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Recent Problems and New Directions for Forest Producer Cooperatives Established in Common Forests in Japan

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1. Introduction

Property rights for land, including forest land, were introduced in Japan following the Meiji Restoration in 1867. During the Meiji Period (1868–1912), a new land registration system was introduced, and the land-tax system was reformed. Individuals received property rights to forest land at that time. The Meiji Restoration was an important turning point in forest land ownership.

The custom of communal forest management, in which the forest is considered a common forest (*iriairin*), was developed during the Edo Period (1603–1868) in various regions[1]. Generally, forest land had high importance at that time, because of the necessity of various forest resources such as fallen-leaves and tree branches for agricultural production. Livestock management also required grazing land in common forests. Firewood and charcoal were the main energy resources produced from the common forest. Wood and wood-based products were also necessary as construction material. Therefore, the common forest was an essential resource for agricultural-based communities. In this chapter, the community represents the smallest unit of a village, which can be called a hamlet[2].

For a common forest to be sustainable, its users had to manage it carefully (to avoid damaging or destroying it). This included preventing intrusion or utilization of the forest by people from other communities. Thus, the management of a common forest included both internal constraints (*e.g.*, rules) and external exclusions. During the Edo Period, forest land was one of the major sources of conflict between communities, and in some cases, struggles continued over several decades. As the security of the common forest is directly linked to the livelihood and agricultural production of the entire community, all community members united to protect their common forest. The boundaries of common forests gradually became clear through such struggles, and the solidarity among community members strengthened. As a result, a sense of equality developed among common forest members (Takasu, 1966). A unanimity rule became important within such communities for making decisions on various matters, including utilization of the common forest. For example, when forest management practices commenced, unanimity rule determined who used the specific forest site and how the profit from the common forests was used. A unanimity rule on the common forest is also thought to be important today[3].

During the Meiji Period, the property rights system was introduced to law in Japan, and how the common forest was organized and managed needed to change to fit into this system. This problem was extremely difficult from the beginning of land reform[4]. This is discussed further in this chapter. However, due to space constraints, only the most important points are explained. The most important right pertaining to the common forest was that people living in a specific area had a conventional right. It must be paid attention to that the right is based on the convention, which is, in most cases, originated from the Edo Period. According to Articles 263 and 294 of the Civil Law of 1896 (Act No. 89), any common forest rights must first consider the customs of a given area.

Common forests with no property rights in modern law gradually decreased in Japan after the Meiji Period. During the early Meiji Period, part of common forest was considered national forest land. In 1889, the concept of the municipality was introduced, and part of common forest became the property of newly founded municipalities. In 1910, the Public Forest Reorganization and Unification Project started and continued until 1939. Under the policy program, the common forest was considered municipal property. However, some people with rights to the common forest took various countermeasures to protect their rights, in some cases, registering the area under his/her name or that of other members, or as a shrine or temple. The management of conventional rights to common forests in the modern legal system has proved challenging. Regardless of whether the land was registered as national, municipal, or private property, rights for common forest may still exist. In such an instance, the important legal point would be the historical fact regarding conventional forest management, including utilization.

After World War II, the common forest faced another economic problem. In 1964, the Forestry Basic Act (Act No. 161 of 1964) was enforced. According to Article 2 of the Act, the main objectives of forestry policy are to increase timber production, timber productivity, and the income of forestry workers. Under the Act, the Forestry Agency strongly promoted the change in species composition throughout Japan, from broad-leaved trees or natural forests to planted forests of coniferous trees such as *Cryptomeria japonica* and *Chamaecyparis obtusa* in the 1960s and 1970s. As the main species of the common forest were broad-leaved trees, the forest was considered a good site for the change in species composition.

In 1966, a new act related to the common forest was enacted, and many forest producer cooperatives, which are called *Seisan Shinrin Kumiai*, were established and started forest management practices. This type of cooperative organization is the main topic of this article. In section 2, the contents of the act of 1966, the policy programs under the act, the founding of forest producer cooperatives, and the current management problems of these cooperatives is explained. Their management is now facing extreme difficulties, and some of the cooperatives have undergone liquidation or soon will do so. However, this has sparked a new movement among some cooperatives. In section 3, three such cooperatives (located in Hyogo, Mie, and Fukui Prefectures) are described, including a brief summary of each cooperative, the major problems they are now facing, and the new movement they are involved in. Section 4 discusses the differences and similarities among these three examples, and section 5 presents our conclusions.

2. Modernization of rights for common forest

2.1 Act on modernization of rights for common forest

In 1966, the Act on Advancement of Modernization of Rights in Relation to Forests Subject to Rights of Common (Act No. 126 of 1966) was enacted. The main contents of the Act are as

follows. In Article 1, the objective is to increase agriculture and forestry in the common forest[5]. At the time the Act was enacted, the total area of common forest was estimated to be approximately 2 million ha, which is equal to 13% of the total area of the non-national forest (Iriai Rinya Kindaika Kenkyukai, 1971). Generally, utilization of the common forest was extensive and did not contribute to an increase in income for the residents of mountainous areas, which they obtained from agriculture or forestry. For a long time, broad-leaved trees in the common forest were used as fuel-wood, so the common forest was necessary, but this use of the common forest as an energy source ended in the 1950s and 1960s. Thus, it was important to modernize the rules governing the common forest to promote its utilization. In this Act, modernization meant abolishment of common forest rights, and the granting of property rights[6].

Article 3 of the Act ordained the implementation procedures for modernizing the common forest rights. It was necessary for all rights holders to agree with the abolishment of rights. To this end, they had to be convinced of the importance of the common forest as a custom. To plan the modernization of the system, it was also necessary to record the locations and precise areas of each common forest. These two procedures—getting all rights holders to agree on relinquishing their personal common rights, and the measurement of land—were particularly complicated and difficult.

After the abolishment of common rights, new property rights were granted, in two different ways: land was either divided equally among all rights holders, or a cooperative organization was established. Both methods were available, but the Forestry Agency recommended establishing cooperatives such as forest producer cooperatives or agricultural producer cooperatives (*noji kumiai hojin*), because equal division allowed for subdivision of the forest land. Generally, in Japan, the unit size of private forest land is so small that management costs are relatively high. Among the cooperative organizations related to agriculture and forestry, the Forestry Agency strongly recommended forest producer cooperatives, under the Forestry Cooperative Act (Act No. 36 of 1978)[7]. This cooperative organization was actually introduced in the 1951 Forest Act, and the main objective was not related to the modernization of common forest policy.

The modernization of common forest policy was also affected by Article 12 of the Forestry Basic Act. This article included various policy measures, including the modernization of rights to the common forest, to realize the expansion of small-scale private forest management in Japan. As the area of common forest was generally broader than that of private forest, the transformation from common forest to cooperative organization conformed to the policy direction subject to Article 12 of the Forestry Basic Act. After the 1960s, the planting policy changed to increase coniferous trees to secure future domestic forest resources for industrial round wood; the land owned by the forest producer cooperatives was adapted to this planting policy.

2.2 Establishment of forest producer cooperatives

Under the Act for modernizing common forest rights, subsidy programs to promote the modernization of rights started in 1967. The following is a statistical summary of this 43-year program, which ran from fiscal year 1967 and to fiscal year 2009 (Forestry Agency, 2011b): 6,651 places were given permission to modernize rights. The total number of common forest rights holders before modernization was 432,906, and 423,618 were granted property rights after modernization. The total acreage[8] of common forest whose policies were modernized was 575,125 ha. After the modernization procedure, 52.4% of the land was

classified as forest producer cooperative, 41.0% was divided equally among common forest rights holders, 5.5% became jointly-owned private forest, and 1.0% was classified as agricultural producer cooperative (Forestry Agency, 2011b). According to these statistics, 59.0% of the land was classified into some form of cooperative, and more than half of the modernized area became forest owned by forest producer cooperatives. The main utilizations of the land after modernization were forestry (97.8%), agriculture (1.9%), and other activities (0.3%). As already mentioned, the main objective of the Act was to increase agriculture and forestry use in the common forest, which it achieved.

The annual areas of forest that were modernized over time are shown in Figure 1. The modernization procedure was conducted most intensively during the latter half of 1960s through the 1980s, with a peak of approximately 53,000 ha processed in 1974. After the 1980s it tended to decrease, and just 950 ha were processed in 2009. The proportion of land converted to forest producer cooperative of the total land area that was modernized from 1967 to 2008 was > 50%. However, this proportion has decreased gradually. By contrast, the percentage of private ownership increased.

There were 3,459, 3,364, and 3,224 forest producer cooperatives in all of Japan at the end of fiscal years 1999, 2004, and 2009, respectively. The number is now decreasing due to several problems, which are discussed below. Figure 2 shows the number of forest producer cooperatives. Since about 1996, the annual change has been negative (with one exception); that is, more cooperatives have been dissolved than have been newly founded[9].

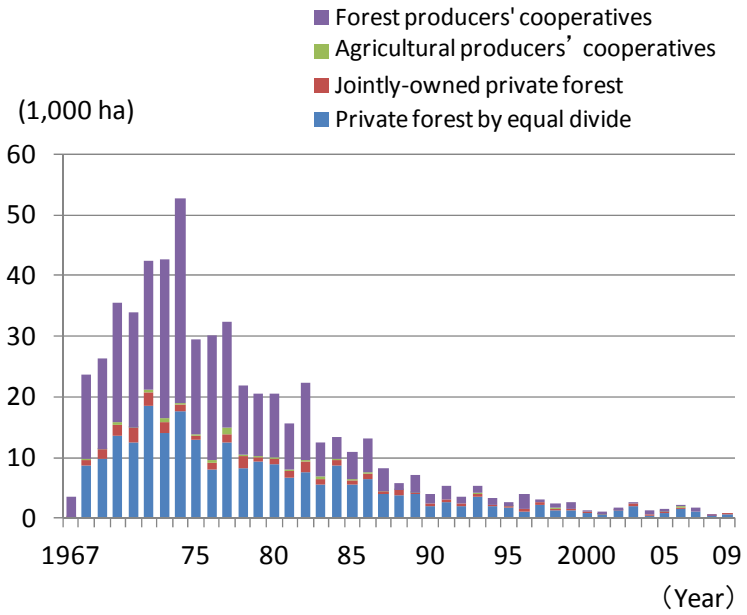

Fig. 1. The areas of common forest modernized over time (1967-2009)
Source: Forestry Agency (1992, 2005, 2006–2011)
Note: Fiscal years are shown.

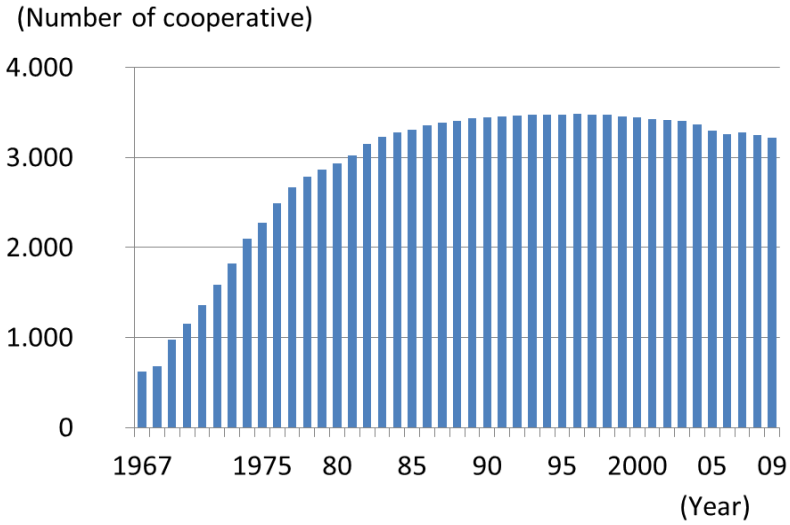

Fig. 2. The number of forest producer cooperatives (1967-2009)
Source: Forestry Agency (1969-80, 1992, 2005, 2006–2011)
Note: End of fiscal year is shown. The figures for the period of 1967-71 represent the number of forest producer cooperatives, which were required to answer the survey conducted by the Forestry Agency in order to compile the Forestry Cooperative Statistics. Thus, the data before 1971 do not completely connect to that after 1972.

2.3 Management problems of the forest producer cooperatives

Based on the statistics[10] for fiscal year 2009, 67.9% of the forest producer cooperatives was founded by the modernization procedure. There were about 247,000 cooperative members, including 7,000 living outside of the community. The common forest rights, which were relinquished at modernization, were strictly limited to the households living onsite. Only about 1% of the cooperatives had full-time executives; thus, nearly all cooperatives were organizationally weak. The total forest area owned by forest producer cooperatives was approximately 357,000 ha, including 10.8% of profit-sharing forest[11]. The percentage of planted forest to the total forest area, of which the main species were *Cryptomeria japonica* and *Chamaecyparis obtusa*, was 50.3%. In fiscal year 2009, total newly planted area was 147 ha, the total area for tending operations was 5,045 ha, the total area for final cutting was 109 ha, and the total area for thinning was 1,007 ha, representing 0.04%, 1.41%, 0.09%, and 0.28% of the total area, respectively. As the area for final cutting and thinning was small, the income from cutting was generally low. The forest producer cooperatives are now facing several issues. Three such challenges are highlighted below.

The first problem is due to the age-class distribution of the planted forests. As planting activities were generally conducted just after the cooperative started from the mid-1960s to mid-1980s, the current average age is 30 or 40 years. Before the modernization procedure, the main species of the common forest were broad-leaved trees for the production of fuel-wood or charcoal; thus, the area of coniferous trees tended to be small. Accordingly, most of the planted forest could not produce income via, for example, timber sale, through final cutting. In addition, certain age classes of tree require thinning. However, at the current

domestic price for logs, it is difficult for many cooperatives to make money from thinning. Thus, the income from cutting is almost zero in many cooperatives. In addition, there are costs to maintain the organization, including taxes[12], which many cooperatives have difficulty paying, which can lead to debt[13].

The second problem is related to cooperative member labor. In a forest producer cooperative, it is ideal for forest practices to be conducted by the cooperative members themselves. Indeed, one common rule of cooperatives is that more than half of the members must engage in forest management. However, these principles are difficult to realize under the present circumstances. For one, the demographic composition of communities has changed since modernization took place. When the Act was enacted, there was an outflow of the rural population in almost all mountainous communities, and this trend continues today. In addition, the average age in these populations has increased considerably. As a result, some mountainous settlements have been forced to close, and the sustainability of associated cooperatives has become questionable. Problems related to ageing of the population are common throughout Japan. Due to the increasing population of elderly persons, the number of cooperative members that can engage in forest practice has been decreasing. It may be possible for aged members to planting trees or weed, which was the main work in 1960s and 1970s, but it is impossible for them to conduct thinning of 30- or 40-year-old coniferous trees. Hence, there is currently an extreme shortage of labor power[14].

The third problem is a lack of organizational management. Many forest producer cooperatives are founded on administrative advice based on the national and prefectural forestry policies, including modernization policy for common forest rights, planting promotion policy for coniferous trees, and policy on profit-sharing forest. The percentage of planted forest increased to approximately 50% in fiscal year 2009, which seems to indicate that the planting program was a success. However, there seem to be no forest management practices being undertaken, such as improved cutting and thinning, after tree planting is finished, and any practices that are undertaken tend to be performed just after planting. As a result, forestry engineers were not included in the cooperatives[15]. In some cases, the executive of the cooperative was determined by rotation, and the members had no experience in, or concern with, forestry. There are almost no forestry technicians, managers, or other staff, and most cooperatives have never created a specific forest-management plan. Without a long-term forest-management plan, cooperatives are unable to conduct appropriate forest practices or construct road systems, and without an appropriate forest road system, for example, it is difficult or impossible to harvest trees.

These three problems are complicated, and correlated. The aging of cooperative members is occurring before many planted forests reach the final cutting age. Such rapid demographic changes are affecting almost all social and economic activities in mountainous areas, including forestry. In addition, younger people are leaving such areas, resulting in not only a decrease in labor but also a lack of managers for the future.

Thus, it is difficult to find a clear reason to continue cooperatives: income from the forest is lacking, there is no future vision for forest management, the tax payments are difficult, and debt is increasing. As a result, the number of established forest producer cooperatives has been decreasing, and the number of dissolved cooperatives has been increasing. Future research should investigate how forest lands are being managed after dissolution of forest producer cooperatives[16].

At the time the Act was enacted, there were approximately 2 million ha of common forest. As mentioned above, the total area of modernized forest during the 43 years from 1967 to 2009 was approximately 575,000 ha. As of December 1, 2007, there were 618,000 ha of common forest remaining, and the modernization procedure began on approximately 109,000 ha among these 618,000 ha. Among the 618,000 ha, only 32,000 ha, which is equal to approximately 5% of the total common forest area, is continuing to undergo modernization. The modernized procedure was discontinued for the remaining 95% of common forest and there has been no will to modernize common forest rights for this area. The deteriorating economic and social conditions described above have also occurred in areas in which modernization has not taken place, and several small settlements are now facing dissolution in the near future. In such areas, the common forest rights will become more ambiguous and complex and it is possible that such areas will be removed from forestry policy and thus problems related to non-timber functions may occur.

3. Case studies

Most forest producer cooperatives are facing management difficulties. They planted coniferous trees. If cutting activities are not conducted, the cooperatives cannot obtain income from the selling of logs. As a result, some cooperatives have chosen to dissolve the organization. However, a small number of cooperatives are persisting. Here, three such cooperatives, located in Hyogo, Mie, and Fukui Prefectures, are described[17].

3.1 Case 1 (Hyogo Prefecture)[18]

3.1.1 Description

This cooperative was founded in 1971. In fiscal year 2009, there were 184 members and the cooperative was managing 563 ha of forest, including 466 ha of planted forest (Hyogo Prefecture, 2011b). This cooperative has planted a substantial number of coniferous trees; currently 82.8% of its land is planted forest, which is extremely high compared to the national average of 41.7% in non-national forests in this prefecture (Hyogo Prefecture, 2011a). *Cryptomeria japonica* and *Chamaecyparis obtusa* are the two main species in the planted forest. The age-class distribution of the forest is as follows[19]: 1.6% (1–10 years), 2.4% (11–20 years), 12.2% (21–30 years), 31.8% (31–40 years), 46.7% (41–50 years), 2.7% (51–60 years), and 2.6% (≥61 years). Thus, there is a large area of 30- to 50-year-old trees. As this cooperative was founded in 1971, trees that are about 40 or more years old were planted before the modernization of rights. Approximately half of the planted forest was already planted during the period when the forest was legally common forest. Generally, common forest is not utilized intensively, but in this case, coniferous trees had been planted in a large area.

3.1.2 Largest problem and background

The biggest problem that the cooperative is now facing is managing the large area of the planted forest, in particular, thinning it. Generally, in Japan, the difference between the selling price of a log and the actual logging cost is small or even negative for many forest sites. Accordingly, thinning activities tend to be put off.

Final cutting was last conducted in 2001. The total forest area for thinning between 1992 and 1995 was 45 ha, whereas that in 2003 was 2 ha and that between 2007 and 2009 was 33 ha. These values are extremely low compared to the area of planted forest.

Thinning is necessary in a planted forest, particularly in a dense plantation, to direct the current forest stand to the targeted forest stand, and in this sense, a delay in thinning or changing the method are generally permitted. However, problems[20] related to thinning have become more political and more complex since the Kyoto Protocol in 2008. The government promised a 6% reduction in greenhouse gasses compared to the base year, including a 3.8% contribution to the carbon sink of domestic forest resources. Thinning must be conducted in the planted forest to fulfill the national target. Without thinning, the planted forests are not considered well managed. Hence, thinning activity is now under political and social pressures related to the Kyoto Protocol, which is unconcerned with forestry activities. The Forestry Agency is now promoting thinning throughout Japan. In 2008, a special measure promoting thinning was enacted[21]. This is a typical problem being experienced by forest producer cooperatives.

3.1.3 New activity and background

This area, including the cooperative forest site, is among the model areas for promoting rapid and intensive timber production. In 2009, an association of which the forest producer cooperative is a member began a project to stabilize timber production.

The new initiative of the cooperative included the introduction of a Japan Verified Emission Reduction (J-VER) Scheme, which is a public certification scheme for carbon offsetting managed by the Ministry of the Environment. In July 2011, there were four J-VER projects related to forest management in progress in Hyogo Prefecture. The representative business operator and the holder of the offset credits was the Hyogo Prefectural Federation of the Forest Owners' Cooperative Association[22]. This association founded a company that provides offset credits in 2008. This prefectural association can sell the offset credit to private companies by way of the offset provider company.

The total area of forest for offset is 97 ha, and the credit period is from 2008 to 2012. The total CO_2 sink for emission reduction is assumed to be 2,657 tons in CO_2 over 5 years, which is 531 tons CO_2 per year. The project was already registered and a field investigation was conducted in 2011. Due to declines in the log price and other reasons, forestry profitability is not expected to be regained, and the CO_2 sink funds are expected to be utilized as part of the future cost of forest management and logging. Under these difficult economic circumstances, the cooperative expects income from their CO_2 business.

The J-VER Scheme, started in 2008, certifies the greenhouse gas reduction or carbon sink realized by domestic projects as a credit. In March 2009, with collaboration between the Ministry of the Environment and the Forestry Agency, the forest management project, in which project CO_2 sink by doing forest practices such as thinning and planting, was added to the list of domestic projects which will act as a carbon sink. The forest management projects[23] in J-VER Scheme are divided into two types, those that will promote thinning, and those that will promote sustainable forest management. This case is the former type.

3.1.4 Characteristics of and evaluation of the new activities

At the time of our investigation, the carbon credit sales produced from the forest owned by the forest producer cooperative was not determined; the direct financial contribution is unclear. As the cooperative expects income from carbon credits, how these profits are to be distributed between the offset provider company, the cooperative, and other related organizations will be determined is the most important. The new relationships that the cooperative wants to build are evaluated from the following three points of view.

First, this cooperative is the first among 3,224 cooperatives that challenged joining the J-VER Scheme[24]. The forerunner of many forest producer cooperatives is common forest originating from the Edo Period, and the common forest had been utilized among a limited number of residents. Generally, the management policy of such forests seems to be limited, thus, the cooperative is isolated from global environmental issues. As there are many forest producer cooperatives, future expansion of the J-VER Scheme might be expected, but it is difficult to rapidly increase forest for carbon offset in cooperatives, due to the current complex and cumbersome procedures and the fact that most cooperatives do not have full-time staff.

Second, the introduction of the carbon offset program is related to the relationship between the younger generation in the community and forest owned by the cooperative. The profits from timber production and the direct or indirect distribution of the profit are tangible results to residents, including the younger generation. The past common forest had brought various tangible results to the rights holders of the forest. However, younger people tended to work outside of their community, and were far removed from agriculture and forestry. As a result, their concern for the forest owned by the cooperative has been decreasing. One important challenge is to renew the involvement of younger people in the forest. Despite the stagnation in timber production, the forest resources owned by the cooperative will contribute to the carbon offset program under the J-VER Scheme, and thus younger people might turn to the forest owned by the cooperative.

A third activity is to enhance the partnership between forest owners among districts. Carbon credits based on the forest owned by the cooperative and jointly owned private forest located next to the cooperative's forest are for sale as one credit. After their sale, the profit will be distributed among those involved[25]. The cooperative and the jointly owned private forest participate in the same forestry promotion group and recently planned the construction of a new skidding road that passes both forests. The jointly owned forest was certified by the Sustainable Green Ecosystem Council (SGEC)[26], which is a Japanese forest certification organization, and now the cooperative is considering obtaining forest certification. This new movement could lead to collaboration with the credit purchaser for the purpose of carbon offset in city areas. According to a newspaper report[27], the profit from carbon credit sales would be used for forest management in the area where the cooperative is located. Thus, the number of people concerned with the forest is expected to grow.

3.2 Case 2 (Mie Prefecture) [28]

3.2.1 Description

This cooperative was founded in 1960, to consolidate the municipalities at that time and to prevent common forest from being absorbed into the new municipal government after consolidation. Thus, all of its members are residents of a village, which was ultimately consolidated into a new municipality. In 2009, the total number of members was 505 (Mie Prefecture, 2010). The area of forest is 23.8 ha, including 21.4 ha of planted *Cryptomeria japonica* and *Chamaecyparis obtusa* forest. The age of the planted forest is approximately 40 years. The cooperative is holding lands other than forest, of which the largest and most important is land for a golf course. The management is generally good, as the cooperative can collect rent from a golf company every year. The main work of the cooperative is management of their forested and non-forested land.

3.2.2 Largest problem and background

Residents can work in the city, as this cooperative is located in an urban neighborhood. It is not a wood-producing area, and activities related to forestry are generally sluggish. There are a few saw mills, in which the logs purchased from outside the area are processed. This cooperative has no forestry technicians. Thus, forest practices have not been introduced, although the cooperative has money for forest management. As thinning has never been conducted, the light intensity in the forest is low and future growth is not expected.

The planted forest was intensively managed in the 1960s and 1970s, but various problems relating to thinning are now occurring. In Case 1 described above with similar problems, a lack of funding for forest practices including thinning was a problem, but not in this case. Rather, an almost total lack of forestry knowledge and experience is the most important problem in this cooperative[29]. Such a situation is common in forest producer cooperatives located in urban neighborhoods, and seem to be related to the following three points.

First, almost all residents, including the cooperative members, have lost a relationship to the forest. Thus, they cannot judge when and how the forestry practices must be conducted. By the 1960s, some connections remained to the forest, such as using it as a source of fuel-wood utilized in daily life. However, wood and fuel-wood are not necessary for residents today. Thus, interest in forestry has dissipated, and along with it, the necessary knowledge, experience, and techniques to manage a forest.

Second, the age-class of the planted trees is increasing. In the 1960s and 1970s, planted trees were short when harvested and special techniques or large machines were not necessary for planting or weeding. Although this was certainly hard work, it was not dangerous or impossible. Today, however, specialized experience and forestry machines are necessary to thin 40-year-old trees. The cut trees must be moved to specific points or a forest road. Such practices cannot be conducted by cooperative members who have no forestry experience.

Third, even if the cooperative members cannot develop and conduct necessary forest practices, there is no problem if there is a forestry-related organization around for consultation. However, there is no such organization near this cooperative. Even if there were, most forest owners' cooperatives are generally weak in urban neighborhoods. In most cases, there are no forestry workers or machines, and their main work is paperwork.

3.2.3 New activity and background

This cooperative started thinning using funds sponsored by an automobile-related enterprise located in the same municipality. Mie Prefecture started a system in which private enterprises can allocate money for sustainable private forest management. When the board of the cooperative discussed thinning with the administrative office, the enterprises were searching for an appropriate site by chance. In 2006, the forest sites for thinning and supporting funds were identified. A tree-planting ceremony was held in 2008. A thinning and tree-planting ceremony was planned to utilize the money over 5 years. Many from the wider community, including elementary school children, attended the ceremony in April 2010. This is important because awareness regarding the forest within the community, and forestry activities generally, spread to the residents, including children and their families.

The chief of the cooperative pointed out that the development of consciousness for forest can be found in the cooperative board members as a result of the conduct of thinning and tree-planting ceremony. Although their major previous thought was that forest can be left

unmanaged without cutting grass, but they begin to think that leaving it uncontrolled was not good practice. When the cooperative conducted thinning, it developed a relationship with the logging company located in the same area.

Various private companies in Japan have recently started supporting management and forest conservation, including both national forests and non-national forests. In the case of national forest policy programs, companies can allocate money for future management costs for a specific forest site, which consists of coniferous trees in most cases, and the company can obtain some of the profits when the forest is finally cut[30]. During a contract with the national forest, the company can utilize the forest site without cutting. For example, the company can place a sign indicating that the company is contributing to the national forest environment, or it can utilize the forest for employee or customer events. Of course, companies can highlight their contribution to the national forest in their annual report on corporate social responsibility. Companies can easily fund national forest management as a public contribution as it is governed by a department in the national government.

By contrast, sustainable forest management in the privately owned non-national forest is supported mainly by subsidies. Recently, many prefectures have developed schemes by which private companies can support non-national forest[31]. The support of forest producer cooperatives by companies, such as Case 2, is a recent phenomenon. Forests owned by cooperatives are non-national forests in which the management area is generally larger than that of forests owned by individuals. Moreover, as the cooperatives are legally incorporated organizations, it seems that they have an advantage in making such contracts with private companies.

3.2.4 Characteristics of and evaluation of the new activities

This contract resulted in good forest practices such as thinning of the planted forest to some extent, which is strictly necessary, but the area that can be supported by a company is limited. More significant is whether the connection between the cooperative and the private company will result in sustainable forest management for the cooperative in the future. Expansion of forest practices in the regional forest might be expected. As the contract has recently just started, an evaluation from these points of view cannot be clearly shown, but several new possibilities are suggested by Case 2.

One of the important characteristics of Case 2 is the strong relationship between the forest producer cooperative and the residents' association. In this case, the forest producer cooperative, as owner of the forest, and the residents' association, as an organization that promotes regional activities in all fields of daily life, are working together. This co-sponsored fund resulted in a new relationship between the cooperative and the residents' association.

As mentioned above, some of the forest producer cooperatives are facing management difficulties such as financial problems, and one of the solutions is dissolution of the cooperative and the transfer of the forest from the cooperative to the residents' association. In these cases, forest management is impossible for the cooperative but may be possible for the association. In such cases, the major role of forest management is changing from timber production to land management, because the main objectives of the residents' association do not include forest management. However, Case 2 shows that the appropriate divisional cooperation will result in profits for both organizations.

In the case of a forest producer cooperative that was founded in a common forest originating during the Edo Period, the cooperative members were originally residents who were living in a limited area at the time the cooperative was created. However, as years pass

since the creation of the cooperative, the members' profile changes, because new residents move there from outside the area and some people, mainly younger people, move away to cities to get jobs. After a long period of time, the area may include a large proportion of people who moved there after the cooperative's founding, and who thus do not have the right to become a cooperative member. However, they can become members of the residents' association. Only in this light, dissolution of the cooperative and transfer of the forest to the residents' association can benefit the community.

Second, when a cooperative is located in an urban neighborhood, various efforts are necessary to promote sustainable forest management, from the point of human resources. In most cases, the chair of the cooperative has no forestry knowledge or experience with forestry. In this case, the board members hold 3-year terms and there may not be a chance to learn forestry at all during their term, or their terms might expire after they have learned some forestry methods.

In this cooperative, thinning activity is conducted by a fund from the company. The board members of the cooperative had no idea that thinning even had to be done. Considering that the cooperative was founded under a national forest policy that ensured the site for planting *Cryptomeria japonica* and *Chamaecyparis obtusa*, the administrative sector also had to show how to sustainably manage the coniferous tree plantation forest, particularly the necessity for thinning. Even if the cooperative board members notice the need for thinning, they cannot progress without any support from forestry-related organization including administrative sector.

In this case, the cooperative had to conduct the thinning and tree-planting ceremony with support from the company, according to the contract between the cooperative and the company. The board member of the cooperative had new relationships with the officer of the municipality, officers of the department of forestry, local officers of the prefectural government, and the local logging company. Thus, the cooperative was able to identify people and organizations involved in forestry in the community and learn about the differences in the forest stand before and after thinning.

Third, it must be pointed out that the contribution of human resources from the cooperative is very important—not only the efforts of the cooperative board members but also the existence of a key person who is willing to participate actively outside the cooperative. In Case 2, the person responsible in this company was enthusiastic about this activity. He spent more time than expected on the project, created various documents for people both inside and outside the company, and carefully prepared for the ceremony.

Generally, the role of the local officer of the prefectural government is to promote forest practices and to expand forest techniques. In this case, his work became more difficult and complex; for example, he often visited the forest site undergoing thinning and generated many official documents. His contribution was also important because he played a coordinating role.

3.3 Case 3 (Fukui Prefecture)[32]

3.3.1 Description

The cooperative was founded in 1968. The total area of forest is large at approximately 2,500 ha, including approximately 200 ha of planted forest[33]. The remaining area is covered by natural forest including secondary broadleaved forest that had been used for the production of fuel-wood or charcoal for a long period of time. When the cooperative was founded, a profit-sharing reforestation program was introduced to plant coniferous trees. In the 1960s and 1970s, the Forestry Agency and the prefectural government promoted the establishment of this type of forest producer cooperatives.

3.3.2 Largest problem and background

The largest problem that this cooperative is now facing is the same as that for Case 1, but to a greater extent. That is, the population has decreased and aged dramatically. In the area where the cooperative is located, there were 93 households and 535 persons, respectively, in 1891. In 1950, the population decreased to 163 persons, and today is down to only two people (MAFF, 2010). The main jobs in the area were forestry and sericulture, and both have fallen into decline. The remaining residents are now living in a neighboring area. Unlike Cases 1 and 2, this cooperative is not located near a city with jobs, which in those other cases has helped to prevent the collapse of the community. Thus, the largest problem of this cooperative is how to reorganize itself under the current circumstances.

3.3.3 New activity and background

With only two people remaining in the community, the cooperative cannot move ownership to a residents' association. As two people can do very little, the cooperative, a large part of the membership of which are now living in a neighboring community, is attempting to revive local interest in exploiting the forest for a wide range of activities. In the annual meeting of the cooperative in 2005, various important problems were discussed, including how to improve degraded forest resources, protect the natural environment, address a problem of illegal dumping, enhance the low morale of mountain climbers, spark community regeneration and activation, and further utilize forest resources (Kuniyoshi, 2008). The group ultimately decided to develop ecotourism in their forest.

The cooperative set up an organization, together with community members, which included previous community members, the staff and students in an architectural course at a local private college, a local private railway company, a non-profit organization related to the mountains, and individuals, and they are actively recruiting sponsors and volunteers (Kuniyoshi, 2008). Various ecoprojects are now in progress (Kuniyoshi, 2008). The organization helps to maintain trails in Hakusan National Park, with the aim of running ecotourism project there as well. Many tours are already available, and some hunting is allowed. Some old traditional houses are being renovated with help from college staff and students. These renovated houses are expected to become major ecotourism draws. The renovations are also viewed as a starting point for community regeneration. Restoration of the local waterway is also being conducted as part of landscape management. A tea-growing area has been introduced into an abandoned cultivation area, which is also expected to be a major attraction for ecotourists in the future.

It is interesting that the cooperative clearly identified the development of ecotourism as their main forest-management goal, given that ecotourism has never before been a major objective of a forest producer cooperative[34].

3.3.4 Characteristics of and evaluation of the new activities

In this case, the final results of the cooperative's initiative will not be realized until the future, but this case study illustrates several new ways to manage a forest producer cooperative.

First, linking the cooperative to ecotourism is a thought-provoking concept. Ecotourism is related to forest resources and many national forests managed by the Forestry Agency, such as Yakushima Island, Iriomoteshima Island, the Shirakami Mountain Range, and Shiretoko, are famous in Japan[35]. In these cases, the forests have been classified as Forest Ecosystem

Protected Areas and almost all forest-related activities are prohibited within them. In contrast, this cooperative owns the forestland, which is non-national forest[36], and thus can open it up for ecotourism.

The second is the basic policy that the existing facilities are important. For example, the renovation of traditional houses, which were damaged by extraordinarily heavy snowfall, is in progress. The first projects are in cooperation with volunteers, and the next project will be developed to effectively utilize the houses. Such a basic idea of utilizing existing facilities is actually related to funding problems. In the past, public work projects for tourism in forested areas required building new facilities, which were paid for by subsidies from the national or prefectural governments. However, in the case of this cooperative, the costs are covered or mitigated using volunteers and sponsors and involving the private sector in planning and finance.

Third is the fact that the ecoprojects were conducted directly by forest producer cooperative that own the forestland used for the ecoprojects, with the cooperation of individuals and organizations that have had no previous relationship with forestry. In contrast, the involvement of the forest owners' cooperative, prefectural federation of forest owners' cooperative association, and logging companies, which played an important role in the new activities of the forest producer cooperative in Cases 1 and 2, seems to be small in Case 3. There are many tourism-related sites and various activities in the national forest, but the Forestry Agency and its regional offices are not involved directly in tourism management. Their role is only that of being the owner of the forestland. The fact that the forest producer cooperative participate directly in the ecoprojects as the forest owner seems to be a new direction in forest resource management.

Fourth is that this cooperative's initiative could lead to substantial earnings. The community is located at the entrance to Hakusan National Park. The cooperative pointed out that the environment, history, and culture of the community are being lost due to depopulation and the increase in the number of climbers in the national park[37]. Particularly for the latter reason, a cooperation fund for protecting the local environment, which is a toll fare system[38], was introduced in 2007, and toll gates were constructed at the entrance to the forest road. Although the income from toll fare is limited, the cooperative is expecting more income from the other activities it has planned.

In Japan, the national park system is based on a zoning system, and the government does not generally own the land within a national park. Thus, the role of private land is important in regions where privately owned land is dominant. However, the Ministry of the Environment, which is responsible for managing the national parks, has done almost nothing to protect and maintain the natural environment in privately owned forests, except to regulate cutting activities. Simultaneously, residents living within park areas do not understand the characteristics of the region in general. Under these circumstances, the new projects of the cooperative have great significance for the national park system, because there are many national parks in which the percentage of privately owned forest is high. The cooperative is contributing to the maintenance of the natural environment around the national park.

Finally, this cooperative has shelved timber production and forest practices, the major objectives of all cooperatives at their founding, in favor of preserving the community's history, culture, and lifestyle. There are other cooperatives and communities in similar situations throughout Japan, particularly in mountainous areas. Still, many challenges remain. If, for example, the remaining two residents leave the community, the long history

of the community will be completely lost. Furthermore, while it is possible to repair the old traditional Japanese houses damaged by heavy snow, it will become more difficult in time. Some previous residents, who are mostly elderly, are still living in surrounding communities, and when the generation changes, a major part of history will disappear. The remaining time is strictly limited.

4. Discussion

Three case studies were introduced in this study to illustrate new trends in the management of forest producer cooperatives. The cooperative in Case 1 reestablished timber production and increased their income by trading carbon credits; that in Case 2 developed a novel relationship between the cooperative and forestry-related organizations; and that in Case 3 has started a number of initiatives aimed at regenerating the community, increasing the population, and embracing ecotourism activities and principles. In all cases, the cooperatives introduced a new social and economic system. Importantly, a small number of cooperatives throughout Japan have begun to apply similar ideas to their cooperatives.

As the management of forest producer cooperatives becomes increasingly difficult and timber prices continue to drop, fewer cooperatives are being formed, and those that were founded long ago are increasingly being dissolved. Yet, these three cooperatives have found new ways to manage their lands in ways that are completely different than previous management styles. The three cooperatives have some common characteristics, which may help inform more effective management of other cooperatives in the future.

First, each has embraced outside organizations that have no connection to forestry, from the private companies purchasing CO_2 credits in Case 1 to the automobile enterprise involved in Case 2 and the college involved in Case 3. Concern about global environmental problems has been gradually increasing in Japan, and the first commitment period for the Kyoto Protocol started in 2008. Environmentally related activities of private companies or organizations have been increasing, and, at the same time, the content has been changing. Thus, in some cases, a forest producer cooperative can open up their lands for such environmental activities. The cooperatives and other forestry-related organizations should explain their difficulties regarding sustainable forest management to the public.

Second, each made substantial administration changes, particularly in Cases 1 and 2. Forestry policy programs have traditionally been run mostly by the national and prefectural government, and in a different manner[39]. However, in Case 1, the carbon credit program is mainly operated by the Hyogo Prefectural Federation of the Forest Owners' Cooperative Association. In addition, the carbon credits produced from the forest are held by the prefectural association. The carbon offset provider is also closely related to the prefectural association. Similarly, in Case 2, many initiatives are sponsored by private companies, but prepared and managed by the prefectural government (a major reason why the companies feel safe supporting the activities). For example, a company paid for thinning and tree planting via the Mie Prefectural Federation of the Forest Owners' Cooperative Association, which is an extra-departmental body of the prefectural government.

Third, each cooperative has found new ways to be funded. In many ways, this is natural consequence of the two previous points. For example, a change in administration means a change in subsidy, and providing benefits to outside organizations can lead to earnings from those outside sources. For instance, in Case 2, the forest producer cooperative received rent from non-forest land every year.

Finally, each cooperative underwent a change in leadership[40]. The original presidents of these cooperatives did not come up with these novel ideas. It took a new generation of presidents, who decided to act in a broader area than just forest practice and timber production. In Case 1, the president had a long-term vision for joint regional timber production and sustainability of the community. In Case 2, the president agreed to participate in an in-forest event for residents and students, and in Case 3, the president was finding a way to regenerate the community. They are acting not only for the business of the cooperative but also for the community and its members.

5. Conclusions

The origin of the forest producer cooperative was the common forest starting during the Edo Period. At that time, forests were an essential resource for agriculture, energy, and daily life. A limited number of people living in a specific area conducted sustainable forest management by following local rules and excluding outsiders. Since 1966, some of such forests have been changed to forest producer cooperatives. These cooperatives have endured many hardships and continue to face major financial and other challenges. However, some novel solutions have recently been applied to revive cooperatives. All of these have included expanding the cooperative's business outside of the forest owned by the cooperative. This has resulted in the formation of new business networks, acceptance of new types of administrative services, and new sources of funding. Moreover, a new generation of leaders, with fresh ideas and different job experiences compared to past presidents, appears to be having an impact, taking the cooperatives into new, unexplored directions.

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7. Notes

1. See Handa (1988) and McKean (1992) for English language accounts of the common forest in Japan.
2. A term that means the smallest unit relating to the rights of the common forest is difficult. In Handa (1988, 2001), "hamlet" is used. "community forest" sometimes means another forest other than the smallest unit of the village. For example, it means forest owned by the city, town, and village in GHQ (1951).
3. Itoh (2009) pointed out the current decision by the Supreme Court.
4. See Totman (2007) for more on land reform during the Meiji Period.
5. This act was not only for the common forest but was also for common land among the municipality forest. As referred to in section 1, part of the common forest became public forest at the time when the municipality system was introduced in 1889. At that time, conventional utilization, which continued from the Edo Period, was permitted in some cases of newly established public forest that originated from the common forest. Namely, there was common land among municipality forests. The important point is

that the conventional utilization in the municipal forest was not the right for the common forest and was permitted by the town or village assembly. However, for simplicity, we refer only to "common forest" in this chapter.

6. Nakao (1969, p.56–69) reported five characteristics of common forest rights. (1) The rights were based on the customs of the area. (2) People who were living in a definite hamlet had rights. (3) Households had rights. (4) It was impossible to inherit rights. (5) It was also impossible to assign or sell rights to anyone. These five points make up the difference between common forest rights and property rights.
7. Under the Forestry Cooperative Act, there were two types of forestry-related cooperative organizations at the local level: forest owners' cooperative and forest producer cooperative. See Forestry Agency (1955), Matsushita & Hirata (2002), and Ota (2009) for more information about the forest owners' cooperative in Japan.
8. Total forest area for modernization of rights was divided by the total number of holders of common forest rights, resulting in 1.33 ha. This figure is just for reference, but it shows the approximate size of forest land that each person would have received if the land was divided equally.
9. The statistics by the Forestry Agency do not include the annual numbers of established cooperatives and dissolved ones, only the number of existing cooperative (Matsushita, 2012).
10. These statistics were compiled annually for all forest producer cooperatives. In the fiscal year 2009 survey, survey sheets were sent to 3,224 cooperatives, and the number of respondents and the rate of respondents was 2,723 and 84.5%, respectively. The figures shown here are for the 2,723 responding cooperatives.
11. Various combinations of profit-sharing forestation systems have been developed in Japan since the Edo Period. After World War II, the Act on Special Measures concerning Shared Forest (Act No. 57 of 1958) was enforced, and planting of coniferous trees was promoted. Most forest producer cooperatives prepared forest land for planting. The Prefectural Forestation Corporation or Forest Development Corporation allocated funds for planting trees, and the profit was divided as a constant percentage, which was determined at planting.
12. A fixed asset tax is common between private forest and forest owned by forest producer cooperatives. A corporate inhabitant tax is required regardless of income.
13. From the Forest Cooperative Statistics of fiscal year 2009, the percentage of forest producer cooperatives with short-term debt and long-term debt is 14.5% and 22.6%, respectively.
14. When labor power is lacking, forest producer cooperatives must outsource forest practices to the forestry company or employ forestry workers. This may conflict with the principles of independent business. Plus, it is important for cooperatives to balance log price and labor cost. Generally in Japan, labor costs have been increasing, and log prices have been decreasing. In 2009, the average wage for male loggers was 12,898 yen per day and the average price for a medium-sized log of *Cryptomeria japonica* was 10,900 yen per 1 m^3 (Forestry Agency, 2011b). In 1980, when the average log price peaked, these figures were 8,550 yen and 39,700 yen, respectively (Forestry Agency, 1992). Although a clear comparison is not possible due to the difference in survey methods between the years, it is clear that the relative log price to the logging wage has decreased drastically.

15. Today, forest management practice of forest producer cooperatives is financially subsidized and generally undertaken by forest owners' cooperatives (Kawamura, 2010).
16. Recently, there has been a rise in the number of forest producer cooperatives that have dissolved their cooperative in order to transfer the forest into a regional organization such as a residents' association (Sakai, 2005; Yamashita 2006). This was unexpected, but is legal, and will likely lead to many future problems, for example, conflicts over how to distribute profit after harvesting trees.
17. These three cases were picked from the annual meeting of the Middle Japan Common Forest Conference.
18. Part of the explanation of this section is based on the personal interview by the author with the board members of the forest producers cooperative in July, 2011, and presentation by Fukuda at the 32th Annual Meeting of the Middle Japan Common Forest Society in September 1, 2011.
19. These data are based on a forest planning system summary table managed by the prefectural government; not all planted forests are included in the system.
20. See Matsushita and Taguchi (2011) for more information about global warming and forest policy in Japan.
21. In 2008, the Act on Special Measures concerning Advancement of Implementation of Forest Thinning, etc. (Act No. 32 of 2008) was enacted. Thinning above the usual levels was promoted by this Act. During fiscal year 2007 and fiscal year 2012, the usual thinning target area is 350,000 ha per year, and the additional area is 200,000 ha per year. In total, 3.3 million ha of planted forest is planned to be thinned as a result of this Act. Additionally, planting in non-reforested land is promoted.
22. Ishimaru (2011) explained the current situation and problems regarding the introduction of the J-VER Scheme to the forest owners' cooperatives, using the examples of Osaka and Hyogo Prefectures.
23. On December 2010, the total number of registered forest management J-VER projects and the quantity of credit was 60 and 74,038 tons CO_2, respectively, and among these registered projects, the total number of entirely certificated projects was 26 and 34,993 tons CO_2, respectively (Forestry Agency, 2011a).
24. The number of cooperatives was based on the Forestry Cooperative Statistics for fiscal 2009.
25. Part of the carbon credit from the forest owned by the cooperative and jointly owned private forest was purchased by a private railway company to offset the carbon dioxide emitted from a railway station, which was newly opened on March 14, 2009. This is the first case of such a project related to a railway station (The Kobe Newspaper, March 12, 2010). The railway company's homepage indicated that the quantity of CO_2 offset during March 14, 2010 and March 13, 2011 was 37 tons in CO_2 for operating the station, 267 tons CO_2 for the train, 3 tons CO_2 for the station stand and automatic vending machines, or a total of 308 tons CO_2.
(http://holdings.hankyu-hanshin.co.jp/eco/information/information_110314.html, 2011/09/06)
26. This organization was founded in 2003. As of April 5, 2011, the total number of certified forests by SGEC was 116, and the total certified forest area was 864,351 ha. More certified forests in Japan have been certified by SGEC than any other certification organization.

27. Kobe Newspaper, March 12, 2010.
28. Part of the explanation of this section is based on Kawasugi (2009), Matsushita (2009), and Nagata (2009).
29. In Case 1, the area in which the forest producer cooperative is located is among the most important forestry areas in Hyogo Prefecture. The Prefectural government has introduced various forestry policy programs in this area, and there are relatively many forestry workers.
30. In fiscal year 2009, 486 sites in national forest were used for activities sponsored by private companies (Forestry Agency, 2011a).
31. In fiscal year 2009, 638 sites in non-national forest were used for activities sponsored by private companies (Forestry Agency, 2011a).
32. Part of the explanation of this section is based on Kuniyoshi (2007, 2008) and Matsushita (2008).
33. The holding area of forest is larger than that of the private forest owned by individuals. This is an important characteristic of the forest producer cooperative, and Handa (2001) and Hirata (2008) have pointed out that this characteristic has to be utilized more often.
34. The Government enacted the Act on Promotion of Ecotourism (Act No. 105 of 2007) in 2007 and enforced it in 2008. Article 3 of the Act indicated a philosophy of ecotourism, including protection of the natural environment, promotion of tourism, regional development, and environmental education. The national government created basic ecotourism policy and the municipal offices made the regional master plan. Ecotourism started before enforcement of the Act, but enacting ecotourism into law was recent. In case 3, some activities related to ecotourism started before enforcement of the Act.
35. Yakushima Island, Shirakami Mountain, and Shiretoko were listed as World Natural Heritage Sites by UNESCO in 1993, 1993, and 2005, respectively.
36. Sacred Sites and Pilgrimage Routes in the Kii Mountain Range were listed as World Cultural Heritage Sites by UNESCO in 2004. Most of the forest is non-national forest.
37. Based on a presentation by Kuniyoshi (2008) at the 28th Annual Meeting of the Middle Japan Common Forest Society.
38. The major contents of the leaflet for the visitors are as follows. There are problems such as damage in forest roads and climbing trails, illegal picking of natural plants in private land, and illegal waste dumping due to the increase in visitors and climbers. The fee is 300 yen for adults and 100 yen for children of elementary school age or younger. The use of the fund is limited to improvement of climbing trails, maintenance, operation, and activities related to nature protection, and so on.
39. The basic policy of the past 45 years on the common forest rights is facing limits. When the act was enforced in 1966, the Forestry Agency and the departments of forestry of prefectural governments did not have ideas such as these three cases. One of the reasons is that these three examples may conflict with the basic principles of independent businesses, which are required for the forest producer cooperative. However, in these three cases, the department of forestry of the prefectural government gave silent approval.
40. In the three cases, the former job of the president was not forestry. Thus, it is possible that their experience in fields other than forestry might have influenced their decisions. New ideas may continue to develop as the ageing population grows in rural areas, particularly

in mountainous areas, and generations change, and new presidents or board members with different experiences and fresh ideas take over the cooperative's business.

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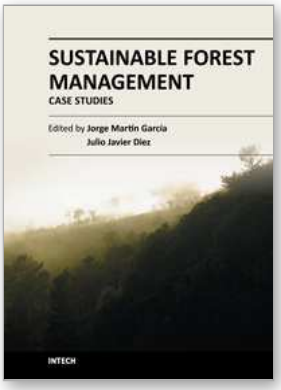

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The concept of forest sustainability dates from centuries ago, although the understanding of sustainable forest management (SFM) as an instrument that harmonizes ecological and socio-economic concerns is relatively new. The change in perspective occurred at the beginning of the 1990s in response to an increased awareness of the deterioration of the environment, in particular of the alarming loss of forest resources. The book collects original case studies from 12 different countries in four continents (Africa, America, Asia and Europe). These studies represent a wide variation of experiences from developing and developed countries, and should clarify the current status of SFM worldwide and the problems associated with its implementation.

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