Supplementary Material: Investigation on the Critical Barriers to Green Construction Technologies Adoption in China

Dear Madam/Sir,

Hello! Thank you for taking time out of your busy schedule to fill out this questionnaire! It is estimated that it will take you 3-5 min to complete this questionnaire.

This questionnaire aims to identify the barriers to the adoption of green construction technology and explore the measures and strategies to promote the application of green construction technology. The "green construction technology" in the questionnaire refers to the construction technology that realizes the green production of the construction industry, saves resources to the maximum extent, and reduces the negative impact on the environment. It can be the green improvement of the traditional construction technologies or can be the newly developed special construction technologies.

This questionnaire is conducted anonymously, and the results are only used for academic research without any commercial purpose. Please give an objective evaluation according to your understanding and the actual situation.

Your answer is of great value to the research of this topic. Sincerely thank you for your understanding and cooperation!

Wish you the best of health and success!

Part one: Basic information investigation

1.What is your age? [Single Choice] *

○ 21–30 years old

○ 31–40 years old

○ 41–50 years old

○ Over 50 years old

2. How long have you worked in the field of engineering and construction? [Single Choice] *

○ Less than 5 years

○ 5-10 years

○ 11–15 years

○ More than 15 years

3.How many types of projects you have participated in? [Multiple Choice] *

☐ Transportation

☐ Building

☐ Petrochemical

☐ Power

☐ Industry

☐ Water conservancy

☐ Manufacturing

☐ Sewage treatment

☐ Telecommunications

☐ Waste treatment

☐ Others

4. How many projects have you been participated in? [Single Choice] *

○ Participated in 1-4 projects

○ Participated in 5-8 projects

○ Participated in 9-12 projects

○ Participated in more than 12 projects

5. The type of company you work for is [Single Choice] *

○ Construction side of contractor

○ Construction side of employer

○ Research Institute

○ Design Company

○ Government Agency

○ Supervision Company

○ Others

6. Your position is [Single Choice] *

○ Enterprise managerial position

○ Enterprise technical position

○ Project managerial position

○ Project technical position

○ Others

Part two: Investigation on the barriers to the adoption of green construction technology.

This part is scored based on a 5-point scale, with 5-point meaning: 5 -- Strongly agree, 4 -- Agree, 3 -- Neither agree nor disagree, 2 -- Disagree, and 1 -- Strongly disagree.

7. Your evaluation of existing green construction technology is [Matrix Scale Questions] *

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Complexity involved in adopting GCTs	○	○	○	○	○
Imperfect GC technological codes and standards	○	○	○	○	○
Lack of quantitative assessment tool for green performance of GCTs	○	○	○	○	○
Low compatibility with other construction technologies	○	○	○	○	○
Lack of related green materials and equipment	○	○	○	○	○

8. The application of green construction techniques will lead to [Matrix Scale Questions] *

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Extra costs associated with GCTs	○	○	○	○	○
Project delay caused by implementation of GCTs	○	○	○	○	○
Incremental risk and uncertainties associated with GCT adoption	○	○	○	○	○

9. The main organizational factors that hamper the application of green construction technology are as follows [Matrix Scale Questions] *

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
Senior managers working for contractors pay insufficient attention on GCTs adoption	○	○	○	○	○
Lack of environmental protection awareness among organization managers working for contractors	○	○	○	○	○
Lack of knowledge and experience relating GCTs application	○	○	○	○	○
Lack of environmental protection awareness among technicians	○	○	○	○	○
Low labor quality	○	○	○	○	○
A shortage of technological trainings for project staff	○	○	○	○	○
Dependence of traditional construction technology	○	○	○	○	○
Lack of government incentives	○	○	○	○	○
Lack of technical assistance for adopting GCTs from government	○	○	○	○	○
Lack of demonstration projects	○	○	○	○	○
Lack of importance attached to GC by owner	○	○	○	○	○
Conflicts of interest among stakeholders in GCTs adoption	○	○	○	○	○
Limited availability for competent subcontractors	○	○	○	○	○