

Article

Community-Led Micro-Hydropower Development and Landcare: A Case Study of Networking Activities of Local Residents and Farmers in the Gokase Township (Japan)

Tokihiko Fujimoto ¹ and Kazuki Kagohashi ^{2,*}

¹ Faculty of Agriculture, Shizuoka University, Shizuoka 422-8017, Japan; fujimoto.tokihiko@shizuoka.ac.jp

² Institute for Social Ethics, Nanzan University, Aichi 466-8673, Japan

* Correspondence: kago84@ic.nanzan-u.ac.jp; Tel.: +81-52-832-3111; Fax: +81-52-832-3703

Received: 31 December 2018; Accepted: 10 March 2019; Published: 16 March 2019



Abstract: This paper aims at clarifying the determinants that promote the community-based renewable energy development in Japan, with a special focus on micro and small hydropower. This paper analyzes a case study of the social enterprise that was established by the local residents and farmers in the Gokase Township, the purpose of which is to install and develop community-based renewable energy. To analyze the case study, we adopt the framework of the Landcare approach. The Landcare approach can be characterized by the following guiding principles: (1) a strong community initiative guided by local residents and primary producers; (2) a focus on local problems; (3) a holistic and integrated approach to tackling problems; (4) stress on community well-being; and (5) partnership and networking. There are similarities between the Gokase Research Institute of Renewable Energy (GRIRE) and Landcare in that they both focus on local issues that can be tackled by local citizens and take a holistic approach that includes not only hydropower development but also improvement in community well-being. This paper examines the fitness of each principle and reveals that all of them fit fairly well with the case of micro-hydropower development in Gokase. This implies that micro-hydropower development in Gokase can be qualitatively evaluated as sustainable from the perspective of Sustainable Development theory.

Keywords: Landcare; micro-hydropower; community-based resource management; social enterprise; Gokase Township; sustainable development

1. Introduction

This paper aims at clarifying the determinants that promote the community-based renewable energy development, with a special focus on micro and small hydropower, taking the community-led micro and small hydropower development project in Gokase as a case study. This paper investigates the underlying factors which led the project to success. While Gokase is one of the leading cases of the community-based renewable energy development, in which a social enterprise was established by the initiative of local residents and farmers, there are a few cases in Japan that could successfully launch and run such a project led by the local initiative. Generally speaking, local people have frequently confronted difficulties, such as social barriers (i.e., building consensus with existing water users and negotiating water use rights, and obtaining permissions for water usage that are based on river engineering and river planning) and the lack of human resources, in setting up renewable energy projects [1].

To investigate the underlying factors that enabled the local people in Gokase to overcome these barriers, this paper adopts a framework termed “Landcare.” Landcare is an approach to

environmental management in Australia from the mid-1980s that stresses the importance of local autonomy and self-sufficiency [2]. The Landcare movement began in Victoria State in 1986 to alleviate land degradation and the various local environmental problems such as soil erosion, salinity induced by rising groundwater, weeds, and wind erosion, which had hindered agricultural production in each farm. Landcare can be characterized by “bottom-up” (community-based) and holistic approaches. The Landcare movement is guided by the initiative of local farmers/residents who are capable of and responsible for taking care of their adjacent land and environment, and the role of the government is restricted to encouraging them to solve local environmental problems on their own. After launch in 1986, the number of local Landcare groups in Australia increased from 10 at the end of 1986 to roughly 5000 in 2010s, and Landcare has been introduced in over 25 countries abroad [3]. The Landcare approach has contributed not only to solving local environmental problems effectively but also to building social resilience and community networking to adapt to crises that farmers have confronted [4].

This paper consists of five sections. In the next section, the framework of Landcare is described for the analysis of the case of Gokase. The third section analyzes the micro-hydropower development led by the social enterprise which the local people in Gokase established by their initiative. The fourth section discusses the underlying factors in the case of Gokase from the perspective of Landcare principles. The fifth section concludes.

2. Framework for the Analysis Based on the Guiding Principles of Landcare

Learning from Australia’s history of environmental restoration from the 1980s to the 1990s, Michael T. Seigel pointed out the essences of Landcare as follows [5]: “One of the most basic insights of Landcare is that the management of the local natural environment or, perhaps more correctly, the management of human interaction with that environment, is best placed in the hands of the people who directly interact with that environment. A second insight is that for this to be successful, these people must work together and they must be supported by a network that provides the expertise, knowledge and funding that they need.” Tomomi Maekawa puts stress on the importance of local initiative through public participation and multi-party partnership [6]. Lisa Robins also argues that institutional arrangements (support for local Landcare activities) are the key to the success of Landcare [3], and Campbell et al. emphasize the outstanding individuals involved in the Landcare activities [7].

These insights exhibit the key features of Landcare, which call for the community initiative to tackle local environmental problems through the participation of local residents and farmers. That is, Landcare puts emphasis on the role of local residents and primary producers to tackle the local problems as a group, with the supports of expertise, knowledge, and funding that satisfy local needs. It should be understood that Landcare is not merely a practice of environmental management but a movement to achieve sustainable community development in the sense that it seeks to preserve the natural environment without compromising community well-being.

Having observed the local Landcare groups’ activities in Australia, Seigel abstracted the core ideas that were widely seen in those activities. He put these into five principles as follows [8]:

1. Landcare is based on local autonomous voluntary groups. They operate on the initiative and under the control of local residents and are therefore rooted in the local community and attuned to the local natural environment. In many cases, Landcare groups are made up largely of primary producers.
2. Landcare groups focus on local issues. They may address global issues such as climate change or biodiversity, but the focus will still be on what can be done locally to address these issues. Landcare groups are not likely to get into debates about politics of these issues.
3. Landcare groups aim at addressing environmental issues holistically. In other words, they do not treat problems such as invasive species, soil degradation, and salinity independently from one another, but try to address these issues in relation to one another. The focus may be on a

specific issue that is particularly serious in a given environment, but the attempt will remain to understand that issue and deal with it in relation to the other issues in the local environment.

4. Landcare groups focus not only on the conservation or restoration of the natural environment, but also on the well-being of the local community, including, therefore, a focus on such things as the income of primary producers. In this sense, the holistic approach mentioned above includes considering human society and the natural environment together in a holistic way.
5. Landcare is characterized by partnership and networking. This means partnership and networking among the different Landcare groups, and partnership and networking with the various levels of governments, with academics and specialists, with business corporations, Non-Governmental Organizations (NGO), etc.

These principles can be summarized as (1) the strong community initiative guided by local residents and primary producers; (2) focus on local problems; (3) a holistic and integrated approach to tackle the problems; (4) stress on community well-being; and (5) partnership and networking.

The first principle denotes the characteristics of the actors that tackle the issues. To check the fitness of the first principle, we have set two variables: (1) autonomy of the group and (2) participation of local residents and primary producers. The first variable (“autonomy of the group”) allows the group to be run by members on a voluntary basis. The second variable (“participation of local residents and primary producers”) implies that the member of the group includes both local residents and primary producers.

On the second principle, a variable “focus on local issues” has been set as a proxy.

The variable of “focus on the proximate causes” is employed as a proxy of the third principle. Martin et al. endorses the idea of “proximate causes,” which is an interim term between “root causes” and “immediate causes” [9]. In short, the proximate causes not only focus on the recognition of the interrelationship among local issues (i.e., Landcare groups are recognizing the importance of the interrelatedness of the issues that they are tackling) but also seek feasible options. The degree to which the local group identifies the interrelated proximate causes can be seen as the index for the fitness of the third principle.

To examine the fitness of the fourth principle, two variables are set: one is “conservation of natural environment” and the other is “community well-being.”

Lastly, the fifth principle can be decomposed into two variables, i.e., (1) internal networking and (2) external networking. The first variable (“internal networking”) denotes the degree of networking in the local community that encompasses the Landcare group. In contrast, the second variable (“external networking”) stresses the degree of networking among the external bodies such as local governments, universities, experts, private companies, and NGOs.

Setting these variables as the checklist of the five Landcare principles, we analyze their fitness in the case of the micro-hydropower development in Gokase.

The interesting point of these principles is their connection to sustainable development (SD) theory in the literature of environmental economics. Among this literature, Partha Dasgupta elaborated and developed the SD framework, which consists of capital assets (e.g., manufactured capital, natural capital, human capital, and knowledge) and institutions [10]. In short, the theory tells us that the level of individual well-being is determined by the size of the capital assets and the quality of institutions. In the context of Landcare, Kagohashi and Fujimoto applied the SD framework to Landcare and confirmed its fitness [11]. However, the content of the institutions has not been fully examined in the literature of Landcare from the perspective of SD. To investigate this point, this study incorporates those Landcare principles into the SD framework as the content of institution and offers a qualitative analysis on the relationship between local renewable energy and SD through the lens of Landcare principles.

3. A Case Study of Social Enterprise of Local Renewable Energy in Gokase

In Landcare, local residents and primary farmers form voluntary groups to tackle social and environmental problems at the local level. They retain a strong initiative in their activities, and some of them establish social enterprises. “The best Landcare groups and networks eventually become community enterprises, contributing to livelihoods and building independent resourcing” [4]. Each local Landcare group has its own initiative on every stage of their activities, from planning to implementation.

How can the local people and farmers build the community’s initiative and capacities to develop local renewable energy themselves? How can they reach consensus on maintaining the future well-being in the community? In this section, a practical case study of community-led micro-hydropower development projects will be analyzed. In Gokase, local people and farmers tried to install micro-hydropower plants and planned to develop small- and medium-scale hydropower plants for community development. These have been accomplished by networking with not only the local government, Non-Profit Organizations (NPO), and neighborhood organizations but also local universities and consultants, and civil engineering, mechanical, and electrical companies.

The Gokase Town is located in the central mountainous area of Kyushu Island. Gokase was founded in 1956 as a local government. In 1956, the population was 9462, and the aging rate (over 65 years old) was 14.1%. In 2015, the population decreased to 3887, while the aging rate increased to 37.6%. As this data shows, the population in Gokase continued to decline over this 60-year period and faced rapid aging. The industrial structure also changed significantly. Agriculture and primary industries had been the main industrial activities in Gokase. In 1980, 60.6% of the population was engaged in the primary industry, but the proportion of the primary industry decreased to 37.6% in 2015 (in terms of the number of laborers, it was 3024 in 1980 and was 1982 in 2015) [12].

In 2013, a community leader in Gokase organized a social enterprise as a cooperative association for augmenting local renewable energy and community well-being. The association was called the “Gokase Research Institute of Renewable Energy (GRIRE).” It is not the government but a private association that runs the enterprise.

What kind of renewable energy potentials are there in Gokase? Gokase is located in the headwaters area of the Gokase River. The Gokase River has a rich volume of water, so the Ministry of Land, Infrastructure, Transport and Tourism classifies it as Class A. From the 1920s to 1980s, 22 points of small- and medium-scale hydropower plants were developed, and the total amount of water intake was 138 m³/s, and the total output reached 138,000 kW [13]. It should be noted that the GRIRE has the distinctive feature of locality (i.e., the aim of GRIRE is to develop local hydropower by and with the residents in Gokase), while the other 22 hydropower plants mentioned above were initiated and developed by large enterprises or bodies such as Asahi KASEI, Chisso, Kyushu Electric Power Corporation, and the Miyazaki prefecture. Hence, GRIRE is capable of empowering residents and farmers directly and collaboratively.

GRIRE aims at empowering the communities in Gokase (Gokase consists of 14 district communities) by using the rich hydropower energy potential through the initiative of each community and developing the network to tackle the local issues, which include the issues of aging and depopulation, in addition to the environmental and agricultural ones.

First, the members of GRIRE tried to hear the voices of local people and share the concerns in their lives in order to reach a consensus regarding the priorities of the issues that local people in Gokase had been facing. The local issues and anxieties that were perceived by the residents and subsequently shared by GRIRE included economic crises, unemployment for young residents, a decreasing birthrate and an aging population, a lack of support for the women who are raising children, a lack of interaction and networking between agricultural leaders in the town, and decreasing management capacities in the local community because of the aging and decreasing population. In order to enhance the well-being of the community, a slogan, “Working together to create community well-being for the future,” was set to motivate local people to solve these issues themselves.

Second, GRIRE planned to install micro-hydropower plants in each community. Over the past five years, more than 10 micro-hydropower plants have been installed. These micro-hydropower plants include pico-pelton turbine (1 kW) made in New Zealand (Figure 1a,b) and a handmade wooden-micro hydropower system of “Kincir” (100–200 W), which was originally made in Indonesia. The knowledge of using Kincir was transferred from the remote villages in West Java, Indonesia, and learned by the local people in Gokase [14].



Figure 1. (a) Handmade micro-hydropower by farmers and local people in Gokase. (b) Installation of the community-based micro-hydropower plants called ‘Kincir’ led by local residents and farmers in Gokase (photo by T. Fujimoto, International workshop on micro-hydropower for community development, 26–27th, SEP, 2015, Gokase, Miyazaki Prefecture, Japan).

The process of installing micro-hydropower plants was marked by the integration of the participation of local people, the discovery of local natural capital (i.e., water resources for hydropower and wooden biomass), and care for the environment recognized by local people in Gokase. Now GRIRE is planning to expand the commercial scale of small hydropower (200 kW) by selling its electricity under the scheme of FIT (feed-in tariff) pricing. This will augment the community’s economic independence through the production of hydropower energy by the community initiative. As the production process of micro-hydropower is entirely ecologically friendly, it has a rich potential not only to strengthen the local economy but also to enhance environmental sustainability. It should be noted that the community-based hydropower developed in Gokase has promoted the local self-reliance through the hydropower energy production by the strong initiative of local people. It also enhanced the community’s capacity to manage renewable energy resources autonomously as local commons.

Figure 2 shows the network of the various cooperative associations of which GRIRE consists. As shown in Figure 2, GRIRE connects actors in Gokase such as green tourism networks, local government, and commercial and industrial associations and attracts support from overseas (e.g., Assosiasi Hidro Bandung in Indonesia) as well as national bodies (e.g., Kyushu university and the Toyota Foundation). Renewable energy resources (including small hydropower and wooden biomass in Gokase) contribute not only to augmenting the energy independence but also to enhancing the community’s sustainability. The network between the associations (e.g., tourist association, agricultural cooperatives, local government, other companies, and NGOs/NPOs) has been created through the process of tackling the local issues in Gokase. In one example, GRIRE set up an agro-food market that provided an opportunity for recruiting new farmers outside the town. They began to take up the plow in Gokase, which in turn contributed to mitigating the abandonment of farmland. Subsequently, GRIRE employed the community planner and designer, whose task is to encourage local farmers/residents to

reach a consensus on agricultural land use, to preserve local landscape, and to propose a plan to use the local public building as a place for social events.

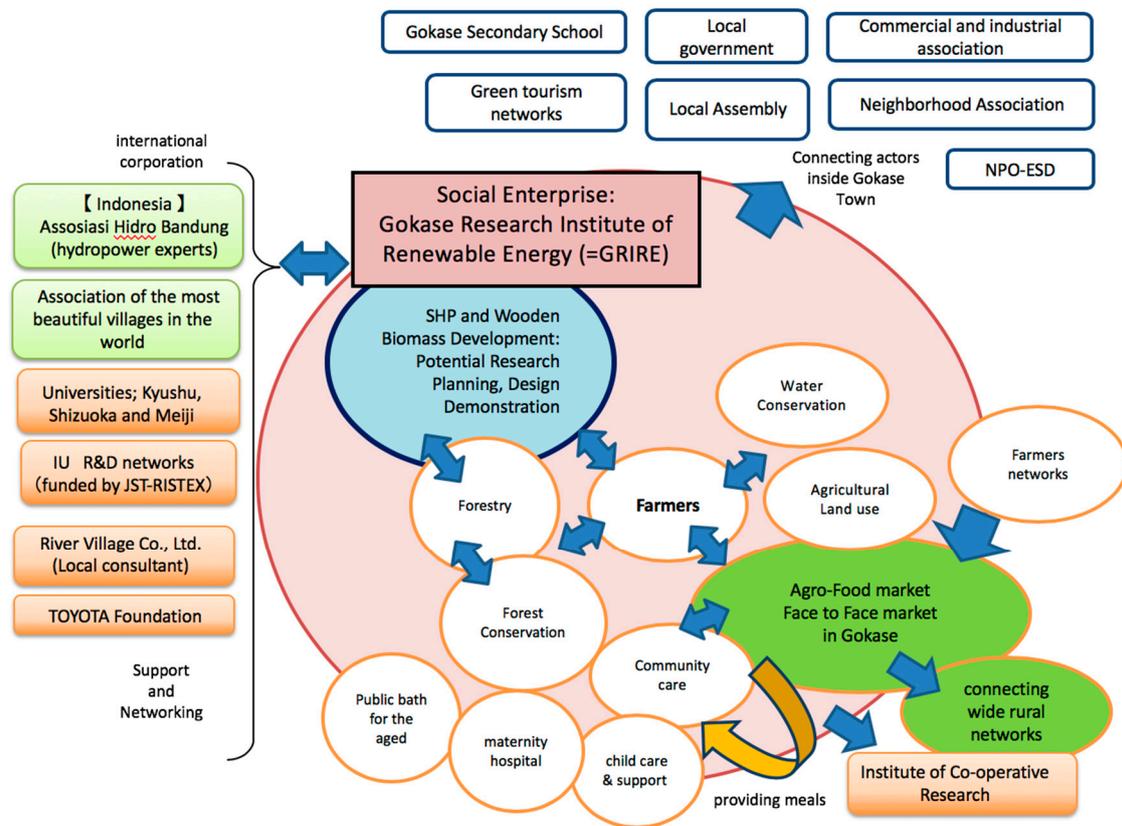


Figure 2. Network between GRIRE and other bodies for local renewable energy production.

4. Discussion

To accomplish sustainable community development in Gokase, GRIRE was set up by the local residents and farmers in Gokase. GRIRE can be seen as a hub that integrates local associations in Gokase and external bodies such as universities, local governments, expert associations, and social entrepreneurs and accelerates the conservation and restoration of both the natural environment and community development. “The introduction of small-scale renewable energy generation can promote local self-reliance. Renewable energies are essentially of the local commons, so when communities take the initiative to install and manage renewable energy resources, they contribute to community cohesion, as well as to energy independence and regional sustainability” [4]. This also holds for the case of GRIRE.

GRIRE is a keystone in the network of capital assets that include natural capital (e.g., land, water, river, and forest), human resources (e.g., farmers, community leaders, and coordinators), knowledge (e.g., the method and technology of Kincir), and infrastructures (i.e., micro-hydropower plants) [10]. Investing in these capital assets has been playing a critical role in improving community well-being and sustainable development in Gokase. Since renewable energy is a community-based local resource, social enterprises should be run by those who are responsible for, and are capable of managing, the local resource.

There are interesting similarities between GRIRE and Landcare. The Gokase community has the strong initiative to tackle local issues with support from various bodies, such as the local government, universities, engineers, social entrepreneurs, and NGO/NPOs, which promotes the investment of capital assets (e.g., infrastructures, human resources, and knowledge). Although natural capital (i.e., renewable energy resources such as water, wooden biomass, and solar and wind power) is utilized

and managed by farmers and local people in Gokase, it would not be possible for them to procure other resources that are required to tackle local issues (not only micro-hydropower development but also social welfare, primary industries, and landscape protection) in Gokase. On this point, GRIRE played a critical role in providing essential resources to tackle local issues based on the needs of each district in Gokase. This is an important commonality between the case of Gokase and Landcare in Australia in that the network among various bodies has helped local people solve their own issues without impairing their initiative. Although some people have not been sufficiently involved in the activities until now, GRIRE has played a critical role in the contribution of augmenting community well-being. Table 1 shows a comparison and the fitness between Landcare principles and GRIRE. As has been indicated in Section 2, these principles can be regarded as the content of the institutions in the framework of SD theory. For instance, the Principles 1 and 2 can help people recognize what kind of capital assets there are in their community; Principles 3 and 4 enable people to utilize diverse capital assets (i.e., manufactured capital, natural capital, human capital, and knowledge) in order to augment the level of well-being. Manufactured capital includes hydropower turbines and water pipes, and natural capital includes water resources and biomass. The skilled workforce in Gokase is categorized as human capital, and the local traditional practices such as Kincir fall under the category of knowledge. Utilizing these capital assets enables people to increase the level of individual well-being in Gokase. Finally, Principle 5 stimulates the accumulation of capital assets by involving diverse bodies such as private companies, local government, and NGOs into the project of local hydropower development in Gokase. Investigating the fitness of these Landcare principles in the case of GRIRE allows us to evaluate the sustainability of the local hydropower development in Gokase in the framework of Landcare and SD theory.

Table 1. Comparison and fitness between Landcare principles and the case of GRIRE (minimum score: 1; maximum score: 5).

	Landcare Principles	Case Study (GRIRE in Gokase)	Fitness
1.	Community Initiative	Local residents formed voluntary local groups that have high self-reliance, but there were not enough farmers.	3
2.	Focus on Local issues	Strongly focused (planning community design).	5
3.	Holistic Approach	Not only renewable energy but also agriculture, social welfare, and landscape protection were targeted.	5
4.	Community Well-being	Some primary producers were not involved yet, but the residents' well-being overall was fairly improved.	4
5.	Partnership and Networking	Not limited to people in Gokase; includes national and international networks.	5

Table 1 shows that GRIRE achieved good scores on Principles 2, 3, and 5 (score 5 means “very good”). As we have seen above, GRIRE has played a key role not only in tackling the local issues holistically but also in building a strong partnership and network among various entities. It should be noted that Landcare focuses not only on the environmental and social issues but also on the livelihood of local people, i.e., the economic income of farmers and primary producers. GRIRE is the outcome of a movement that has developed in each community in Gokase based on the grassroots civic participation of local people, but the local farmers, foresters, and primary producers have not been sufficiently included in the movement. This should be seen as a future task to be tackled from the perspective of Landcare principles. Therefore, GRIRE achieved a score of 3, which means “improving” on Principle 1. Although some primary producers have not been included in the process of renewable energy development as mentioned above, it should be fair to say that community well-being has been improved overall, which translates to a score of 4 on Principle 4, “fairly good” in Table 1.

What can other locations and areas learn from this case study to establish similar social renewable energy enterprises? What steps should they follow to achieve similar results? The results of this study show that, firstly, the enhancement of fitness of Landcare principles can be theoretically evaluated as the improvement of institutions, which consequently improves the level of community well-being. This implies that people in other areas can develop social renewable energy enterprises likewise in Gokase by following the Landcare principles as guiding principles. There are other community based micro-hydropower development projects in Kyushu Island. To improve these projects, the Landcare approach can easily evaluate their progress. More specifically, the case of Gokase shows the importance of partnership and networks (i.e., Principle 5). A leader of a social enterprise of renewable energy is a community designer, who is not only making an innovative and sustainable local business but also consensus building for future generations. Mr. Ishii, the director of GRIRE, set a target to have all local residents participating in GRIRE activities and to build a space for dialogue with the local people [15]. In order to put it into practice, Mr. Ishii and the members of GRIRE started to hold a monthly meeting in Kuraoka district (called “future colloquium in Kuraoka”) in July 2018, and the meeting aims at involving farmers, foresters, local government, green tourism networks, and neighborhood associations to discuss local problems (Figure 2: connecting actors in Gokase). This future colloquium consists of five subcommittees: (1) agriculture and farming, (2) renewable energy, (3) social welfare and support to aged people, (4) landscape protection, and (5) promoting information dissemination and coordinating mutual learning. This future colloquium helped people in the Kuraoka district enhance their capabilities and initiatives to address local issues themselves. Specifically, the community planner and designer effectively enabled people in the Kuraoka district to hold a meeting every month to reach a consensus on their activities, which include not only the economic activities on agriculture, renewable energy, and tourism but also the social ones that aim at promoting social welfare, gender equality, cultural diversity, and education for children. A member of GRIRE stated, “You are a hero and leader. Please join the future colloquium and make a dialogue with people in Gokase.” This activity fits well with Principle 5, which explains the success of the social enterprises of Gokase. In the meeting in February 2019, it was decided that the project would be expanded to neighboring regions next April, receiving support from the Ministry of Agriculture, Forestry, and Fisheries.

5. Conclusions

We argue that the process of micro-hydropower development in Gokase led by the social enterprise of GRIRE is compatible with the guiding principles of Landcare. They can be understood as the constituents of “institutions” in the framework of SD theory, where the improvement of institutions will contribute to augmenting the level of well-being. This allows us to evaluate the sustainability of the Gokase project in light of SD theory by investigating the fitness of Landcare principles with the case of GRIRE. In other words, Landcare principles can be utilized as an index of the quality of institutions. Based on this methodological framework, we examined the fitness of each principle and revealed that all of them fit the case of micro-hydropower development in Gokase fairly well. This implies that micro-hydropower development in Gokase can be qualitatively evaluated as sustainable from the perspective of SD theory. This study is novel in that it links the Landcare principles with the institutions of SD theory and provides a way of assessing the sustainability of renewable energy development.

There are remaining challenges that need to be addressed in the future. First, the assessment framework developed in this study should be elaborated further so that quantitative analysis can be done. This can be done by conducting econometric analysis with a field survey. Second, factors that impede the involvement and participation of primary producers in Gokase should be analyzed further. As discussed in the previous section, some farmers, foresters, and primary producers have not been fully involved in the project led by GRIRE. Identifying obstacles in the participation process should contribute to strengthening the social cohesion to address local issues in Gokase. Third, it is important to clarify the role of coordinators who connect local people and associations in the network of GRIRE and compare that role to that in Landcare. Through analyzing the case of Gokase on these

future lines, the way to promote community-based renewable energy development that is compatible with sustainability can be clarified.

Author Contributions: Conceptualization, T.F. and K.K.; Formal analysis, T.F. and K.K.; Investigation, T.F.; Methodology, K.K.; Resources, T.F.; Visualization, T.F.; Writing—original draft, T.F.; Writing—review & editing, K.K.

Funding: This research was supported by JSPS KAKENHI (Grant-in-Aid for Early-Career Scientists) Grant Number 18K18238 and 18K14538.

Acknowledgments: We appreciate the valuable comments from the editor and three anonymous reviewers as well as the comments from the participants and session chair of the 5th International Conference on Power and Energy Systems Engineering (CPESE 2018) and the 4th International Conference on Renewable Energy and Development (ICRED 2018).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Fujimoto, T. *World Small Hydropower Development Report 2016*; United Nations Industrial Development Organization (UNIDO); International Center on Small Hydro Power (ICSHP); Booksmith Productions: Vienna, Austria; Hangzhou, China, 2016; pp. 415–419. Available online: http://www.smallhydropower.org/fileadmin/user_upload/pdf/2016/WSHPDR_2016_full_report.pdf (accessed on 28 February 2019).
2. Youl, R.; Marriott, S.; Nabben, T. *Landcare in Australia: Founded on Local Action*; SILC and Rob Youl Consulting Pty. Ltd.: Wallington, Australia, 2006.
3. Robins, L. More than 30 years of ‘Landcare’ in Australia: Five Phases of Development from ‘Childhood’ to ‘Mid-Life’ (Crisis or Renewal?). *Aust. J. Environ. Manag.* **2018**, *25*, 385–397. [CrossRef]
4. Seigel, M.T.; Kagohashi, K. *Global Resilience through Local Self-Reliance—The Landcare Model: A Summary of the Discussion of International Conference of Landcare Studies 2017*; Nanzan University Institute for Social Ethics and Australian Landcare International: Nagoya, Japan, 2018.
5. Seigel, M.T. Landcare and Japan. *SPELJ (=Secretariat Promot. Establ. Landcare Jpn.) Newsl.* **2013**, *1*, 3–6.
6. Maekawa, T. Model of an Environmental Community Support System: The Landcare Movement in Australia. *Int. J. Geomate* **2017**, *12*, 76–83. [CrossRef]
7. Campbell, A.; Alexandra, J.; Curtis, D. Reflections on Four Decades of Land Restoration in Australia. *Rangel. J.* **2017**, *39*, 405–416. [CrossRef]
8. Seigel, M.T. Basic principles of Landcare. *SPELJ Newsl.* **2013**, *1*, 12.
9. Martin, A.; Kagohashi, K.; Seigel, M.T.; Pullen, J.; Dimmer, C.; Nagahama, K.; Mere, W.S. *Responding to the Environmental Crisis*; Institute for Social Ethics: Nagoya, Japan, 2015.
10. Dasgupta, P. *Human Well-Being and the Natural Environment*; Oxford University Press: Oxford, UK, 2004.
11. Kagohashi, K.; Fujimoto, T. Landcare, Water Resource Management and Sustainable Development: Implications from a Case Study of a Community-Based Approach to Micro-Hydropower Development and Social Issues in Gokase Township, Japan. *Energy Procedia* **2019**, *156*, 154–158. [CrossRef]
12. National Population Census in Japan, Statistic Bureau, Ministry of International Affairs and Communications in Japan. Available online: <https://www.stat.go.jp/data/> (accessed on 28 February 2019).
13. Yasunaga, A.; Fujimoto, T.; Shimatani, Y. Small Scale Hydropower Generation toward Community Development: A Case Study of Japanese Rural Area. In Proceedings of the 4th International Conference on Applied Energy 2012 (CD-ROM), Suzhou, China, 5–8 July 2012; pp. 302–308.
14. Rahadian, F.; Fujimoto, T. Inspirasi Besar Dari Kincir Air. Broadcast via TV, 15Dec2015, Kompas TV, Indonesia. 2015. Available online: <https://www.youtube.com/watch?v=caSlKiaVtmg> (accessed on 28 February 2019).
15. Fujimoto, T. Shizenenergi syakaikigyō (=Case Study on Concept Building Processes of Social Enterprise Designed to Manage the Renewable Energy: Focused on Small Scale Hydropower). *Higashiasia kenkyū (=East Asian Studies.)* **2014**, *16*, 71–87. (In Japanese)

