1. Overview

In the symposium's afternoon session, an electronic voting system was used to gather audience opinion regarding what were considered to be the most important points for each topic, based on the discussions of the 1st and 2nd day expert workshop. In addition to the questions submitted by each group (total: 7 questions), we asked 2 further questions regarding awareness of the CO_2 reduction targets for 2050 that the symposium is aiming for, making for a total of 9 questions. We gathered audience response twice, once before and once after explaining the key findings of the discussions on each topic, so as to ascertain mind-setted audience awareness and any change in that awareness as a result of hearing about the key findings through discussions conducted in the experts workshop. We offered 4–6 responses for each question.

Before the afternoon session, we used electronic voting system to ask the audience to provide their age (4 categories), region (3 categories), and profession (5 categories), these questions also serving to familiarize the audience with the system. Participant profiles are shown in Table 1. N/A represents participants who joined the session part way through and so had not provided answers to the profile questions. Results showed that most of the 198 persons who participated in the afternoon session were Japanese, and that most were spread evenly over the 30–39, 40–49, and over 50 years age groups. Participants were distributed fairly evenly among each of the profession categories, with a slight bias towards academia and industry.

Age		Region		Profession	
Under 29 years old	17	Japan	138	Political authority and government	33
30-39 years old	43	Developed country	18	Business and Industry	40
40-49 years old	42	Developing/ Rising country	14	Academics and Research	50
Over 50 years old	66	N/A	28	Media	24
N/A	30			NGO, Citizens, and others	23
				N/A	28

Table 1: Participant profiles

* A total of 198 persons participated in the session. Those who joined the session part way through were classified as N/A

2. Results

At the session, the results of key findings through discussions conducted in the experts workshop up to the previous day on the 4 themes of (1) Behaviour Change and its Impact on Delivering LCSs, (2) Delivering LCS through Sustainable Development, (3) Enabling LCSs: Investment, and (4) Barriers and Opportunities: Approaches to Sensitive LCS Sectors were announced and questions put to the audience. The questions are shown in Table 2. All of the questions produced interesting results, but we would like to focus here on the 2 questions (Q1, Q2) on awareness regarding CO_2 reduction and 2 questions (Q4-1, Q4-2) on industrial sectors and activities that demand the greatest attention from the viewpoint of CO_2 reduction. We present overall results to the questions in Figs. 1 to 3 and Table 3.

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Overall questions: Awareness of the CO ₂ reduction targets for 2050				
Q1	In 2050, our world HAS TO reduce CO_2 to ?	Q2	In 2050, our world CAN reduce CO ₂ to ?	
	(1) 0% of 1990 levels or increasing from current levels		(1) 0% of 1990 levels or increasing from current levels	
	(2) About 30% of 1990 levels		(2) About 30% of 1990 levels	

(3) About	50%	of	1990	levels

(4) About 70	% of 1990	levels
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(3) About 50% of 1990 levels	
(4) About 70% of 1990 levels	

Topic1	: Behaviour change and its impact on delivering LCSs		
Q1-1	What is most needed to change people's behaviour towards	Q1-2	Between whom is dialogue most needed to promote
	adopting a low-carbon lifestyle?		behaviours leading towards a LCS?
	(1) Clear government standards and strong regulation		(1) Between business and consumers
	(2) Information and guidance for action		(2) Between government and citizens
	(3) Availability of suitable alternatives and choices		(3) Between government and business
	(4) Prices and incentives that reflect the cost of carbon		(4) Between national and local level governments
	(5) Personal mind-set and positive attitudes		
Topic2	2: Delivering LCS through Sustainable Development		
Q2-1	How to deliver LCS globally through SD?		
	(1) Developed countries set examples for LCS		
	(2) Continue current development with strong carbon		
	mitigation		
	(3) Alternative development path with international		
	assistance		
	(4) All countries follow LCS through SD actions		
Topic3	3 : Enabling LCSs: Investment		
Q3-1	From the package of actions, what area of investment would	Q3-2	How would you rank the priority of these interventions?
	you focus on as a priority?		(Choose 1st one only)
	(1) Energy efficiency		(1) Regulation
	(2) Demand management		(2) Taxation
	(3) Renewables		(3) Carbon pricing
	(4) CCS		(4) Information disclosure
			(5) Consumer finance
			(6) Subsidies
Topic4	: Barriers and opportunities: Approaches to sensitive LCS sectors		
Q4-1	Which sector faces the biggest challenges in the transition to	Q4-2	What is the most important response to challenge for energy
	LCS?		intensive industries?
	(1) Electricity		(1) Radical LC technologies
	(2) Surface transport		(2) Closing gaps to achieve a level playing field
	(3) Iron and steel		(3) Retain competitiveness by restricting import
	(4) Forestry conservation		(4) Securing subsidies to retain competitiveness
	(5) Aviation		



Fig. 1 Awareness regarding CO₂ reduction (before afternoon session)



Table 3: Q4-2 results

1

79

6

3

1

4

After

2

4

23

1

1

6

3

2

4 N/A

5

14

3

1

Which sector faces the biggest challenges in the transition to LCS?



3: Retain competitiveness by restricting import

4: Securing subsidies to retain competitiveness Owing in part to the fact that the symposium was invitation-only, awareness regarding CO₂ reduction was probably relatively high right from the start. Regarding the level of worldwide CO_2 reduction by 2050, irrespective of the timing of the question, a majority of participants responded that a reduction of over about 50% was required. A closer look at the results shows that several of those who chose 70% reduction before the session switched to 50% after the session. This is thought to have been caused by confusion before the start of the session over required worldwide CO_2 reduction level and the reduction level that Japan needs to achieve.

Looking at the question of feasibility of CO_2 reduction worldwide, the majority of participants felt before the start of the session that at best, no more than 30%–50% reduction would be feasible, despite their view that reduction of over about 50% was required. When the question was put to the audience again after the session, results show an increase in the number of participants who considered a higher reduction level to be feasible. However, the results also show that while the gap between participant perceptions of necessary and feasible reduction levels that existed before the symposium closed to a certain degree, the audience remained insufficiently convinced as a whole on the feasibility of achieving a level of CO₂ required for the abatement of climate change risks and assurance of a sustainable future.

Q4-1 asks which industrial sector faces the biggest challenges in relation to the implementation of political, institutional, and technological measures for the transition to the LCS. Responses to this question revealed a difference in views between Japanese participants and those from other countries. Before the announcement of the key findings of Topic 4 discussions, a great many participants irrespective of nationality held the view that the electricity sector faced the biggest challenges in transitioning to LCS. However, Topic 4 discussion included arguments to the effect that Japan's electricity sector in particular is in a favorable position for transitioning to the LCS owing to Japanese technological capabilities and lack of international competition. We consequently anticipated that the number of people choosing the electricity sector as a response to the question would decrease, but the number of Japanese choosing the sector in fact increased. While the discussion session suggested that the possibilities for the electricity sector to transition to LCS were high, Japanese participants appear to have thought that if the "challenges" mentioned in the question were surmountable, Japan's electricity sector needs to make greater efforts to transition to LCS. Non-Japanese participants, on the other hand, appear to have interpreted "challenges" as meaning hurdles that are difficult to surmount, and as such, chose other sectors (iron and steel, surface transport) as facing more difficult challenges than the electricity sector, for which the possibilities for transitioning to LCS were described as being relatively high.

Q4-2 solicited opinions on the most important response to challenges for energy intensive industries, offering participants a choice of 4 responses: 1 response proposing the development of radical low carbon (LC) technology, and 3 responses related to maintaining a level playing field for international competition. Results show that irrespective of timing of the question, the great majority of participants considered the development of radical LC technology to be the most important, with very few participants selecting responses related to the international competition environment. The announcement of discussion results explained that electricity and heating supply sector accounted for the largest share (25%) of per-sector global emissions, followed by transport, buildings, and motor vehicle manufacture. The announcement also touched on the sectors most exposed to international competition, but motor vehicle manufacture is the only such sector among those mentioned above, and the announcement explained that even if international competition is fierce, the auto industry is not considered to be hugely significant in terms of CO_2 emissions. As a result, participants appear to have decided that domestic countermeasures are the most important, and accordingly chose technological innovation rather than responses related to the structuring of the international competition environment.