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Participatory approach in Sustainability Science:
Vision and Indicator Settings
in Local Level in Japan

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Participatory approach in Sustainability Science: Vision and Indicator Settings in Local Level in Japan

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(Abstract)

With a variety of global threats emerging, including climate change, sustainability science has been developed with an aim to deal with the complex problems and realize sustainable societies. While past studies in sustainability science have stressed the importance of participatory approaches in vision and indicator settings both as an essential instruments and the objective of a sustainable society, actual practices at local level and their characteristics have not been well summarized in Japan. In this paper, I present a brief summary of emerging practices in Japanese local municipalities, in which participatory methods are applied to envision sustainable future and relevant target settings. Specifically I look into three local cases: *Higashiomi* city in Shiga Prefecture, *Kizugawa* city in Kyoto prefecture and *Nagakute* city in Aichi prefecture, all of which applied participatory approach involving local citizens. I particularly look into governance of participatory processes in each case and tried to identify commonalities and differences in the practices. I then discuss challenges and prospects of participatory approach in local municipalities in Japan especially in the context of sustainability.

1. Introduction

Sustainability science has been developed to deal with complex problems that are posing threats to global sustainability and the foundation of human being (Kates et al. 2001; Clark and Dickson 2003; Komiyama and Takeuchi 2006). Sustainability science is highly solution-oriented in response to complex problems such as climate change, degradation of ecosystem services and resources depletion. Past studies in the field highlight the essential feature of linking knowledge to transformational actions in participatory and deliberative settings (Bäckstrand 2003; Wiek et al. 2011). Wiek et al. (2011) discuss that the key competencies in coping with sustainability problems should entail participatory methods. As sustainability problems are usually complex and contextual, solutions should encompass normative aspect while reflecting local contexts. It is thus of critical importance to operationalize participatory processes in formulating future visions, action plans, and goal settings with effective indicators.

One of the well-known activities at local level that entails participatory processes would be the Sustainable Seattle initiative (1998). Community members that consist of local citizens selected comprehensive indicators under five large categories of environment, population and

resources, economy, youth and education, and health and community. Such participatory methods have also been applied in such activities as future scenario makings, including backcasting scenarios, as a way to understand peoples' preference and as a learning process (Schneider and Rist 2014; Carlsson-Kanyama et al. 2008; Quist and Vergragt 2006). While deliberation processes with participatory approach particularly in the context of future vision settings is still limited in decision making processes in local municipalities in Japan, relevant practices, backed by such local authorities, have been gradually growing. Such practices, however, have not been reported in a good manner.

In this paper I report some of the emerging practices at municipality levels in which participation of local citizens is prioritized in order to formulate policies related to visioning futures and to develop associated indicators. Specifically I look into three practices in local municipalities including *Higashiomi* city in Shiga Prefecture, *Kizugawa* city in Kyoto prefecture and *Nagakute* city in Aichi prefecture. Each one of them has unique features in terms of, for example, the way of inviting local citizens, main discussion themes, forms of deliberation processes and the way to transfer the shared ideas into actual policy makings. By summarizing these practices, I aim to discuss current status and future challenges of policy formulation with regards to building sustainable societies by involving local citizens.

2. Practices in Japan – case studies

Three cases have been selected taking into account geographical distribution, the targeted themes in relation to future visioning and relevance to policy making at municipality level. Note that all three practices aim to address future visions of cities, relevant indicators and action plans. Three cases were selected including the practices in *Higashiomi* city in Shiga Prefecture, *Kizugawa* city in Kyoto prefecture and *Nagakute* city in Aichi prefecture. I interviewed key persons who are in charge of or being heavily involved in each practice individually. The following section reports a brief summary of individual practices.

2.1 *Higashiomi* city, Shiga

Higashiomi city is located in the eastern part of Shiga prefecture with the population about 113, 800 (as of 2014) in 388.58km². As the prefecture surrounding the lake Biwa, the largest lake in Japan, Shiga has historically been keen to pursue sustainability in its city planning, environmental planning and relevant policy makings. In fact, Shiga prefecture developed and enacted “sustainable Shiga in 2030”, which aimed to address future vision and set specific targets for 2030, such as reducing GHG emissions by half in comparison with the 1990 level and restoring water quality in Lake Biwa to the level in 1965.

Following such unique activities at prefectural level, *Higashiomi* city also launched a

round - table workshop inviting key stakeholders who lived within the cities in order to discuss future visions of the city in 2030. In total, 26 local citizens were invited to the workshop as the members, most of which represent relevant activities such as NPOs and enterprises. Note that the workshop was operationalized by the secretariat that consisted of three city workers, three scientists and three facilitators in charge of coordinating discussions in the series of workshops. The first workshop was organized on Feb 8, 2010 and six workshops in total were organized until December in the same year.

While one of the main themes of the workshop was combating climate change, the members attempted to discuss the future vision from broader viewpoints in relation to sustainability. In fact, participants identified eight indispensable areas that should be prioritized when envisioning sustainable futures in 2030; i.e., that is “community” “medical treatment and welfare” “education, children” “employment and industry” “food, consumption, wastes” “symbiosis with nature” “transportation” and “energy.” While taking into account these essential areas which participating members came up with, the workshop finally formulated “Future vision of *Higashiomi* city in 2030.”

There are some essential features about *Higashiomi*'s case. First, the members tried to address broad viewpoints in relation to sustainability, rather than focusing only on specific issues such as combating climate change, as discussed above. Secondly, although the finalized vision in 2030 address various aspects of sustainability including societal aspects, the discussion processes were backed by scientific knowledge and information. The scientists involved in the discussions played an important role in providing scientific information to support discussion about future that usually entails many kinds of uncertainties. As a result, the finalized vision included quantitative analyses about greenhouse gas emissions under the shared vision in 2030, as well. Third, not only formulating the future vision in 2030, the roadmap and action plans towards 2030 were created through another series of workshops that followed. In fact, seven workshops were additionally organized between April and August in 2011. These plans created through the participatory methods are now under discussion as to how to incorporate the idea into actual policy makings such as the Basic Environmental Plan of the city.

2.2 *Kizugawa* city, Kyoto

Kizugawa city is a city located in southern part of Kyoto prefecture with a population over 70,000. *Kizugawa* city recently stipulated the “Plan for activities to conserve biodiversity in *Kizugawa* city through regional partnership (literally translated from Japanese)” in February 2014 with an aim to succeed the rich *Satoyama* nature and to utilize it in a sustainable manner by means of appropriate management. The plan actually aims to maintain *Satoyama* and conserve ecosystems within the city while preserving unique history and cultures by means of

the partnerships among local stakeholders. The stipulated plan was developed under the leadership of council which consists of city workers, NPOs, local residents, and people of learning and experiences. In parallel of the council, a series of workshops were organized in which activity groups and city workers participated and discussed such essential issues as goals of the plan, principles of actions and evaluation indicators. The council meetings were organized seven times in total between 2012 and 2014, while the workshops were organized six times in total during the period. The workshop was organized by participatory methods, in which about 18 local citizens mainly representing six local activity groups and NPOs were invited to discuss future visions of their activities and *Kaseyama* district where several local communities and NPOs have historically performed such activities as maintenance of bamboo trees and walkways, cultivation of mushroom, and environmental education for small children. Table 1 presents examples of such local communities and their activities who participated in the workshops.

Table 1 Activities of local communities and NPOs

Group ID	Main activities
1	Cultivation of ancient rice, seasonal vegetables, etc., maintenance of bamboo grove
2	Maintenance of bamboo grove, maintenance and management of Satoyama landscape
3	Setting of route sign to <i>Kaseyama</i> castle, maintenance of walkways in mountainous areas
4	Advertising <i>Kaseyama</i> persimmon, organizing tours to persimmon cultivation,
5	Regeneration of pine trees and persimmon and blueberry cultivation fields, organizing camping and environmental education program
6	Organizing nature observation meetings and eco-friendly crafts making
7	Cultivation of mushrooms, maintenance of bamboo grove, management of pine trees

What is important about the case in *Kizugawa* is that activity groups and city workers shared and discussed together the important items such as long term and short term visions, principles of actions and evaluation indicators. The partnership helps incentivize both activity groups and city workers to conserve *Satoyama* landscape and relevant activities in a responsible manner.

Another point is the fact that activity groups set up a platform called “Cheer group for the conservation activities through the regional partnership in *Kizugawa* city (literally translated from Japanese)” aiming to enhance the cooperation among them and widely advertise the activities carried out in *Kizugawa* city. The platform is to be operationalized by *Kizugawa* city. The platform is of vital importance in that it could actually allow continuing efforts to support

and implement the visions, action plans and indicators that participants of workshops and council came up with in a reflexive manner.

2.3 Nagakute city, Aichi

Nagakute city with a population about 52,000 is located in the northern part of Aichi prefecture. It has recently been ranked high in the evaluation of living condition due to sufficient cultural facilities, good employment conditions and high level of convenience. Under the leadership of incumbent mayor, participation of local citizens has been encouraged in addressing future visions of the city and policy makings about various challenges facing the city.

The city, in close collaboration with an academic advisor, has created a forum where participants of local citizens discuss future visions and relevant indicators in pursuit of high quality of life and well-being of the citizens. The secretariat consisting of ten city workers, two member from a consulting firm and an academic advisor, was set up to run the workshops involving eleven citizens. Ten consecutive workshops had been organized Between October in 2013 and August 2014, in which the participants discussed and shared future visions of *Nagakute* in 2030 with a particular focus on quality of life and well-being of citizens. First, they came up with eight indispensable areas to address in realizing high quality of life of the city: i.e., 1. Environment, 2. Connection, 3. Prevention of disaster/crimes, 4. Welfare, 5. Health, 6. Raising children/education, 7. Culture and 8. Life / infrastructure. Based on these eight essential areas, they tried to address future vision of *Nagakute* city and also formulated a questionnaire survey sheet which was distributed to citizens in order to grasp the perception of local citizens. The questionnaire survey was sent out to 5000 local citizens between February and March in 2014, and 1871 effective responses were collected. A summary report was formulated in which all the activities such as workshops and ideas created through the participatory methods and questionnaire survey were summarized (*Nagakute* city, 2014). In its second phase starting from 2015, the forum is now seeking opportunities and ways to utilize the results gained from the survey and ideas from the series of workshops.

2.3 Comparative analysis

Table 2 summarizes comparative analysis of the three practices based on the interviews and other information available. In particular, the following aspects are examined: i.e., 1. Main themes that have been discussed in relation to sustainability, 2. Composition and attributes of secretariat members, 3. Target year in case of visioning the future, 4. Attributes and number of citizens involved, 5. Forms of deliberation processes, such as types and the number of workshops that have been operated, 6. Formulation of action plans/roadmaps in relation to set

visions, 7. Any opportunities to get inputs from a wider range of citizens in deliberation processes, 8. legitimacy of set visions / inputs to policy making, 9. Any system or mechanism to ensure PDCA cycles of set visions and action plans/roadmaps, and 10. Efforts to advertise the formulated vision and action plans.

Table 2: Comparative analysis between three practices

	<i>Higashiomi</i>	<i>Kizugawa</i>	<i>Nagakute</i>
1. Primary themes	GHG gas reduction (combating climate change)	Maintenance of ecosystem service (<i>Satoyama</i>)	Well-being, Quality of life
2. Composition of secretariat	- 2 facilitators - 3 city workers - 3 scientists	- 3 city workers - 1 advisor (scientist) - 1 Facilitator (scientist)	- 10 city workers - 1 advisor (scientist) - 2 consultants
3. Target year	2030	2030	2030
4. Attributes /number of citizens involved	26 representatives of NGOs, activity groups, enterprises	About 18 members representing 6 NPOs in <i>Kaseyama</i> district	11 local citizens from within the city
5. Forms of deliberation processes	6 consecutive workshops	6 consecutive workshops (and 7 council meetings)	10 consecutive workshops
6. Formulation of action plans / roadmaps	Yes (formulated through 7 consecutive workshops)	Yes	- (to be addressed in its second phase activities)
7. Inputs from a wider range of citizens	A forum organized for comments/feedbacks	Public comments operated by council meetings	Questionnaire surveys to 5000 citizens
8. Legitimacy, inputs into policy making	Partially incorporated into policy measures	Fully reflected in the action plan	Under discussion for policy inputs / implementations
9. Systems to support PDCA cycle, reflexivity	Under discussion (Its importance is shared)	A forum was set up to pursue PDCA	Under discussion (Its importance is shared)
10. Efforts of PR	Yes (workshops,	Yes (various events,	Yes (Cable TV,

	cable TV program)	SNS tools)	forum)
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3. Discussions

From the case studies and comparative analysis, we found some essential implications and lessons as follows.

a) Themes in the context of sustainability

While each case set a specific domain or area of prioritization, such as combating climate change (*Higashiomi*), preserving ecosystem services (*Kizugawa*) and human well-being (*Nagakute*), various aspects of sustainability have also been addressed, including socio-economic components. Each case has a specific pattern of discussion. First, each case started discussions by sharing a sort of ideal society in which participants want to live. From the shared ideals future society at the top level, participants break down the abstract images of future visions into more concrete and essential areas of discussions. For example, as described earlier, eight areas, i.e., “community” “medical treatment and welfare” “education, children” “employment and industry” “food, consumption, wastes” “symbiosis with nature” “transportation” and “energy,” were identified in the case of *Higashiomi*.

Policy discussions have been usually centered on specific issues, such as reducing greenhouse gases (combating climate changes), as indicated by the vertical structure of governmental body. However, sharing a big picture of future would be an essential feature of this kinds of emerging practices.

b) Platform as communication tool and education

It is also important that the series of workshops have served as the platform for communication among people with different perspectives, backgrounds and interests. For example, we learned from the interview with *Kizugawa* city’s worker that the processes to identify indicators in the workshops served as an essential communication tool. This kind of participatory methods could also influence the mindset of the city workers who are used to running council meetings to formulate policies inviting scientists from academic community and other members. The participatory discussion processes were very different from the conventional type of policy formulation based on the council meetings. The series of workshops turn out to be a good opportunity for the city workers (secretariat) to change the way of thinking as far as more integrated approaches, such as sustainability discussions, are concerned

c) Methods/tools ensuring effective discussions

It is essential to ensure effective as well as scientifically-sound discussions when it comes to addressing future visions. In this regard, two kinds of efforts were observed in the case studies interviewed. First one is the way of facilitation for discussion. The facilitators were either professional facilitators or scientists, depending on the case. Regardless of the cases, it was essential to put together different viewpoints from the participants whose knowledge levels are different.

Another point is provision of scientific information and facts as materials for sound discussions. As far as discussion about future visions is concerned, there are many uncertainties involved, as represented by population growth and life style of people as socio-economic conditions which are changeable with time. It is therefore indispensable to address future based on scientific facts while taking into account various uncertainties. For instance, discussions had been carried out both by narrative and quantitative approaches in the case of *Higashiomi*. The scientists involved in the discussion as a member of secretariat provided useful information about estimation of possible CO₂ emission reduction under narrative description of future visions which participants came up with in the series of workshops.

d) Governance aspects

While each practice was significant in that the future visions were addressed through participatory approach, the visions and associated action plans which were formulated should be given kind of legitimacy in one way or another in order for the visions to be influential in policy making. This point clearly and directly has to do with the governance aspect. All three cases have been administrated by the secretariat consisting of the local government. This indicates that the ideas obtained from the workshops could have some policy relevant to some extent. Yet, the extent to which the visions or action plans are incorporated into actual policy makings varies depending on the cases or the conditions involved in each case. As the forms and governance of participatory methods vary depending on the case and are different from the conventional type of policy making processes, as represented by the council method in Japan, ensuring legitimacy and policy relevance would be a challenge in this type of participatory approaches.

Another point would be to ensure PDCA cycles and reflexive processes. As far as future visions are concerned, it is essential to entail the reflexive processes. This is partly because future discussions involve many kinds of uncertainties. A scientist interviewed who served as the secretariat in *Higashiomi's* case claimed that visions and plan should be reviewed as societal situation has totally altered after the Great East Japan Earthquake in 2011. Likewise, socio-economic conditions are changeable with time, vision and ideas at one point cannot be the answer for good. In this regard, it is important to maintain reflexive system which allows

updating or reviewing of the ideas and plans. For example, in *Kizugawa*' case, an organization was set up aiming to review the enacted plans, which is fully supported by the local government (*Kizugawa* city).

It is also important to keep stable operation of such participatory approaches. The fact that practices are backed by the local government, as with the three cases examined in the study, indicates that activities could be influenced by, for example, the changes of personnel of city workers who served as the secretariat. As discussed above, the practices should be ideally maintained with PDCA systems, the stability of operation should be a discussion point in terms of governance.

e) Other points

Other than the points discussed above, we found from the interviews the following points or challenges ahead. First, we need to further clarify “representativeness” of participants. The way in which participants (local citizens) are selected varies depending on the cases. If participatory approaches become more effective and important tools whose legitimacy is ensured, this point will not be negligible as far as policy relevance is concerned. Apart from the point of representativeness, balancing not the attributes of the participants as well as the ages would also be important. As for the practices examined in this study, there is the tendency that fewer young are involved in the discussion. Since the future visions matter more to the young, it would be crucial to facilitate the involvement of such younger generations, as well.

Also, the ideas and visions gained through the workshops should be shared with a wider range of citizens. Such effort is indispensable to make the ideas more influential and practical in changing society. While such efforts as PR strategies have been attempted in different forms in each practice to some extent, more efforts should be coordinated, so that the participatory approach becomes known to more people and more practical.

As indicated in Table 2, the target year of discussions was 2030 for all three cases. The longer the time spans, the more uncertainties we might face. This said, addressing long-term visions (e.g., 2050) would also be important considering future generations to come.

4. Conclusion

In this paper, comparative analysis of three practices is presented to discuss current status and challenges of participatory approaches in pursuit of a sustainable society in Japan. The three practices have both commonalities and differences. I reported some of the challenges in terms of governance based on the comparative analysis. In particular, governance that ensures stable and continuous practices, including PDCA cycle after formulating visions and action plans would be, among others, the key to develop such participatory approach in the context of sustainability

science.

Indeed, participatory practices to envision sustainable futures which are with policy relevance and legitimacy are still very limited. Some of the activities could be launched simply by the leaderships of some important stakeholders, including mayors. This means that these practices are not yet well systematized in terms of governance and public policies in Japan. Sharing the information about ongoing and emerging practices, such as those reported in this paper, therefore would be crucial as the first step to enhance participatory methods in Japan.

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