



Local Perceptions of Forest Certification in State-Based Forest Enterprises

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Abstract

Forest management certification plays a supportive role in the realization of wood production by evaluating social, economic and ecological objectives. This study analyzed the changes in the perceptions, views and expectations with respect to forest management certification held by those who live on forest land in Turkey, known as forest peasants, according to their education level, age and their engagement in forestry activities. The study was conducted at the Kastamonu Regional Directorate of Forestry located in northwestern Turkey. Data were collected using face-to-face survey with 407 forest peasants who randomly selected. In addition to the descriptive statistics, Kruskal–Wallis and Mann–Whitney U tests were used to analyze whether there were any significant differences among the views depending on the locals' education level, age and their engagement in forestry activities. The results showed that forest peasants generally knew what certification was. The forest peasants stated that certification has benefits for occupational health and safety. However, they also stated that there had not been any significant increase in forestry worker wages or the price of forest products, that there had not been any noticeable difference in the forest administration's forestry activities, and that the principles of participatory forest management had not been applied efficiently and effectively following certification.

Keywords Forest Stewardship Council (FSC) · Local people's perceptive · Sustainable forestry · State forestry · Turkey

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Introduction

Forest certification systems are market-based strategies that are established with the purpose of encouraging the use of forests with a view to environmental, economic, and social sustainability (Hansen et al. 2006; Bowyer 2008; Tian et al. 2018). Certified products are sold in competitive global markets and they encourage consumers, who care about sustainability and to pay an extra premium for “green products” (OECD 2012). This system was initially developed to protect tropical forests during the 1980s. Later, it began being used for forests all over the world (Cashore et al. 2003). In addition to the positive impacts of Forest Management Certification (FMC) there may also be some negative impacts such as the fact that certification companies are more stringent in applying the rules for the use of non-timber products, especially by locals, which gives rise to conflict, plus the fact that the certified products are sold cheaper (Zainalabidin et al. 2013; Dasgupta 2017) than those without certification due to their high costs, sometimes (Cashore et al. 2006; Zainalabidin et al. 2013). Furthermore, the fall in production due to limitations introduced by certification can cause workers to work less (Cashore et al. 2006). Today, approximately 8% of the forests around the world have been certified by the Program for the Endorsement of Forest Certification (PEFC) and by Forest Stewardship Council (FSC) systems (PEFC 2018).

Turkey has 22.3 million hectares of forestland (GDF 2016) with approximately 18.4 million m³ being used for industrial wood production (GDF 2017). Forest certification efforts in Turkey began in 2010 (Komut and Öztürk 2017). Certified forest areas increased from 9152 hectares to 2,348,136 hectares between 2012 and 2018 (Sen and Genç 2017; Sen and Genc 2018). Although it has only been 6 years, 10.5% of the forests in Turkey have been certified (FSC 2018). Forestry activities are well implemented in Turkey and that forest administration has no production, marketing, planning and management problems. The reason why FMC was initiated in Turkey are. Specifially, with exports to Middle East markets in decline, Turkey needed to send its products to American and European markets both of which require imported forest products to carry forest certification (Cashore et al. 2006). With the adoption of certification, the private manufacturing sector in Turkey will be able to procure raw material with confidence and the necessary investments for the certified product.

The local population living in and around the forests is directly affected by the results of FMC. Forest peasants are some of the forestry organizations’ most important strategic partners so studies conducted among them would prove beneficial in identifying the local population’s problems and increasing their confidence in the forest organizations in addition to fostering a sense of belonging to the process and identifying the problems in implementation. For this reason, i.e. the identification and evaluation of peasants’ perceptions and views on FMC, the concept of participatory forest management and other issues related to it will provide an important contribution to the continuity of these studies. Doubts concerning peasants’ perceptions of certification, whether or not they understand these concepts and whether or not they are opposed to certification have indirectly

impacts on certification work in Turkey. The indirect effects of the villagers on the forests and forestry are considerable and influential. The forest peasants have some of indirect effects for forest and forestry such as not permitting the nearest village forestry activities and the foreign to work in the owner village, removing the plan and wrong planting in afforestation activities, even starting a fire in forest areas if there is conflict between the managers and peasants. For this reason, it is crucial for the forest peasants to adopt and support certification so that the sustainability of forests and certification activities can be assured and protected.

Hence the purpose of this study was to determine the views of the local population living on certified forestland in Turkey with respect to forest certification and the certification system, as well as what this population generally thinks about the structure and process of certification from when the FMC was first initiated until now.

In recent times, several studies have ascertained the perceptions of stakeholders in regard to forest certification around the world. Although studies have begun to explore this issue in Turkey, these do not investigate all aspects of FMC and especially not the views and opinions of the local stakeholders. In this study, we tried to make up for the lack of similar studies in the literature and hoped that these results will be useful for decision-makers carrying out certification work in Turkey and in other countries with similar forest management structures and policies.

Materials and Methods

Study Area

This study was conducted at the Kastamonu Regional Directorate of Forestry (KRDF) of Turkey. The certified forestland of the KRDF accounts for 20.8% of the certified forestland in Turkey (Sen and Genç 2017). The KRDF is in the western part of Turkey's Black Sea region (Fig. 1). There are two provinces (Kastamonu and Sinop), 29 districts and 1542 villages within the limits of the KRDF. The total population of this region is 561,119 and, according to the KRDF data, approximately 250,744 members of this population are classified as forest peasants (KRDF 2016; TSI 2016). Furthermore, 51,817 people live in 419 forest villages within the boundaries of certified forestry enterprises. The study covers two national parks: The Kure Mountains National Park, which has a Protected Areas Network (PAN) certificate, and the Ilgaz Mountain National Park (Anonymous 2014; Öztürk and Ayan 2015). The overall size of the KRDF is 2 million hectares, 1.2 million of which is forest land (Sen and Genç 2017). Forest lands are operated through the Forests Enterprise Directorate (FED). The following FEDs have been certified in accordance with FSC standards: Daday, Arac, Ayancık, Taskopru, and Tosya (Fig. 1). The total area of certified forestland is 541,006.9 hectares. This accounts for 26.90% of the total size of KRDF and 29.38% of the forestlands (Şenöz 2014; GDF 2018).



Fig. 1 Locations of the Forests Enterprise Directorate (FED)s and certified FEDs in the Kastamonu Regional Directorate of Forestry in Turkey

Survey Design

The study was carried out by open-ended and closed-ended questions in surveys. After open-ended questions, the participants were asked to indicate the reasons for their responses. The questions were aimed at determining the perceptions of the forest peasants with respect to what certification is, their views regarding the implementation of the certification process vis-à-vis forest management, and their views regarding the changes in the forestry activities that took place after certification (Table 1). In addition, questions were asked in order to obtain information about some descriptive characteristics of forest peasants.

The data were collected from face-to-face interviews in the forest villages which are located within the boundaries of forestry operations' directorates with FMC, between the dates of June 2017 and August 2017. One participant from each household who works intensively in the forestry activities was selected for the survey. Houses were randomly selected for the questionnaire. No questionnaire was done in all the houses. The participants were provided with explanations about the questions when necessary.

Table 1 Survey questions used in the study

| | | Male | Female |
|----|---|--|--------------------------------|
| 1 | Age | | |
| 2 | Gender | | |
| 3 | What is your education level? | Elementary school University degree | High school Master's degree |
| 4 | Are you involved in forestry activities? | Yes | No |
| 5 | Do you know what Forest Stewardship Council is? | Yes | No |
| 6 | Do you know what Forest Management Certification is? | Yes | No |
| 7 | Did you receive any introductory training on FSC? | Yes | No |
| 8 | What does certification mean to you? Please describe: | | |
| 9 | Do you know what participatory forest management is? | Yes | No |
| | What does participation mean to you? Please describe: | | |
| 10 | Did they include you in the creation of forest management plans in your region? | Yes | No |
| 11 | Have you observed any changes in the practices of the forestry organization following certification? Please describe: | Yes | No |
| 12 | Was the training provided during the certification process useful? | Yes | No |
| | What kind of benefits and improvements did you obtain from this training? | | |
| 13 | Do you think the certification had any positive impact on the implementation of occupational safety criteria? | Yes | No |
| | What kind of improvements could be made in order to improve occupational safety practices? | | |
| 14 | Did you continue to receive additional training in forestry activities after the certification? | Yes | No |
| 15 | Has there been a decrease or limitation in the benefits you derived from the forests after certification? | Yes | No |
| 16 | Has there been an increase in the wages you receive for forestry activities after certification? Amount of increase in the rate? | Yes | No |
| 17 | Do you think the proportion of illegal use of forests in your region has decreased after the certification? | Decreased | Not changed |
| | | Increased | No idea |
| 18 | Do you think the awareness of the peasants toward forest conservation and environmental protection has increased after the certification? | Yes | No |

Table 1 (continued)

| | | | |
|----|---|-----------------------|--------------|
| 19 | Do you think that certification is generally useful for the forests and peasants? Can you describe the reasons why certification was found useful or not useful? | Yes | No |
| 20 | Are the current legislative regulations sufficient in terms of regulating forest-local population relations? | Sufficient No idea | Insufficient |

Statistical Analysis

The total number of households in study area was calculated as 12,954 by dividing the total population by four, which is the average number of people living in a household. The following formula was used to determine the sample size (Orhunbilge 2000; GÜNGÖR 2011):

$$n = \frac{N * t^2 * P * Q}{(d^2(N - 1)) + (t^2 * P * Q)} \quad (1)$$

where n is the sample size, $t=1.96$ corresponding with a 95% confidence level, N is the population size (12,954 households), P is probability of the presence of the aspect aimed to be measured within the main group (taken at 50% due to the multi-purpose nature of this study), Q is $1 - P$, and d is the sampling error considered 5% (0.05). Thus, it was calculated that the minimum sample size should be 373. A random sampling method was used and lots were drawn to determine how to distribute the surveys to the enterprise directorates of forests.

It is thought that such factors as the forest peasants' age, education and involvement with forest-related activities may influence their views regarding forestry and certification. In this context the null hypothesis was formulated as: "There is no difference among the perceptions, opinions and expectations of forest peasants depending on their level of education, age or whether they are involved in forestry activities". The alternative hypothesis was formulated as: "There is a significant difference among the perceptions, opinions and expectations of forest peasants depending on their level of education, age and whether they are involved in forestry activities." Data collected from the survey were tested for normality before being analyzed. It was accepted that when the Shapiro–Wilk value is smaller than 0.05 the data did not have a normal distribution in which cases nonparametric tests were. The Kruskal–Wallis test was used to determine whether or not there was significant differences among the groups. The participants were grouped by education level as follows: graduated from elementary school (ESG), high school (HSG) and graduated with bachelor's degree, master's degree or higher (UMG). Furthermore, the participants were grouped by age as follows: 15–20 (A1), 21–50 (A2), and over 51 (A3). Two groups were formed based on participants' involvement (IN) and non-involvement (NIN) in forestry activities such as working for afforestation activities, wood production, etc. Differences among the groups were determined using the Mann–Whitney U (MWU) test (p value < 0.05) (Anderson and Whitaker 2009; Polat 2014). The Bonferroni correction method was used for the differences among three and more groups. For the Bonferroni correction method meaningfulness was set as 3 in the MWU test and as $0.05/3 = 0.02$, $p = 0.02$ for higher group numbers. The SPSS 17 statistics package program was used to perform the analyses.

Results

All of the participants were male. Only 0.5% of the participants were in the 15–20 age range. The rate of elementary school graduates among the participants was 89.5% and the rate of university graduates was only 1%. Around 83% of the participants were involved in forestry activities. Descriptive information regarding the participants is shown in Table 2.

Findings Related to the Perceptions of Forest Peasants Regarding Certification

In the study the conceptual knowledge of forest peasants regarding the FSC, FMC, and participatory forest management was surveyed first. This required asking the peasants whether or not they knew these concepts and then they were asked to define what these concepts were in order to determine what they understood from those concepts. According to the findings obtained in the study, 65.1% of the participants knew what FSC was and 84.8% knew what certification was. However, 3.4% of those who said they knew what FSC was, expressed that they did not know what certification was while 25.8% of those who said they knew what certification was stated that they did not know what FSC was.

The percent of eighty-nine point seven of participants stated they had received training in FMC during the certification process. The participants were also asked what certification meant to them. Participants defined certification as documentation

Table 2 Characteristics of survey participants

| Age groups | Involvement in forestry activities (IFA) | | | | | | | | Total |
|------------|--|----------------------|-------------------|-----------------|-----|-----|-----|----|-------|
| | Yes | No | Yes | No | Yes | No | Yes | No | |
| | Elementary school graduate | High school graduate | University degree | Master's degree | | | | | |
| 15–20 | n 2 | – | – | – | – | – | – | – | 5 |
| | % 0.5 | – | – | – | – | – | – | – | 0.5 |
| 21–30 | n 37 | 2 | 9 | – | – | 1 | 2 | – | 51 |
| | % 9.1 | 0.5 | 2.2 | – | – | 0.3 | 0.5 | – | 12.5 |
| 31–40 | n 59 | 1 | 4 | 1 | 2 | – | 1 | – | 68 |
| | % 14.4 | 0.3 | 0.9 | 0.3 | 0.5 | – | 0.3 | – | 16.7 |
| 41–50 | n 84 | 9 | 5 | 3 | – | – | – | – | 101 |
| | % 20.6 | 2.2 | 1.2 | 0.7 | – | – | – | – | 24.8 |
| 51–60 | n 87 | 25 | 6 | 3 | – | – | – | – | 121 |
| | % 21.4 | 6.1 | 1.5 | 0.7 | – | – | – | – | 29.7 |
| 60 < | n 37 | 21 | 3 | 3 | – | – | – | – | 64 |
| | % 9.1 | 5.2 | 0.7 | 0.7 | – | – | – | – | 15.7 |
| Total | n 306 | 58 | 27 | 10 | 2 | 1 | 3 | – | 407 |
| | % 75.2 | 14.3 | 6.6 | 2.5 | 0.5 | 0.3 | 0.7 | – | 100 |

(26.8%), quality wood production (25.8%), provision of information about production methods (20.1%), forest protection and sustainability (6.5%), facilitation of product sales (6.2%), improvement of occupational safety (5.9%), regulation of production activities (4.5%) and prevention of environmental pollution (4.2%).

82.3% of participants stated that they knew the conventional meaning of the participation of this survey. When they were asked to explain what participation of this meant to them, 37% explained that it was for regular meeting about forestry in villages, 24.2% said that verbal and written warnings about forestry activities would be given to them, 22% explained that it was for provision of training and certificates regarding the activities and 16.8% stated that it was for the transactions being made through cooperatives. Only 19.4% of participants stated that their opinions were taken during the preparation stage of the forest management plans.

The answers to questions on the awareness of FSC were statistically significant in terms of IFA and age (Table 3). 29.1% of Group A2 said “Yes”, while 42.2% of Group A3 said “No”. This means that the rate of awareness of FSC has a negative correlation with age. Likewise, only 31.1% of the IN group did not know about FSC, whereas more than half of the NIN group (53.6%) had no knowledge of FSC. Participant answers to questions regarding FMC indicate a statistically significant variation only with respect to IFA. Also, there was no statistically significant variation in the level of awareness of the participants of participatory forest management depending on their level of education, age and IFA.

Findings Related to the Views of Forest Peasants Regarding the Process Following Certification

The local population is very important for the FMC system. FMC should have a supportive structure, particularly with respect to increasing the income of the local population, ensuring occupational safety, providing social security and insurance, and increasing knowledge of the work.

44% of the participants stated that they observed any changes in the practices of the forestry organization following the certification was answered “Yes”. The top reason for these changes is the number of work trackings and warnings by the personnel of the forestry organization had increased (35.5%), more effort was being made to increase the quality of products and work (21.6%), that the forestry organization personnel were paying more attention to forestry activities (13.3%), that more information was provided by the forestry organization personnel (12.6%), that more importance was given to occupational safety (12.2%) and that participant’s awareness of environmental pollution had increased (4.8%).

96% of the participants indicated that the training received during the certification process was useful. The result for the reason of useful training, 41% of participants stated that the training increased the peasant’s level of knowledge and information regarding workplace health and safety matters. The others indicated the reason of it follows; improvement in the use of work tools and equipment (25.4%), increasing peasant’s knowledge about forestry activities and certification (20.6%), increasing peasant’s level of information regarding the cleanliness of the environment

Table 3 Kruskal–Wallis and Mann–Whitney U test results on findings related to the perceptions of forest peasants regarding the certification according to their level of education, age, and the situation of involvement in forestry activities

| | N | Kruskal–Wallis | | | | Mann–Whitney U | | | | |
|--|-----|----------------|------------|----|-------|--|----------|--------|-------|---------------------------------|
| | | Mean rank | Chi square | df | p | Groups | U | Z | p | Signifi- cant vari- ation |
| Do you know what Forest Stewardship Council is? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 204.46 | 0.006 | 2 | 0.997 | No significant variation among the views of groups | | | | |
| HSG | 3 | 200.83 | | | | | | | | |
| UMG | 3 | 200.83 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 133.00 | 8.614 | 2 | 0.013 | A1–A2 | 231 | −0.973 | 0.330 | No |
| A2 | 220 | 192.20 | | | | A1–A3 | 32 | −1.383 | 0.167 | No |
| A3 | 185 | 218.80 | | | | A2–A3 | 8976 | −2.726 | 0.006 | Yes |
| IFA | | | | | | | | | | |
| IN | 338 | 196.22 | | | | IN–NIN | 9030.5 | −3.578 | 0.000 | Yes |
| NIN | 69 | 242.12 | | | | | | | | |
| Do you know what Forest Management Certification is? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 204.46 | 1.092 | 2 | 0.579 | No significant variation among the views of groups | | | | |
| HSG | 3 | 173.00 | | | | | | | | |
| UMG | 3 | 173.00 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 173.00 | 1.401 | 2 | 0.496 | No significant variation among the views of groups | | | | |
| A2 | 220 | 200.75 | | | | | | | | |
| A3 | 185 | 208.20 | | | | | | | | |
| IFA | | | | | | | | | | |
| IN | 338 | 206.72 | | | | IN–NIN | 10,743.0 | −1.656 | 0.098 | No |
| NIN | 69 | 190.70 | | | | | | | | |
| Do you know what participatory forest management is? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 203.52 | 1.021 | 2 | 0.600 | No significant variation among the views of groups | | | | |
| HSG | 3 | 235.83 | | | | | | | | |
| UMG | 3 | 235.83 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 168.00 | 2.212 | 2 | 0.331 | No significant variation among the views of groups | | | | |
| A2 | 220 | 199.45 | | | | | | | | |
| A3 | 185 | 209.80 | | | | | | | | |
| IFA | | | | | | | | | | |
| IN | 338 | 204.73 | | | | IN–NIN | 11,415.5 | −0.417 | 0.677 | No |
| NIN | 69 | 200.44 | | | | | | | | |
| NIN | 69 | 200.44 | | | | | | | | |

and recycling (7.8%), and increasing peasant's level of knowledge and information regarding the benefits of forests (5.2%).

85% of the participants thought that the certification positively affected the implementation of occupational safety criteria. According to the answers, 32.7% of the participants agreed that the application of "more frequent training should be provided to increase the workers' level of awareness" needed to be done more. In addition, 14.3% of these participants suggested that warnings should have been issued more often, 13.7% stated that there should have been more first-aid classes, 12.6% indicated that there should have been more warning signs, 12% argued that occupational safety equipment should have been cheaper and 11.1% stated that the tools used in production should have been modernized.

The question "Did you continue to receive additional training in forestry activities after certification?" was answered "Yes" by 52.8% of participants.

The question "Has there been any decrease or limitation in the benefits you derived from the forests after certification?" was answered "Yes" by 27% of participants. The question "Has there been an increase in the wages you receive for the forestry activities after the certification?" was answered "Yes" by 20% of participants. These people also indicated that this increase occurred in the range of 5–20%.

Participants were asked "Do you think the rate of illegal use of forests in your region has decreased after certification?" The responses were as follows: 29.5% of participants said it had decreased; 1.7% said it had increased; 29.7% said nothing had changed and 39.1% said they had no idea about the matter.

It was asked whether or not there had been an increase in awareness about forest conservation and keeping the environment clean among the peasants after certification. Around 74.22% responded "Yes".

The participants answered whether they thought that certification was generally useful for forests and peasants. In this context, 94.6% of participants indicated that they believed in the usefulness of the certification system. These people indicated that as the top reason for benefits of certification is led to an increase in the level of awareness of activities related to forests and forestry. Beyond the top reason, following reasons are mentioned by the participants: 19.1% of them, stated that it was an increase in the level of awareness of activities related to forests and forestry, 13.6% of them reported that there was an increase in the quality of the forests, 13.6% of them explained that there was some improvements in workplace health and safety for the workers engaged in forest activities, 8.3% of them assured the future of the forests, 4.9% of them said that their work would become more proper and easier, and 1.5% of them led to standardization. Only 31.4% of participants indicated that certification was successful.

Another question asked to the local population was whether or not the current legislative regulations were sufficient in terms of regulating forest–local population relations. In this context 39.8% of the peasants indicated that they found the current regulations sufficient, whereas 29.5% stated that they were not enough and 30.7% said that they do not have any idea about the matter. Those who said "No" argued that the current legislation should be amended to ensure that there were wage increases and that wages were paid on time. Furthermore, they also stated that the local population should be more involved in the forest management process.

Results of the analysis of Kruskal–Wallis and Mann–Whitney U tests conducted to determine (Table 4).

As seen in Table 4, there is a statistically significant variation in the answers given by the IFA groups regarding the changes in the activities of the forestry organization after certification. Although 48.8% of the IN group stated that the activities of the forestry organization had changed, only 20.6% of the NIN group gave the same response.

There is a statistically significant variation in the responses given by the different age groups regarding the usefulness of the provided training sessions during the certification process. While 7.3% of the IN group indicated that the training sessions were not useful and 10% of the IN group indicated that the training sessions were partially useful, 5.4% of the NIN group indicated that the training sessions were not at all useful, and 21.1% of the NIN group indicated that the training sessions were only partially useful. The rest of IN and NIN of participants stated that they found the training sessions useful. There is a statistically significant variation in the answers given by the IFA groups regarding whether or not certification had any effect on the benefits derived from forests; Accordingly, 11.6% of the IN group and 27% of the NIN group stated that the benefits they derived from the forests had decreased after certification.

All groups stated the same views with respect to the effects of certification on occupational safety and no statistically significant variation was found. The answers given to questions about wage increases were not statistically significant for any of the groups.

Discussion

There are only male opinions in the study. This is because in rural areas women are engaged with household chores and other daily chores in general. Those working in jobs requiring power-demanding, such as afforestation, road construction, wood production in forestry work, are usually men. However, this situation may vary regionally. The results of this study also indicate that the majority of forest peasants have only an elementary school education. The fact that more than 80% of the locals earn their income through forestry activities demonstrates that forests are crucial resources for these people and those peasants are crucial stakeholders for sustainable forest management. The local population does not yet have a sufficient level of awareness about certification.

47% of participants in another study conducted in Turkey were indicated is not suitable for the forest certification of the existing education level (Komut and Öztürk 2017). A study carried out in Nepal, the level of awareness of the locals regarding certification was around 50% and this result supports the results of our work (Acharya 2007).

While this is to be expected in developing countries, studies made show that forestry workers and owners in many advanced countries also have low levels of knowledge about certification. The level of knowledge and awareness among forest landowners regarding certification in Canada (Jayasinghe et al. 2007), the United

Table 4 Kruskal–Wallis and Mann–Whitney U test results for findings related to the views of forest peasants regarding the process following certification according to their level of education, age and the situation of involvement in forestry activities

| | N | Kruskal–Wallis | | | | Mann–Whitney U | | | | |
|---|-----|----------------|------------|----|-------|--|----------|--------|-------|-----------------------|
| | | Mean rank | Chi square | df | p | Groups | U | Z | p | Meaningful difference |
| Have you observed any changes in the practices of the forestry organization following certification? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 204.19 | 3.954 | 2 | 0.138 | No significant variation among the views of groups | | | | |
| HSG | 3 | 90.00 | | | | | | | | |
| UMG | 3 | 225.33 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 293.00 | 1.828 | 2 | 0.401 | No significant variation among the views of groups | | | | |
| A2 | 220 | 205.34 | | | | | | | | |
| A3 | 185 | 200.33 | | | | | | | | |
| IFA | | | | | | | | | | |
| IN | 338 | 193.90 | | | | IN–NIN | 8248 | –4.273 | 0.000 | Yes |
| NIN | 69 | 251.21 | | | | | | | | |
| Was the training provided during the certification process useful? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 203.79 | 2.998 | 2 | 0.223 | No significant variation among the views of groups | | | | |
| HSG | 3 | 160.50 | | | | | | | | |
| UMG | 3 | 275.83 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 160.50 | 6.671 | 2 | 0.036 | A1–A2 | 182 | –0.641 | 0.521 | No |
| A2 | 220 | 194.73 | | | | A1–A3 | 136 | –0.839 | 0.402 | No |
| A3 | 185 | 215.49 | | | | A2–A3 | 18,273 | –2.473 | 0.013 | Yes |
| IFA | | | | | | | | | | |
| IN | 338 | 206.47 | | | | IN–NIN | 10,824.5 | –1.315 | 0.189 | No |
| NIN | 69 | 191.88 | | | | | | | | |
| Do you think the certification had any positive impact on the implementation of occupational safety criteria? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 203.95 | 1.318 | 2 | 0.517 | No significant variation among the views of groups | | | | |
| HSG | 3 | 173.50 | | | | | | | | |
| UMG | 3 | 241.33 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 173.50 | 2.408 | 2 | 0.300 | No significant variation among the views of groups | | | | |
| A2 | 220 | 199.40 | | | | | | | | |
| A3 | 185 | 209.80 | | | | | | | | |
| IFA | | | | | | | | | | |
| IN | 338 | 201.80 | | | | IN–NIN | 10,916.5 | –1.352 | 0.176 | No |
| NIN | 69 | 214.79 | | | | | | | | |

Table 4 (continued)

| | N | Kruskal–Wallis | | | | Mann–Whitney U | | | | Meaningful difference |
|---|-----|----------------|------------|----|-------|--|----------|--------|-------|-----------------------|
| | | Mean rank | Chi square | df | p | Groups | U | Z | p | |
| Has there been a decrease or limitation in the benefits you derived from the forests after certification? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 204.19 | 0.122 | 2 | 0.941 | No significant variation among the views of groups | | | | |
| HSG | 3 | 191.17 | | | | | | | | |
| UMG | 3 | 191.17 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 259.00 | 2.408 | 2 | 0.300 | No significant variation among the views of groups | | | | |
| A2 | 220 | 209.05 | | | | | | | | |
| A3 | 185 | 197.40 | | | | | | | | |
| IFA | | | | | | | | | | |
| IN | 338 | 197.59 | | | | IN–NIN | 9494 | –3.164 | 0.002 | Yes |
| NIN | 69 | 235.41 | | | | | | | | |
| Has there been an increase in the wages you receive for forestry activities after certification? | | | | | | | | | | |
| Education | | | | | | | | | | |
| ESG | 401 | 203.39 | 1.509 | 2 | 0.470 | No significant variation among the views of groups | | | | |
| HSG | 3 | 244.50 | | | | | | | | |
| UMG | 3 | 244.50 | | | | | | | | |
| Age | | | | | | | | | | |
| A1 | 2 | 244.50 | 4.483 | 2 | 0.106 | No significant variation among the views of groups | | | | |
| A2 | 220 | 196.40 | | | | | | | | |
| A3 | 185 | 212.60 | | | | | | | | |
| IFA | | | | | | | | | | |
| IN | 338 | 201.75 | | | | IN–NIN | 10,901.5 | –1.233 | 0.217 | No |
| NIN | 69 | 215.01 | | | | | | | | |

States (Butler 2008), and China (Chen et al. 2011; Tian et al. 2018) was determined to be low as well. According to our study results, the level of knowledge about FSC showed significant differences according to age groups and IFA. Younger people engaged in forestry activities possess a higher level of knowledge. However, no significant difference was found with respect to education level. The study by Ma et al. (2012) stated that college graduates and the higher-educated are more interested and willing to be certified.

Even though around 20% of participants stated they had been asked for their opinion about forest management plans, they failed to mention this in the definition of participation, which may prove that the main purpose in certification, sustainability and participation is not fully understood. Furthermore, 80% of the local population was not included in the management plans for the forests in which they live. However, in the FSC system, the participation of locals who live in certified forest areas

in the planning process for forest management is obligatory (Başkent and Türker 2002). In spite of that, the study results show that the participatory management approach is not adequately reflected in the implementation process. According to research observations, the fact that forest administrators are not open to newness and reluctant to share decision-making power. Another reason of that is the tendency of villagers to follow the usual scheme. Also, the legal background is not being fully in line with the participatory management approach etc. can be stated as obstacles in integrating villagers into decision-making processes.

When other certification procedures from around the world were examined, interaction with the local population was typically higher. For example, studies conducted in Mexico (Markopoulos 2003), the Western Amazon region of Brazil (Humphries and Kainer 2006) and Guatemala (Carrera et al. 2004) showed that participatory approaches and management planning activities carried out with the local population were endorsed by their respective states. Our results are similar to the study by Tsanga et al. (2014) which reported that although it was supported by the state, participation of the local population in forest management during certification efforts in Cameroon was limited.

Certification studies conducted around the world indicate developments in several areas similar to the results of our study, including an increase in the use of personal protection equipment, better waste management and an increase in efforts to decrease damage to forests (Humphries and Kainer 2006). Although forest peasants who know anything about FMC suddenly found themselves in the certification process, they gained knowledge about the certification by participating in the training sessions and information provided to them, as well as some of the evaluation sessions in which they personally participated throughout this process. The forest peasants stated that as a result of the trainings and the presentations made during the certification process, their knowledge and awareness about occupational health and safety, vocational education, environmental cleaning, recycling and the structure and benefits of forests had increased. In addition, the vast majority of the peasants (94.6%) stated that certification was useful for both the forests and themselves. Similar results were obtained in studies conducted in different regions. A study conducted in Nepal determined the rate of contentment about FMC was 63% (Acharya 2007). Moreover, a study conducted in the Amazon in Brazil concluded that that local people are satisfied with the certification and therefore want to continue their certification work (Humphries and Kainer 2006). The fact that nearly half of the forest peasants stated that trainings did not continue after certification raises doubts as to whether forest administrations are attaching the necessary importance to certification in terms of job security and training. In spite of that, the peasants did state that some changes had been made in the practices of forest administrations after certification. In this context, the participants stated that forest administrations made a greater effort to increase production and quality, placed more importance on occupational safety and paid more attention to issues such as environmental awareness.

Certification leads to expectations among the local population regarding possible improvements in their current working and living conditions (FSC 2017). When all the stakeholders believe in and internalize certification, this is particularly helpful for the successful implementation of certification. This situation was used as a

source of motivation for peasants during the certification process, thus creating great expectations on the part of the peasants. Likewise, a large number of the local population in the region where forest certification was to take place in Nepal indicated that they expected an increase in their income (Acharya 2007). The overall absence of an increase in worker pay shows that the forest peasants' expectations were not met. Studies conducted in other countries support our findings. Studies conducted in the United States and Bolivia concluded that certification did not cause an overall increase in the prices of forest products (Hubbard and Bowe 2005; Espinoza and Dockry 2014). However, it made it easier for companies processing certified products to enter different markets and prevented them from being affected too much by declining demands for forest products (Anderson et al. 2005; Hubbard and Bowe 2005; Espinoza et al. 2012; Espinoza and Dockry 2014). Similar results were found in Cameroon during the FSC certification. The weaknesses of the forest administration demonstrated in implementations specifically in the area of supervision, led them to show a very limited effect on improving the income of forest peasants (Tsanga et al. 2014).

Around 40% of forest peasants stated that current laws and regulations were sufficient to regulate the relationship between the forest and local population. On the other hand, they point out that there is still a need for new regulations to provide timely payment of fees, for the legalization of education and for increasing cooperation with the local population in forest management. The rate of 30% of the forest villagers who have declared no idea about this.

It was reported that certification in Bolivia was successful because of the changes such as made in the certification criteria and forest laws. Some of these changes were the establishment of forest ministry, elaboration of forest management plans, to ensure that indigenous and local communities have a say in management (Espinoza and Dockry 2014). This echoes the suggestions made by the local population in Turkey.

Only 30% of forest villagers said that the illegal use of forests was decreasing depending on the certification. The informative and educational activities to be carried out within this scope were supposed to decrease rate of illegal use even more. Similarly, the local population in Nepal reported that the illegal use of the forests decreased significantly after certification (Acharya 2007). Furthermore, the fact that the majority of forest peasants stated that their awareness and sensitivity toward the environment increased is considered important in terms of the sustainability of forests and continued certification efforts.

When the overall results are evaluated it is seen that the use of an FMC system can help replace aspects that are missing in Turkish forestry. For Turkish forestry, which is generally in good condition in terms of planning, operating, and forest conservation, certification is supposed to make contributions in terms of protection activities (protection of indigenous species, endangered species and forest areas of particular importance etc.), in the implementation of participatory management approaches, in the protection of the local population and workers' rights and in the improvement of occupational safety practices and working environments. In this context, it may be a logical approach for Turkey to develop its own certification system. However, a whole new certification can be very bold and aggressive and have

unintended consequences (low recognition by international markets, etc.). Therefore, it is important that establishing new rules for participatory forest management and existing laws and regulations in addition to certification. In this context, it should be specified, in particular, the extent to which local people will be able to participate in forest management. Similarly, a study conducted in China stated that the certification alone was not effective for sustainable forest management and that the state also carries out various programs such as the Natural Forest Conservation Programs (Liu et al. 2013).

Conclusion

There are differences between the expectations of the villagers about certification and the benefits that certification will provide to them and the benefits they are actually receiving progress needs to be made to ensure the success and continuity of certification activities. The FMC could be used to increase support for the workers and local population, in addition to ensuring sustainable forestry. In this context, particularly when forest management plans start being drawn up, the opinions, wishes and needs of the forest peasants should be taken into consideration. Furthermore, the social and technical training given to forest peasants to increase their knowledge of certification should be continued issues such as occupational health and safety, improvements in employee rights and working environments, the elimination of deficiencies in forest-public relations and existing forest management practices and the improvement of conditions should be reconsidered on the basis of FMC. Solution to current problems such as the lack of involvement of local stakeholders in forest management, the lack of full implementation of occupational health and safety, the inability of local people to fully internalize certification should be made permanent through legislative regulations, in addition to maintaining certification. The certification process needs to be changed to ensure to determine how stakeholders will be affected and how they may benefit from it.

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