

Diverse interpretations enabling the continuity of community renewable energy projects: A case study of a woody biomass project in rural area of Japan

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Abstract

Community renewable energy projects have captured significant attention due to their potential to tackle climate change by socially and economically empowering local societies. Recently, however, various difficulties in the continuity of such projects over extended periods of time have been reported. As a case study, this article explores a woody biomass project, planned and put into practice by local people, which has lasted for over 10 years. The article first examines the process of collective decision-making among members who have diverse motivations. It then focuses on how the project objectives have been interpreted by individual members, paying particular attention to each member's practice. The article shows that decisions related to the project were based on the diverse and constant social interactions between members, which focused on their collaboration rather than overall quantitative goals. I argue, both theoretically and empirically, that this vagueness of the overall goals has enabled the project's continuity. Based on their own practices, it has allowed each project member to interpret the project and to gain a sense of its success. Diversity of practices within a project leads to plural sets of values, which bring sustainability to a project running in an uncertain context.

Keywords

case study, community renewable energy projects, continuity, decision-making, local initiatives, plural sets of values, sense of success, woody biomass

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Introduction

This article explores the social dynamics of project stakeholders of a continuing community renewable energy (CRE) project in a rural area of Hokkaido, Japan. By looking closely at the project's emergence and set-up, and the members' practices in running the project for over 10 years, the article explores the factors that have enabled its continuity.

Literature review

CRE projects have captured attention and been discussed in both positive and negative terms. Renewable energy in general has been promoted on various levels. One of its major objectives is to mitigate climate change, but the ways in which policies are put into practice can cause unwanted side effects like job losses and price increases (cf. Walker, 2011). CRE projects in this article are defined as 'projects where communities (of place or interest) exhibit a high degree of ownership and control, as well as benefiting collectively from the outcomes, and [...] include both supply- and demand-side sustainable energy initiatives' (Seyfang et al., 2013: 978; see also Walker and Devine-Wright, 2008). The key dimensions of CRE projects were pointed out by Walker and Devine-Wright (2008) as being local stakeholders' participation (process dimensions) and distribution of project benefits (outcome dimensions). The former is said to reduce the potential social and environmental risks of projects (Furuya, 2015: 79) and to lead to the empowerment of the local people (Maruyama, 2009a). Meanwhile, the latter refers to the achievement of distributive justice between cost and benefit in local and urban areas. However, this is not a given, as local participation does not eliminate all the risks of a project (Maruyama, 2014: 64; Maruyama et al., 2015), and how

outcomes are distributed is also a matter of debate (Koike, 2002; Terabayashi, 2013).

Among the various difficulties CRE projects face, a crucial issue is the problem of continuity. Projects have to continue over a period of time in order to bring various benefits to its members and society as a whole (Kondo, 2013). One fundamental difficulty mentioned in the articles by Seyfang et al. (2013) and Haggett and Aitken (2015), grasping the overall issues of CRE projects, is the lack of continuity or even the collapse of projects. In the context of Japanese renewable energy projects, Ozawa (2013: 129–130) criticises projects which only implement mechanisms using subsidies and stop as soon as those subsidies are cut.

In order to address this topic, I use a case study of a project which has continued for a certain period of time and ascertain the internal factors that have enabled its continuity. Here, internal factors refer to individuals, groups and communities who run projects, while external factors include environmental and policy changes. Although external factors have a high impact on projects (Haggett and Aitken, 2015; Seyfang et al., 2013), it is the project's members who exploit external resources (cf. Smith et al., 2015), who understand what is successful and what is not (Chmutina et al., 2014) and, simply, who actually run the projects.

Theoretical framework and objectives

The project will be studied from two perspectives: personal motivations and collective decision-making. First, personal motivations refer to the reasons that each project member joins a project, which can be diverse. CRE projects are led by local stakeholders and financial problems are not uncommon (Haggett and Aitken, 2015). Most CRE projects are not capable of paying their members a significant salary, so the reasons for someone joining

a CRE project are unlikely to include financial gain. Recent research has revealed various motivations for joining CRE projects. Dóci and Vasileiadou's (2015) work theoretically and empirically showed that project members join CRE projects not merely for normative reasons based on their understanding of the environment, but also because of short-term individual motivations such as seeking happiness. Bauwens's (2016) work also showed the heterogeneity of individuals' motivations and explored the underlying factors thereof.

Although different motivations and interpretations of a project may cause conflicts (see van Veelen and Haggett, 2017), they may also drive a project's continuity. Maruyama et al. (2007) investigated the incentives of the members of CRE projects in Japan. They argued that diverse incentives could boost social acceptance, and the variety of the ways in which the project was understood encouraged and enabled various people to join the project as stakeholders. They argued that maintaining members' heterogeneous individual motivations rather than having a clear and narrow single objective enabled a wider range of people to participate (see also Maruyama, 2009b, 2013; Miyauchi, 2013). Thus, the diversity of motivations and understandings of a single project frequently found in CRE projects may be both a barrier and a driver of a project. To further enhance our understanding of the project and people's participation therein, I now turn to the second perspective: collective decision-making.

Collective decision-making refers to the process of creating collective understanding based on interpretations within the local context. The process of shaping collective decision-making is vital as it is the process through which members who have different motivations can engage with the project. In other words, it is precisely what brings diverse *local people* to become *members* of

one single project. Previous studies have concluded that shared collective identities play a key role in promoting the mobilisation and progression of CRE projects (Bomberg and McEwen, 2012; Rogers et al., 2012b). Walker et al. (2010) contrasted two CRE projects and their backgrounds, and argued that social trust within local stakeholders shapes the meaning(s) of the project. They further argued that interpersonal and social trust in CRE projects can be a promoting factor which enhances the project, while conversely the lack of such elements can be a barrier. Others have focused on the process of building collective decision-making. Catney et al. (2013) emphasised the role of face-to-face social interactions which entail 'a process of interaction and negotiation between forms of knowledge, social networks, and contrasting cultural frames' (515). These interactions are worthy of attention as they play a major role 'in shaping practices, but also the ways in which these can be identified and [...] mobilised to enable overall changes in energy use' (510). Their work showed theoretically how the process of decision-making plays an important role in collective creation with respect to CRE projects (also see Miyauchi, 2017).¹

My intention here is twofold: to observe the process of building collective decision-making by members who have diverse personal motivations and then to understand the project through individuals' interpretations. In doing so, I argue that decisions by members who have various motivations and preferences are made through constant and diverse face-to-face interactions, determining the overall framework of the project. Such interactions do not determine the successive outcomes to be met: each member has space to interpret the project based on their own set of values in relation to the project. This leads to the coexistence of various sets of values within

a single project (plural sets of values) which become a driver for the continuity of the project in a context of uncertainty.

Relatively few studies to date have explored the factors determining the continuity of CRE projects. I would like to contribute to the current debates around CRE projects by bringing in a qualitative case study and Japanese literature that explore sustainable relationships between the environment and society (Miyauchi, 2013, 2017; Seki, 2007).

In the following section, I will briefly overview the field site, the reasons for deciding on the field site and the research methods. The ‘Findings’ section is divided into three parts. After the description of the project, the focus is on the process of collective decision-making, and highlighting the diverse and constant social interactions in the process of decision-making. I then investigate the diversity of each member’s practices in the project and interpretations of it, which form the basis of their motivations for joining the project. The ‘Discussion’ section explores those factors which enable the continuity of the project. The factors will be explored based on the findings and theoretical perspectives, focusing on social interactions (Catney et al., 2013; Miyauchi, 2017), sense of success (Chmutina et al., 2014; Mosse, 2005) and plural sets of values (Miyauchi, 2013).

Methodology

Ashoro town, the site of study, is the sixth largest municipality in Japan (1408 km²) with a population of 7891. Its population peaked in 1962 at over 20,000.² The major industries in the town nowadays are forestry and agriculture. Forest covers 82% of the whole town, 67% of it belonging to the Japanese government and the rest to the local government, local people and Kyushu University (Ashoro Town, 2014: 1). Kyushu University’s Research Forest has been located in the town since 1948 (Ashoro Choushi Hensan Inkaai, 2010: 256).

The project this article takes as its case study has been run by local stakeholders since 2005, and produces pellets used for heating. The project was selected for two reasons. First, I chose a woody biomass project in Ashoro town to gauge the participation of local stakeholders. As shown in Figure 1, the basic flow of this woody biomass project can be divided into ‘supply’, ‘technology’ and ‘demand.’ In order to run the project, the collaboration between local stakeholders in each sector is crucial (Aikawa, 2014; Kakizawa, 2011; Kondo, 2013; Kostevšek et al., 2013). Technical solutions related to producing pellets often involve consideration of such topics as reducing supply cost (problem 1) and expanding users and demand (problem 2).³ As Kondo (2013) stressed, various actors’ continuing and active engagement and

Table 1. Interviewees.

Main members		Related informants	
Project leader (forestry)	Interviewee 1	Current government official 1	Interviewee 7
Former government official	Interviewee 2	Current government official 2	Interviewee 8
Architect	Interviewee 3	Forest Association worker	Interviewee 9
Plant manager	Interviewee 4	Gas station manager	Interviewee 10
Relatively young forestry worker	Interviewee 5	Current Research Forest manager	Interviewee 11
Former research forest manager	Interviewee 6		

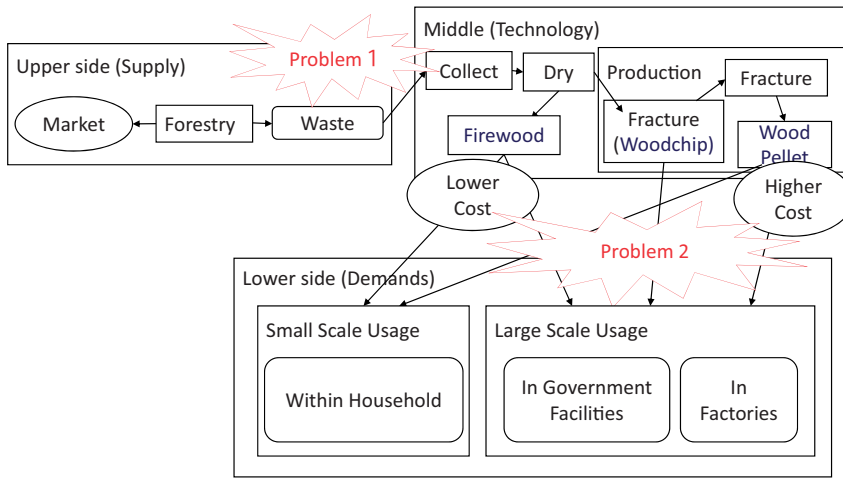


Figure 1. Basic flow of woody biomass.

commitment are necessary for overall success. The project in Ashoro town used raw materials collected in the process of forestry in the local area, which were taken to the plant and then sold to users, mostly in the local area. The main project members range from forestry workers to architects, plant managers and transport industry workers. The project has also involved academics and government officials in the process of setting up the project (Iwahara, 2012; Kanuma and Ohtomo, 2007; Ozawa and Uragami, 2013: 133). It is the participation and collaboration among stakeholders that has lasted for over a decade that I intend to elaborate on from the case of Ashoro town.

Second, the project in Ashoro town was selected due to the limited impact of external factors. Renewable energy in Japanese policies has not received significant attention, and it was only after the new feed-in tariff (FIT) in 2012 that significant implementation started (Vivoda, 2014).⁴ As the purpose of this article is to investigate internal factors, I chose a project which does not generate electricity to reduce the impact of policy changes or external factors.

I conducted in-depth semi-structured interviews and document reviews to seek

the factors that had enabled the project's continuity. Following the methods applied in Rogers et al. (2012b), interviews were conducted with six core project members,⁵ with five interviewees purposively sampled through a snowballing process among the local stakeholders. I opted for a grounded theoretical approach to reveal the realities of the woody biomass projects taking place in the rural areas of Japan. I conducted preliminary research in three woody biomass projects (Ashoro town, Tsurui town and Nanporo town) in the Hokkaido region. I initially held an interview with a serving government official in Ashoro town for an overview of the project (15 May 2015). I then contacted the project leader and asked him to introduce me to project members. I carried out two field trips, conducting interviews with the project members and local stakeholders shown in Table 1 (14–21 September 2016 and 22–26 May 2017). Prior to conducting interviews with the project members, I made a chronological table of the project based on the interview I held with the serving government official and the documents available. In the interviews with the project members, I asked about the consequences, backgrounds and

their engagement in each event or time period while pointing at the chronological table (cf. Tomita, 2014: 45). Direct questions such as ‘What was the motivation for setting up or joining the project?’ were avoided, at least in the early parts of interviews. My questions focused more on facts and contexts of the project and members’ interactions, through which I endeavoured to see individual members’ perceptions towards the project and their engagement.

All relevant Japanese literature and interviews were translated into English by the author. Masculine pronouns are used when referring to the interviewees as all were men.

Findings

Overview of the project

The beginning of the project can be traced back to two feasibility research projects fully supported by subsidies in 2001 (Table 2). One was led by the New Energy and Industrial Technology Development Organisation (NEDO),⁶ which conducted

feasibility research on renewable energy sources in general, including wind power, biomass power and hydroelectric power. The other was led by the Forestry Agency, subsidiaries of the Ministry of Agriculture, Forestry and Fisheries, and this was solely on the woody biomass project. The research projects involved the participation of scientists, government officials and relevant local stakeholders. This not only enabled the local government of Ashoro town to conduct a feasibility research, but also provided opportunities for members to get to know each other. Prospective project members were not complete strangers, but had not created strong relationships prior to the research projects. It was within the discussions they had in the projects that they became acquainted.

After the research projects ended in 2002, people within the projects started monthly gatherings later known as *Shinrinkobo*. Although *Shinrinkobo* consisted of people who were interested in doing new projects, these were casual and informal gatherings with alcohol (*Nomikai*). Those who joined were mainly project members and others who ranged from academics and journalists to forestry workers. They talked about a range of topics involving woody biomass and how to set up a project.

Having monthly *Shinrinkobo* over a year, the main members decided to work on pellets and bought a small machine to make pellets (pelletiser). In 2003, they set up *Ashorocho Mokushitsu Pellet Kenkyukai* (Research Society), in order to receive two subsidies, respectively, from the Tokachi Sub-Prefecture Office and the Ashoro town government.⁷ One of the main aims of this research society was to spread the notion of pellets and woody biomass, which were then hardly known in Japan. They placed stoves with the town council to let ordinary people see the actual pellets

Table 2. Overview of the project (Iwahara, 2012; Kanuma and Ohtomo, 2007).

Year	Events
2001	<ul style="list-style-type: none"> • Feasibility research on renewable energy based on a subsidy from NEDO • Feasibility research on woody biomass based on a subsidy from MAFF
2002	<ul style="list-style-type: none"> • <i>Shinrinkobo</i> started
2003	<ul style="list-style-type: none"> • Establishment of the Research Society; pelletiser purchased
2004	<ul style="list-style-type: none"> • Reconstruction of the town council • Establishment of the Cooperative
2005	<ul style="list-style-type: none"> • Pellet plant starts operating

MAFF: Ministry of Agriculture, Forestry and Fisheries;
NEDO: New Energy and Industrial Technology Development Organisation.

and held a number of events for various audiences.

The plant started running in 2005. This was supported by two events. First, in 2003, the main members and government officials in Ashoro town and Hokkaido prefecture went to Sweden to inspect an advanced biomass project.⁸ A report of the inspection was published (Ashoro Mokushitsu Peretto Kenkyukai, 2003), a symposium was held in Ashoro town on 20 September 2003 and articles on the inspection were printed in a local newspaper (*Tokachi Mainichi Shinbun*, 23–27 September 2003).

Second, the project gained support from government. The government official of the time won two subsidies: one from Cabinet which allowed the members to use the building of an unused secondary school as their factory without incurring extra expenditure; and another from the Forestry Agency which subsidised the cost of the machines (Kanuma and Ohtomo, 2007: 112).⁹ Such support enabled the project to cut down the initial cost to set up the project. Furthermore, the boilers which burn pellets were introduced in 2004 in public facilities, including the town council. This guaranteed significant demand. This has been one of the most important economic factors which let the project run stably. The consumption of pellets in public facilities accounts for around 40% of the total usage through the years (Table 3 contains data of 2012).

Table 3. Consumption of pellets in 2012.^a

Within Tokachi sub-prefecture		Other places
Ashoro Town	59%	22%
	<ul style="list-style-type: none">• 40% in public facilities• 19% privately	
Other places	19%	

^aThe data was provided from interviewee 7, 15 May 2015.

They established the *Tokachi Pellet Kyoudo Kumiai* (the Cooperative) in December 2004 and started running the plant in 2005. Currently, there is no subsidy which supports the project itself, but the town government is subsidising a maximum of half of the prices of stoves if there are new users who wish to buy new stoves that combust pellets.

The process of setting up the project

This section recaptures the process of setting up the project outlined in the previous section. Here, I focus on each person’s original motivations and how they reached collective decisions. By doing so, the section points out that the decisions were made through project members’ constant and diverse interactions with each other.

When the members gathered during the feasibility research projects in 2001 and *Shinrinkobo*, each person’s preferences and reasons for joining varied. The government official who applied for the research projects in 2001 was interested in a biogas plant using waste from dairy farming. He was in charge of agricultural production engineering based within the jurisdiction of the town government. He was worried about the effects of the liberalisation of agricultural produce markets due to the GATT Uruguay round of multilateral trade negotiations, and disposing of livestock excreta being mandatory due to the national policies (Iwahara, 2012: 131). He was not interested in woody biomass in the beginning and became interested in it after joining and listening to the conversations held in *Shinrinkobo*.

I was interested not only in pellets but also in methane fermentation of animal manure, so I was at first not so positive about pellets. I was listening to other people discussing, and not active about pellets. But as I joined those gatherings,

they were saying we should do pellets first, so I started thinking 'let's do pellets'.¹⁰

The project leader, who is engaged in forestry, was interested in starting a new project that produced wood coal. His biggest concern at the time was the declining and shrinking forestry industry. Forestry is a public enterprise, and according to the project leader maintenance of forests needs financial support from the government in various levels.¹¹ In the 2000s, Prime Minister Koizumi Junichiro promoted sweeping reforms (*Seiikinaki Kaikaku*), which reduced public services and increased markets' role in aiding the economy as a whole. This, for forestry workers, meant a reduction in subsidies. Therefore, the project leader was afraid that Koizumi's policies would further worsen the situation for the forestry industry.¹² He was thinking of carrying out a wood coal project to avoid the worst-case scenario.

Project members included an academic and an architect who each had experience of researching stoves which burn woody pellets. The academic was the head of the Research Forest in the town. Although his speciality is forestation, he was invited to join the research project investigating the combustion of pellets when the leader of the research project came to Ashoro (see Kanuma and Ohtomo, 2007). The architect supported him by collecting information about stoves and assisting with some experiments.

These four people (the governmental official, project leader, academic and architect) and another person working in forestry were the main members who set up the pellet project and held their *Shinrinkobo*.¹³ Although *Shinrinkobo* was where members convened and made decisions in the setting up of the pellet project, the topics they discussed were not limited to the project on which they were working. These were

'normal' gatherings, where the members talked about where they were from, what they had done and what they wanted to do. One of the initial members recalled a gathering thus:

In *nomikai* [casual gatherings] of these rural areas, many people tend to complain, like 'I don't like that' and 'Will someone do that for me?' It is boring, and it makes our alcohol taste bad. In *Shinrinkobo*, we didn't only talk about pellets. We decided to talk something that has a dream, like 'how about doing something like this or that.'¹⁴

As also exemplified in the project leader's short account 'Everyone was saying what they wanted to do',¹⁵ the gatherings were informal and casual without large restrictions and could express their own ideas. The gatherings were 'loose' where attendance was up to each member and anyone who was interested could join. Attendees ranged from academics to forestry workers and journalists. Thus, the gatherings functioned as an informal space in which members exchanged their interests and got acquainted with each other.

None of the members were initially interested in the woody biomass project, and the decision to launch the project was made through the conversations they had in the gatherings. As mentioned above, the government official was interested in methane fermentation of animal manure and the project leader was interested in a project producing coal. The academic had knowledge on the usage of pellets due to his experience of conducting research but did not have experiences in making pellets. The academic, architect, project leader and government official all identified *Shinrinkobo* to be where the decision was made. The actual *Shinrinkobo* itself has not been researched in the fieldwork I conducted. However,

based on these interview data, I can conclude that the decision to conduct a pellet project was made through discussions between people with different interests. Thus, the decision was made through constant social interactions.

After the decision was made, the Research Society was set up, and this was when the current plant manager joined the *Shinrinkobo*. He was invited and joined the initial meeting of the Research Society and the *Shinrinkobo* held after it. The plant manager was the manager of a chopsticks factory at the time. Considering the increase in cheap chopsticks imported from China, he thought the industry would soon shrink in Japan. When he heard that there was no one able or willing to run the pellet plant although the government support for factory had been agreed, he decided to quit his post and manage the plant instead.

Within the gatherings, the project was slowly designed. As explained in the 'Methodology' section, the woody biomass projects require collaboration between material supply, technologies for producing products and demand expansion (Kakizawa, 2011; Kondo, 2013; Kostevšek et al., 2013). Kostevšek et al. (2013) proposed a concept called the renewable energy sources (RES) networks which refers to a network involving various stakeholders throughout the value chain. This concept reminds us that when running a project, the overall system, which entails various stakeholders, needs to be designed. In the case of Ashoro town, how each member contributes to the project was decided within the interactions among the project members.

What each of us is good at was completely different, so we did what we could do. And this has continued till today. No one said, 'Please do this for me' to others, nor 'I will do this for you'.

I think it was a natural process that contracts were made based on each member's roles.¹⁶

Although there were many troubles and problems, since the members work in different industries, we all depend on each other and listen to each other. Our discussions were relatively general, and I think we hardly had any conflicting opinions. We gathered what others don't have, and made decisions, so we didn't have any conflicts within the project.¹⁷

What the interview data show is that in the case of Ashoro town, members discussed the project on a general level and how each member contributed to it was decided spontaneously. It was the negotiations between the project and what individuals can do that shaped the project and each member's role. Thus, the design of the project rationale and the RES networks were created within the constant social interactions.

In the process of starting up the project, informal communications in *Shinrinkobo* and communications on various levels took place to shape the project. Constant informal communications were undertaken, as the project leader explains: 'Right before we constructed the plant, we emailed each other every day to pass on information, and gathered irregularly for short meetings. These relations continued for two years after the plant started running.'¹⁸

However, there were also more formal communications. Regarding the subsidies they used to construct the plant, the government officials from Ashoro town and Hokkaido prefecture and the project leader held meetings. This meeting played a major role in the project design, as the subsidy determined the scale of the operation and the price of the pellets. Another formal communication took place in

the meetings of the Cooperative, the organisation which runs the project. The architect recalled the discussion they had when they set up the project:

One of the major topics which we discussed was raw materials. Some were sceptical about using forest scraps. That was the biggest one. Other topics didn't involve argument, but we discussed how to fracture the wood in the plant and how to dry materials. Each person had different preferences.¹⁹

Based on these various members' interactions, they reached a consensus and started running the project. Thus, the process of decision-making involved both informal and formal social interactions among the members.

In this section, I have outlined how individuals had different interests and concerns, and then how they created collective and shared decisions within various levels of communication and social interaction. The project members gathered in 2001 for two research projects which were supported by subsidies. Those who were interested in the topic for various reasons gathered and started to interact. It was through these interactions that they decided to pursue a woody biomass project and worked out how to set it up.

Diverse practices and interpretations within the project

In this section, I focus on each person's actual practices within the project to point out the diversity of each person's practices based on their occupation and to show how each individual's interpretations differ.

The government official's perspective was based on economic calculations: his role in relation to the project was getting subsidies to support the project and its members. One of his major focuses was on

the effect of the project on the local economy. He applied for subsidies for two feasibility research projects and construction of the pellet plant. For the applications to be successful, the project had to be feasible and would have to achieve its goal within three to five years; it also needed to demonstrate a beneficial contribution to the local economy. When he applied for a subsidy for building the pellet plant, he held discussions with the project leader and government officials working for the Hokkaido prefecture. These discussions were on the potential demand and scale of the plant. Since the plant started operating, he has not been engaged in the actual project itself. However, he created a subsidy programme which supports local people to buy a pellet stove, and applied for a subsidy provided by the Ministry of Health, Labour and Welfare which supports the project members economically (Iwahara, 2012). Thus, the government official's engagement in the project was in the form of applying for subsidies and supporting the project financially.

The government officials' engagement with the project has not changed over the years. The government official who was engaged when the members initially set up the project has since retired, and currently two new government officials are supporting the project. One of them was my first interviewee, who I first asked about the project. He mentioned the subsidies which support local people to buy stoves, and further explained the project thus:

We are doing this project not because it is eye-catching, but because using the resources in the region will improve the economic cycle, or the local economy will be better when we can circulate money, things and energy within the region.²⁰

Thus, the serving government official understood the project in terms of its

contribution to the local economy and supporting the project by providing subsidies.

The project leader had been in charge of starting up and managing the project. Within the discussion in relation to the subsidy for the pellet plant, the government official's idea was to set a price competitive with kerosene, a major heating fuel in Hokkaido. However, the project leader's idea was to set the price even higher to reduce risks. His focus was on running the project safely. Figure 2 was provided by the project leader, and the data were collected and kept by him.²¹

The project leader understands the project not only by itself, but also when contextualised within the woody biomass industry in the Hokkaido region. He recalls his actions when the project was set up: 'We did experiments in a very old community centre, and many people from all around the place, including media, asked us to do inspections.'²² His practice of giving talks to ensure many people recognised pellets was part of the activity leading to the project's establishment. However, he has also

been hoping to increase the number of factories within the Hokkaido region.

Many pellet plants were constructed all around Hokkaido, so the quantity of products decreased. That's natural, as they buy pellets from the plants that are closer to their locations. This is when I realised that pellet plants have spread around Hokkaido, started supplying pellets, and customers have started buying them. I was really happy about it.²³

The quote indicates that profit maximisation or stimulation of the local economy is not the only goal which the project aims to achieve. The project leader understands the project within a regional context.

Importantly, the project leader has not articulated the goal of the project clearly. When I asked him about the future plans for the project, he answered: 'Most people who come to Ashoro and inspect our project ask me what the prospects of the project are. However, I can only answer that we only decide what to do on each occasion.'²⁴

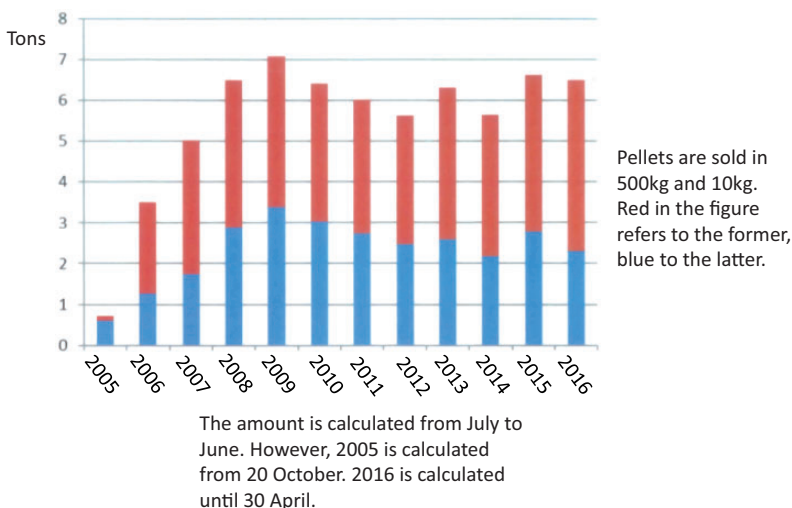


Figure 2. Amount of production.

Thus, he is running the project on the assumption of the uncertainty of the future.

The plant manager's everyday practice has been to produce standardised pellets. He has contributed to the woody biomass project by running the plant properly. 'We get money from the users, and that means we need to provide them with qualified and standard products. [...] The mission for me is to produce products that satisfy our customers.'²⁵

The ways in which he has been contributing to the project are by running the plant and by producing marketable pellets daily.

A relatively young forestry worker, who joined the project after it had started running, is in charge of transporting the products from the plant to the town council. As he works in forestry, he also used to be in charge of collecting spare wood from the forest and chopping them.²⁶

He is concerned with the local economy and the future of forestry. He is the head of a young forestry workers' group called *Ashoro Kishikai* and works to improve the situation of forestry in Ashoro town. He says that his goal is 'not to lose what we have now'.²⁷ For him, one of the things that they already have and want to maintain long term is the woody biomass project. The group's activities focus on forestry, and they have held an event where a member of a famous biomass project in Niigata prefecture gave a lecture in Ashoro town.²⁸ His understanding of the project in Ashoro was thus:

The pellet project is something I hope will run forever in the town, and something that should be running in the long term. Using the materials in the local place in the local context, and hoping the meanings of it are understood by everyone. This will promote the economic cycle.²⁹

The goal of the project, for him, is to help reinvigorate local forestry and, by doing so, improve the economic situation in the town.

The architect, courtesy of expanding demand and users, is selling stoves and expanding his own projects. As elaborated in the previous sections, having enough demand is a key point which allows a project to continue (see especially Aikawa, 2014). The architect said: 'The stoves I'm selling are the end product for the pellets. This is my profession, and I am working hard to spread their usage.'³⁰ He explained to me that he had recently been involved in a project which bakes bread using wheat and locally produced energy.

I have been making ovens since last year using a subsidy. The aim is to make heating energy out of pellets. Wheat is famous in the Tokachi region [...] Most of the strong flour is imported from abroad, but there are some farmers who are starting to make this. [...] There is a milling company which is called *Tokachi Yume Mill*. The bread shop is located in Obihiro city and they introduced pellet ovens to use local energy and ingredients.³¹

This project aims to make bread using local materials. The architect is engaged with the project, albeit indirectly, by expanding the demand for pellets.

The architect also focuses on a network of project members rather than the project per se. In the fieldwork, I had a chance to join a barbecue party which was held at the architect's home. Within the interview, he told me:

We still have gatherings with the previous and current heads of Research Forest, students, government officials, and we even have our children joining in. This is how we have networks now. This wasn't something likely to happen. But we still have these things now, and I'm really happy with it.³²

Informal gatherings have been practised for over a decade. Here, the network, which was built throughout the emergence of the project itself, has become one of the core values attached to the project.

This section has elaborated on the ways in which each member engages with the project. As outlined above, each person's activity differs. This section especially explored the practices of five core project members who had set up and run the project: the government official who is applying for various subsidies from the town council, the project leader who is managing the project, the plant manager who oversees pellet production in the plant, the forestry worker who is in charge of transporting pellets and the architect who is expanding demand. I also showed that members are interpreting the project in a range of contexts including the woody biomass industry in the region and personal networks within the project. Here, I am not arguing that the accounts above are complementary nor that these understandings are the only understandings that exist in the project. There may be wider unspoken motivations held by individuals that were not expressed in the interview process. Furthermore, each understanding and interpretation of the project presented above is not always incompatible with each other: each project member can have multiple motivations. The main intention of this section is to depict the *diversity* of the practice and the wide range of interpretations that exist in a single project.

The following 'Discussion' section brings in two points outlined in the 'Findings': the process of decision-making through constant social interactions, and the diverse practices and understandings of the project which coexist. The section aims to explore the factors which have enabled the project to continue and be sustained for over a decade.

Discussion: The role of social interactions and plural sets of values

I chose the woody biomass project in Ashoro town as the field site because it has been continuing for over a decade and involves the active participation of various actors within the local area. To investigate the factors enabling this continuity, I asked project members why they thought it had succeeded. Interestingly, one respondent denied that the project had actually succeeded: 'We haven't succeeded yet. We aren't earning yet. Nor have we failed. We are doing the best within our own role.'³³ Another respondent agreed that they had not succeeded yet: 'I don't know if this project is going to go well or not, but the reason it is going fine now is due to the industry-government-academic collaboration.'³⁴

The question that I would like to address here, then, is how a project which has not yet succeeded has continued to run for over a decade. The project was built through local people's interactions which mainly focused on the process and the system of the project. The reason the project has continued, I argue, is this lack of determined ideal outcomes, which has enabled each member to relate their practices to the project. I further argue that this has enabled plural sets of values to coexist, allowing each member to attach their own meanings and reasons to actively participate in the project.

Decisions made through constant and diverse social interactions

Whether or not a project is successful cannot be measured objectively, but instead involves subjective judgements and interpretations. These judgements are partly personal, but the significance of collective factors such as social identities (Bomberg and McEwen, 2012), trust (Walker et al.,

2010) and land attachment (Rogers et al., 2012b; van Veelen and Haggett, 2017) has been pointed out. For the purpose of this article, the effects of the collective concept in the project will not be explored. However, I do want to elaborate on the process of creating collectively.

The importance of social interactions at diverse levels in the process of collective decision-making has been pointed out theoretically in recent research. Social interactions relating to a project in the locality will situate it in the local context. For Catney et al. (2013), social interactions refer to ‘face-to-face interactions’, ‘the position of institutional “nodal points”’ and ‘enduring [...] attachment that people have to locality’ (513). These social interactions within local communities, they argue, are the ‘process of interaction and negotiation’ in the locality which shapes the daily practices and their identification of energy consumption within the local context. As noted above, in order to implement a woody biomass project successfully, the project not only needs to be designed in a technological sense, but also requires a holistic embrace of the RES networks (Kostevšek et al., 2013). Catney’s et al. (2013) argument expanded what Kostevšek et al. (2013) call the RES networks from the related stakeholders to the larger social context or that of a community. A project is inevitably situated in its local economic, environmental, political and social context. What these authors have stressed is the importance of contextualisation of the project in its locality through social interactions in local contexts.

Miyauchi (2017) also pointed out the importance of social interactions, with a particular emphasis on consensus-building. He examined various ways of consensus-building and pointed out their strengths and weaknesses, arguing that no single strategy will be successful in building a consensus and concluding that ‘fundamental points of consensus-building are consents

based on diverse communications, and decision-making is the diverse sets of process to create consents’ (154). As he noted, ‘most of the “agreements” in the practices are not the state of complete agreement of opinions, but rather compromise based on trust relationships or consents based on mutual understandings’ (153). What he stressed in building consensuses based on diverse communications involving trust, compromise and tolerance is the importance of the process itself. Both Catney et al. (2013) and Miyauchi (2017) pointed out the messiness and the importance of the process of consensus-building or decision-making. What they both argued is that diverse, constant social interactions are crucial for building collective decision-making.

The project has involved various and constant interactions among its members. The diverse social interactions are described above, and although *Shinrinkobo* are no longer held, architect says that other interactions continue to occur:

We don’t have monthly gatherings any more, and the name *Shinrinkobo* is not used any more. But we have yearly gatherings in the Research Society and will see the main members there. [...] I met the relatively young forestry worker and current government officials in the meeting for the Tree Festival we had in Monbetsu, and these meetings are daily. We have also had a Messenger group entitled *Shinrinkobo* since last year, and people who are in their 40s and 50s join this. Last Saturday, one of the members posted ‘Is there anyone who is interested in planting maple trees?’ We often have such posts and interactions.³⁵

Informal social interactions, not restricted to the project, are maintained, and face-to-face interactions still take place in the locality. Formal annual meetings of the Research Society and the Cooperative

bring together project members, government officials and academics in the Research Forestry under the topic of woody biomass and forestry. In this sense, these institutions are playing the role of nodal points. Thus, diverse communications based on the local contexts have been undertaken constantly since the feasibility research projects were held.

Through diverse and constant social interactions, they have come to share an understanding of the importance of ‘collaborations’ among the project members. As we have seen in the ‘Findings’ section, each member’s role in the project was determined through the interactions, and many have placed emphasis on collaborations between industry, academics and government. This is also clearly articulated in the report written after the inspection in Sweden. The report pointed out: ‘[I]n order to spread woody pellets, technical solutions to problems are not enough, and construction of the “system” from gathering raw materials to production, marketing and usage is essential’ (Ashoro Mokushitsu Peretto Kenkyukai, 2003: 1). The collaboration itself was one goal, as the academic pointed out in the newspaper article which concluded the report: ‘[W]hen we think of the long-term development, establishment of a key institution which [...] promotes activities on energy that is led by industry-academic-governmental collaborations is indispensable’ (Okano, 2003). Thus, collaborations have become important norms shared among the members through the processes of collective decision-making.

Unclear overall goals and coexistence of plural sets of values

However, although collaborations are clearly stated and shared among members, they have lacked quantitative goals to pursue. As seen in the ‘Findings’ section, the project leader does not put emphasis

on the profit the project makes, and the project is run with a sense of uncertainty. In other words, the project perpetuates the unclearness of the ideal outputs the project should achieve. I argue that this is crucial in enabling the continuity of the project and will now look at the concepts of ‘success’ and ‘plural sets of values’.

Success is a matter of interpretation of practices. Mosse (2005), in his ethnographic study in the context of a development programme in India, argued that the success of a project is a matter of representation, namely the interpretation of practices.³⁶ Chmutina et al.’s (2014) work, in the context of CRE projects, showed empirically how success is a matter of understanding. It is, they argued, a matter of how one understands the processes and outcomes of the project, and their judgement of whether or not these are working determines whether it is a success or not (Chmutina et al., 2014). Thus, a success is not a success in itself, but is rather a success when concrete practices are evaluated as successful by the relevant individuals.

In the case of Ashoro, the notion of ‘success’ has been interpreted diversely by the project members, yet it has simultaneously shared the normative understandings of ‘collaborations’ among members. Although the notion of ‘collaboration’ is clear, this has not prevented each member having different understandings and interpretations of the project. As pointed out in the ‘Findings’ section, there are different understandings of the project’s goal: profit making, expansion of the industry in the region, reinvigoration of local forestry and improvement of the economic situation of the town.

The project members interpret the ‘success’ of the project in very different ways, and this has enabled active engagement of each member within their capacities. The serving government officials, architect and forestry workers, although

dedicated to the project, have their own occupations as well. Although active and continuous engagement is essential for the project (Kondo, 2013), it is difficult to continue burdensome practices over a certain amount of time. If they can interpret the project's success as something that can be achieved through the everyday practices of their respective occupations, it would enable individuals to engage with the project actively within their capacities. Leaving spaces to set goals instead of having tangible ideal goals, therefore, enables members to remain motivated to engage with the project over a significant period of time.

Moreover, not having a clear set of goals enables the coexistence of plural sets of value, which is another factor contributing to the project's continuity. The interpretations of the project are based on what each person considers important. In addition to what each member endeavours to achieve through the project, there are other values attached to the project. The architect's account of the network that the project has nurtured is one such example. Values refer to the underlying significance of these interpretations and understandings and, in Ashoro's case, plural sets of values exist within one project.

The role of plurality of values in a sustainable society and projects has been argued in the volume edited by Taisuke Miyauchi (2013) (cf. Seki, 2007). In the theoretical chapter of the volume, Maruyama (2013: 301) summarises uncertainty as:

- Not knowing what will happen in the future (uncertainty of predicting phenomena)
- Not knowing who will be affected and how (uncertainty of the party concerned)
- Not knowing whether/when it will happen (uncertainty of prediction)

He argued that, due to these uncertainties, policies should not be the single

solution for an issue as they have only a single rationale or set of values. If any uncertain issues occur which counter the policy's rationale, it would no longer work. Rather, Maruyama focused on the ways in which problems are diagnosed and solved. He argued that they should be derived from project members' plural sets of values. Plural sets of values in this context refer to the various reasons people join an environmental project and what they want to achieve from doing so (Miyauchi, 2013: 23; see also Maruyama et al., 2007; Maruyama, 2009b). When plural sets of values are maintained within the project, even if there are unexpected issues that counter the project's rationale, members can still re-evaluate the project based on other sets of values. Therefore, considering the uncertainty each project inevitably faces, Maruyama (2013) argued that having plural sets of values can avoid the collapse of a project and bring sustainability to it.³⁷

Within the past decade and more, the project has faced a critical issue in terms of collecting raw materials. The project initially used scraps that were derived from forestry in the town, but they have become difficult to collect.³⁸ The project is now buying pulp wood from the Forest Owner's Co-operative Association. Considering the project was set up to improve the situation of forestry in the area by using biomass resources effectively (Ashoro Town, 2002), not using scraps from forestry could be seen as failure. The project has not collapsed, I suggest, because of the diverse understandings that coexist within the project, which have enabled the project to be re-evaluated in light of various sets of values.

Conclusion

This article took a woody biomass project in a rural part of Japan as a case study and

elaborated on the factors which have enabled the project's continuity. I looked at the process of decision-making by individuals who have their own motivations and interests in the project. I then focused on individuals' practices within the project and how they perceived the project. First, the findings suggest that the project has been run based on decision-making which involved diverse, constant social interactions. This has enabled the members to situate the project in the local context (cf. Catney et al., 2013; Miyauchi, 2017). Second, I suggest that the fact that the project does not have a clear overall goal has enabled each member to understand the project's success based on their own practices, and there are therefore various sets of values coexisting within the project. Following Miyauchi (2013), these plural sets of values, I argue, have enabled the project to continue over time in spite of negative developments.

This article has contributed to the literature on CRE projects by providing an in-depth qualitative case study which has focused on the continuity of a project and the social dynamics it entails. Furthermore, I have introduced a Japanese case study and literature which will enrich the existing debates in the field.

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Notes

1. The role of social interactions in spreading particular technology is elaborated in Rogers et al. (2012a).
2. Most of the population was working on the construction of the dam and in forestry. The population has declined due to the decrease in these industries (Ashoro Town, 2015).
3. The second problem is vital especially in the case of woody biomass projects that try to sell products as fuel. This is because the end users need to have stoves or boiler for the specific usage, so expansion of the number of equipment introduced is often essential for the project's continuity (see especially Aikawa, 2014).
4. FIT obligates electricity companies to purchase electricity generated by renewable energy at a fixed price from 10 to 20 years, depending on each circumstance. Japanese energy policies have invested mainly in nuclear power and improvement in energy efficiency rather than in renewable energy after the two oil crises (Vivoda, 2014).
5. Two interviews with interviewees 1–5, one interview with interviewee 6.
6. This is an institution that 'supports technology development to achieve higher efficiency and lower cost, with a primary goal of developing new technologies and ensuring that project results are introduced to the market' (NEDO, 2016: 3).

7. The subsidies supported Research Society to purchase a pelletiser which costed 3,371,000 yen. Tokachi Sub-Prefecture Office and the Ashoro town government, respectively, subsidised 1,600,000 yen and 871,000 yen (Kanuma and Ohtomo, 2007: 111).
8. This was conducted 7–15 June 2003 (Ashoro Mokushitsu Peretto Kenkyukai, 2003).
9. It subsidised 70,000,000 yen out of 73,500,000 yen, which was provided by the central government and town government.
10. Interviewee 2, 16 September 2016.
11. This is because forestry in Japan requires constant thinning and weeding to maintain the forests, and subsidies are necessary to carry out such maintenance.
12. Until the 1960s, the degree of self-sufficiency in woods in Japan was 93%, but due to the removal of restrictions on trade, it declined to around 20% in the 1990s (Nagata, 2012: 28).
13. The forestry worker I have not mentioned in detail: he passed away in the year the plant started running.
14. Interviewee 6, 14 September 2016.
15. Interviewee 1, 15 September 2016.
16. Interviewee 3, 24 May 2017.
17. Interviewee 2, 23 May 2017.
18. Interviewee 1, 22 May 2017.
19. Interviewee 3, 24 May 2017.
20. Interviewee 7, 15 May 2015.
21. This was provided by the project leader on 22 May 2017 and translated by the author.
22. Interviewee 1, 15 September 2016.
23. Interviewee 1, 15 September 2016.
24. Interviewee 1, 15 September 2016.
25. Interviewee 4, 16 September 2016.
26. Interviewee 5, 19 September 2016.
27. Interviewee 5, 25 September 2017.
28. Other events include wood crafting, an event to know about forestry, and inspections.
29. Interviewee 5, 19 September 2016.
30. Interviewee 3, 17 September 2016.
31. Interviewee 3, 17 September 2016.
32. Interviewee 3, 17 September 2016.
33. Interviewee 3, 17 September 2016.
34. Interviewee 4, 16 September 2016.
35. Interviewee 3, 24 May 2017.
36. Although this article is showing how practices are interpreted individually, Mosse's work is more focusing on the major effects institutions have on interpreting the 'practices'. I do admit that the context of CRE projects and development programmes has various differences in terms of institutional characteristics. Nevertheless, the statement of 'success' as a matter of 'interpretation' or 'representation' of practices remains an important point to mention.
37. See the full volume for various case studies.
38. This is due to the demand for wood scraps emerging from the agriculture sector.

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