beneficial for the environment.					
11	I believe purchasing carbon-labeled agricultural products is a wise choice.					
12	Purchasing carbon-labeled agricultural products will make me feel physically and mentally pleasant.					
13	As a consumer, I should bear some responsibility for reducing carbon dioxide emissions.					
14	I feel responsible for environmental issues caused by not purchasing carbon-labeled agricultural products.					
15	I would feel guilty if I didn't buy agricultural items with carbon labels, contributing to increased carbon dioxide emissions.					
16	I believe that every consumer bears some responsibility for the					

	environmental and social problems caused by the production and consumption of agricultural products.					
17	Please select “ Disagree ” for this question.					
18	To safeguard the environment, I should try to limit the number of agricultural items I buy that release a lot of carbon dioxide.					
19	I feel morally obligated to contribute to reducing carbon dioxide emissions by purchasing carbon-labeled agricultural products.					
20	I consider it a moral duty to society to purchase carbon-labeled agricultural products to reduce carbon dioxide emissions.					
21	Everyone is responsible for considering the environmental impact when purchasing agricultural products.					
22	The price of carbon-labeled produce significantly influences my decision to purchase it.					
23	I think that consumers find it difficult to purchase items with a carbon label because of the high prices.					
24	I am willing to buy carbon-labeled products when I have confidence in their environmental benefits.					
25	I am glad to purchase carbon-labeled agricultural products.					
26	I am likely to purchase carbon-labeled agricultural products in the future.					
27	I plan to buy more carbon-labeled agricultural products in the future.					
28	I would recommend carbon-labeled agricultural products to my relatives and friends.					

29	I prefer carbon-labeled agricultural products because my friends and family approve purchasing them.					
30	My friends and family are hoping I will buy agricultural items with a carbon label, so I would like to do so.					
31	I prefer to buy carbon-labeled agricultural products because the government encourages me.					
32	I prefer to buy carbon-labeled agricultural products because of the environmentally friendly examples.					
33	I worry that I might be wasting money when buying carbon-labeled agricultural products.					
34	I am concerned that carbon-labeled agricultural products may not provide the necessary benefits.					
35	I worry that carbon-labeled agricultural products may not perform as well as advertised.					
36	Considering various factors, I think there are risks associated with purchasing carbon-labeled agricultural products.					

29

30 Section III: Carbon Label Promotion

31 1. Have you purchased carbon-labeled agricultural products before?

32 A. Yes

33 B. No. Please proceed to **Q3**.

34 2. How often have you chosen carbon-labeled agricultural products in the past year?

35 A. 0 times

36 B. 1-3 times

37 C. 4-6 times

38 D. 7-9 times

39 E. 10-12 times

40 F. 13-15 times

41 G. More than 15 times

42 3. Would you pay more for products like “carbon-neutral” organic milk and “zero-carbon” organic
43 vegetables?

- 44 (1) Yes
- 45 (2) No. Please briefly describe the reasons for refusing to pay more. (Multiple choices allowed;
- 46 Please proceed to Q9)
- 47 A. I contend that agricultural products do not influence the environment considerably from
- 48 production to consumption.
- 49 B. I cannot afford the expense due to financial constraints, but I would be willing to do so if
- 50 my income increased.
- 51 C. It is not cost-effective, and I don't think it is necessary to spend more money on it; I would
- 52 prefer to buy cheaper agricultural products that are not carbon-labeled.
- 53 D. I do not believe that carbon-labeled products will help reduce carbon dioxide emissions.
- 54 E. I believe the government should take more responsibility for reducing emissions than the
- 55 consumers.
- 56 F. I do not want to try new products.
- 57 G. Others_____

58 4. After calculating the average price of common plain milk in supermarkets is RMB 3.75 per carton

59 (250 ml), what is the maximum value (in RMB) you are willing to pay for each carton of carbon-

60 labeled plain milk? (Please complete the checkboxes in the table)

3.75	3.94	4.13	4.31	4.50
4.69	4.88	5.06	5.25	5.44
5.63	5.81	6.00	6.19	6.38
6.56	6.75	6.94	7.13	7.31

61 5. Relevant data show that the latest average market price of corns in China is RMB 1.80 per catty

62 (500g); what is the maximum value (in RMB) you are willing to pay for each catty of carbon-labeled

63 corns? (Please complete the checkboxes in the table)

1.80	1.89	1.98	2.07	2.16
2.25	2.34	2.43	2.52	2.61
2.70	2.79	2.88	2.97	3.06
3.15	3.24	3.33	3.42	3.51

64 6. Relevant data show that the latest average market price of bananas in China is RMB 3.36 per

65 catty (500g); what is the maximum value (in RMB) you are willing to pay for each catty of carbon-

66 labeled bananas? (Please complete the checkboxes in the table)

3.36	3.53	3.70	3.86	4.03
4.20	4.37	4.54	4.70	4.87
5.04	5.21	5.38	5.54	5.71
5.88	6.05	6.22	6.38	6.55

67 7. Relevant data show that the latest average market price of tomatoes in China is RMB 2.90 per

68 catty (500g); what is the maximum value (in RMB) you are willing to pay for each catty of carbon-

69 labeled tomatoes? (Please complete the checkboxes in the table)

2.90	3.05	3.19	3.34	3.48
3.63	3.77	3.92	4.06	4.21
4.35	4.50	4.64	4.79	4.93
5.08	5.22	5.37	5.51	5.66

70 8. Relevant data show that the latest average market price of eggs in China is RMB 5.10 per catty

71 (500g); what is the maximum value (in RMB) you are willing to pay for each catty of carbon-labeled
 72 eggs? (Please complete the checkboxes in the table)

5.10	5.36	5.61	5.87	6.12
6.38	6.63	6.89	7.14	7.40
7.65	7.91	8.16	8.42	8.67
8.93	9.18	9.44	9.69	9.95

73 9. Which of the following styles of carbon labels would attract your attention more? (Picture is an
 74 example)



A



B



C



D



E

75
 76 A. Carbon Neutral Label: Does not disclose explicit carbon emissions data and indicates that
 77 carbon neutrality has fully offset the product's carbon footprint.

78 B. Carbon Footprint Label: Indicate the carbon emissions over the entire product's life cycle or
 79 at each stage of the product's life cycle.

80 C. Carbon Rating Label: the total value of carbon dioxide emissions generated throughout the
 81 product's life cycle and the level of carbon reduction.

82 D. Carbon Reduction Label (which simply indicates that the product's whole-life carbon
 83 dioxide emissions are below a set standard).

84 E. Carbon labels with additional elements (such as the traffic light elements and carbon
 85 emission data above combined for product comparison).

86 10. Please provide your comments or suggestions regarding implementing carbon labeling of
 87 agricultural products in China. (For your convenience, you may select more than one option.)

88 A. Enhance the authenticity and reliability of carbon label certification information.

89 B. Lower the price so that it does not differ too much from the price of ordinary products.

90 C. Improve the quality of carbon-labeled agricultural products.

91 D. Strengthen the publicity of environmental protection and carbon reduction policies to raise
 92 awareness of low-carbon and environmental protection.

93 E. Combine online forms to facilitate the promotion of carbon-labeled agricultural products
94 through e-commerce and other initiatives.

95 F. Others _____

96
97 **Section IV: Basic Information Collection**

98 1. Gender: Male / Female

99 2. Age: _____ years old

100 3. Current residence: _____ province _____ city

101 4. Highest level of education:

102 A. Primary school

103 B. Junior high school

104 C. High school

105 D. Undergraduate

106 E. Postgraduate

107 5. Occupation: (Please choose the one that best describes your current occupation)

108 A. School student

109 B. Corporate or company employee

110 C. Government staff/Lawyer

111 D. Private business owner/Businessman

112 E. Service industry staff

113 F. Worker or farmer

114 G. Freelancer

115 H. Unemployed

116 I. Retired

117 J. Other _____

118 6. Your approximate monthly income last month: RMB _____

119 A. Under 3000

120 B. 3000-5000

121 C. 5001-10000

122 D. 10001-20000

123 E. 20001-30000

124 G. 30001-40000

125 H. 40001-50000

126 I. More than 50000

127 7. Number of people in your household: _____

128 A. Two or fewer persons

129 B. 3-4 persons

130 C. 5-6 persons

131 D. 7 and more