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## HISTORICAL TRANSITION OF COMMUNITY CURRENCIES IN JAPAN

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### ABSTRACT

This study investigates the historical transition of diversifying community currencies (CCs) in Japan. We searched for papers, reports, newspaper articles, and websites about Japanese CCs to acquire all available information on CCs issued in Japan. We classify the types of CCs by purpose and examine their development process by organizing the purposes, issuing forms, and starting year for each CC.

Our survey results show that 792 CCs were issued in Japan. The largest number of CCs was 130 issued in 2002. New CCs have gradually decreased since 2002, and approximately 15-20 CCs were issued annually since 2008. The purpose of issuing CCs also changed; CCs aiming to “create connections among people” were the most frequent, though this changed in 2002 to “revitalizing the regional economy.” The number of issued CCs to “create connections among people” was in third place in 2011, while “promoting resource recycling” was second.

To classify CCs in Japan, we conduct a cluster analysis using sample scores obtained by Hayashi's quantification method type III as a dependent variable for the issuing purpose. Many CCs issued in the first half of 2000 belonged to Cluster 4, “formation of people's connection and regional economic revitalization;” however, those issued in recent years belonged to Cluster 3, “forestry and regional economic revitalization.” Although the number of new CCs decreased drastically in the past 15 years, CCs are clearly evolving as a tool for solving social problems with changing issuing purposes.

### KEYWORDS

Classification, cluster analysis, issuing purposes, issuing forms, Japanese CCs.

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## 1. INTRODUCTION

The first community currency (CC) in Japan was the Volunteer Labor Bank established by Teruko Mizushima in 1973 to support working women. Subsequently, in the 1980s and 1990s, the time-banking system spread throughout Japan<sup>i</sup> following the launch of time-based CCs (e.g., time stocks and “Fureai Kippu”), which were inspired by the Volunteer Labor Bank. A CC boom occurred in Japan from the late 1990s through the early 2000s, and over the years, hundreds of CCs that are tradable both in the reciprocal realm and the market realm have appeared (Miyazaki & Kurita, 2018). According to Lietaer (2004), more than 600 CCs circulated in Japan at the end of 2003, making Japan the world’s most advanced and historic country in terms of CCs. However, few papers in English describe the current situation and changes with respect to Japanese CCs since the boom, except for a few case studies (see Kichiji & Nishibe, 2008; Kurita et al., 2012; Hayashi, 2012; Nakazato & Hiramoto, 2012; Miyazaki & Kurita, 2013; Kurita et al., 2015; September 2019).

Lietaer (2004) described why information about Japanese CCs was not transmitted worldwide as follows:

Nevertheless, remarkably little is available in any other language than Japanese on this topic [the largest diversity of complementary currencies experiments in Japan]. Even more surprisingly, within Japan itself the full range of currency experiments is rarely perceived because different Japanese “complementary currency schools” tended to ignore each other.

Lietaer classified Japanese complementary currency systems into four schools: 1) the pioneer issued by the Volunteer Labour Bank, 2) the Fureai Kippu system, 3) the Eco-money system, and 4) Grass-root initiatives. At present, the eco-money system no longer exists in Japan, and CCs of schools 1 and 2 are rarely issued. In the last few years, the CC boom in Japan has settled down, and there are moves to verify past efforts and explore new ways to utilize CCs. Recently, we have seen new types of development in the establishment of other types of currencies, such as CCs, that give children experience in business commerce and social participation (children’s currency) and CCs aimed at conserving the natural environment and promoting local consumption of locally produced goods (see Miyazaki & Kurita, 2013; Kurita et al., 2015). We think that these CCs belong to the Grass-roots school, but it is not clear what kind of activities the Grass-roots school engages in and how it expanded in Japan. Seyfang and Longhurst (2013) attempted to classify the international diffusion of CC types focusing on Grass-roots innovations, but this study makes no positive reference to the Japanese initiatives. We therefore attempt to grasp the transition of such initiatives from the late 1990s to the present quantitatively. Through our analysis, it is possible to overview the scale and extent of the initiatives, which had been difficult to grasp in previous case studies.

To help understand the transition of the Grass-roots school in Japan, we surveyed 11 papers and reports in Japanese that investigated trends in Japanese CCs (Miyazaki et al., 2016). These studies attempted to give an overall picture of CCs in Japan by quantitatively evaluating the effectiveness of each. From the results of our surveys, we found many cases where mail-based questionnaire surveys or telephone-based interview surveys were implemented to investigate cases of CC introductions. Carried out with the principal purpose of understanding the present situation and extracting the issues involved, the surveys focused on the CC system and the entities issuing and operating the CC. According to the Sendai Urban Research Forum (2002) and Michimori and Miura (2002), who conducted early nationwide surveys, the organizations issuing and operating CCs and the commencement of such initiatives increased rapidly from 1999.

Regarding the purpose of introducing CCs, many of the issuing organizations cited social aims such as “community revitalization” and “creating connections among people,” while other organizations cited economic aims like “shopping district revitalization,” “invigorating town planning activities,” and “simultaneously regenerating the local community and revitalizing regional commerce.” (Japan Center for Regional Development, 2004; The Japan Research Institute, 2004; Yosano et al., 2006; Kimura, 2008). In general, a CC is used as a tool to solve regional economic poverty and community decline, but the goals of introducing a CC differ in each region. Some regions simultaneously aim for multiple goals. Meanwhile, as far as the issuance system is concerned, the most common format of currency issuance, the note format, accounts for half or more of the total. However, we can divide these note-issued currencies into two types by whether they perform an endorsement or not. The next most common currency system is the book type, and of the many such types that exist, some use the note issuance and book type together. In recent years, we have seen a gradual increase in regions adopting electronic centralized management methods

via IC cards and online accounts, but at the time of the initial surveys, only a few were examined during the first half of the 2000s.

We cannot know the transition in CC in Japan from these results because these previous studies targeted Japanese CCs at a certain point in time. In addition, since they were mainly conducted in the first half of 2000, no research has been conducted for all CCs issued in Japan. Therefore, no studies investigated the transition in Japanese CC from the end of the boom to the present<sup>ii</sup>.

This study aims to clarify the expected roles and limitations of Japanese CC by determining the transition in the purpose and form of Japanese CCs from previous surveys and our survey. Asking why such diverse types of CC were created by exploring the reason and development process will elucidate the changes in Japan's economy and society through the transition of CCs.

## 2. METHODOLOGY

To make a complete list of CCs issued in Japan since the 1980s, we searched for information about Japanese CCs from media such as academic papers, reports websites, and newspaper databases (The Asahi Shimbun and the Nikkei). The information about each CC includes the circulation area, the start and end year, the purpose of issuance, the issuing form (e.g., Coupon type, IC card), and its convertibility. We divided the 47 prefectures in Japan into three areas, and gathered information on CCs in these areas. For each CC, we classified the purpose of issuance into 13 categories (Table 1) according to the Japan Research Institute (2004). The classification was carried out in two steps. In the first step, three authors independently classified the issuance purpose of CCs in an assigned area. In the next step, the validity of the classification was discussed and a final decision was then made. From the collected information, we could hardly obtain information about the end year of a CC and its convertibility. Regarding the former, about half of Japanese were CCs suspended or terminated within 2 - 3 years of its issuance (Izumi, 2006), though the termination was not announced in many cases.

Table 1. CC issuing purpose classification.

1) Creating connections among people	2) Promoting welfare and medical care	3) Promotion of recycling
4) Natural environment protection	5) Protection and restoration of cultural properties	6) Maintenances of roads, parks, and public facilities
7) Regional economic revitalization	8) Promotion of local festivals and events	9) Promotion of civic activity
10) Support for the agriculture, forestry, and fishery industries	11) Promotion of exchanges with other regions	12) International cooperation
13) Others		

Our study identified 792 CCs issued in Japan, 537 CCs of which fit within our classification of issuance purpose. Although there are CCs with only one purpose, many CCs have multiple. To specify the features of the combination of purposes, we conducted a cluster analysis using sample scores obtained by Hayashi's quantification method type III (Hayashi, 1951) as a dependent variable for issuing purpose. From the results of these analyses, we consider the features of issuing purposes according to issuing forms and transition.

## 3. RESULTS

### 3.1. Transition of issuing purpose of Japanese CCs

Fig. 1 shows the time series of the number of new Japanese CCs from 1999 to 2016. The number of new CC in Japan intensified their increasing trend since 1999, but started declining after peaking in 2002; then, approximately 15 CCs were issued annually since 2008.

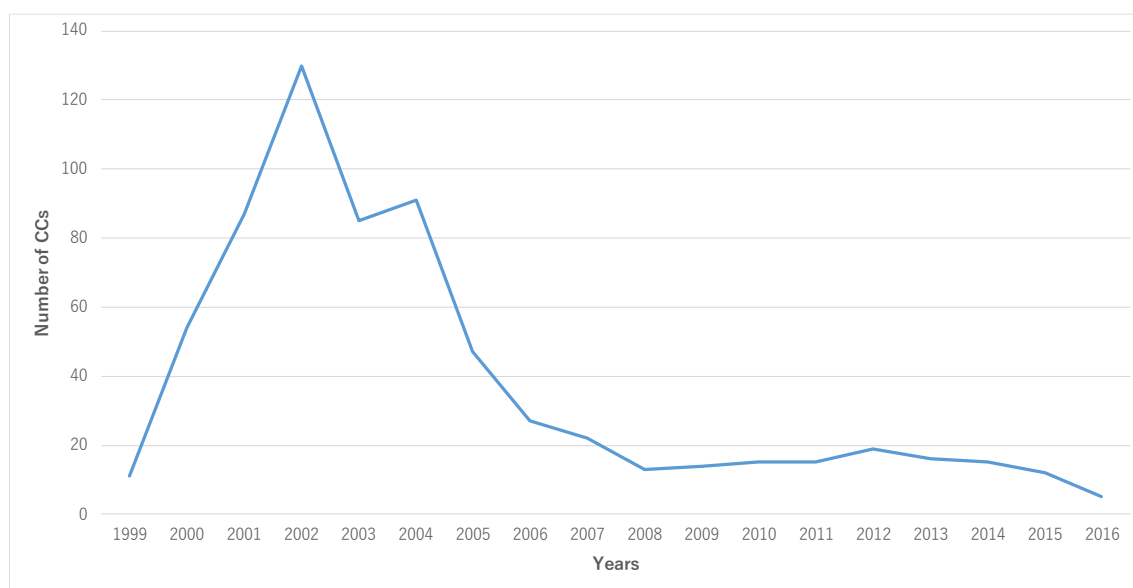


Figure 1. Time series of the number of new Japanese CCs.

Table 2 is a cross-tabulation showing the relationship between the issuing purpose and form. The most common purpose for issuing CCs was “creating connections among people” (349 samples), followed by “regional economic revitalization” (258 cases). The most frequently issued form is “coupon type” (429 samples), which actually accounts for 80% of the total. The second is “book type” (104 samples), and there are fewer CCs issued through digital media such as IC cards and online system than that for analog media. Focusing on the relationship between issuing purpose and issuing form, 93% of the book type, 62% of the coupon type, and 86% of the online system CCs were issued for “creating connection among people.” On the other hand, 50% of coupon type, 35% of book type, and 68% of IC cards aimed at “regional economic revitalization.” Since the book type is limited to between dozens of people to hundreds of participants, rather than revitalizing the regional economy, it is adopted for “creating connections among people.”

Table 2. Relationship between CC issuance purpose and issue form in Japan.

	Issuing purpose of CC													Sum
	Creating connections among people	Promoting welfare and medical care	Promotion of recycling	Natural environment protection	Protection and restoration of cultural properties	Maintenances of roads, parks, and public facilities	Regional economic revitalization	Promotion of local festival and event	Promotion of civic activity	Support for agriculture, forestry, and fishery industries	Promotion of exchange with other regions	International cooperation	Others	
Coupon type	264	57	122	127	11	17	220	68	101	80	32	15	40	429
Book type	97	22	24	22	5	5	36	13	36	7	8	4	10	104
Due bill type	8	2	0	2	0	0	7	1	3	1	1	0	0	12
IC card	13	6	12	3	0	4	21	6	5	1	3	0	3	31
Online system	18	3	6	5	1	2	11	7	5	1	5	1	3	21
Others	8	3	4	4	0	0	9	2	3	1	1	0	4	15
Sum	349	78	148	144	14	23	258	79	129	86	39	17	50	537

Fig. 2 shows the time series of the number of new Japanese CCs by issue purpose from 1999 to 2016. The purpose of issuing CCs changed; CCs aimed at “creating connections among people” were the most frequent. However, the most frequent purpose since 2007 was “regional economic revitalization.” The number of issued CCs for “creating connections among people” was third in 2011, while the number of CCs for “promotion of recycling” was second. Many Japanese CCs have both single and multiple purposes, so it is difficult to determine the characteristics of CCs in Japan from only Fig. 2. Therefore, we must clarify the combinations of issuance purposes.

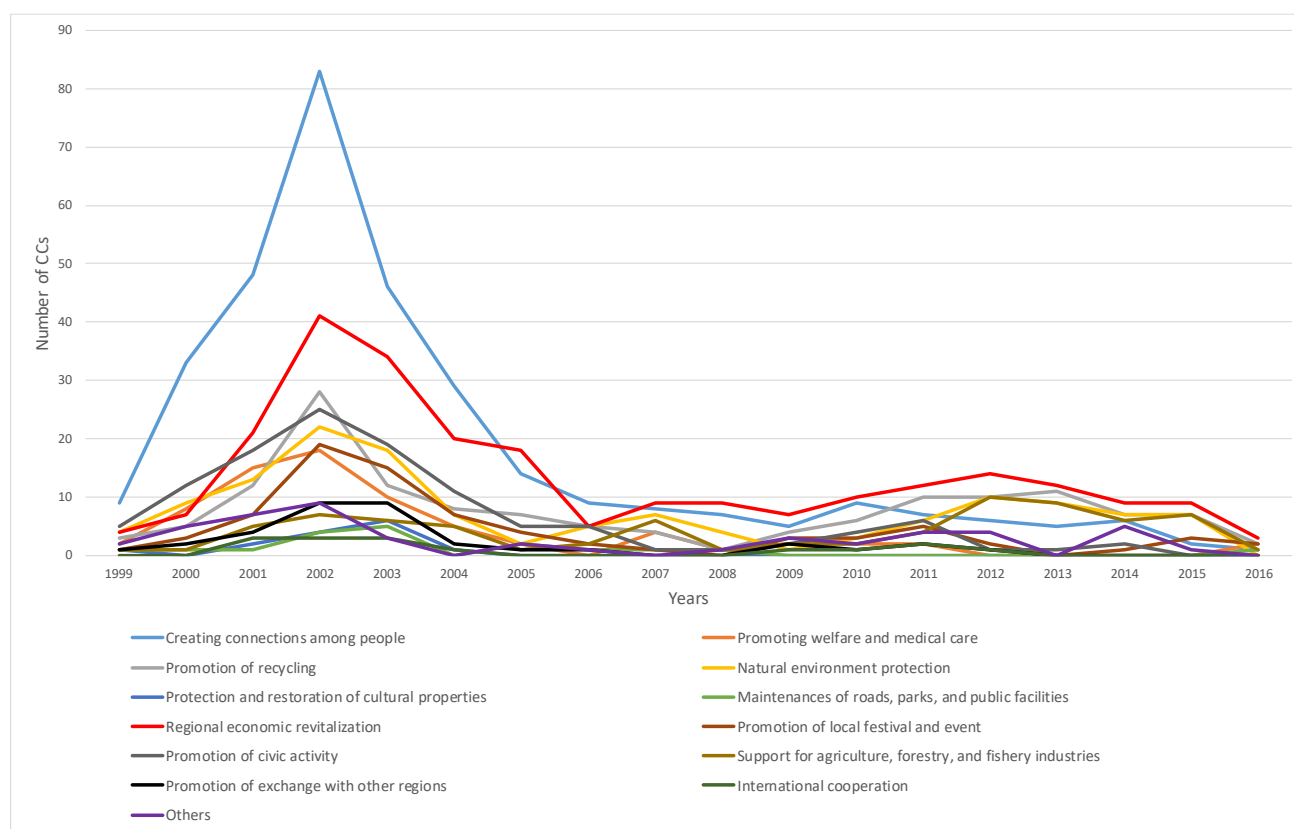


Figure 2. Time series of the number of new Japanese CCs by issuing purpose.

### 3.2. Characteristics of combinations of issuing purposes

Based on responses (categories) to the 13 issuing purposes of each CC (samples), Hayashi's Quantification Method Type III quantifies samples and categorizes simultaneously. In this method, a response matrix should be rearranged so that the correlations between rows and columns become maximal. a "category score" can be obtained for each issuance purpose as an element of the eigenvector corresponding to the maximum eigenvalue. A "sample score," which is an average value of the category score with which the CC responded, can be assigned to various CCs. We applied a hierarchical clustering method to all sample scores obtained by the Quantification Method Type III and estimated 5 clusters in advance from the results. We also conducted a non-hierarchical clustering analysis for all sample scores using the estimated number of clusters and K-means algorithm. We used IBM SPSS Statistics 22 for all analyses. From the discrimination measurement plot, "promotion of recycling" and "natural environment protection" are related to dimension 1, "promotion of a local festival and event" and "promotion of civic activity" were related to dimension 2. From this result, dimension 1 on the X axis represents "Environment-oriented CC," and dimension 2 on the Y axis represents "Regional activity-oriented CC." We defined the following 5 clusters by examining the meanings represented by each dimension and the issuing purpose of the CCs belonging to each cluster.

Cluster 1: Revitalization of regional economies based on environmental protection and resource circulation

Cluster 2: Multipurpose CCs

Cluster 3: Revitalization of forestry and regional economies

Cluster 4: Formation of people's connections and regional economic revitalization

Cluster 5: Promotion of regional activities and community welfare based on people's connections

Fig. 3 shows the range of each cluster in a scatter plot of sample scores. Table 3 shows the number of CCs included in each cluster.

Table 3. Number of CCs in each cluster.

Cluster	Number of CCs
1	87
2	31
3	67
4	253
5	92

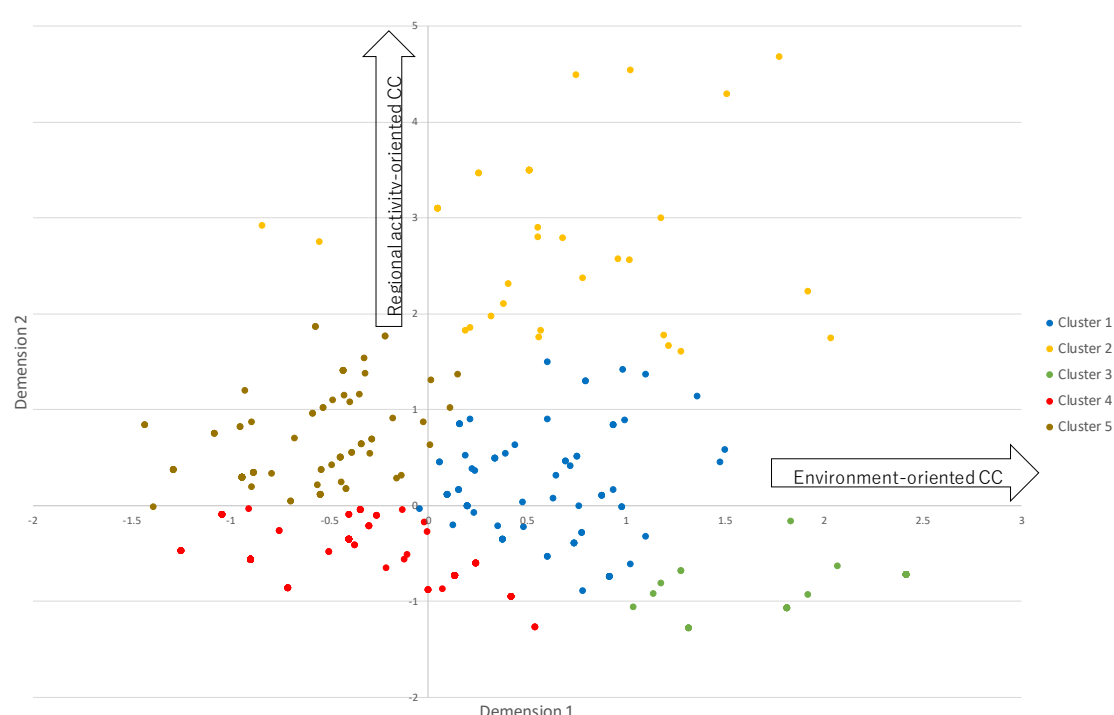


Figure 3. Scatter plot of sample scores by cluster: Some points contain some CC data.

Cluster 4 accounts for 48% of the all CCs because more than half of Japanese CCs aim at “creating connections among people” or “regional economic revitalization,” or both. The CCs of Clusters 1, 2, and 3 positioned on the + X-axis are environmentally friendly type CCs for environmental protection and resource circulation. The CCs in Cluster 3 have a specific purpose, that is, to promote thinning forests by introducing CCs and revitalizing the regional economy simultaneously (e.g., “Mori Ken”<sup>iii</sup> and the “Kinoeki Project”). On the other hand, Cluster 1 contains CCs aimed at various environmental protections and resource circulation, such as cleaning beaches and recycling newspapers (e.g., “Beach Money” and “Pepa”). Cluster 2 is also positive on the Y axis, so CCs belonging to Cluster 2 are multipurpose and aimed for not only natural environmental protection and promotion of recycling, but also to promote citizen activities and local events (e.g., the “Atom Currency”<sup>iv</sup>). Since Cluster 5 is located in the second quadrant, it contains CCs aimed at promoting regional activities and welfare activities, including time-based money such as “Fureai Kippu.”

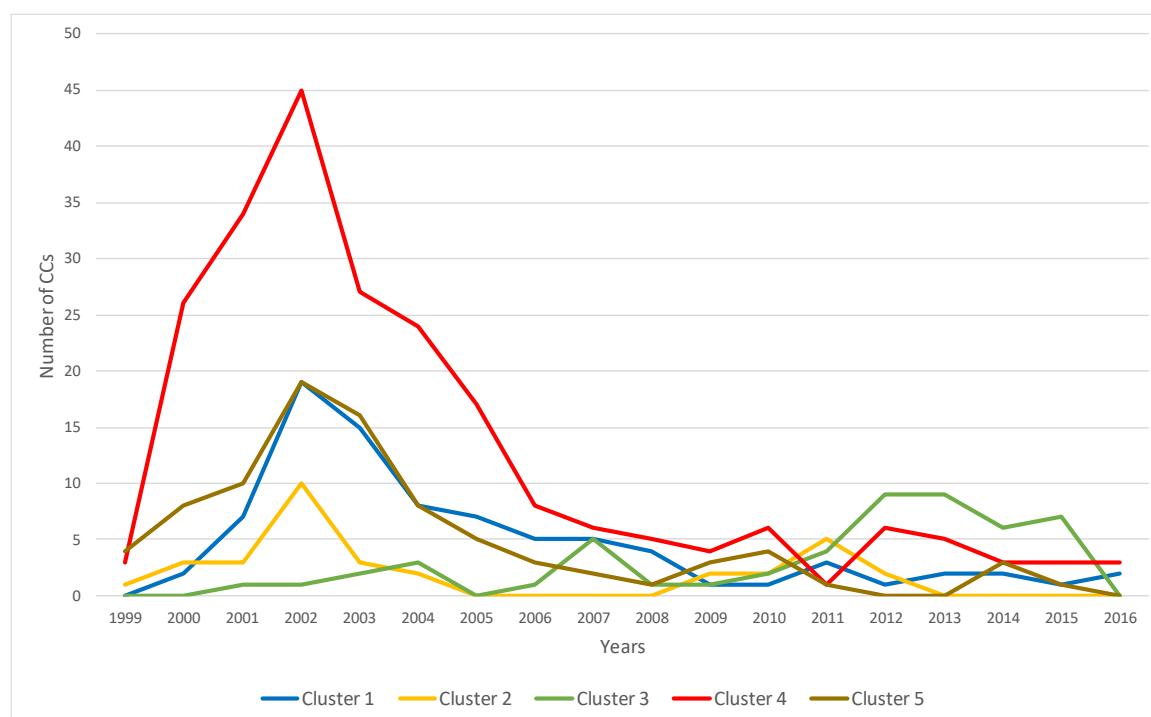


Figure 4. The time series of the number of newly issued Japanese CCs by cluster.

Fig. 4 shows the time series of the number of new Japanese CCs by cluster. Cluster 4 was the most frequently issued CCs in 2002, but Cluster 3, which targeted the regional economy and forestry, is the leader from 2012. Most environment-oriented CCs issued recently belongs to Cluster 3 because the number of new CCs belonging to Cluster 1 were less than 5 each year since 2006. The number of new CCs belonging to Cluster 4 has dropped to 2 in 2011, but the number is increasing since 2012. This is because CCs issued to “make connections among people” were triggered by the Great East Japan Earthquake in 2011. There were 10 cases of Cluster 2 CCs, a multipurpose CC, were issued in 2002, but there were no new CCs in this cluster from 2005 to 2008. The number of CCs in Japan with multiple purposes has decreased.

## 4. DISCUSSION

### 4.1. Comparison with previous survey

Here, we compare our findings to previous research results. Kimura (2008) is the most similar study to ours. He gathered information about CCs in Japan from September 2006 to July 2007 using a similar method and created a database of Japanese CCs. The database items included information such as start time, issuer, currency form, purpose, and CC use. Focusing on the purpose of CCs in the database, the CCs aimed at “revitalizing the community (promoting volunteer activities)” applied to 63.8% of CCs, followed by CCs aimed at “revitalizing the regional economy” at 20.7%. Although we report similar findings from our survey, we can see that the number of CCs issued to address environmental protection, which accounted for only a few percent in Kimura’s survey, has increased greatly in our survey. Regarding the form of CC, there is no difference in our findings with that of Kimura (2008), in that coupon types were more frequent than book type.

Izumi (2006; 2013) conducted a hearing on CC operating organizations from 1999 to 2008 and found that transactions using CCs continued. The number of new CCs in Japan has declined dramatically since 2002 (Izumi, 2013), the number of CCs operating in Japan was the largest in December 2005. These facts also indicate that many CCs issued in Japan at this time stopping circulating 2-3 years from their launch.

### 4.2. Role of issuing organizations on the transition in CCs

While we show results consistent with previous studies, we can suggest a certain relationship between the activities of CC organizations that lead the introduction of CCs and the formation of each cluster. For example, the “Sawayaka



Fukushi (Sawayaka Welfare) Foundation,” which spread the concept of time-based currency in Japan and Toshiharu Kato, who advocated “Eco-money,” influenced the transition of Clusters 4 and 5 in the 2000s. We think that the number of new CCs belonging to Clusters 4 and 5 decreased in the second half of the 2000s because they reduced the involvement in the spread of these CCs. However, the Sawayaka Fukushi Foundation has been supporting the issue of CC called “reconstruction support currencies” to promote recovery from the Great East Japan Earthquake. This activity contributes to the number of newly issued clusters 5 in recent years. On the other hand, the Atom Currency (Cluster 1) launched branches in various areas of Japan from 2008, each of which shared a circulation scheme that succeeded at its headquarters, so the number of new CCs belonging to Cluster 1 has increased. In the 2010s, organizational activities such as “Transition Town” and the “Kinoeki Project” contributed to the rise in the number of new issuances in Clusters 3 and 4. These organizations regularly hold study sessions on CCs and shared knowledge of issuing and operating CCs. In particular, the “Kinoeki Project” systemized the method for exchanging thinning wood and CCs to enable introduction of this system in various areas in Japan. By this approach, the Kinoeki Project was implemented in about 40 regions in 2017. However, in all areas, the “Kinoeki Project” had a deficit balance after deducting subsidies from income. This means that the project is financially unstable (Fujimoto et al., 2015). Even CCs belonging to Cluster 3 have the problem of operating cost, and unless this problem is solved, not only does the number of new CCs decrease, but also the system itself using the CC may disappear. The field required the development of a CC system that revitalizes the regional economy without relying on subsidies, but there are few successful models in Japan.

## 5. CONCLUSION

We clarified the transition in the expected roles of Japanese CC by investigating the issuing purpose and form of all CCs issued in Japan. The results of our survey show that the number of new CCs in Japan fell dramatically until 2008, with peaks in 2002, suggesting that the expectation of CCs as a tool for regional economic revitalization and creating connections among people has been decreasing. However, new CCs have not disappeared: from 2008 to 2016, 15-20 new CCs were issued annually. New types of CC stand out (e.g., the “Kinoeki Project”, the “Atom Currency”, and reconstruction support currencies to recover from the Great East Japan Earthquake, etc.), while the combinations of issuing purposes have changed in line with the Japanese economy and society. One of the mechanisms through which new types of CCs are spreading is that an organization issuing a specific CC propagates its circulation model to various areas. CCs belonging to Clusters 1 and 3 are increasing in the 2010s because the “Atom Currency” (Cluster 1) and the “Kinoeki Project” (Cluster 3) spread their circulation model to other CC organizations.

In this study we focused on the starting year, purpose, and form of Japanese CCs, but we need to clarify the effect of the CCs in Japan by examining the duration of each CC and the degree that each achieved its purpose. It is also necessary to clarify the distribution process of the CC circulation model and how the issuing organization is involved in the process. Such findings may reveal how to revitalize the stagnant Japanese CC. To address these research subjects, we plan to conduct interview surveys and questionnaire surveys of the main issuing organizations in Japan we found in this study.

In addition, of the many types of digital CCs, we only checked the IC card type. Recently, some cases of attempts to issue other types of digital CCs have emerged in Japan. These digital CCs are characterized by benefits to both users and issuers, such as settlement by smartphone application and cheap system maintenance and management costs. It is necessary to continue attempting to determine what kind of cluster the digital CCs will form in the future.

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## ENDNOTES

i - For further details about the evolution of time banking in Japan, please refer to Miller (2008).

ii - Miyazaki and Kurita (2018) aimed to show the diversity and evolutionary process of CC in Japan.

iii - For further details about the “Mori Ken,” please refer to Miyazaki and Kurita (2013).

iv - The “Atom Currency” is distributed to people who have done “good things” according to the four principles of “area,” “environment,” “international,” and “education” (Weekly Waseda, 2010).