



## Development conditions and possibilities for forest villages (A case study: Western Black Sea region)

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### Abstract

One of the most significant differences between underdeveloped and developing countries is the efficient use of resources. Another important characteristic is the spread of economic development throughout the society. Improving the life quality and economic level in those living in rural areas should be seen as an important goal to ensure development. Turkey has been experiencing a rapid development process. However, the difference between regions in terms of development level is one of the greatest obstacles before development as a country. Development in rural areas is just as important for underdeveloped and developed countries as it is for developing countries. The structure of the rural in Turkey has been changing rapidly since 1980's. While 65-70% of the population used to live in rural areas, it is quite the opposite today. 65% of the country's population lives in cities. This has caused serious economic and social problems in cities. In Turkey, there are 3.1 million families/establishments living in rural areas and occupied with agriculture and husbandry. Those who live in forest villages have a living environment which is intertwined with forest areas. They have to engage in production in infertile and highly fragmented areas since they are mostly located in upper parts of basins. Forest villages constitute about half of rural areas in the country. In other words, one of every two villages is a forest village in rural areas. Thus, it is necessary to give forest villages priority in rural development studies. Both forestry-related studies and other rural development studies must firstly focus on forest villages. Socio-economic conditions of forest villages show variations between regions. In order to conduct successful rural development studies on forest villages, it is necessary to determine region-specific socio-economic conditions of these villages. Implementation of effective rural development projects is only possible by doing so. The purpose of this study is to determine socio-economic structures of forest villages located in the Western Black Sea Region, and reveal their development conditions and possibilities. The study involves forest villages in provinces of Bolu, Bartın, Karabük, Kastamonu, Sinop, and Zonguldak, which constitute the Western Black Sea Region of Turkey. 113 villages located in the Western Black Sea Region were included in the sample in the Material and Method section of the study. Face-to-face surveys were applied to 384 families/establishments in these villages to obtain area-specific data. The data was assessed based on 22 variables using the multiple correlation analysis and the factor analysis. As a result, relationships between variables such as population, population growth rate, migration, agricultural area availability, bovine animal availability, and total fallow area were determined based on the demographic characteristics of these forest villages. Factors which stand out for the development of forest villages located in the Western Black Sea Region were collected under 7 groups. It was found to be necessary to consider the distribution of the population in terms of age groups; assess bovine breeding, fallow areas, and forage crops; improve production systems related to greenhouse cultivation and dwarf fruit cultivation; and support villages which are located in the center of their respective basin in terms of rural industry.

**Keywords:** Forest villages, rural development, factor analysis

## **Özet**

Az gelişmiş ve gelişmekte olan ülkeler arasındaki önemli farklılıklardan birisini de kaynakların verimli kullanılması oluşturmaktadır. Bir başka önemli yaklaşımı ise ekonomik gelişmenin topluma yayılabilmesi oluşturmaktadır. Kırsal alanda yaşayan kitlenin yaşam kalitesinin ve ekonomik düzeylerinin yükseltilmesinin sağlanması hem kalkınmayı hem de gelişmesi sağlayacak önemli bir unsur olarak görülmelidir. Türkiye’de hızla kalkınma sürecini yaşamaktadır. Ancak bölgesel ve yöresel kalkınmış düzey farklılıkları ülkenin gelişmişliğinin önündeki önemli etkenlerden birisini oluşturmaktadır. Geri kalmış ülkeler, az gelişmiş ülkeler ve gelişmiş ülkeleri için de kırsal alanda kalkınmanın yakalanması oldukça önemli bir konu olmuştur. Ülkemiz kırsal yapısı 1980’lerden günümüze hızla değişmiştir. Ülke nüfusunun %65-70’i kırsal kesimde yaşarken durum tam tersine dönmüştür. Bugün ülke nüfusunun yaklaşık %65’i kentlerde yaşamaktadır. Bu beraberinde ciddi ekonomik ve sosyal sorunları kentlere taşımıştır. Türkiye kırsal kesiminde yaşayan ve geçimini tarım ve hayvancılıkla sağlayan 3.1 milyon aile/işletme bulunmaktadır. Kırsal kesimde yer alan orman köylülerinin ise, doğal yaşam ortamları orman alanları ile iç içedir. Yerleşim yeri konumu bakımından havzaların üst kısımlarında daha verimsiz ve çok parçalı alanlarda üretim yapmak zorundadırlar. Orman köyleri ülke kırsal kesiminin yaklaşık olarak yarısını oluşturmaktadırlar. Yani kırsal alandaki her iki köyden birisini orman köyü oluşturmaktadır. Bu nedenle kırsal kalkınma çalışmalarında bu kesimin öncelikle irdelenmesi gerekmektedir. Gerek ormancılık çalışmaları ve gerekse diğer kırsal kalkınma çalışmalarında orman köylerinin önceliğinin olması bir zorunluluktur. Orman köylerinin bölgesel ve yöresel olarak sosyo-ekonomik koşulları değişiklik göstermektedir. Orman köylerinde kırsal kalkınma çalışmalarının başarılı olabilmesi için; bölge ve yöre düzeyinde bu köyleri sosyo-ekonomik koşullarının saptanması gerekmektedir. Ancak bu yolla orman köylerinin kalkındırılmasına yönelik kırsal kalkınma projeleri uygulanabilecektir. Çalışmanın amacı; Batı Karadeniz Bölgesinde yer alan orman içi köyleri sosyo-ekonomik yapılarını belirleyerek bu köylerin kalkındırılma koşul ve olanaklarını ortaya koymaktır. Çalışma; Batı Karadeniz bölgesini oluşturan Bolu, Bartın, Karabük, Kastamonu, Sinop ve Zonguldak illerindeki orman içi köyleri kapsamaktadır. Materyal ve Yöntem; Batı Karadeniz Bölgesinde yer alan orman içi köylerden 113 köy örneklenmiştir. Alan özgün verileri; bu köylerden örneklenen 384 aile /işletme ile yüzyüze anket uygulaması yoluyla elde edilmiştir. Elde edilen veriler 22 değişken üzerinden çoğul korelasyon analizi ve faktör analizi ile değerlendirilmiştir. Sonuç; orman içi köylerin demografik özelliklerden nüfus ile nüfus artış hızı, göç, tarım alanları varlığı, büyükbaş hayvan varlığı, nadas alanları miktarı vb. değişkenler arasında ilişkiler saptanmıştır. Batı Karadeniz Bölgesi orman içi köylerin kalkındırılmasında öne çıkan faktör grupları 7 başlık altında toplanmıştır. Bölge de gerçekleştirilecek kırsal kalkınma çalışmalarında nüfusun yaş gruplarına dağılımı da dikkate alınarak; büyükbaş hayvancılık, nadas alanlarının yem bitkileri ile değerlendirilmesi, seracılık, bodur meyvecilik gibi üretim sistemlerinin geliştirilmesi yanısıra havza merkez köyü konumundaki köylerin kırsal sanayi için desteklenmesinin uygun olacağı saptanmıştır.

**Anahtar kelimeler;** orman köyleri, kırsal kalkınma, faktör analizi.

## **Introduction**

The 35-40 year period since 1980’s has witnessed a rapid change in the structure of rural areas in Turkey. There has been a huge wave of migration from rural areas to urban areas. While about 70% of the population used to live in rural areas; today, 60% of the population live in urban areas. The share of forest areas in Turkey’s total surface area is 27.6%, which corresponds to 21.7 million hectares. There are about 7.1 million people living in 22.6 thousand villages intertwined with forests (Anonymous, 2016). Today, there are 3.1 million agricultural establishments in rural areas including families occupied with agriculture. Families/establishments in forest villages constitute about half of these agricultural establishments (1.4 million establishments) (Anonymous, 2018). Therefore, one of every two family living in rural areas lives in a forest village. This makes it necessary to prioritize forest villages which are intertwined with forests in studies on forestry and rural areas. It is very important to ensure the development of this population, which are affected by various forestry activities. Certain measures must be taken to ensure the development of those who live in forest villages, who encounter with certain socio-economic limitations during efforts toward efficient use of forest resources in Turkey, which is a developing country.

Considering the structure of rural areas in Turkey, it is observed that forest villages are mostly located in upper parts of their respective basins (Coşgun; 2002). Agricultural and forestry activities are the primary means of livelihood for forest villages (Çağlar; 1986, Coşgun, 2005). Forest villagers have to carry out their productive activities on infertile, small, and highly fragmented lands, yet the same market conditions apply for them as well (Coşgun; 2005). It is absolutely necessary to consider forest villagers to ensure development in rural areas.

Since its transition to a more organized period in 1960's, Turkey has shown some improvement in its approach to rural areas. Rural development is considered to be particularly important. The establishment of the General Directorate of Forestry and Rural Affairs (ORKÖY) is a reflection of the Turkish government's perspective regarding rural areas in 1960's. One of the ministries established by the 28th government led by İsmet İnönü in between 1963-1965 was "The Ministry of Rural Affairs". Established in 1963 with the transition to a more organized system, the Ministry has made certain efforts to develop rural areas and also forest villages. The focus of these efforts has shifted to forest villages with the establishment of the General Directorate of Forestry and Rural Affairs in 1970 (Coşgun, 2008). In approximately 45-years from its establishment to this day, the Ministry of Forestry and ORKÖY performed their duties in various organizational schemes. Today, ORKÖY continues its activities as a "Department" of the General Directorate of Forestry. ORKÖY provides social and economic aids to forest villagers in the form of cooperative or individual loans in order to ensure the development of forest villages.

The main function of ORKÖY is to ensure the development of forest villages and regulate the relationship between forests and people, thereby mitigating the pressure caused by forest villagers on forests. Projects involving cooperative or individual loans are implemented to help forest villager socially and economically develop. In this process, studies conducted by Directorates of Forestry Research and Faculties of Forestry and other faculties of Turkish Universities have focused on regulating the relationship between forests and people, and assessing characteristics of the rural population, the place of forest villagers in this population, and the socio-economic status of forest villagers (Sakman, 1974; DPT, 1970; DPT, 1971). The Forestry Engineering Organization has brought policies aimed at developing forest villages up for discussion (OMO, 1974). Studies on the development of forest villages have aimed to shed light to policies of ORKÖY (Anıl; 1973; Duruöz, 1975; Duruöz et al., 1976).

Regarding socio-economic structures of forest villages, an effort has been made to guide the activities of ORKÖY aimed at ensuring the development of forest villages by performing reviews on rural-urban migration among forest villagers, the relationship between forests and villages, and the development of forest villages, performing economic analyses of agricultural establishments in forest villages, and determining optimum establishment plans using the linear programming method within the scope of district development plans of ORKÖY (Geray and Acun, 1980; Acun, 1983; Taraklı, 1982; İstanbullu, 1978).

Activities aimed at ensuring the development of village forests by determining social changes and development levels in villages, towns, and cities and new ORKÖY models to shape the future of ORKÖY have been discussed (Akşit, 1985; Çağlar, 1986).

Socio-economic problems faced by forest villagers have been determined and solutions at a district or regional level have been sought to ensure the development of forest villages (Özkurt, 1998; Uzun, 2008). The concept of Social Forestry, one of the emerging practices in the world, has been discussed, new opportunities for ORKÖY have been assessed, implications of ORKÖY's plans and practices for the forest villager have been researched, and effects of forest villagers on forests and their development possibilities have been evaluated (Gümüş, 1993; Tolunay, 1992; Tolunay, 1998; Tolunay et al., 2007; Türker and Toksoy, 1992; Türker, 1992). The effects of individual loans provided by ORKÖY in order to ensure the development of forest villagers on the development of forest villagers, and the effects of investments made in order to ensure the development of forest villagers have been investigated as well (Coşgun et al., 2007; Coşgun et al., 2009; Alkan and Demir, 2013; Tolunay et al., 2002; Tolunay and Korkmaz, 2005; Uzun, 2008; Önal, 2010; Önal and Bekiroğlu, 2011; Ay and Tolunay, 2012; Okutucu et al., 2012; Korkmaz and Alkan, 2014; Coşgun, 2016, Coşgun, 2017; Coşgun and Güler, 2017; Daşdemir and Yılmaz, 2016; Daşdemir and Yıldırım, 2017)

The importance of forest villages in rural development makes it necessary to determine socio-economic structures of these villages throughout the country. Because socio-economic structures of forest villages vary from region to region. It is necessary to determine conditions and possibilities for development of forest villages depending on the conditions of the region. These determinations must be

used to design various development studies. Standard practices of the central government may not be compatible with the socio-economic and cultural structure of a given region.

The purpose of this study is to determine socio-economic structures of forest villages located in the Western Black Sea Region and reveal their development conditions and possibilities. The study involves forest villages in provinces of Bolu, Bartın, Karabük, Kastamonu, Sinop, and Zonguldak, which constitute the Western Black Sea Region of Turkey.

### **Material and Method**

The material of the study consists of domestic and international studies on the subject and the data obtained from face-to-face surveys. There are 972 forest villages in provinces which constitute the Western Black Sea Region of Turkey. These villages were assigned to three groups based on the average agricultural area size by each village where economic activities are performed. 113 villages among these were included in the sample using the formula 1 given below (Akalin, 1973).

$$n = \frac{S^2 * t^2 * N}{(N - 1) * e^2 + S^2 * t^2} \quad \text{formula (1)}$$

N: Population size, t: Standard normal distribution value, (1.96 for probability value of P=95%), S<sup>2</sup>: Variance (S: Square of the absolute population standard deviation),  $\bar{X}$ : Sub-population average, e: Maximum acceptable error.

Considering the available agricultural land in forest villages and using the formula 1, it was found that the necessary number of families/establishments to survey was 384. In addition to simple statistical assessments on the data obtained from surveys, the multiple correlation analysis and the factor analysis were performed to determine significant factors for the development of forest villages. The data obtained from the Village Introduction Survey applied to the villages included in the sample was statistically analyzed in two ways. The first was the multiple correlation analysis performed to reveal relationships in terms of 22 variables. A factor analysis was also performed by limiting the data obtained from surveys to 22 variables. The KMO (Kaiser-Meyer-Oklın Measure of Sampling Adequacy) value must be 0.500 or above for the reliability of factor analysis. In this study, the KMO value was found to be 0.629. In addition to "VARIMAX Extraction" and Kaiser Normalization" methods, the Principal Components Analysis (PCA) model was used since it is the most widely used technique in factor analysis (Gümüş, 1996; Geray, 1982).

### **Results and Discussion**

#### **Some socio-economic indicators of forest villages in the Western Black Sea region**

Some socio-economic indicators of forest villages in The Western Black Sea Region were investigated. Among these indicators, demographic indicators such as population, population density, population growth, and average population by household were examined. The average population in forest villages was found to be 160.3. The population of the region was found to migrate from rural areas to urban areas. The population growth rate in forest villages was found to be -7.4%, about twice of the rural population growth rate of Turkey (-3.2%). The negative population growth rate indicates migration from rural areas to urban areas, which was observed to occur more intensively in forest villages. According the State Planning Organization's study on forest villages in 1971, the population by household was 6.5. Çağlar (1986) reported the population by household as 6.3, Engindeniz (1993) reported the average population by household as 4.6 in forest villages in the district of Tire, the Province of İzmir, while Konak et al. (1996) reported this value to be 4.4 in forest villages in the district of Koçarlı, the Province of Adana and 4.9 in forest villages located in the Western Black Sea Region. The average household size varies between different regions. It is believed that the density of production activities in villages is effective on this value.

The average agricultural land by village was 1045.7 da in forest villages located in the Western Black Sea Region. An increase was observed in size of agricultural lands in forest villages proportional to establishment size. However, it was seen that the share of agricultural lands in the total forest village area (8.0%) was found to be insufficient. Considering that the primary means of livelihood are agriculture and husbandry for these villages, it is obvious that villagers face serious limitations related to land use. The lack of land for productive activities is one of the most significant reasons behind the underdeveloped production for the market. As a result of this, the economic structure of forest villages has more negative aspects compared to other village types (villages near forests or villages on plains). The quantitative and qualitative inadequacy of agricultural lands in forest villages slows down agricultural development in these settlements together with disadvantages caused by their location, while it also leads to a small number of establishments owning most of the lands (Çağlar, 1986).

The regional average of agricultural land by household was 32.0 da. According to the results of the General Agricultural Census of 1991, there are 4,068,432 agricultural establishments in Turkey. 85.0% of these establishments have less than 100 da of land, while 35.1% have 20 to 49 da of land. The average agricultural land by household or establishment size is 51.6 da throughout the country (Anonymous, 1994). According to a study conducted in the district of Tire, the Province of İzmir, average agricultural land by household or establishment size is 29.9 da for forest villages, 51.6 for villages near forests, and 56.7 da for other villages (non-forest villages as assessed by the author) (Engindeniz, 1993). The average agricultural land by household in forest villages is 27.0 da throughout the country (Gökçe, 1992). The average land size for establishments in forest villages is 41.5 da, and the ratio of establishments with a land size below average is about 72%, whereas these values are 71.7 da and 66.4% for non-forest villages (Çağlar, 1986). The average size of land cultivated by agricultural establishments is 49.2 in the village of Halilbeyli, the district of Kemalpaşa, the province of İzmir (Özkaya et al., 1998). The average establishment size shows significant variances in provinces constituting the Eastern Anatolia Region. While the regional average is 70.0 da, the average establishment size is 144.1 in the province of Bartın, 99.8 in the province of Ağrı, and 93.9 in the province of Muş. On the other hand, the average establishment size is only 23.5 da in the province of Bingöl (Yıldırım et al., 1998). As explained above, studies show different values related to average establishment size in forest villages. This is important in that it shows the necessity of adopting different approaches for forest villages in different regions.

Another primary mean of livelihood for forest villages is husbandry. The average number of bovine animals by household is 4.3 throughout the region. According to the results of the General Agricultural Census of 1991, the average number of bovine animal by establishment is 2.8 in Turkey, while the average number of bovine animal by establishment is reported to be 1.7 in forest villages in the province of İçel (Anonymous, 1994; Özkurt, 1998). These numbers are important in that they show regional differences between forest villages in terms of primary means of livelihood. Especially bovine breeding has a significant place for forest villages in the Western Black Sea Region.

### **Assessing forest villages in the Western Black Sea region through statistical analysis**

A correlation analysis was performed for the variables which might be effective in the development of forest villages in the region. According to the analysis, there was a linear correlation between population and population density; population and migration rate; population and distribution of dry agricultural land; population and bovine animal availability; and population and agricultural land availability. A positive correlation was observed between population density and migration rate, while there was a negative correlation between population density and fallow area size.

7 factor groups were formed for forest villages based on 22 variables using the data obtained in the study. Each factor group was named taking variables in the respective group into account. Accordingly, factor 1 was named “the Mechanization Factor”, factor 2 was named “the Demographic Factor”, factor 3 was named “the Size of Idle Agricultural Land Factor”, factor 4 was named “the Village’s Distance to The District Center Factor”, factor 5 was named “the Number of Neighborhood

Factor”, factor 6 was named “the Forest Land Factor”, and factor 7 was named “the Pasture Area Factor”.

### **Conclusion and Recommendations**

Migration is a significant problem for forest villages. The population growth rate of -7.4% is an indication of this issue. In establishments examined within the scope of the study, the population participating in the labor force was found to be quite limited. 23.7% of the population were in the 0-14 age group, while 47.6% were in the 65 and above age group. In other words, the population participating in the labor force was 28.7%. This indicates that there is limited room in terms of labor-intensive production. The average population by household, which was 6.5 back in 1970's, has dropped to around 4.5, which indicates that establishments in forest villages have shifted to nuclear family structure which is similar to urban areas. For this reason, proposed development approaches must focus on two main strategies. The first strategy is to develop production skills of the available population. The second strategy is to implement rural development projects which may attract the young population to rural areas. Thus, attention must be exercised to economically scale projects for the population living in forest villages and come up with project subjects which will attract the young population to rural areas. Bovine animal breeding is very important in this sense. In order to improve the state of bovine animal breeding, small-scale industrial investment projects should be supported. Central villages of the respective basin may be selected to process animal products and produce yoghurt and cheese varieties, which will attract the young population as a rural industrial investment.

Fallowing is extensively practiced for agricultural lands in forest villages of the region. Villagers should be encouraged to work these idle soils and cultivate forage crops, which will also contribute to the development of husbandry in the region. Developing projects to support the cultivation of forage crops on fallow areas will allow for meeting the need for forage, which is the most expensive input of husbandry. Obtaining the most expensive input in an affordable way will ensure efficiency.

The majority (69.0%) of the directors in the establishments surveyed within the scope of the study were open to innovations, while a considerable portion (48.4%) of the directors believed that their income was insufficient. Hence, there is a great potential for change and improvement in production methods in the region. Especially greenhouse vegetable cultivation is an important rural development tool for forest villages. On the other hand, forest villages in the region are mostly located in upper parts of basins, which is an advantage in terms of fruit cultivation. Particularly dwarf apple cultivation and dwarf cherry cultivation have good potential for rural development projects.

The three most effective factors for the development of forest villages and the region in general; agricultural land, declining forest land, and husbandry were found to have the same weight as a result of the data analysis. Other factors were observed to show variations. Considering the factor groups obtained as a result of the factor analysis, it seems to be quite important to design development programs and projects for provinces constituting the region.

It is necessary to reconstruct agriculture and husbandry, the primary means of livelihood for forest villages in the Western Black Sea Region, according to today's conditions. The transition from dry farming to irrigated farming is particularly important. Although mountain and forest villages are the closest settlements to water resources, which are extensively utilized in irrigated farming performed by plain villages, this opportunity is not properly used. Irrigated farming and mechanization in farming are the primary factors necessary for the development of forest villages. Since agricultural lands in forest villages are small and highly fragmented, agricultural mechanization must be carefully planned. It is necessary to plan mechanization by assigning villages to groups in order to achieve an efficient use of resources.

Husbandry is the other important means of livelihood in forest villages. Thus, it is necessary to draw plans to increase efficiency by making use of modern techniques in bovine and ovine animal

breeding. There is a need for plans involving the implementation of the semi-closed barn system and encouraging villagers to use the forage that they produced themselves.

It is necessary to develop approaches which will encourage forest villagers, who lead a life intertwined with forests, to make more efficient use of products and services other than wood production. In this context, plans based on the comparative advantages approach are needed. Social, cultural, and natural resources of micro-basins and basins should be prioritized. Implementing the same strategies in each region impedes improvement. Products and services other than wood production such as ecotourism, wildlife tourism, medical products, and aromatic products should be encouraged on a micro-basin-specific basis, but considering the entirety of the basin as well. Adopting a planning mentality which prioritizes valuable resources of the micro-basin, it is necessary to encourage forest villages to focus on alternative means of income.

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