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# DEVELOPING A METHODOLOGY PACKAGE FOR LOCAL CAPITAL STOCKS MANAGEMENT : A CASE STUDY IN ICHIHARA CITY

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**ABSTRACT:** It is necessary that capital stocks be maintained in order to achieve environmental sustainability. However, there is as yet no firmly established methodology for maintaining and managing capital stocks. This study focuses on one example of a developmental process which took place in order to create a methodology package that will assist city officials and others such as the staff of not-for-profit organisations in Japan to manage local capital stocks. The methodology package has two main elements: providing access to a simulator which shows expected changes in local capital stocks in each city; and providing workshops to promote the sharing of knowledge and discussion among local students and people of other generations. Through the implementation of this methodology package by the project members, it has been found that these two elements generated a realisation within junior high school and high school students of expected changes to each city, and encouraged a diversity of ideas among them. Through promoting the sharing of ideas, this package has proved effective as a tool for generating suggestions regarding the management of capital stocks which have then been presented by participants at the workshops to the local mayor.

*Keywords: Sustainable Resource Management, Capital Stocks Management, Participation, Simulator, Workshops*

## 1. INTRODUCTION

It is recognised that there are four categories of capital stocks ― natural capital stocks, material capital stocks, human capital stocks, and social capital stocks―which need to be maintained in order to achieve sustainability of societies, including environmental sustainability [1], [2]. Each category of capital stocks needs maintaining in a different way. For example, natural capital stocks need agricultural land maintenance and fish stock maintenance; material capital stocks need maintenance of architecture and promotion of recycling and sharing; human capital stocks need education and care/childcare; and social capital stocks need the public service to be maintained and community/not-for profit organisations to be fostered [3].

However, focusing on the situation in Japan, especially since 2008, when the population of Japan began to decline [4], there are various challenges to maintaining these capital stocks. Some of these challenges include: aging and population decline, global warming and environmental degradation, ageing infrastructure, and the disappearance of communities along with a decline in social connectedness [3].

To deal with these challenges, it is necessary to consider the particular context of each locality and also to respond to local needs, from the perspective of the subsidiarity principle which means that what can be dealt with by the basic administrative unit should be left to that unit, and a wider administrative unit should deal with other issues [2], [5]. However, the basic administrative unit sometimes lacks the necessary information and human resources for dealing with the challenges mentioned above, and further, there is no firmly established holistic methodology that can be used for maintaining and managing these capital stocks at the level of the basic administrative unit: cities, towns, or villages.

## 2. PURPOSE AND METHODOLOGY

In this study, the authors, who are members of the management team of the project (Tomomi Maekawa joined in March, 2016, and Hidefumi Kurasaka in November, 2014, also since the launch of the project), focus on the developmental process and the outcomes of the project "OPoSSuM" (Open Project on Stock Sustainability Management), which have been achieved during the period from November, 2014 to October, 2016.

The purpose of this study is to analyse the developmental process and the outcomes of the project and to identify the challenges for the future of the project with a view to improving the

contents of the methodology package. In order to achieve this purpose, the authors focus on a case study of the implementations of this methodology package in Ichihara city, Chiba prefecture. The implementations were carried out on 19 and 20 August, 2015, and on 24 March, 2016.

The methodologies used in this study are documentation analysis of the project including materials such as the brochures and leaflet used for carrying out the implementations in Ichihara city, and participatory observation through participating in the management team of the project as members.

## 3. ABOUT PROJECT "OPoSSuM"

In order to deal with the various challenges that Japan has been facing, mentioned in the first chapter of this paper, the project team of OPoSSuM (which is composed of researchers from several universities and institutes) has been developing a methodology package, which is intended to assist people such as city officials and the staff of not-for-profit organisations to maintain and manage local capital stocks in their areas [2]. In this chapter, we describe the contents of the methodology package through analysis of the project's documents [3], [6].

### 3.1 Designing a Methodology Package as an Approach

Based on the recognition that local capital stocks management should respond to local needs and that future generations are an important part of the community, the project team decided to develop a methodology package with the following elements.

Firstly, access is provided to a simulator which shows expected changes in local capital stocks in each basic administrative unit—cities, towns, or villages—, which is named the "Future Simulator". And secondly, providing workshops to promote the sharing of knowledge and discussion between local students and people of other generations, which are named the "Future Workshops".

### 3.2 Developing the "Future Simulator"

The project team has been developing the "Future Simulator" in order to identify the challenges facing local capital stocks management in each basic administrative unit. The aim of the development of the "Future Simulator" is to predict the gaps generated between demand and supply of human capital stocks such as childcare, education, medicine and care; between demand and supply of housing; and between revenue and expenditure of local authorities. These gaps are predicted based on the hypothesis that the trends existing in or around 2015 will continue until 2040.

For example, with regard to the industrial structure, the "Future Simulator" predicts the likely industrial structure in 2040 based on the long term population projection while assuming that the trends in the number of people employed by industry since 2000 will continue — it is estimated that the population in Japan in 2040 will have shrunk by about 15% compared to 2015 and the number of people who are employed will have decreased by 20%—. Regarding the other topics, it predicts the following changes: the supply and demand in childcare, education, medical and care services; the level of labour which is necessary to maintain the current level of cultivation; the amount of housing and the number of households; and future revenue and expenditure.

Using the "Future Simulator", the project produces the "Future Card" which summarises what the "Future Simulator" shows. The project distributes a "Future Card" to each city, town or village which requests it from the project. In this way, providing access to the "Future Simulator" is carried out through distributing a "Future Card" to whoever requests it.

### 3.3 Developing the "Future Workshops"

The project team has also been developing a workshop method which is named "Future Workshops". This encourages local people such as junior high school students, high school students and elderly persons to recognise the challenges in their own area identified through the "Future Simulator", and to start thinking about and taking action towards solving the challenges that the local capital stocks management in their area are facing.

At the "Future Workshops", the participants—mainly junior high school students and high school students — give policy recommendations to the current mayor, as future mayors of 2040.

With a view to enhancing the understanding of the local area by the participants themselves, after a lecture on the results of the "Future Simulator" by the project members, the participants walk around key areas of the city/town/village which demonstrate the type of community, the local industrial structure, educational facilities, etc. Then, the participants are divided into several groups and through discussion within the groups work on generating policy recommendations.

### 3.4 Implementing the Methodology Package

Implementing the methodology package involves three steps: lecturing on the results of the "Future Simulator" to the participants; leading the participants on a walk around key areas in the locality; and facilitating the discussion and

generating policy recommendations among the participants. The three steps are carried out by the members of the project.

*3.4.1 Step 1: lecturing on the results of the "Future Simulator"*

Firstly, the participants learn about the status of the local capital stocks in their own area from the results of the "Future Simulator". This is carried out through listening to a lecture referring to the "Future Card" which is made and distributed by the project team.

*3.4.2 Step 2: leading participants on a walk around key areas in the locality*

Secondly, the participants walk around key areas in the locality while referring to a map which reflects the estimated local population in 2040. The project members ensure the safety of the student participants, and also enhance awareness in the participants about the expected changes in reality.

*3.4.3 Step 3: facilitating discussion and generating policy recommendations among participants*

Finally, with assistance from the facilitators (the project members), the participants, working in several groups, generate policy recommendations through exchanging ideas with the other members of their group. This workshop style ensures each participant gains new ideas and also clarifies his/her recognition of the challenges in the local area. Group discussion is facilitated by a series of guidelines (See Table 1) [6].

Table 1 "Future Workshops" Discussion Group Guidelines

| | |
|---|---|
| Suggesting ideas to others | • Suggest as many ideas as possible, don't worry about their quality.<br>• Unique ideas which might sound strange to others will be welcome.<br>• Don't be critical of others' ideas.<br>• Think holistically through seeing and listening to others' ideas. |
| Attitudes | • Try to show your agreement or sympathy to others by nodding or your facial expression.<br>• Write down ideas in large characters and speak clearly when you make suggestions.<br>• Keep calm and quiet when you have to concentrate on writing ideas. |

## 4. IMPLEMENTATION

### 4.1 Targeting the Younger Generation

In this section, we describe the process and outcomes of the implementation of the methodology package in Ichihara city on 19 and 20 August, 2015, based on the documentation and reports created by the project members. This implementation targeted the younger generation, that is, junior high school and high school students living in Ichihara city [7]. Through recruitment by advertising in the publicity of Ichihara city and by distributing flyers to the local junior high schools and high schools through the board of education of the city, 39 junior high school students and 1 high school student participated in the implementation [7].

*4.1.1 Implementation: Step 1*

In Step 1 the results of the "Future Simulator" were presented at a lecture to the participants at a hall in Ichihara city. Information presented regarding the results of the "Future Simulator" for Ichihara city included the following [6]:

- The population of the city will decline by about 20% by 2040 as compared to 2015.
- The number of workers in 2040 will shrink to about 75% of that in 2015.
- The number of people working in both the construction industry and agriculture in 2040 will decline to about 40% of that in 2015, and the number of people working in the areas of care and welfare will increase by about 10% in 2040 as compared to 2015.
- The population of school children in 2040 will decline to about 60% of that in 2015, and due to this, the number of schools in the southern area of the city will decline.
- The rate of abandoned farm land will be about 28% of the cultivated land in the city.
- The rate of vacant houses will be about 15% of the houses in the city.
- The number of households located far from public transport such as railways and bus services will amount to 8500 (7.5% of the total number of the households in the city).
- Landfills in the city will be filled to capacity in about 2026.
- In 2040, revenue of the city will amount to 640 billion yen and expenditure of the city will amount to 698 billion yen.

*4.1.2 Implementation: Step 2*

The participants visited the following three key areas of the city including experiencing the local railway called Kominato railway; the area around Kazusaushiku station (See Fig.1); a community centre named Uchida Mirai Gakkou which is using

a building of a closed local school; and Idemitsukousanchibaseiyujo, which produces about 40% of the total oil production of the Idemitsu group. The participants also listened to lectures given by the staff at Uchida Mirai Gakkou and at Idemitsukousanchibaseiyujo [6].

Fig.1 The participants at the Future Workshop on 19 and 20 August, 2015 walking around the area near Kazusaushiku station. (Photo was taken by H. Kurasaka.)

*4.1.3 Implementation: Step 3*

On the second day of the implementation the participants worked on generating policy recommendations through exchanging ideas with the other members of their groups. In each discussion group, the participants wrote their own ideas on small sticky notes which were then placed on large blank sheets of paper. The sticky notes were then grouped according to categories suggested following discussion of what the students had seen, heard, and learnt at the lecture and after visiting the key areas of the city. The methodology used in this discussion was the *Jigsaw* method where the members are partly exchanged among the groups during discussion [7].

Finally, after completing the work on the blank sheets, the participants gave presentations regarding what they had generated through discussion in their groups to all the other participants and the observers including the mayor of the city (See Fig.2). The participants—local students—gave their policy recommendations, as future mayors, to the current mayor and exchanged comments. Some of the suggestions which were generated by the participants included:

- Growing seedlings via field learning at schools.
- Students or staff of local schools visiting elderly people and informing them of events which they can join in.
- Increasing the salaries of care workers and increasing the number of care facilities for elderly people.

Also the project team received comments from the participants after the implementation such as: "The most important thing is the relationships between people. I think interactions among people will grow Ichihara city as a city where people can talk together and cooperate with each other. I would like to talk with various people at another 'Future Workshop' in the future" [8].

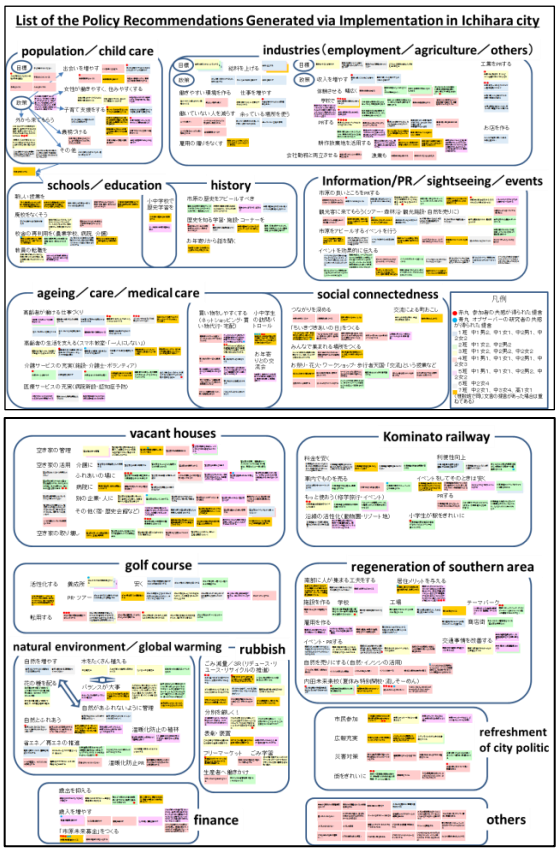


Fig.2 The list of policy recommendations generated at the Future Workshop on 19 and 20 August, 2015. (The project team compiled this composite list from the recommendations of all the groups at the implementation. The original list was made by H. Kurasaka and then translated by T. Maekawa.) The categories of the ideas are as follows: population/child care, industries (employment/agriculture/others), schools/ education, history, information/PR/sightseeing/ events, ageing/care/medical care, social connectedness, vacant houses, Kominato railway, golf course, regeneration of southern area, natural environment/global warming, rubbish, refreshment of city politics, finance, and others.

### 4.2 Targeting the Elderly Generation

In this section, we describe the process and outcomes of an implementation of the methodology package in Ichihara city carried out on 24 March, 2016, through participatory

observation and based on the documents created by the project members. This implementation targeted the elderly generation living in Ichihara city and comprised of 10 people aged over 65 years of age. They were recruited at a centre for elderly people who are willing to work. Step 2 of the implementation was omitted as the participants had enough knowledge of the local geography and situation.

*4.2.1 Implementation: Step 1*

As with the implementation in August, 2015, the results of the "Future Simulator" were presented to the participants at a lecture in Ichihara city. Because the location was the same, the materials used were identical to those used at the previous implementation.

*4.2.2 Implementation: Step 3*

After the lecture on the results of the "Future Simulator", the participants divided into two groups of five and worked on generating policy recommendations through exchanging ideas with the members of their group. The discussion style was almost the same as the implementation in August, 2015, but this time the participants studied the other group's recommendations after completing the work with the sticky notes, instead of applying the *Jigsaw* method (See Fig.3).

Fig.3 Participants at the Future Workshop on 24 March, 2016 studying the completed sheet of the other group. (Photo taken by T. Maekawa.)

Some of the suggestions which were generated from the participants were as follows (See Fig.4):

- Use local temples as venues for local people who wish to come together to learn.
- Provide education to people on classifying rubbish in order to promote reducing/reusing/recycling.
- Establish volunteer groups for conservation of forests.
- Switch the way of caring for *Satoyama* from conservation to utilising livelihoods.

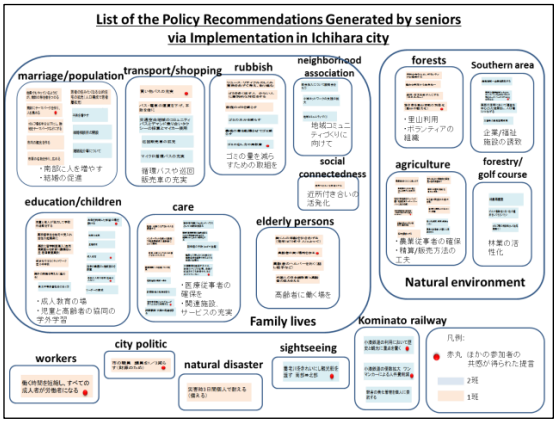


Fig.4 List of policy recommendations generated at the Future Workshop on 24 March, 2016. (This list was compiled and translated by T. Maekawa on behalf of the project team and based on the recommendations made by the groups at the implementation.) The categories of the ideas are as follows: marriage/population, transport/shopping, rubbish, neighbourhood associations, social connectedness, education/children, care, elderly persons, forests, southern areas, agriculture, forestry/golf course, workers, city politics, natural disasters, sightseeing, and Kominato railway.

## 5. DISCUSSION

### 5.1 Findings from the Implementations

*5.1.1 Impact of the methodology package to the participants*

The list of policy recommendations based on the completed sticky note displays (See Fig.2) shows the diversity of the ideas and suggestions generated through discussion. Also, the participants at the ideas "Future Workshop" on 24 March, 2016 realised that the two groups came up with ideas that were both similar and different, through being able to view both displays (See Fig.3).

Thus, through implementing the methodology package in Ichihara city, it was found that the methodology package generated a realisation within junior high school and high school students and also within elderly people of expected changes to the city, and encouraged a diversity of ideas among them through facilitation by the project members at the "Future Workshop".

*5.1.2 Difference in areas of interest of the participants by their generations*

It was found that there were differences in the ideas generated by the younger participants and

those of the elderly generation. The differences appeared in some characteristic topics for each generation, and these indicated that the interests of each generation were different. For example, the younger generation suggested many ideas on topics such as child raising and ways of contributing to the society or community, while the elderly generation suggested many ideas on life-long learning and also on ways to conserve *Satoyama*, the word which expresses not only the natural environment but also the traditional Japanese livelihoods that harmonise with the native ecosystems.

### 5.2 Challenges for Improving the Methodology Package

There are challenges for improving the quality of the program and the implementation of the methodology package. These are as follows:

- Reflecting the estimated influence on the city/town/village of the temporary population decline which is caused when younger people move away to higher education.
- Designing and incorporating some new steps or other devices for promoting links among the participants at "Future Workshops" and also between the different generations.
- Establishing a system for fostering additional facilitators and other staff who can deliver the methodology package, including training in facilitation skills.

### 5.3 Realising one of the Generated Policy Recommendations

With a view to promoting social connectedness among the participants at the workshop in Ichihara city in August, 2015, an event named "The Summer of Nagashi-somen" (a community event where visitors enjoyed Japanese noodles) was planned. Through promoting communication its aim was to provide an opportunity for the previous participants to come together and to encourage them to collaborate in taking action towards the regeneration of the local communities within the locality.

This event was designed and carried out on 28 August, 2016 at Uchida Mirai Gakkou by the particular committee for this event which was composed of volunteers, under the auspices of the city government of Ichihara, and with support from Uchida Mirai Gakkou and Project OPoSSuM. The collaboration for this event was realised through continued communication with the local people of Ichihara city since 2015 and facilitation of collaboration among the stakeholders within the locality by a member of the project team. There were about 200 participants from a wide range of generations. During this event, the participants enjoyed spending time participating in Nagashi-somen and other kinds of games (See Fig.5).


Fig.5 Above: The entrance of the Uchida Mirai Gakkou where the event on 28 August, 2016 was held. Local people gathering together in the morning. Below: Part of the printed sheet listing policy recommendations generated at the implementation carried out in August, 2015 in Ichihara city. The comments in the red circle are the ones which were realised at the event on 28 August, 2016. The red circle is titled "Uchida Mirai Gakkou" ("Special Summer School /Nagashi-somen").

Some of the participating students at the implementation in Ichihara city in August, 2015 were interviewed regarding the impact of the implementation. Some of their responses to the interviewer were as follows:

- University students and others who worked on generating policy recommendations with the participating students respected what they said or suggested, even to minor questions.
- They didn't think that their suggestions would be acted on. They recognised that nothing would change unless they expressed their ideas.
- They felt that others listened to them with respect, and they felt that they would respond by listening to others with respect, too.

- They had never thought about their own city in this way, but came to realise that they could have an impact.

The participating students' responses to the interviewer indicate that the students recognised that their suggestions (the policy recommendations that they generated at the implementation) could in reality be reflected in the policy of their city, and also that the students were encouraged by having the opportunity to express their ideas to others.

### 5.4 Future Plans of the Project

The OPoSSuM project plans to design and to carry out implementations of the package in Yachiyo city in November, 2016 and also in Tateyama city in the summer of 2017. These forthcoming implementations will be of differing designs regarding the "Future Workshops", with a view to developing various models of implementation appropriate to the situation and needs of each locality. We expect that developing various types of implementation will provide flexibility in the use of this package. That is, it will enable it to be used in any city/town/village across the nation.

The project team has also been preparing for the launch of a not-for-profit organisation called the "Institute for Local Sustainability" ("Chiikijizoku-kenkyujo") which is expected to take over the business that project OPoSSuM has developed, after 2017.

## 6. CONCLUSION

Through analysing the developmental process and the outcomes of the methodology package that the project has been developing, using a case study of the implementation in Ichihara city, it has been found that the methodology package generated a realisation within junior high school and high school students and also within elderly people of expected changes to the cities/towns/villages in their community, and encouraged a diversity of ideas among them.

While the methodology package needs additional development to improve its impact, that is, the three steps of the package could be improved especially in line with the three points outlined in section 5.2, it has proved effective as a tool for generating suggestions for managing local capital stocks (in this case in Ichihara city) which have then been presented to the city mayor.

Also, through the interviews at the follow up event, it was found that the participants from the implementation recognised that the policy recommendations they generated were able to be reflected in the policy of their city, and that through the experience of participating in the workshop where they were given the same treatment as adults, they were encouraged to express their own ideas to others in order to solve or improve future problems.

This indicates that with some additional development the methodology package will be effective in fostering within participants a sense of being part of their local community and city/town/village. In particular, an essential part and impact of the methodology package will be in ensuring that there are individuals who can provide leadership in realising the sustainable management of local capital stocks. Establishing a method of fostering persons who can take on leadership roles in the sustainable management of local capital stocks is indispensable.

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