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Motivation of Japanese Citizens to Utilize International Carbon Crediting and Individual Offsetting: An Experimental Survey Offering an Actual Offsetting Opportunity

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Contents

- Introduction to background and study objectives
- Survey description
- Methodology of analysis
- Results, discussion and conclusion

Motivation (1)

Intercity environmental cooperation has played a unique role to enhance the capacity of local governments in developing countries to improve local environment.

Citizens' support becomes important for Japanese cities to use limited budget for intercity cooperation.

Few studies have done for finding factors of citizens' support for intercity environmental cooperation.

Literature on citizens' attitude towards intercity environmental cooperation

Fujikura (1997)

General views among Japanese nationals

➡ Municipalities were not specified

Hitsumoto (1999), City of Kitakyushu (2009)

Surveys of citizen-advisers selected from Kitakyushu

➡ Their views may differ from those of the common people

Motivation (2)

Japanese local governments initiated the cooperation on climate change mitigation, or **low carbon development**. Yet this is relatively a new attempt.

Several advanced Japanese local governments initiated **domestic interregional collaboration** to reduce GHG emissions.

It is not clear if Japanese citizens may or may not support their local governments' cooperation with cities in developing countries to achieve GHG emissions reduction target in return for obtaining **carbon credits**.

Citizens perception on carbon crediting may affect the support to intercity environmental cooperation in the future.

Citizens perception on carbon crediting

Citizens may or may not support **Japanese government**'s purchase of carbon credits from developing countries to achieve Kyoto target. The reasoning may not be understood by traditional economy – environment dichotomy.

	Economy	Environment
Support crediting	Cost effective to achieve the target Contribute to the growth of environment business market for Japanese companies	Good to technology transfer to developing countries
Oppose crediting	Tax shall be used domestically	GHG emissions shall be reduced domestically

Japanese **local government** could use carbon crediting mechanism for their intercity cooperation for low carbon development for mutual benefits. Yet it may be opposed by citizens.

Carbon offsetting in Japan

Carbon offsetting in Japan has just emerged.

	Volume (ktCO2e)			Value		
Year	2007	2008	2009	2007	2008	2009
Regulated market (Global)	2,920,000	4,713,000	8,625,000	63,711 (US$ mil)	134,415 (US$ mil)	143,897 (US$ mil)
Voluntary market (Global)	66,000	127,000	94,000	335 (US$ mil)	728 (US$ mil)	387 (US$ mil)
Voluntary market (Japan)	85	516	905	396 (mil yen)	2,204 (mil yen)	3,748 (mil yen)

Sources: Hamilton et al. (2009), Hamilton et al. (2010), Yano Research Institute (2009)

Ordinary citizens, not corporate, may or may not voluntarily offset their GHG emissions for various reasons:

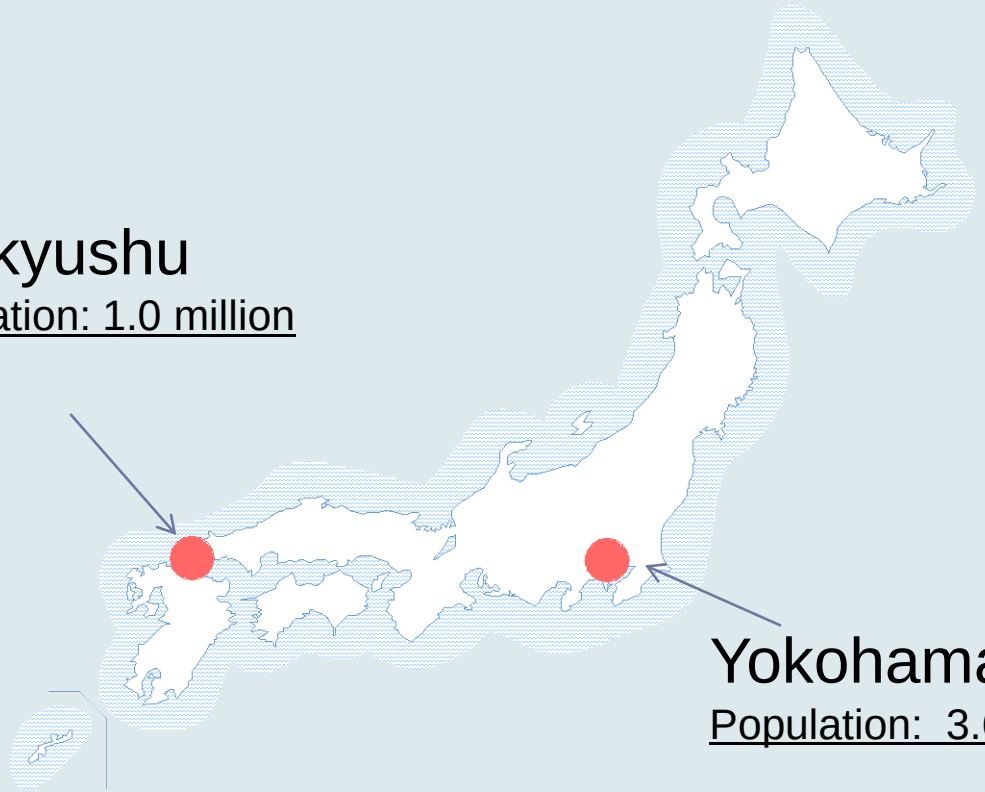
- “No reason to pay.”
- “I should reduce GHG emissions myself, and hence do not use offset.”
- “Maybe good but it is unclear and do not know it is trustworthy.“
- “It is good for the environment and I can do it.”

Objectives

Describe and summarize citizens' attitudes towards intercity environmental cooperation of their own cities.

Find factors of citizens' support for intercity environmental cooperation, focusing on attitudes on carbon crediting and offsetting.

Yokohama and Kitakyushu



Kitakyushu

Population: 1.0 million

Yokohama

Population: 3.6 million

Manifested international cooperation policy

Yokohama:

- Emphasis on contribution to solve global issues as global citizens: sense of responsibility

Kitakyushu:

- Emphasis on economic growth in both sides of cooperation
  eg. Kitakyushu – Dalian, China cooperation

Yokohama's intercity environmental cooperation

- Intercity collaboration through CITYNET, hosted by Yokohama (1988 - present)

- Support of environmental education in Southeast and South Asia (2004 - 2009)

- Support of reconstruction after Tsunami in Banda Aceh, Indonesia (2005 – 2006)

- Capacity development for water management in Vietnam and African countries (2006 - present)

Kitakyushu's intercity environmental cooperation

- Creation of environmental model city in Dalian, China (1993 - 2008)
- Kitakyushu Initiative for a Clean Environment (2000 – 2010)
- Environmental education in Cebu, Philippines (2002 - 2003)
- Support for composting of domestic waste in Surabaya, Indonesia (2005 – present)
- Support for industrial ecology in Tianjin and Qingdao, China (2007 – present)
- Support for Hai Phong, Vietnam (2009 – present)
- Promotion of low-carbon technology in Asia (2009 – present)

Survey

- February 2010
- Mail method
- 1,757 adults for each city
- Two-staged random sampling using citizen-registration lists
- Response ratio:
    - -Yokohama: 38%
    - Kitakyushu: 39%

Questionnaire

i. Attitude towards environmental problems

ii. Attitude towards carbon crediting

iii. Attitude towards intercity environmental cooperation

Do you want your city to continue intercity environmental cooperation?

Yes, Rather yes, Hard to say, Rather no, No

iv. Knowledge on past environmental cooperation

v. Preference for local/international donation for environmental activities

vi. Personal attributes and experience of voluntary activities

Annex: Selection of remuneration (gift certificate, carbon offset)

→ Actual behavioral data generated by the survey

Offsetting opportunity in the survey

- Instead of receiving gift certificate of 500 JPY (~5 USD) as remuneration to participate in the survey, a respondent can use the money to offset the emissions from their daily lives for 100 kg of CO_2, around 5% of emissions a year from Japanese household.
- The credit used is certificate emissions reduction (CER) under the Kyoto mechanism, produced from a biomass power project in rural India.

- Carbon offset was executed by an offset provider and a certificate was sent later to the respondents who chose carbon offset.

Partnership for Environmental Action with Responsibility

PEAR CARBON OFFSET

カーボンフットプリント オフセット証明書

Certificate for Offsetting Your Carbon Footprints

100 kg CO_2

証明書発行日(失効手続き実施日)/Issuance date: 2010/ 03/ 23

あなたの自らの責任感や気持ちに基づいた上記の量のカーボンフットプリント(CO_2排出量)のオフセットが完了し，その分の大気への負荷が消失したことを証明いたします．

またこれは，その分，開発途上国において，PEARのクライテリアに沿った低炭素型で持続可能な発展のためのプロジェクトが実施できたことを意味しています．

This certificate confirms that the offset of the bearer's carbon footprints of the above amount has been completed by PEAR on his/her behalf based on his/her responsibility to mitigate climate change. This implies that you contribute to the project with co-benefits for low-carbon sustainable development path in the host developing country.

今回のオフセットに用いられたプロジェクトとクレジットのシリアルナンバー

CDM Project No. 0391 《インドのバイオマス発電プロジェクト》
"Indur 7.5 MW Non-Conventional Renewable Sources Biomass Power Project"
http://cdm.unfccc.int/Projects/DB/DNV-CUK1146051603.73/view

シリアルナンバー: IN-000-000-036-220-372 より 100 kgCO_2

株式会社 PEARカーボンオフセット･イニシアティブ
〒104-0045 東京都中央区築地 1-10-11 RATIO 1002
Phone: 03-3248-0557
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代表 松尾 直樹

※カーボンオフセットの原資となったプロジェクトや クレジットのシリアルナンバーに関しては，次ページをご参照下さい．

Example of certificate sent

Procedure for statistical analysis

i. Summarize answers
- Method: Principal component analysis

ii. Group citizens by their attitudes towards the environment and the international development
- Method: Cluster analysis

iii. Find factors for supporting intercity environmental cooperation
- Method: Ordered logit analysis

Support for cooperation = *f* (group, individual attributes)

Discreteness of the dependent variable explicitly considered

Summarizing answers

Factor loadings calculated by principal component analysis

Axis (Principal component)

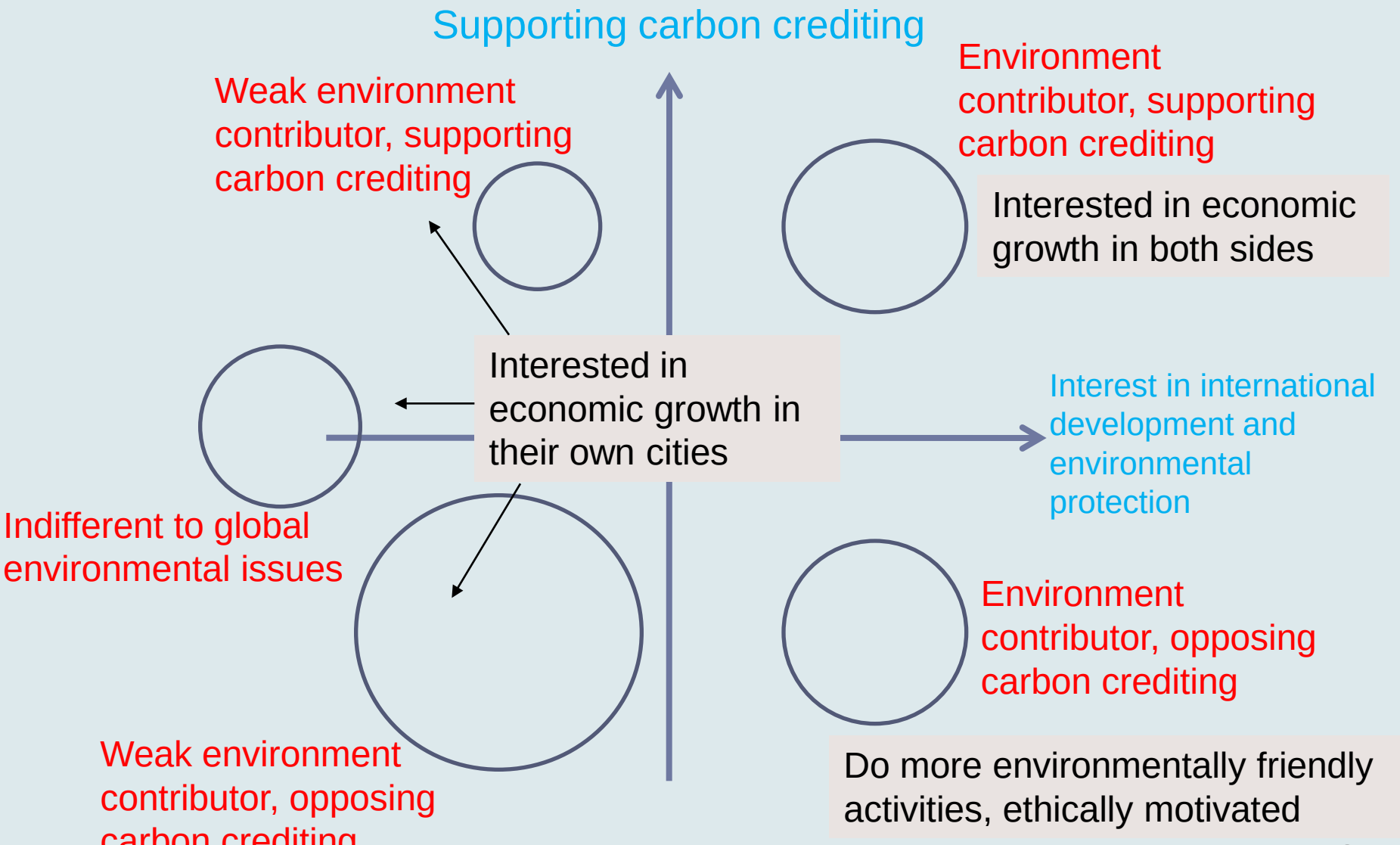
Variables	1 Supporting carbon crediting	2 Interest in international development	3 Overseas experienced	4 No offset and overseas donation	5 Volunteering
Carbon crediting supports overseas business development	0.814	0.072	0.022	0.215	−0.108
Carbon crediting is cost effective	0.812	−0.051	−0.087	0.204	0.063
Carbon crediting supports technology transfer	0.776	0.098	0.047	0.208	−0.082
Carbon crediting contradicts national obligation	−0.659	0.142	0.035	0.263	−0.122
Tax shall be used to domestic project rather than carbon crediting	−0.634	0.148	0.072	0.362	−0.086
Concerned about international development	0.034	0.736	0.082	0.015	−0.057
Concerned about climate change	−0.002	0.712	−0.108	0.099	−0.371
Number of daily climate protection actions	0.014	0.546	−0.416	0.171	−0.039
Resided overseas	0.089	0.273	0.643	0.066	0.111
Visited developing countries	0.035	0.325	0.637	−0.055	0.339
Chose offset as remuneration	0.123	0.210	−0.030	−0.709	−0.350
Donated overseas activities	0.032	0.369	−0.132	−0.452	0.366
Did volunteer works	−0.036	0.263	−0.421	0.095	0.663
Eigen values	2.790	1.836	1.224	1.094	1.010
Accumulated % of variance explained	21.5	35.6	45.0	53.4	61.2

Common to Yokohama and Kitakyushu

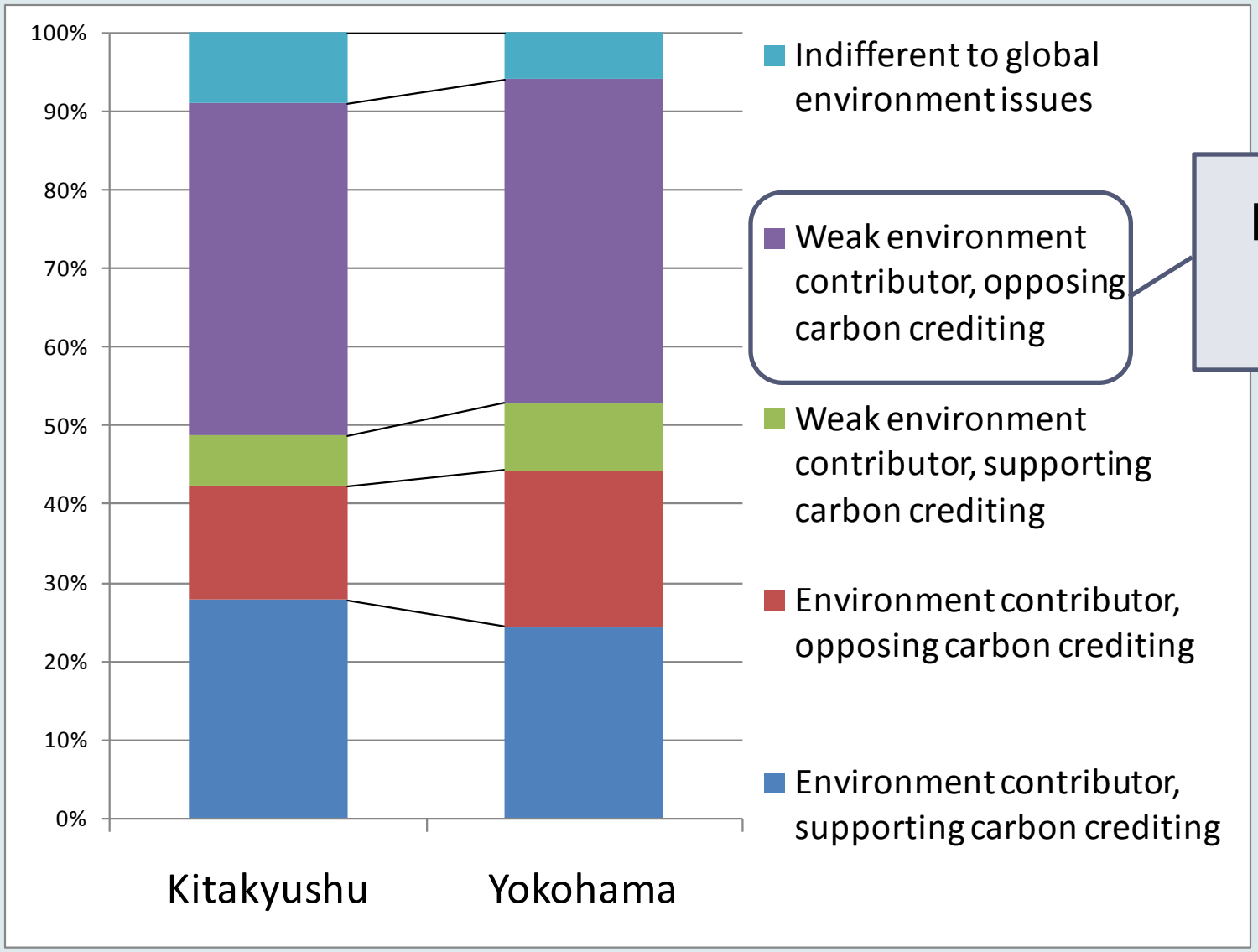
Red squares indicate factor loadings greater than 0.45.

- Attitude on **carbon crediting** constitutes the first principle component
- Selection of **carbon offset** does not make axis of citizens' characteristics

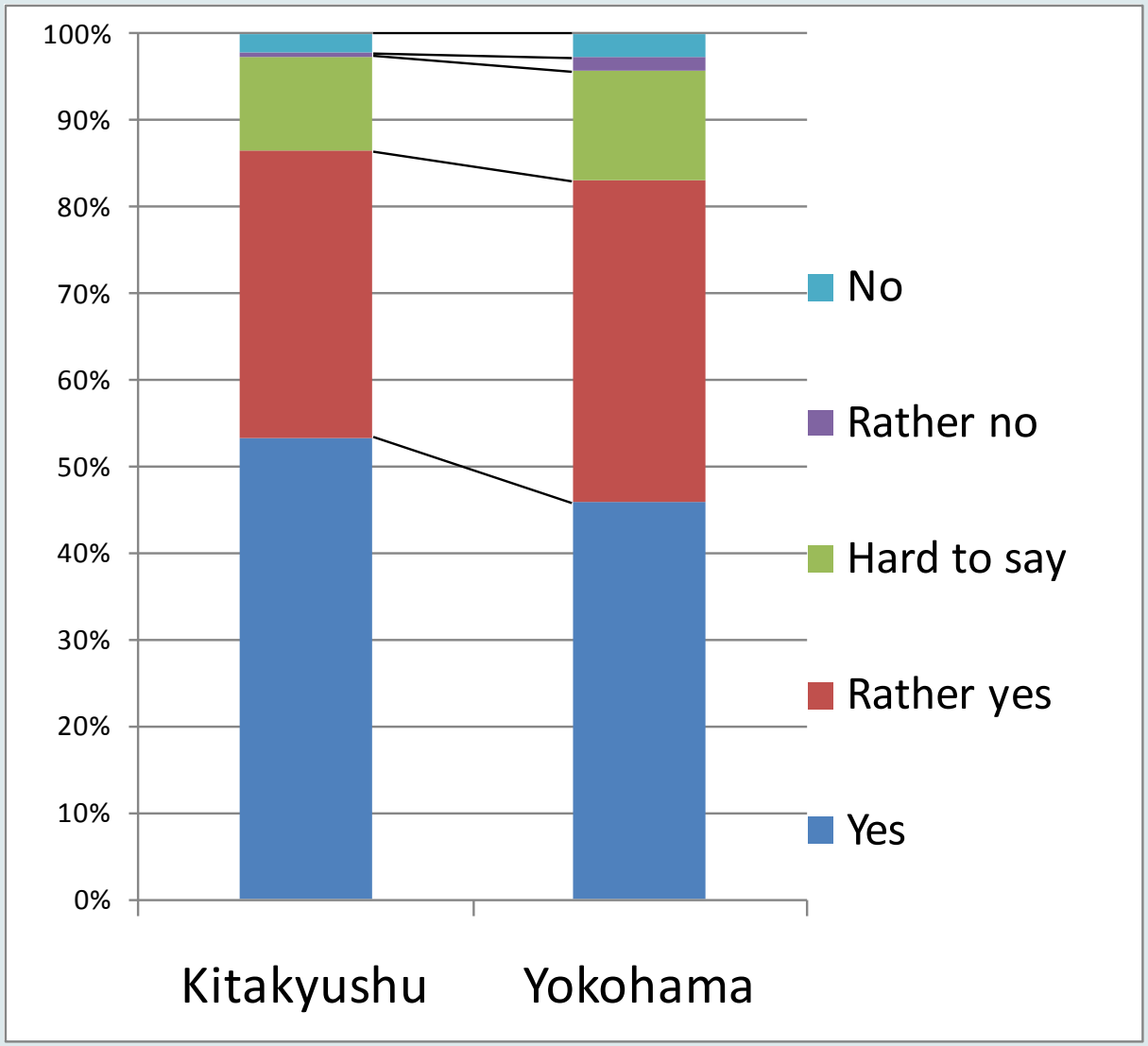
Five groups of citizens identified



Estimated group distributions



Do you want your city to continue intercity environmental cooperation?



Factors for supporting intercity environmental cooperation

Most supportive group

Results from ordered logit analysis

Variable	Coefficient	p-value
Environment contributor, opposing carbon crediting	1.171	0.000
Environment contributor, supporting carbon crediting	0.763	0.000
Weak environment contributor, supporting carbon crediting	0.473	0.062
Indifferent to global environment issues	−0.960	0.000
Household income	0.286	0.034
Women	−0.234	0.074
Age	−0.051	0.239
Kitakyushu sample	0.514	0.000
Constant	3.790	0.000
Threshold parameters		
K1	0.458	0.000
K2	2.129	0.000
K3	3.953	0.000

Conclusions

"Weak environmental contributor, opposing carbon crediting" is the largest group among citizens

This group is interested in their own welfare.
Creating benefits for their side from intercity cooperation will help gain support from them.

"Environmental contributor, opposing carbon crediting" is the most supportive group to intercity environmental cooperation

This group will support traditional local environment management cooperation, such as waste management and recycling and air and water management.
However, they are negative about gaining many carbon credits from the project.