

Characteristics of Forest-based Recreation in Korea and the Case of Natural Recreation Forests

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Abstract: Comprehensive opportunities for urban populations to enjoy outdoor recreation are a major indication of the quality of life and the well-being of people in industrial nations. Forests can play a major role in providing these opportunities and can provide physical and emotional benefits to recreational users. Not only are the quality and quantity of forests crucial, their accessibility is also important. Access includes ways for people to enter forests, the existence of recreation facilities, opportunities to use forests, and customs that include forest recreation. This article analyzes forest recreation opportunities and practices in South Korea that have been introduced as a new concept during the last three decades, in the wake of massive reforestation of the mountainous areas after the Korean War. The analysis is based on available Korean forest visitor data, the designated homepage of the Korean Natural Recreation Forests, and interviews with experts. Forest recreation in Korea is compared with that in Germany. The study shows that although Korea has become one of the best wooded industrial nations worldwide and embraces forest recreation, opportunities for the general public to use forests are still limited for various reasons. Thus, we propose a more integrated and multifunctional approach for future forest management.

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1. Introduction

Successful reforestation and development of forest recreation in Korea: South Korea is regarded as one of the world's most successful countries in terms of large-scale reforestation of devastated forests (FAO, 2005). Originally, the mountains were covered with mixed forests of oak, maple, beech, elm, poplar, spruce, and aspen, as well as coniferous forests of spruce and larch. During colonization by Japan and the Korean War, the country suffered extensive deforestation. At the end of the Korean War, more than 80% of the Korean forests had been destroyed and the wood stock was less than 10 m³/ha. The forested mountains were largely bare (Figure 1). There were serious consequences of deforestation in the form of erosion, landslides, floods, and droughts (Engelhard, 2004; Lee and Lee, 2005; Lee, 2010). The Forest Act of 1961 to promote reforestation and management of forests and to establish a separate forest authority, the Korea Forest Service (which came into being in 1967), initiated the forest reconstruction effort. Over a 35-year period (1973–2007), the Government National Afforestation program reforested 4 million hectares. As a result of these efforts, 65% of the country is forested again today. Since 1973, the National Forest Development Plans have gradually shifted focus, widening their objectives (Cho, 2002). Initially, the reforestation and afforestation program gave high priority to

establishing trees with economic value. The second version of the forest plan (1979–1987) introduced measures to control erosion and protect forests, and the third plan (1988–1997) included initiatives to promote the use of forests as recreational areas and to provide environmental education for the public. The fourth forest plan (1998–2007) further expanded forest management, and the fifth forestry plan, in effect until 2017, adopts a stronger ecosystem approach. It incorporates international environmental discourse and seeks to promote multifunctional, sustainable use, and conservation and protection of forests (Korea Forest Service, 2008).



Figure 1. Deforested mountain in Daegu, South Korea (Photo: Adam Ewert, 1954)

The Forestry Development Cooperation of the Federal Republic of Germany was involved during the first two decades of reconstruction in these research fields. In 1974, the Korean–German Forest

Management Project (KGFMP) was launched with the aim of improving the condition of Korean forests, in terms of both their productivity and essential protection and regulation functions (e.g., erosion control, water balance). The KGFMP seeks to restore devastated forest land to build a fully functional forest, and to support the mainly private forest owners. The Forest Engineering Training Center was founded in 1982 in Gangneung, followed by the Forestry Technical Training Center in 1984, to meet the demand for experts in forestry techniques and engineering (GTZ, 1986).

Propagation of a new idea from Germany: A key aspect of the German–Korean cooperation was an exchange program under the supervision of the State Forest Administration of Hesse in Germany. This program spanned the years 1974 to 1993 and involved more than 150 visits by Korean Public Officers to Germany, to learn about reforestation, silviculture, and forest management. These visits introduced them to the meaning and use of forests for recreation. At that time, Germany was investing strongly multifunctional forest management (KGFMP, 1993; Zundel and Völksen, 2002). The exchange program was historically remarkable because, until that time, the concept of forest recreation for urban populations was unknown in Korea. In Germany, however, the concept was discussed intensively and there were numerous studies on the needs, requirements, and opportunities for forest recreation. In 1977, Youn published an important article on forest recreation in Germany. The article described the concept of multifunctional forest use in Germany and proposed it as a goal of Korean recreational policy (Youn, 1977a, 1977b, 1977c). A few years later, Kim published a forest management plan with the theme of “justification of recreational forest,” which he illustrated using examples from Germany (Kim, 1982, 1984a, 1984b). These articles were followed by scientific studies, mostly based on individual case studies, which were dedicated to the planning, establishment, and management of forest recreation areas (Kim, 1984; Kim, 1988). Increasingly, studies questioned the capacity of national parks to withstand damage from visitors (Lee, 2010). In 1988, the first Korean Natural Recreation Forest was founded under the Third National Forest Plan, and in 1990, the Forest Act created the legal basis for management of forest recreation areas. From then on, the need for forest management was rapidly embraced around the country and additional official forest recreation areas were identified. These forest recreation areas and the possibilities of forest recreation for the population in Korea differed fundamentally from forests and attitudes in Germany (Figure 2). Over the course of

20 years, Korea has developed a significantly different concept of forest recreation from the concept in Germany, adapted to the different natural features and socio-economic conditions in Korea (Jeon, 1999; Youn, 2000). The suitability of this concept for the future, however, will be put to the test, because conditions in Korea have changed dramatically in many ways.



Figure 2. Korean Natural Recreation Forest (*Wunmun*)

2. Material and Methods

The current state of forest recreation opportunities and forest use in Korea is set forth here. For comparison and to improve our understanding of the situation in Korea, we also outline the development of forest recovery in Germany, using actual data from German nature parks and the results of visitor surveys in local forest recreation areas in Germany. The comparison between forest programs in Germany and Korea was carried out by Lee (2010), who collected data on this topic for his doctoral thesis on forest recovery in Germany and Korea. In addition to performing extensive literature and Internet searches, he conducted a cross-cultural study that involved approximately 100 National Natural Recreation Forests in Korea and 91 Nature Parks in Germany. His assessment of the history and the current state of forest recreation in Korea has since been confirmed by 14 interviews with professional experts who have many years of experience in forest recreation. The methodology of this expert survey followed Meuser and Nagel (1991). The results are summarized and led to recommendations for the further development of outdoor recreation in Korea.

3. Results

Late establishment of forest recreation areas: The majority of the 145 Korean Natural Recreation Forests (61%) were established over a short 12-year period after the first Recreation Forest was

established in 1988. There was a high demand for the use of this forest and people had high expectations for nature experiences there. After 2000, fewer Recreation Forests were established, although the recreation demands of the population have since increased due to strong economic growth and gradually increasing leisure time. By comparison, German Nature Parks placed a high priority on supplying recreation opportunities to nearby urban dwellers, through the forest function mapping project (Volk and Schirmer, 2003). The concept of founding recreation in urban forests began about three decades later in Korea than in Germany.

Development of Natural Recreation Forests: The National Natural Recreation Forest areas are reported to cover a total area of 129,053 ha in Korea today, representing 1.3% of the country and thus 0.002 hectares per capita. In addition, there are 21 national parks and 56 municipal parks, providing a total area of 665,624 ha of outdoor recreation opportunities. There are 2.69 m per hectare of forest roads, mostly of very poor grade. Hiking opportunities are limited to steep foot paths and usually lack additional infrastructure. The same conditions hold in the few accessible peri-urban forests. The size of the area that may be used by people for recreational activities is relatively low. Four-fifths of the designated Natural Recreation Forests (79%) are smaller than 500 hectares, and only five areas cover more than 10,000 ha. According to the law of forest recreation, recreational areas have a minimum size of 50 hectares for state and municipal Recreation Forests and 30 ha for private Recreation Forests. These minimum sizes were established because of the high cost and complexity of work involved in developing recreational infrastructure in the mountainous landscape. All these forested areas are far away from urban areas, requiring people to factor transportation time into their recreation experience. Usually, these areas are accessible by public transport, which has been the favored mode of transport.

Central government responsibilities and goals: The foundation and development of Korean Natural Recreation Forests initially fell under the supervision of the Korea Forest Service. Later, municipal and privately owned forest recreation areas were added. Currently, there are 39 state-operated facilities managed and led by the National Natural Recreation Forest Office of the Korea Forest Service, which was founded in 2005. The National Natural Recreation Forest Office monitors, supports, and advises the 89 municipal and 17 private institutions. There are legal standards for all equipment and infrastructure of Natural Recreation Forests (Law on Forest Recreation and Culture, 2012). A manual on

furnishing and facilities (Korea Forest Service, 1990) is available from the state, which provides a central communication network, content concepts, administration and management, and an online reservation system. Because policies are developed in isolation rather than being integrated with other policies, there is no communication or cooperation between forest authorities and external actors, providers and all stakeholders, such as travel tour operators, transportation companies, hotels, caterers, environmental educators and cultural activity leaders, guided tour leaders, or local communities. The Natural Recreation Forests are planned without a structured quality control system such as a park evaluation system; they are established and maintained as a tourism company. Under the law on forest recreation and culture of 2012 § 2 Section 1, Natural Recreation Forests were founded mainly as natural areas to enhance the psychological and physiological health and environmental education of the population. § 2 Section 2 indicates clearly that Recreation Forests are multifunctional, meeting forestry and local development objectives. However, the practical management focus is on outdoor recreation, accommodations, and environmental education. Even 20 years after the first legal justification of Natural Recreation Forests, forests are failing to meet local development and multifunctional forest use objectives. Hong (1999) pointed out that the Natural Recreation Forests have played no role in local development. The nature conservation of these areas receives little attention and forest management is extremely difficult, because of pressure from visitors and nature preservation groups.

Similar natural geography and standardized equipment: The Natural Recreation Forests in Korea are almost all located on steep, mountainous landscapes. Because reforestation occurred in the 1970s, 76% of the woodland is less than 40 years old and the forest is largely dominated by softwoods (Korea Forest Service, 2012). The Korea Forest Service has established a standard for recreational infrastructure (Korea Forest Service, 1990). Usually, each recreation area has parking, an information office, public toilets and trash bins, and accommodations such as cabins or campsites. There are often showers and cooking facilities with drinking water. Playgrounds for children and covered pavilion seats are common, and more than half of Recreation Forests have a covered viewing place. Due to limited capacity and very high demand during a short period, it is essential for visitors to make online reservations for facilities. There are only sufficient facilities to meet the needs of 1 person in every 800 people in the population in a typical high season. Most of the population has a summer vacation that occurs during

the same short period, and due to geographical conditions, most of them come to the same place at the same time (Choi, 1989; Kong, 1987; Kwon, 1984; Lee, 1988; Park, 1987; Seong, 1988; Youn, 2000). Hiking and walking are the most common recreation activities, and the public expects to find well-developed hiking paths. Due to the topography and the lack of developed forest roads, people often walk on steep and narrow paths (Table 1). Cycling in forests (MTB, Tracking) is uncommon due to these constraints, and it is often carried out by individuals or small groups.

Table 1. Activities in recreation areas

Author	Research areas	Activity	
Youn 1982	Deogyu	Walking	: 60%
		Mountain-Biking	: 13.7%
Kong 1994	Pukhansan	Walking	: 61.2%
		Relaxing	: 11.7%
	Kwanak	Relaxing	: 28.5%
		Walking	: 26.8%
	Yoo-Myung	Relaxing	: 30.1%
		Climbing	: 29.1%
	Yongmun	Walking	: 35.4%
		Relaxing	: 27.1%
	Seorak	Walking	: 36.3%
		Relaxing	: 26%
Ji Ri	Walking	: 53.3%	
	Camping	: 14.9%	
Shin 1994	Worak	Walking	
Lee 1997	6 areas of Jeon-nam	Walking	
		Relaxing	
Kim 1998	Mudeung	Walking	: 85%
		Drinking	: 64%
		Eating,	: 44%

Recreational facilities offer standardized equipment, instead of more individualized sporting facilities or equipment in each area. The Trimm-Dich-Pfad (natural training path) was imported from Germany in the 1970s, as a result of interviews with experts, and is found in three-quarters (76%) of the Korean Natural Recreation Forests. In addition, most areas have a multipurpose sports field, which is primarily used for football and group activities. Other sporting activities make up less than 10% of use. Even traditional sports like archery and wrestling are offered in only 6% of Natural Recreation Forests (Table 2). Water-based activities play a major role in many nature parks in Germany because of the natural infrastructure there, but they are rare in Korea. Although there are valleys, streams, and wetlands

with fresh water, the corresponding active sports, such as rafting, canoeing, kayaking, or diving, do not yet exist. Visitors can only step into the water. Visitors have high expectations of participating in water-based activities (Kang, 1999; Lee, 1997; Shin, 1995; Shin, 1998; Shin, 2000), and facilities for bathing and swimming are found in 75% of all Natural Recreation Forests. Outdoor activities in the winter are seldom offered. However, to date, only a very few people want to visit forests in winter or to stay there. The steep and poorly developed forest roads offer few flat areas for cross-country skiing, and downhill skiing facilities are not developed in Natural Recreation Forest areas. Only a few sledging facilities exist in 18% of all Natural Recreation Forests (Table 2).

Table 2. Recreational activity service by Korean natural recreation forest and German nature park

	Germany	%	Korea	%
Forest Activity	Hiking	95	Hiking	98
	Biking	92	Walking	96
	Horse Riding	71	Fitness Trail	76
	MTB	37	Team Sport	64
	Nordic Walking	34	MTB	10
	Golf	32	Survival	8
	Paragliding	25	Game	
	Inline Skating	21	Traditional	6
	Climbing	20	Sport	
	Tennis	15	Youth	6
	Bosseln	8	Fitness	
	Hunting	7	Bow Sport	4
			Paragliding	4
			Gateball	4
	Water Activity	Swimming	66	Swimming
Canoeing		62	Fishing	4
Fishing		43		
Sailing		38		
Rowing		38		
Surfing		31		
Winter Activity	Diving	14		
	Cross Country	41	Snow	18
	Ski & Snowboarding	27	Sledging	
	Snow Sledging	19		
	Skating	11		
	Curling	8		
	Ice Sailing	1		

Tours are generally offered by the administrative offices of each Natural Recreation Forest. As in Germany, tour participants prefer to learn about nature and landscape (in 80% of areas) or cultural history (in 72% of areas). Wellness and spa trips are similarly distributed as in Germany (present

in 32% of the areas in both countries). Tours with the theme of environmental education are, however, poorly represented (present in only 4% of Korean Natural Recreation Forests, compared with 31% of German Nature Parks). Environmental education is generally accessible through fixed facilities such as wild plants and botanical gardens, nature trails, and nature observation areas. Sports touring activities occur significantly less often than in Germany (in 18% of all Natural Recreation Forests, compared with 33% of German Nature Parks).

Rare recreational opportunities: Numerous studies on the motivations, the expectations, satisfaction, demands, and problems of Korean forest visitors have yielded the following results. Existing recreational programs were rarely used by the public until recently. Long working hours, little leisure time, few yearly vacation days, and long distances to outdoor recreation areas (lack of access) caused lack of interest, as well as lack of opportunity, in outdoor recreation. Most of the population in Korea still only has a few holidays and vacation days per year. The opportunity for multiday trips that cover a long distance is still exceptional. Half of the visitors in Korea come to the forest at least once a year and up to five times per year (Lee, 2010). All recent publications on the theme of demand indicate that people will significantly increase their demand for forest recreation opportunities in the future (Lee, 2010; Lee, 2011; Korea Forest Service, 2008, 2012).

Young and educated visitor: Korean Natural Recreation Forests are mainly visited by young people between 20 and 40 years, as well as people up to age 50. Visitors over 50 years of age make up a small portion of yearly visits (Lee, 2010). The reason for these results might be partly the long distance from the cities and the associated travel time. Older visitors prefer to visit forests near their residences in urban areas, and they want to reach them on foot or by public transport. Most visitors to Korean Natural Recreation Forests are highly educated and few of them have little education (limited to elementary and middle school).

Nature-related motivations and limited activities: The most common motivation for visiting the forest is to enjoy the beauty of nature, landscapes, and forests, according to visitor surveys in 34 Natural Recreation Forests and 14 national parks between 1982 and 2002. An important additional attraction is to see a valley stream. In this environment of mountains, forest, and water, visitor enjoy nature, relax, reduce their stress levels, and leave city life for a short time. "Relax in peace" is the most common reason for visiting in previous studies from 15 Natural Recreation Forests, and "walking and hiking" is the most common activity (Ann, 2002; Han, 2000;

Hong, 1999; Kang, 1999; Kim, 1998; Kong, 1987; Kong, 1994; Lee, 1997; Lee, 2010; Seong, 1988; Shin, 1994; Shin, 1995; Shin, 2000; Youn, 1982). Social opportunities with family, friends, colleagues, or other acquaintances play an important role, especially for visitors who rarely go into the forest. Forest visiting in Korea provides an occasion and context for social activities: the natural aspects of the forest have secondary importance. Due to the limited infrastructural facilities, the recreational activities of Korean forest visitors are localized and passive in nature: Visitors simply stay in Recreation Forests and enjoy being surrounded by nature and using the simple facilities, which might include a barbecue and picnic place, a swimming place, a short walking road, or a natural training path (Figure 3).

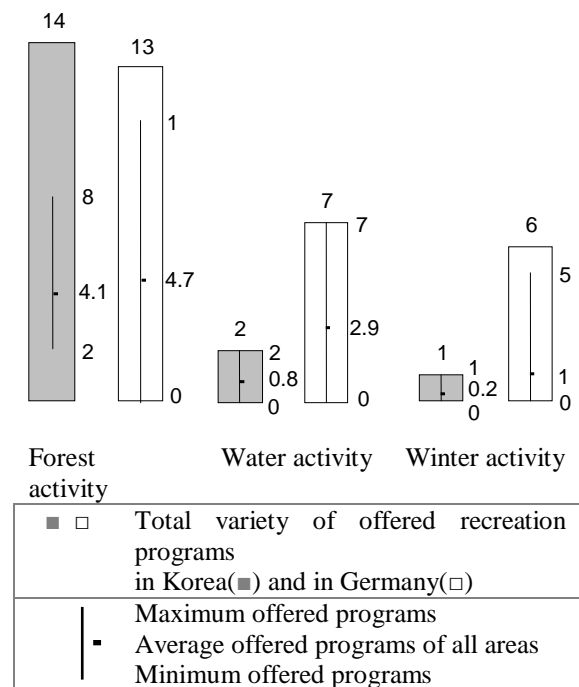


Figure 3. Variety of offered recreation programs in recreation areas in Korea and Germany

High demand for artificial facilities and growing environmental awareness: Being accustomed to typical urban life, combined with being alienated from nature, results in a high demand for artificial recreational facilities: people expect sanitary facilities such as toilets, garbage cans, and drinking water (Shin, 1994). In addition, the existence of cabins, picnic tables, benches, barbecue places, and playgrounds for children reflects visitors' demands and also their separation from natural resources. There is still little interest in the environment, nature conservation, or ecological and sustainable tourism by Korean forest visitors.

Gradually, interest has grown, and there has been a shift toward better understanding of natural resources.

4. Discussions

Although Korea is the richest among the world's nation in terms of forested areas, with 64% of its area devoted to forest lands, the general population has very limited access to these areas for recreational and tourist activities. Forest land is typically not near large urban areas. For example, the capital city, Seoul, is in the northwest of the country and is home to 23 million inhabitants (Statistics Korea, 2012), but it is far away from the mostly steep mountainous areas that make up 64% of the country. Although these areas were only reforested in the 1970s and 1980s, and therefore are still very young forests, they already provide important functions of water supply and erosion protection. However, because they are, to date, of minor economic importance, they have an average of only 2.69 m forest road per ha of forest and a total length of 17,145 km of poorly developed forest roads (Korea Forest Service, 2012). The opportunities for forest recreation are, therefore, apart from the national and local parks considered earlier, largely limited to the specifically disclosed and limited forest recreational areas that are further away from urban areas. The concept of recreational use developed within the past three decades in Korea, as a way to provide nature-based experience to an increasingly urban population. This concept had already existed in Germany since the 19th century.

After the Second World War, people demanded not only a rapid economic recovery, but also opportunities to participate in natural recreation, and there was a national move toward nature-based recreation in Germany. This movement was present in the 1960s in Germany but did not occur in Korea until later. After the war, the country was still mostly rural and agricultural and was struggling with reconstruction and industrialization. The socio-economic background of leisure and recreation activities developed more in the late 1970s. The necessity and advantage of landscape-based relaxation resonated with and was accepted by the officials of the Korea Forest Service and the ministries, as well as the general population. Environmental conditions were relatively similar across the landscape, and the design of recreational areas, infrastructure, and services by the Natural Recreation Forest Office was more or less uniform for different forested areas. Although the official conception, management, and supervision of forest recreation areas allowed the idea to be rapidly implemented and disseminated like a pre-fabricated template, there were disadvantages to having very similar leisure facilities everywhere. The Korean

Natural Recreation Forests lack unique features and identity, unlike German Nature Parks, which have unequivocal individuality and identity. Korean forest visitors display a passive and uncritical attitude regarding their visits to forest areas. Their expectations are to gain more nature experiences in their little leisure time and to seek a change from urban life, which is so far from nature (Figure 4).

Rapid and extensive industrialization occurred in Korea starting in the 1960s, and today 89% of South Koreans live in one of the largest metropolitan areas in the world (Engelhard, 2004). Young urban dwellers are particularly alienated from nature and have few direct personal experiences with nature. Therefore, the general public's perception of nature conservation and environmental protection is not well developed. The expectations of Korean people for a nature experience are focused on the mountains, when they have holidays or vacations. The attitude of most people toward nature is passive and simple. When they visit forests and other natural environments after work, they want to rest, relax, and take a break with family, friends, or colleagues. They prefer passive behavior, such as relaxing under trees, viewing the landscape, or walking for a short time, rather than engaging in active sport and varied activities. Their needs are simple, and accordingly may be easily met in the Natural Recreation Forest.



Figure 4. Urban recreation facilities - the redesigned *Chung-Gye Stream* in Seoul, South Korea

This attitude differs from the prevailing sense found in Germany in the 1960s, when rapid industrial development was being accomplished by diligent workaholic Germans. To keep the work force strong, opportunities to “switch off and relax” were considered very important to ensure healthy lives. With rising incomes, increased mobility, and more leisure time, vacation days, and public holidays, life circumstances and quality of life gradually change. In

Korea, working is no longer as necessary and with more active and self-determined leisure time, people are able to gather new impressions and experiences outside their everyday work. This change has not only driven national and international tourism but has also promoted intense demand for recreation and an increasing number of landscape-occupying leisure activities. Thus, a new leisure industry has developed in Korea. Holidays and leisure time in Germany are part of the social fabric and an expression of life quality. According to recent studies by Eurofound (2011), vacation days and public holidays totaled an actual working week of 40.5 hours on average (40 days per year), the highest among the European countries. Through rapid industrialization, urbanization, and economic development over the last 30 years, the people of Korea have gradually attained a higher standard of living, and recently they too have gained more mobility and more leisure time. In 2005, a 5-day-week working culture was introduced for almost all jobs. This system allows relatively long weekends, which can be used for recreational activities. An increased frequency of visits, variety of visiting periods, and distribution of visitors to recreational areas are expected in the near future. Rising incomes and rising living standards are probably also leading to more holiday visits abroad that bring people into contact with previously unknown forms of natural experience and nature sports, such as hiking, guided tours, treetop trails, canoeing, and water rafting. These experiences will drive an expectation to engage in similar activities in their own country, Korea. However, the already discernible increase in demand is leading to overcrowding in forest recreation facilities, necessitating an increase in the capacity of the Natural Recreation Forests.

Considering all the changed conditions, it is necessary to meet the anticipated challenges of the previous design. Nevertheless, for the future, increasing the capacity of existing Natural Recreation Forest facilities is not a good idea. Rather, a qualitative diversification is needed, to meet the demands of weekend visitors and those seeking new types of recreation. The construction of more forest paths in urban forests should be considered, built to conform with forest management and variable disaster protection requirements. For recreational areas that are near residential areas, restricted facilities should be considered, such as walking trails a few kilometers in length with good and uniform signs. In addition, any existing forest trail should be complemented with conservation and erosion protection features. A prerequisite for targeted and meaningful improvement would be a paths inventory (trail assessment). The entry point of forest trails

should have an information board showing the position of the road, the total distance of the trail, and any attractions such as overlooks, noteworthy individual trees, rocks, and springs or streams. Limited rest and picnic facilities with tables, benches, and a simple playground for children can be considered as important as sanitation facilities. An efficient connection to the road network and public transport, including a bus stop and parking, remains necessary. Another management goal of Natural Recreation Forests should be to avoid excessive stresses on the weekends. Furthermore, in order to diversify the recreational opportunities and enhance the natural recreation, the existing forest recreation areas should be used to maximize their existing potential and take advantage of possible synergies. The construction of forest roads could be considered under the fifth national plan for forest management, which will be in effect until 2017.

This research into ways to better use existing facilities will be a historic opportunity to improve the recreational infrastructure and its connection to the existing Natural Recreation Forest areas. Hence, the existing forest roads are regarded as an essential prerequisite for recreational use. In this sense, recreational forest use could also be considered as multifunctional forest use, such as nature conservation co-existing with timber production. Strong cooperation with private businesses in Recreation Forest areas could be extended, for example, to provide catering and accommodation services. Here, the main task of the forest administration should be to achieve goal-oriented quality control, which takes into account visitor expectations and satisfaction. In this regard, the institutionalized Korean Natural Recreation Forest areas can contribute as a facet of a regionally sustainable, environmentally friendly tourism industry. They would generate indirect profit that would justify the existence of the recreation facilities.

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References

- [1] Ann JM, Cho KJ. Evaluating visitor perceptions of park related leisure activities: Importance-performance analysis at jirisan national park.

- Journal of Korean Forest Society 2002; 91: 609-619.
- [2] Cho HK. Untersuchungen über die Erfassung von Waldflächen und deren Veränderungen mit Hilfe der Satellitenfernerkundung und segmentbasierter Klassifikation. Ph. D. Thesis, Faculty of Forest Science and Ecology, Georg-August-Universität Göttingen, Germany, 2002; 120.
- [3] Choi K. Measuring congestion effects in a high density recreational site. Journal of Korean Forest Society 1989; 78:75.
- [4] Engelhard K. Süd Korea-Vom Entwicklungsland zum Industriestaat, Waxmann 2004; 397.
- [5] EUROFOUND. Working Time Developments 2010, EUROFOUND 2011;33.
- [6] FAO. Global Forest Resources Assessment–Progress Towards Sustainable Forest Management, FAO Forestry Paper147 2005; 350.
- [7] GTZ Deutsche Gesellschaft für Technische Zusammenarbeit: Forstliche Beiträge der Bundesrepublik Deutschland zur Entwicklung des ländlichen Raumes in der Dritten Welt, GTZ 1986;401.
- [8] Han SY. Measuring the environmental attitudes for national park visitors. Journal of Korean Forest Society 2000; 89:598-608.
- [9] Hong SK, Song YM. Application of importance–performance analysis to management of recreation forests. Korean Academy of Parks & Recreation 1999; 1:33-43.
- [10] Kang MH, Kim SI, Hong SK, Lee TH. Positioning of recreation forests using multidimensional scaling. Journal of Korean Forest Society 1999; 88:133-141.
- [11] Kim KW. Basic studies for the design of the forest aromatic bath ground. Journal of Korean Forest Society 1984; 65:31-42.
- [12] Kim SO, Oh KI. Present use of trails and influential factors on trails selection - in mudeung-san provincial park. Journal of Korean Forest Society 1988; 87:131-144.
- [13] Kim SI. Evaluating spatial structure effects in recreation travel using gravity. Journal of Korean Forest Society 1989; 78(1):65-61.
- [14] Kim SO, Oh KI. Present use of trails and influential factors on trails selection – In mudeung-san provincial park. Journal of Korean Forest Society 1998; 87:131-144.
- [15] Kim YD. Maßnahme für Naturschutz und Walderholung. Forest 1982;203:25-31.
- [16] Kim YD. Walderholungsvorsorge 1. Forest 1984a;219:30-35.
- [17] Kim YD. Walderholungsvorsorge 2. Forest 1984b; 220: 30-34.
- [18] KGFMP Korean–German Forest Management Project. Die 20-Jährige Zusammenarbeit, Korean–German Forest Management Project 1993; 310.
- [19] Kong YH. Studies on the characteristics in use, attitudes of users and socio-psychological carrying capacity in geryongsan national park. Seoul University, Seoul, 1987.
- [20] Kong YH. Motivation and satisfaction of forest recreationists in Korea. Ph. D. Thesis, Forest Department, Faculty of Agriculture and Life Science, Seoul National University, Korea, 1994.
- [21] Korea Forest Service. Guidelines for forest recreation areas. Korea Forest Service 1990; 665.
- [22] Korea Forest Service. 5th Forest Plan 2008-2017, Korea Forest Service 2008; 198.
- [23] Korea Forest Service. Statistical Yearbook of Forestry 2012, Korea Forest Service 2012; 488.
- [24] Kwon HC. Multiple use and management of forest resources. Journal of Korean Forest Society 1984; 63:121-128.
- [25] Lee CH. Analysis of user characteristics and behaviors in recreation forest (2) - With a special reference to users' satisfaction. Journal of Korean Forest Society 1997; 86:352-364.
- [26] Lee DG, Lee YK. Roles of saemaul undong in reforestation and NGO activities for sustainable forest management in Korea. Journal of Sustainable Forestry 2005; 20:1-16.
- [27] Lee JH. Walderholung in Korea und in Deutschland, Georg-August-Universität Göttingen 2010; 230.
- [28] Lee JH. German forest recreation in nature parks. Journal of Korean Forest Society 2011; 100(3):334-343.
- [29] Lee KJ, Oh KK, Jo JC. Studies on the structure of plant community and visitor's activities in Mt. naejang park (II) - User's impact and activity. Journal of Korean Forest Society 1988; 77:401-413.
- [30] Meuser M, Nagel U. Experten interviews – vielfach erprobt, wenig bedacht. In: Garz D. & Kraimer K.(Ed.) Qualitativ-empirische Sozialforschung. Opladen 1991;471.
- [31] Park SH. Estimation of tourism and recreation values of forests: Mt. sorak and Mt. songni national park in Korea. Journal of Korean Forest Society 1987; 76:58-58.
- [32] Seong IK, Cho EH. A Study on the estimate and characteristics of recreational use in Mt. kyeryong national park. Journal of Korean Forest Society 1988; 77:322-330.
- [33] Shin WS. The influence of past experience levels on attitudes toward environment and park

- management. Journal of Korean Forest Society 1994;83:344-356.
- [34] Shin WS. Socio-Psychological model intergrated evalutaions of forest recreation values. Journal of Korean Forest Society 1995; 84: 456-464.
- [35] Shin WS. Application of observance - Influence analysis techique in a national park management. Journal of Korean Forest Society 1998; 87:211-219.
- [36] Shin WS. The identification of indicators to monitor recreational experiences for benefit - based management: A delphi study. Journal of Korean Forest Society 2000; 89:9-17.
- [37] Statistics Korea. Yearbook 2012. Statistics Korea 2012.
- [38] Youn KD. Landscape and recreation planning. Forest 1977a;139:67-71.
- [39] Youn KD. Landscape and recreation planning. Forest 1977b;140:75-80.
- [40] Youn KD. Landscape and recreation planning. Forest 1977c;143:63-69.
- [41] Youn YI. Fundamental characteristics of the problems existing in national park system. Korean Academy of Parks & Recreation 2000; 2:113-121.
- [42] Youn YC. Studies on forest recreation demand and benefits of deogyu national park. M. Sc. Thesis, Forest Department, Faculty of Agriculture and Life Science, Seoul National University, Korea, 1982.
- [43] Zundel R, Völksen G. Ergebnisse der Walderholungs-forschung, Verlag Dr. Kessel 2002;91.
- [44] Volk H, Schirmer C. Leitfaden zur Kartierung der Schutz- und Erholungsfunktionen des Waldes, Forstliche Landschaftspflege Freiburg 2003;107.

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