Turning Green to Goals: Leading Hong Kong Design Education towards Sustainability

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Abstract

Through the Green Forum events, we concluded that the core obstacle of Hong Kong becoming a sustainable city can be attributed to three dominant factors. The first factor is the lack of interest, understanding and awareness of sustainability in the general public. Even among the Green Forum participants, a unique mindset of showing concerns but without setting sustainability as a top priority often leads to inactions of various stakeholders. The second factor suggests the existing messages of sustainability are considered to be too diverse, not meaningful and too complicated for the general public. Finally, government efforts mainly focus on the hardware side (e.g. infrastructure, cost, technology, building and product regulations, etc.) of sustainability but often neglect the softer side (humans' values, attitudes, lifestyles, habits, etc.) of sustainability. Consequently, many top-down interventions cannot be implemented effectively without the supports of educated and informed citizens. Several potential solutions are presented in the Green Agenda derived from the Professional Caucus (roundtable discussions). Our top priority aims to raise the interest and awareness of sustainability to different niche audience groups through communication design, small-scale pilot community projects, and sustainability education in order to build a united green community to tackle the challenges of sustainability.

KEYWORDS: Sustainability education, Sustainability awareness, Sustainability perception, Social Innovation, Hong Kong design education

Introduction

The Council of Sustainable Development (2011) in Hong Kong was established in 2009 aiming to achieve a worthy goal of reducing carbon intensity in 2020 by 60% compared to

the 2005 figure. The main strategy focuses on reducing electricity usage of specific target groups through regulations, financial assistance, incentives, and government-led examples. Nonetheless, the top-down and one-size-fit-all approach is often criticised to be technocratic, production-focused and considers mainly the efficient factor of hardware (Gouldson, Hills, & Welford, 2008; Lo, 2008) but neglects to devise demand-side management and interventions from a system perspective. As a result, many government policies to tackle sustainability remain debatable (Ng, 2012). For instance, the conventional plastic shopping bag use is reduced by 70% after the implementation of the plastic bag levy in July 2009 but the overall plastic use is increased by 30% due to a 96% increase in the use of non-woven bags as substitutes (Wan, 2011). Since sustainability is multi-facet and interconnected, no single intervention is capable of creating significant behaviour changes (Gardner & Stern, 2002) while concepts crucial to design education is strategically positioned to bring the softer (human) side of sustainability including sustainable lifestyles (Barr, Gilg, & Shaw, 2011), social innovation (Jegou & Manzini, 2008), integrated thinking and system design (Meadows, 1999) to complement the government efforts. The Green Forum events were organized in early September, 2011 aiming to understand the challenges and opportunities of promoting sustainability in Hong Kong. The Green Forum invited leading experts to introduce the latest international trends of design for sustainability to the general public. The Professional Caucus (roundtable discussions) invited design-related professionals to discuss the current status and strategies related to sustainability in Hong Kong while the Masterclasses engaged higher-education students from diverse disciplines to become heralds to spread green awareness to the general public.

The use and definition of the words, Green, and, Sustainability, vary in different contexts. The word, Green, often has a more vernacular connotation that is related to environmental protection while sustainability is considered to be more academic and comprehensive including economic development, environmental conservation and social equality (Adams, 2006). Nonetheless, green and sustainability are used interchangeably for the purpose of discussion in this paper.

Research Design

To the authors' knowledge, the pilot study is the first of its kind conducted in Hong Kong with an emphasis on design-related disciplines. The pilot study comprises three components including a content analysis of the Hong Kong news media reporting of green issues, a sustainability awareness survey and a qualitative data analysis of the Professional Caucus (roundtable discussions). The content analysis of news media reporting used four leading local newspapers (3 Chinese newspapers and 1 English newspaper) as proxies to reflect the media coverage of sustainability-related public discourses and hence provided an informal reference of the awareness (and perception) of sustainability among various stakeholders in Hong Kong.

Newspaper name (Chinese/Eng.)	Avg. daily circulation (Date)	Source
Apple Daily (C)	281,953 (June 2011)	(The Hong Kong Audit Bureau of Circulations Ltd., 2012)
HK Economic Times (C)	93,052 (Jan-Jun 2009)	
South China Morning Post (E)	101,892 (Jan-Jun 2011)	
Sing Tao Daily (C)	~80,000 (2011)	(Wei, 2011)

Table 1 The most recent circulation figures for the selected newspapers.

The newspapers were selected to represent various target groups: Apple Daily (General public), HK Economic Times (Businesses and professionals), Sing Tao Daily (Students), South China Morning Post (English-speaking group). The most recent circulation information is provided in Table 1. Since the Green Forum events were consisted of the Professional Caucus (roundtable discussions), the Green Forum and the Masterclasses, the pre-event survey was conducted when participants registered online for any of the Green Forum events. The Professional Caucus (4 roundtable discussions) invited design-related professionals and leading experts in specific areas of sustainability including, green community, sustainable materials, sustainable lifestyle and social innovation (Jegou & Manzini, 2008) to discuss and formulate a future green agenda for Hong Kong. The qualitative analyses based on the Caucus transcripts are used to propose potential connections and explanations for the quantitative results from the news media analysis and the sustainability perception survey. By constructing a comprehensive picture concerning various sustainability issues, we aim to devise corresponding directions and strategies for promoting sustainable development in Hong Kong.

Research Methods and Data Collection

Content analysis

Content analysis was employed due to its advantage of uncovering hidden patterns from a large amount of raw data (Chi, 1997). Our sample size includes one-year headline articles collected from WiseNews (Wisers Information Limited, 2011), an electronic database, between 1 July 2010 and 30 June 2011 (# of total headlines from 4 newspapers: 1356).

Two coding schemes were developed. The first coding scheme was intended to be comprehensive containing 30 standard news themes (Lynch & Peer, 2002, p. 19), e.g. Politics/government, Natural disaster/accident, etc. Since newspaper editors often select headlines that are attractive to potential readers and audience, the scheme can reflect the general interest of various target groups in Hong Kong and inform the possibility of relating sustainability to these existing interests. The second coding scheme was derived from the National Geographic / GlobeScan Greendex (2010) for 9 domain-specific sustainability-related categories. e.g. Housing/Building, Transport, Food, Energy, etc. The coding procedure involved a qualified coder selecting at least 1 prominent news theme (max 2) and 1 sustainability-related domain category based on the title of the headline article. Due to limited resources, only a single coder was used in the analysis and coding reliability was considered to be less essential for the exploratory nature of this study. Nonetheless, coding reliability can be further verified by a second independent coder if necessary.

Survey

The pre-event survey was developed partially based on the Gfk Roper Green Gauge ® Study (2007, 2008, 2010) and National Geographic / GlobeScan Greendex (2010) that assess consumers' awareness of green issues and consumers' behaviours associated with various green attitudes and beliefs. Due to the exploratory nature of the study, the pre-event survey is much shorter than the Green Gauge study and serves as a pilot to understand the status of sustainable living in Hong Kong. 323 responses (Caucus (40), Forum (118), Masterclasses

(165)) were verified from the registration system. There were 11 pre-survey questions, 5 were Likert-scale questions concerning registrants' attitudes towards green issues and 6 checkbox-type questions with an open-ended others option. Several questions were reversely worded to prevent response sets. Since the survey was conducted in a self-reporting style, reliability of findings may be affected.

Inductive qualitative data analysis

The Professional Caucus (roundtable discussions) employed an inductive qualitative data analysis method (Miles & Huberman, 1994, p. 21) for summarising and displaying the collected data. The general method aims to reduce the amount of raw data into more manageable categories and themes and to provide a simplified framework for understanding the key points from each roundtable discussion without scarifying findings reliability and traceability. The 4 roundtable discussion videos contain approximately 8 hours of video footage. The video footage was transcribed into full English transcripts with corresponding timestamps by a professional transcriber. A data reduction process is used to turn the full English transcript into intermediate coded segments. Each segment was given a content label or a code inductively based on the topic of interest. For instance, a discussion concerning a new recyclable material would be labeled under the category "sustainable materials." Most of the categories were self-evident based on extracted keywords from the discussion. A sample of coded segments is presented in Table 2. Finally, all the categories were consolidated under four overarching themes including obstacles, solutions, Hong Kong context and examples related to the topic of discussion and re-organized into 4 concept map summaries. These themes aim to provide a guiding framework for relating various roundtables. The structure of each concept map has some small variations due to the fact that each roundtable discussion was facilitated in a slightly different way. The data reduction process is reversible and each node of the concept map summary can be traced back to the original conversation on the transcript.

Time stamp (mm:ss)	Designing green communities (key ideas extracted from the original transcript)	Inductive category
05:05	small projects get done	small-scale
05:05	small communities are quicker to act than very large communities	small-scale
06:35	remote places, e.g. Kun Ming, have a real deep desire for a greener and more sustainable environment	motivations / examples
07:44	city of Kun Ming has a lot of rooftop water heaters	examples
09:02	using Bamboo for structural purposes, experimenting with the material	new concepts / experimentation
09:02	using bamboo for fabrics	new concepts / experimentation
10:45	a smaller community is a better and a quicker building block	small-scale
11:16	big plans (Hong Kong) of city life often fail	government policy
11:16	concrete, focused, top-down policies often fails	government policy
11:26	transformation of Tokyo after the 311 earthquake	the Japanese case
15:25	many products only work when there is electricity	the Japanese case
17:31	you don't need so many lights in shopping malls	new concepts / experimentation

21:07	propagandas for you to use and spend more than you actually need	propaganda / capitalism
20:38	the laws require companies to reduce energy use by 15%, the resulting GDP was not affected (0.2% difference)	the Japanese case
22:10	the Japanese mindsets and behaviours have changed, especially for young people. They just have to keep them	new habits
24:14	students have self-belief, self-care, and self-commitment and sharing through social media	new mindsets
38:02	capitalism is the source that encourages people to consume and buy for economic growth	capitalism
38:02	we need to change the whole system, looking at savings and the green economy	new green economy

Table 2 **A** sample of coded segments from the Designing Green Communities roundtable.

Results

Coding results from the Hong Kong news media study

The coding results using the 30 standard news themes are presented in Table 3. The numbers from the top two categories of each newspaper are highlighted. The results confirm our initial expectations that the numbers of newspaper headlines are geared towards the interested of their target audience. For instance, the Apple Daily headlines often have themes that are related to police/crime and natural disaster/accident. The Hong Kong Economic Times headlines are mostly related to business while the Sing Tao daily and the SCMP both have a more diverse coverage.

Reference news themes (Select at least 1 (max 2) news theme(s) per article headline)	Apple_HL Theme 1	Apple_HL Theme 2	HKET_HL Theme 1	HKET_HL Theme 2	SingT_HL Theme 1	SingT_HL Theme 2	SCMP_HL Theme 1	SCMP_HL Theme 2
1. Politics/government (see subcategory list)	36	16	20	12	53	37	41	23
2. Police/crime/courts/legal (see subcategory list)	117	19	4	1	36	15	87	15
3. Natural disaster/accident	59	8	4	1	21	2	4	5
4. Business, Economics & Personal Finance	17	14	258	17	85	49	66	40
5. Sports (see subcategory list)	5	2	0	1	4	0	3	1
6. War/International Conflict	11	4	0	1	10	1	6	1
7. Parenting and Relationships	1	2	0	0	0	0	2	3
8. Science and Technology	6	3	0	0	3	2	7	9
9. Health, fitness & medicine	7	16	0	0	4	9	12	10
10. Education	2	3	0	0	18	4	6	3
11. Jobs and Career	3	2	0	3	14	8	8	7
12. Automotive	0	5	0	0	0	3	4	3
13. Travel	2	8	0	0	3	5	4	3
14. Environment	0	1	0	0	2	5	16	9
15. Religion/Spirituality	0	1	0	0	0	0	2	3
16. Ordinary People	12	63	0	1	3	20	1	10
17. Real Estate	3	4	15	47	56	27	10	12
18. Food	8	6	0	0	7	3	3	2
19. Movies	0	0	0	0	0	0	1	0
20. Popular Music	0	0	0	0	0	0	0	0
21. Television	0	1	0	1	5	0	1	3
22. The Arts (e.g., dance, classical music, museums, etc.)	4	3	0	0	0	0	3	0
23. Community Announcements (including weddings, events, etc.)	11	1	0	0	7	2	3	0
24. Obituaries	5	0	0	0	2	0	1	0
25. Fashion and Beauty	0	0	0	5	0	0	0	0
26. Celebrity	26	64	1	21	9	26	6	19
27. Charity	6	4	0	0	4	2	1	0
28. Suicide	7	2	0	0	0	0	1	0
29. Mainland China	7	12	2	31	13	25	18	25
30. Others	10	27	0	1	5	9	6	59
NA	0	74	0	159	0	110	0	58
Total	**365**	**365**	**304**	**302**	**364**	**364**	**323**	**323**

Table 3 The Coding Results Using the 30 Standard News Themes.

Sustainability-related category (Select 1 category only per article headline)	Apple_HL	HKET_HL	SingT_HL	SCMP_HL
A. Housing / Building	0	2	7	0
B. Transport	0	1	1	1
C. Food	3	0	2	3
D. Goods (Everyday)	0	0	0	0
E. Goods (Big-Ticket)	0	0	0	1
F. Environment (Air/Water)	0	0	0	17
G. Energy	0	0	1	3
H. Social / Community-related	0	0	0	0
I. Others	0	0	0	3
NA	362	301	353	295
Total	365	304	364	323

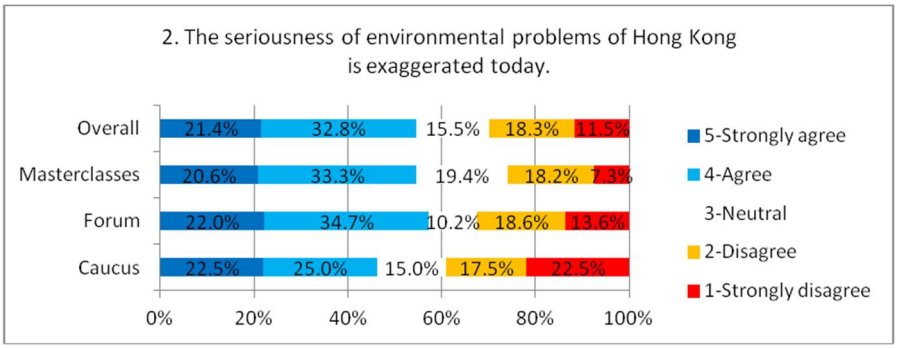
Table 4 Sustainability-related coding results.

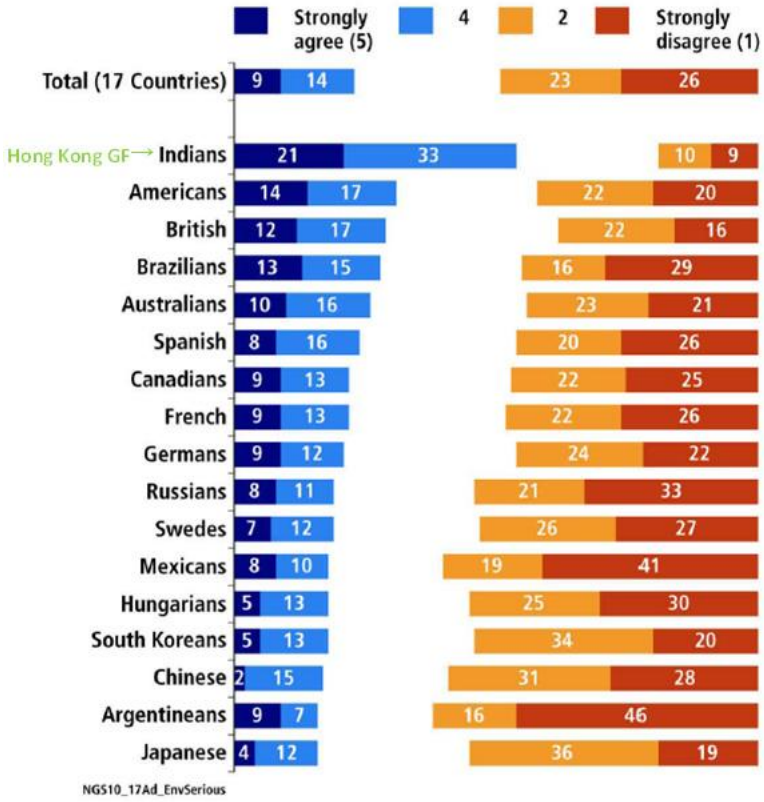
Nonetheless, we notice that the number of the SCMP environment-related headlines is a lot higher than the combined coverage of the other newspapers. The sustainability-related coding results presented in Table 4 with the top category highlighted also seem to confirm the earlier observation. The observation suggests that the Hong Kong general public seems to have a limited exposure to the importance of sustainability for the lack of coverage in these major newspapers. When relating to sustainability, the public is mainly interested in Food and Housing/Building-related issues that can be a starting point for designing a new message to communicate to our audience. Due to the lack of interest, the public also seems to lack a central frame when discussing sustainability-related issues while the English-speaking population has put their top priority on the environment such as air and water quality. This is also a major perceptual difference between the general public and the English-speaking population suggesting that different messages are needed to target different audience. Nonetheless, sustainability awareness in Hong Kong is still in its infancy reflecting the urgency and priority of raising awareness of sustainability in Hong Kong beyond other interventions / solutions can be implemented.

Results from the pre-event survey

The responses are grouped by event into Caucus registrants (mainly professionals and design educators), Forum registrants (a mixed group) and Masterclass registrants (mainly higher education students). Only a subset of the questions is presented below and comparisons with the Greendex (2010) reference data are provided where applicable.

Q2) The seriousness of environmental problems of Hong Kong is exaggerated today.



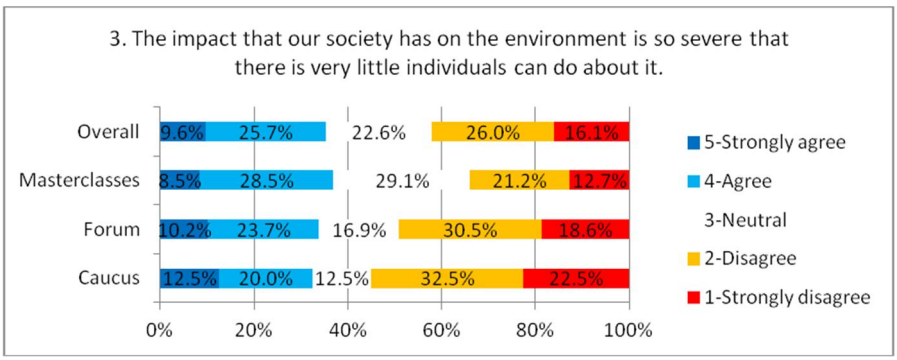


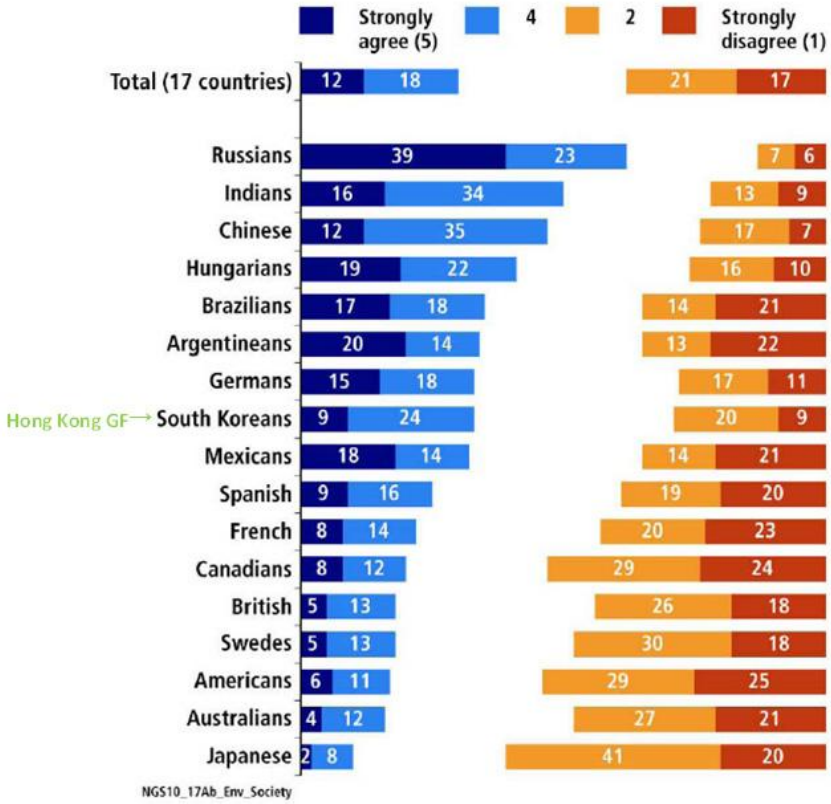
*Adopted from the Greendex (2010) report

Over half (53%, ratings > 3) of all the registrants thought that Hong Kong environmental problems are exaggerated today and only a small percentage of students (7%) strongly disagreed with the statement that is considerably smaller than the percentages of professionals (23%) and the public (14%) who held a similar position. The response profile is similar to those of Indians showing our concerns of environmental problems lacks behind the rest of the world even though there are some strong disagreements from the Caucus group. The comparison of the mean value among the three groups also shows that higher education students tended to think that environmental problems are exaggerated today.

	Response Mean Value (5-pt scale) Caucus < Forum < Masterclass	
1- Strongly disagree	3.07 < 3.33 < 3.42	5-Strongly agree

Q3) The impact that our society has on the environment is so severe that there is very little individuals can do about it.





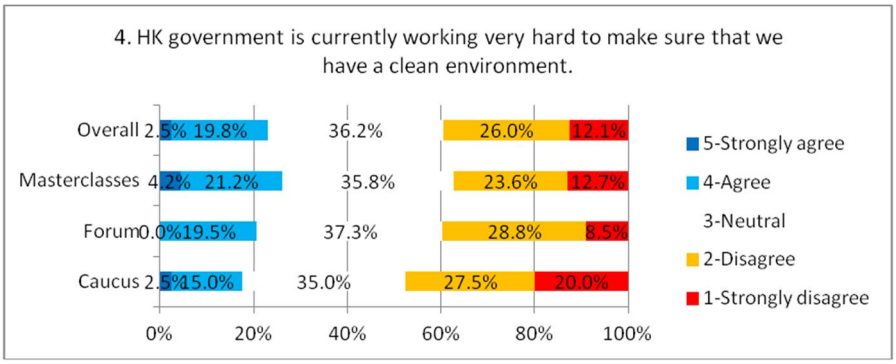
*Adopted from the Greendex (2010) report

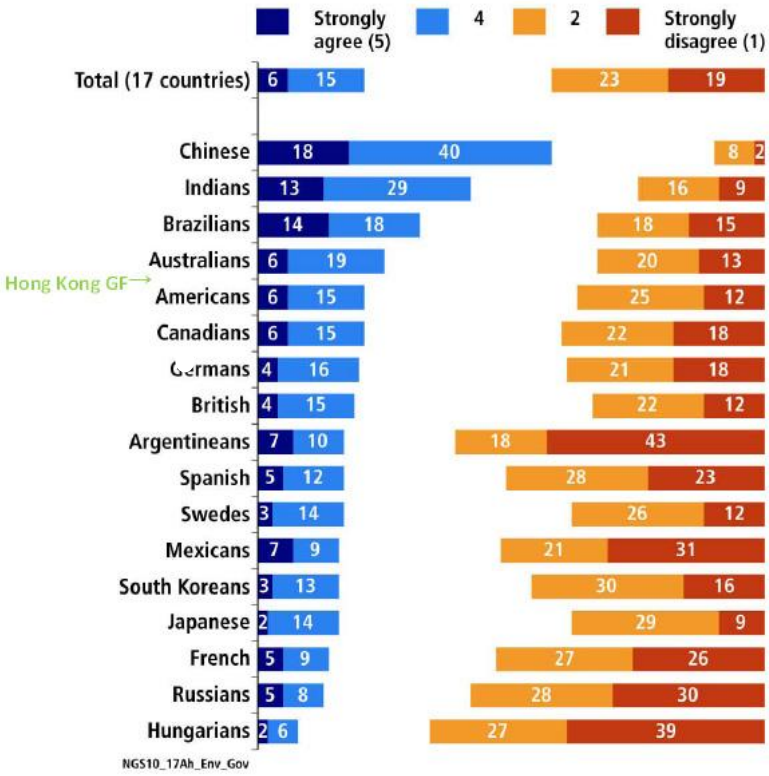
Response Mean Value (5-pt scale)
Caucus < Forum < Masterclass

1- Strongly disagree 2.68 < 2.76 < 2.99 5-Strongly agree

In terms of individual abilities on protecting the environment, over half (55%) of the Caucus registrants and 49% of the Forum registrants disagreed with the statement that individual efforts are futile to our environmental problems but only 34% of students disagreed with the statement. In addition, a large percentage of students (29%) had a neutral opinion (3) on the individual ability of making an impact on the environment that is much higher than those from the Caucus group (13%) and the Forum group (17%). These results suggest that higher education students tended to believe that they cannot do much as individuals to the current situation. Comparing to the rest of the world, registrants' attitudes on individual efforts seem to fall in the middle of the 17 countries.

Q4) HK government is currently working very hard to make sure that we have a clean environment.



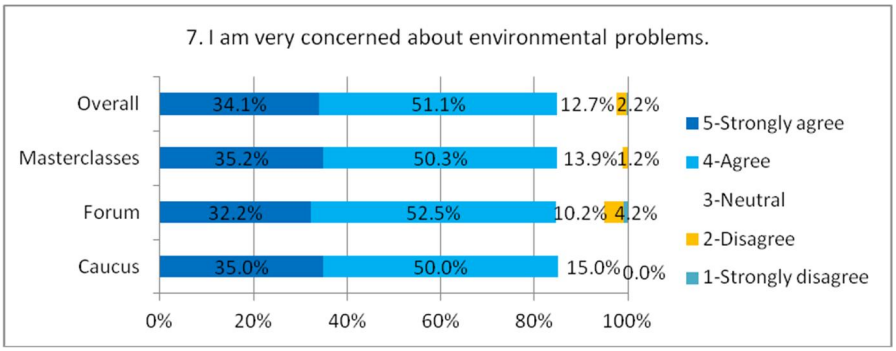


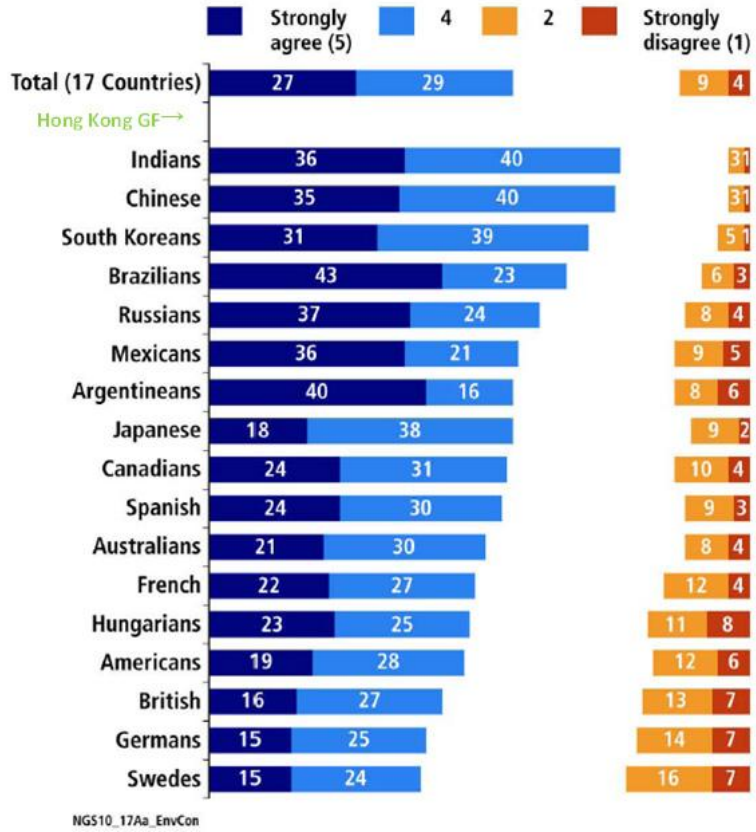
*Adopted from the Greendex (2010) report

	Response Mean Value (5-pt scale) Caucus < Forum < Masterclass	
1- Strongly disagree	2.53 < 2.72 < 2.80	5-Strongly agree

The results reflect that the attitudes of Hong Kong citizens are quite different from those of Mainland Chinese on our government efforts for a clean environment. Higher education students also tended to have a higher regard for the Hong Kong SAR government for providing a clean environment (with 4% of strongly agree and a higher mean value than the other two groups) while no registrant from the Forum strongly agreed on the given statement. Otherwise, the overall responses are similar to those of Americans.

Q7) I am very concerned about environmental problems.





*Adopted from the Greendex (2010) report

Response Mean Value (5-pt scale)
Caucus > Forum < Masterclass

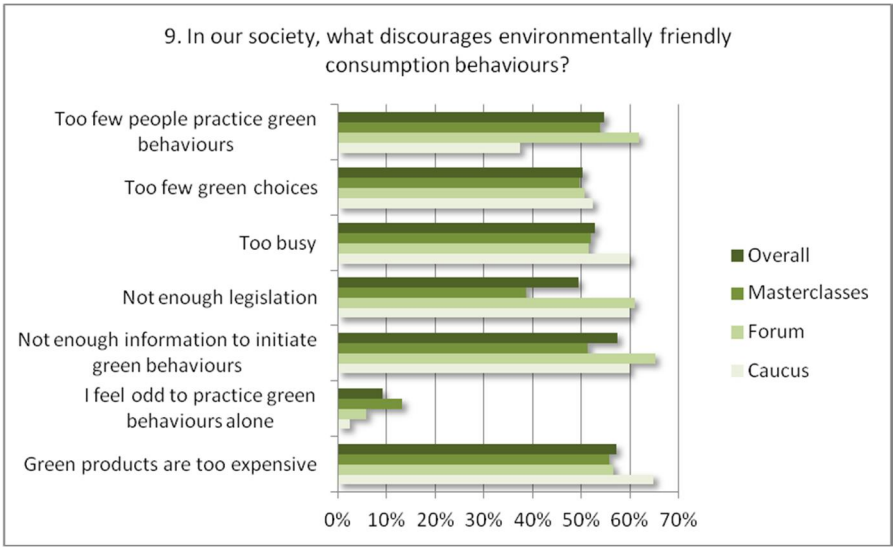
1- Strongly disagree 4.20 > 4.11 < 4.19 5-Strongly agree

The result for the statement is the most encouraging since we surpass all the other countries in the survey and over 85% of the registrants claimed that they are very concerned about environmental problems. The results can be attributed to the fact that registrants voluntarily participate at these Green events and they are likely to represent a specific group of HK citizens that are already more interested in environmental issues than the general public. The response mean value also shows that professionals and higher education students are more concerned than the Forum registrants. The following questions are checkbox-type questions with the Others option for soliciting open-ended responses from the registrants.

Q8) Actions that I have been taking to reduce my own negative impact on the environment.

The highest 2 forms of actions correspond to the common themes of reduce, reuse and recycle that are often prescribed in the media concerning sustainability. Besides the given actions, some registrants provided additional possibilities including reducing energy (e.g. air-conditioner), paper and plastic bag usage. These common perceptions of reduction provide a good starting point for adopting more sustainable habits. A few registrants also suggested that we should not forget the importance of being a role model and informing/educating others concerning sustainability. Nonetheless, the action of buying only essential items is the lowest among all actions selected and falls below 50% for the Masterclasses registrants. The result may indicate the difficulty of reducing or changing one's buying habits under the predominant shopping culture of a market economy.

Q9) In our society, what discourages environmentally friendly consumption behaviours?

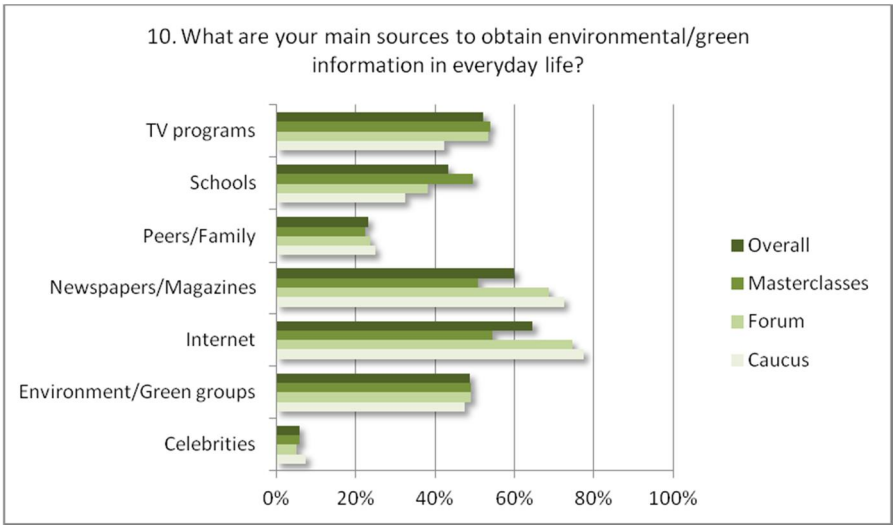


"Discourage (4+5)" Percentage of Consumers, Total, 2010

*Adopted from the Greendex (2010) report

The results suggest that there seems to be many perceived obstacles to the adoption of more sustainable consumption behaviours compared with the international averages since all of the options (except 1) were selected by more than 50% of the registrants. The least selected option shows that registrants are not afraid to practice green behaviours alone. It also appears that most registrants believed that not enough information to initiate green behaviours and green products being too costly to be the major obstacles that discourages green consumption behaviours. There are also some slight disagreements among various groups. For instance, the Caucus and Forum registrants were more concerned with not having enough legislation than the Masterclasses registrants. The concerns were furthered elaborated by some specific possibilities of subsidizing the recycle industry and creating a comprehensible sustainable policy by the HK government. The Forum and Masterclasses registrants also tended to blame that there are too few people to practice green behaviours in Hong Kong. Even though the Greendex questions are more detailed, based on our responses, the issue appears to be rather complex and multi-faceted. Multiple strategies and approaches may be needed to tackle these perceived obstacles.

10) What are your main sources to obtain environmental/green information in everyday life?



The question assists researchers to understand the various channels that can be utilized to convey the message of sustainable living and design to our potential audience. The Internet and conventional media including newspapers and magazines are dominant sources (~70%) for both Caucus and Forum participants to obtain green information. The results also support our earlier decision to conduct a content analysis of newspapers reporting to assess the baseline perceptions of green issues in Hong Kong. The content analysis can provide us with a potential direction of how to change and shape our target audience existing perception concerning green issues. In addition to the above two forms of media, higher education students obtained green information from diverse sources. Schools, Green groups and TV programs are equally-important sources for students although we would have expected that schools to have been more prominent in disseminating new ideas and concepts of sustainable living and design. Nevertheless, the second lowest selection (Peers/Family, ~23%) for all groups raises some concerns. The lack of attention in peer groups and family concerning sustainability is likely to create a potential obstacle of adopting a more sustainable lifestyle since new concepts and behaviours require continual reinforcement and support. It may be useful for designers and design educators to create a compatible atmosphere where peer groups and family can support one another for a more sustainable lifestyle.

Discussion of the pre-event survey results

Besides focusing on each question individually, results from the 11 pre-survey questions can be used together to reveal the general attitude and beliefs towards sustainability in Hong Kong. The survey respondents seem to hold a unique set of beliefs that is quite different from those of Mainland Chinese or Americans (developed countries). For instance, our respondents scored extremely high (#1 among 18 countries) on Q2 (the seriousness of environmental problems is exaggerated today) and Q7 (I am very concerned about environmental problems), showing that they are extremely concerned about the environment but believe that these problems are exaggerated and may not require any immediate actions. The responses on Q3 (the environment impact is so severe that there is very little individuals can do about it), showing long tails at both ends of the spectrum (4+5 responses and 1+2 responses), also deviates from other countries. In this case, one group (32%) believed that these environmental issues cannot be tackled by individual while another group (36%) held a

completely opposite belief. In general, some of our beliefs (usually, at a macro level) are in line with developed countries while other beliefs (at an individual level) are in line with developing countries. The unique set of attitudes and beliefs is likely to affect the respondents' consequent behaviours and actions towards sustainability. The surprising results may raise concern that overseas or Mainland China successful cases of promoting sustainability may not be directly applicable to the Hong Kong context. Nonetheless, further research is needed to provide verifications and potential explanations for these findings.

Results from the Professional Caucus analysis

Due to a word limit, only the result of the Designing Green Communities roundtable is presented in the paper and details of the other roundtables are described in a separate report (Lam & Lau, 2012). The Designing Green Communities roundtable is selected due to its formative structure of outlining common obstacles in Hong Kong and their connections with the news media study and survey findings. In order to facilitate readers' understanding, we employed an informal visualization program named, Wordle (Feinberg, 2009) to provide a visual overview (Figure 1) based on keyword frequency appeared on the English transcripts. The visualization is followed by a brief description of the roundtable and the resulting concept map (Figure 2).

Introduction to roundtable discussion: Designing Green Communities (facilitated by Mr. Patrick Bruce and Prof. Fumikazu Masuda)

Figure 1. The visualization of the Designing Green Communities (DGC) roundtable.

The roundtable focused on how small green communities can assist Hong Kong to become a more sustainable city. Masuda began by describing the changes of Japanese thinking and behaviours after the 311 Japan earthquakes. He suggested that companies required by laws were able to save 15% energy usage without negatively affecting the GDP after the incident. The participants then started to describe the obstacles of building green communities in Hong Kong. Many of the obstacles reside on the government policy level including the lack of cross-functional planning and the lack of long-term planning for sustainability. Hong Kong's convenient and disposable living style also contributes as a crucial factor while Hong Kong citizens remain largely unaware of the issue of sustainability. Another crucial factor is the lack of a central frame to discuss and coordinate an overall green agenda for Hong Kong although many efforts and small projects towards different aspects of green are emerging.

Several successful cases of practicing green in the community were mentioned and a few solution directions were discussed. One of the important principles includes being small and bold to experiment in a small-scale. Concrete proposals of having an experimental green building code zone and individual adopting mature green technology were suggested. Universal green education is also proposed as a crucial part of the solution since new technology or materials cannot substitute for individuals' understandings and behaviours for achieving a sustainable living. Another solution is to make green economy initially viable through government subsidies for the related green industries (e.g. recycling, manufacturing, and incentives for green behaviours). Some immediate actionable items were also proposed. Readers are encouraged to navigate through the different branches of the concept map (Figure 2) in order to obtain a more comprehensive understanding of the roundtable discussion.

Discussion of the DGC roundtable

The concept map extracted from the roundtable transcript provides an essential framework to understand the obstacles of achieving sustainable development in Hong Kong, ranging from macro and global factors (e.g. a capitalistic system favoring economic growth, government policy) to local and individual barriers (e.g. the constraints of existing infrastructures and users habits). The various branches of the concept map also provide a potential connection and explanation for our earlier findings from the news media study and pre-event survey. The results (branch 2.1.6-7) suggest that the lack of interest and awareness of sustainability may be due to the negative connotation associated with a particular green group and there is no media exposure of good green practices within the community. In addition, various green activists tend to strive at their own domains without forming a central green influence on the government policy.

Our survey results indicate that there is a huge value-action gap (Blake, 1999) in the population meaning that concerns for the environmental do not translate into sustainable behaviours and the reasons are likely to be related to the convenient and comfortable Hong Kong lifestyle (branches 2.1.3-5). Blake (1999) also classified barriers to initiate environmental actions into three major types: individual, social and institutional and all three types seem to present in the Hong Kong context (see Q9 of the survey study). It should be emphasised that a tokenistic or uncoordinated effort on a few barriers will likely to have an infinitesimal effect due to the interdepence among the three types of barriers. For instance, the survey results (Q3 and Q4) show that many people believe that there is little individuals can do for the environment and the Hong Kong government is working very hard for a clean environment. These beliefs are likely to produce a positive feedback effect on one another and unintentionally strengthen the existing individual, social and institutional barriers.

Since the Hong Kong government policy (branches 2.1.2) is considered by the Caucus participants to be a major obstacle of initiating changes, simply cultivating the citizen-consumer notion of sustainability may not be enough to alter the existing beliefs and habits and many actionable items identified will only create a marginal impact. A systemic perspective is required to breakdown the different types of barriers. The particular roundtable also discussed potential solutions of promoting green communities through small-scale experimentations, universal green education and making a viable green economy (branches 2.2.1-3) in Hong Kong. A universal green education should be the top priority due to the complexity related to sustainability issues. Ironically, all of these aspects seem to be

largely overlooked when formulating corresponding strategies (Council for Sustainable Development, 2011).

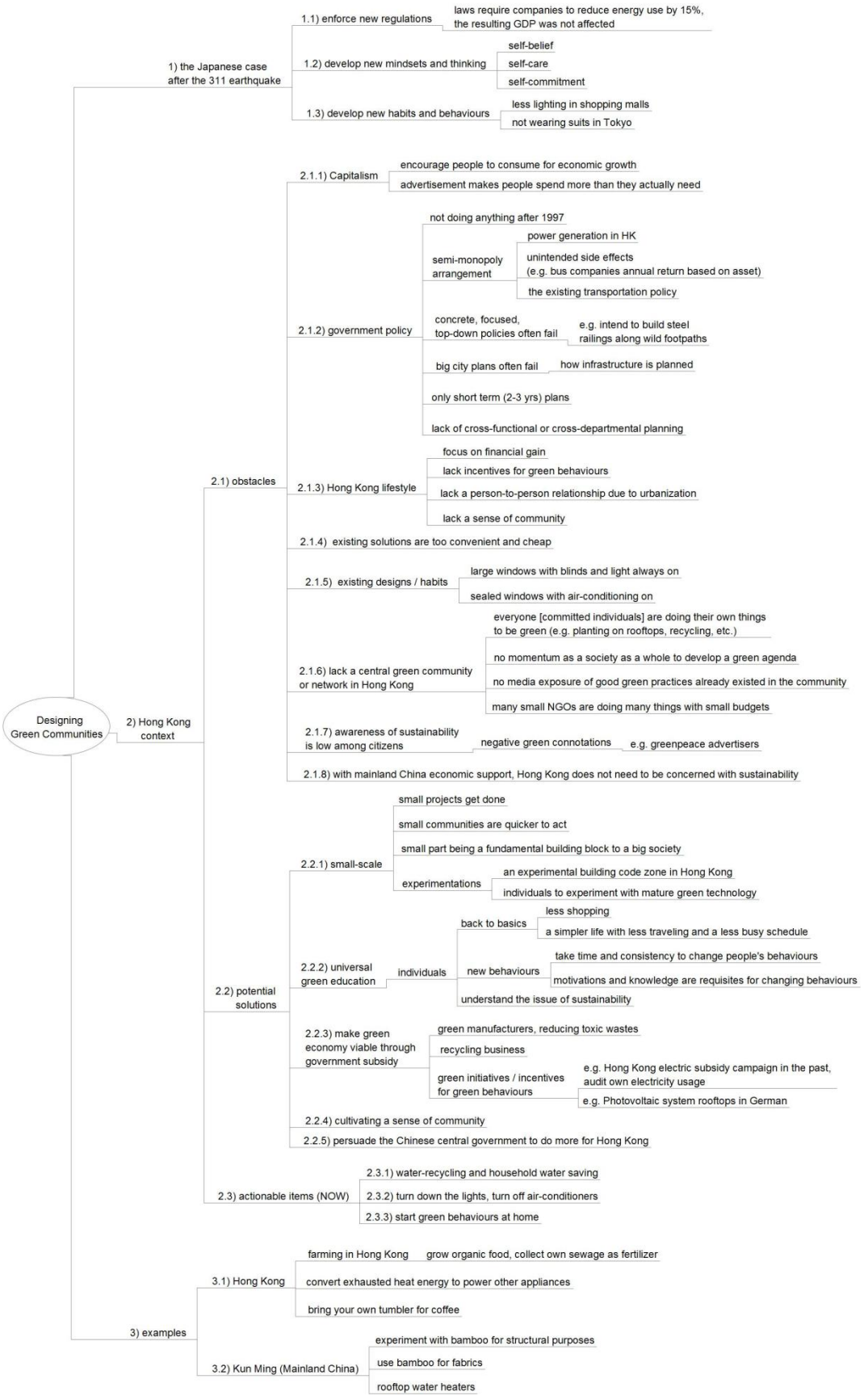


Figure 2 The concept map for the Designing Green Communities roundtable.

Conclusion

Several underlying causes that prevent Hong Kong from becoming a more sustainable city seem to have emerged from the 4 concept map summaries although only 1 concept map is presented above. Government regulations/interventions and inter-departmental coordination remain one of the top priority (Gouldson et al., 2008; Hills & Barron, 1997). Other crucial factors mentioned are related to the hardware side of sustainability including the recycling infrastructure and technology. These are essential to enable the development of a sustainable economy and society on a scalable basis. Instead of seeing these as challenges, Hong Kong should perceive these as new business and market opportunities. The green proposition must be a 'value' proposition – otherwise the cost factor will always be an inhabiting factor. In addition, Hong Kong should encourage the development of local businesses and social enterprises to better utilize existing resources and manpower. Principles and forms of successful business-NGO partnerships in Hong Kong are reported by Mantel et. al. (2007).

On the softer (human) side, the lack of understanding of sustainability is manifested as the inactions of various stakeholders at different levels of the society even though there are many small dedicate groups of activists working on various projects and aspects concerning sustainability. The barrier originated from the limited understanding and participation of the public concerning sustainability should not be underestimated since many government policies can have a longer-term effect on the community (Lo, 2008). It is crucially important to communicate the benefit of sustainability in a way that can connect with the target segments (Ottman, 2011). For businesses, the message should highlight the value of green business. For the public, 'green' should appeal to consumers' self-interest (Yau, 2010). Raising interest and awareness of sustainability to smaller target groups should be a top priority before other interventions can be proposed and implemented effectively since the existing messages are considered to be not meaningful to the general public. Many potential solutions and opportunities were presented during the discussions. For instance, the building of a green community in Hong Kong with local champions from businesses, the community and the media, a bottom-up approach of helping individuals to jumpstart small scale projects as a way of planting seeds in Hong Kong for a future movement. Last but not least, Hong Kong could enhance the green education curriculum across all levels and disciplines of education with a stronger focus on the value of design, innovation and inter-disciplinary collaboration.

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