

Paradigm shift on forest utilization: Forest service for health promotion in the Republic of Korea

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ABSTRACT

Use pattern of forest resources for people has changed from outdoor recreational to human health promotion; about 12.8 million people now visit recreation forests every year and about 61% of the total populations are aware of the effectiveness of forest healing. Background to forest healing was the strengthening scientific evidence of the effectiveness of forest healing through investment in research and development and conducting the national plans, the revision of laws in relation to forest healing policy. Forest healing policy has diverse meanings for forest owners, local residents, the public, and the government. Forest healing policy has certain limitations; healing forest construct for urban areas, more scientific evidences for forest healing effectiveness, business model for private healing forest.

Keywords: Forest therapy, forest healing, human health, well-being, paradigm shift.

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INTRODUCTION

Forest resources have an important role providing ecological services including soil and water conservation, biomass production. In these days, people are also acknowledging its beneficial impact on human health, specifically stress relief and overall important in the quality of life. R&D was stressed for establishing supporting scientific evidence. Researchers tried to quantify the human health benefits of environment resources (Bell et al., 2011). There are various models and theories linked to ecosystem and human health aspects (Henwood, 2002; Macintyre et al., 2002; Millennium Assessment, 2003). Researches provided the evidence of positive relationships with longevity and forest area (Tanaka et al., 1996; Takano et al., 2002). Natural resources play an important role in resident's feeling of attachment towards the community (Kim and Kaplan, 2004). In experimental studies, nature scenery exposure by video player had beneficial effects on blood pressure reduction (Ulrich et al., 1991). Especially, the relationship of health and natural area applied on the policy progress by interdisciplinary research (Phoenix et

al., 2013). Reflecting this policy progress, there is a movement for utilizing the forest as a space for health promotion within the Korean forest policy. Since the aging society is rapidly becoming and there is a new labor institution adopted a 40-hour week followed by increased leisure time, the need for quality of life and health promotion within people has increased explosively. In accordance with the increased level of people's need, the forest policy has been changed. Following the change, reflection of health promotion flow utilizing the forest in policy, increase in related R&D, institution improvement and etc are occurred within forest policy.

Relate to this paradigm, the concept of "forest healing" was established for human health benefits of forest resources in Republic of Korea. This study investigated a ripple effect of the concept of "forest healing" through examining changes in social issues, R&D and policy. The differences after adopting the concept of "forest healing" for the purpose of health promotion has been examined.

In this study, we investigated the recent trend of forest resource for human health with the policy trend analysis

and social issue analysis. In conclusion, the future policy direction of forest healing was suggested.

MATERIALS AND METHODS

This study conducted the examination of forest policies, forest science research, and social issues in Korea related to "forest healing" from 2007 to 2014. Also, the study looked at the changes in contents of policy enforcement within the Korea Forest Service and related agencies; and analysed changes of forest science research trend and social issues related to the "forest healing". The effect of "forest healing" to Korean society is analysed by examining changes of policy, research and society after adopting the concept of "forest healing".

The change of policy, social and R&D aspects related were investigated during 8 years (2007 to 2014). The policy change analysis focused on the budget and policy enforcement progress. In social aspects, the social issue analysis and economic impact of "forest healing" on the mountain village were surveyed. The research trend analysis on forest healing was conducted.

RESULTS AND DISCUSSION

Using forests to improve human health has become an important item on the agenda of forest policy (IUFRO Task Force on Forests and Human Health, 2007). The Korean government has implemented impressive forest policies over the past 60 years. While these policies came into force in Korea later than in other nations, these policies seek to ensure "human health" and include such aspects as the assurance of public safety in forest disasters, such as landslides and fires, and the improvement of physical and mental wellbeing through the accessibility of wooded areas. During the Second World War and the Korean War, forests were destroyed, resulting in huge losses of life because of shortages in fuel, frequent flooding, and landslides.

However, thanks to the government's "National Reforestation Program" and the active participation of the public, the expansion of deforested areas in the Korean Peninsula has not taken place (Figure 1) and damages caused due to deforestation have reduced. Over time, as the lost forest area has recovered, the stock of trees has returned almost to the level of the early 1900s. These results showed the phenomenon that forest area rate increased as time passes. Number of visitors also increased sharply during 1960s. Rehabilitated forest resources were used for leisure purposes, such as hiking, climbing, and visiting in recreational forests (Gallup Korea, 1991; Gallup Korea, 2001; Gallup Korea, 2006; Gallup Korea, 2010). In all, 156 recreation forests are in operation currently and about 12.8 million people (an estimated 1/6 of the total population) visit recreation forests every year (Korea Forest Service, 2014).

Thus, recreational activities in forests have become more popular and diversified in recent years. Consequently, "forest healing" is the most important aspect on the forest agenda, one which conforms to the

increasing public demand for a better quality of life. According to the Korea Forest Service's 2009 national survey on forest healing, about 61% of the total population and 75 % of those with health problems are aware of the effectiveness of forest healing (Gallup Korea, 2009). About 0.79 million people have visited "national healing forests" in the five years since the concept of forest healing was first introduced in Korea in 2009. In addition, the visits to healing forests have increased 11 times more than those to recreational forests in the last four years (Table 1); thus, healing can be a crucial function of forests. To meet this social demand, the "Korea Forest Service" has established 22 public healing forests throughout the nation. This trend means that people do not want to only climb mountains but also enhance quality of life. Forest activities changed the meaning from "forest resources" to "positive benefits on the human". The successes of these "healing forests" include (1) public awareness of the recreational benefits of forests; (2) positive socioeconomic changes; (3) a paradigm shift in forest policy; (4) continuous R&D investments; and (5) improvements in the institutional setting.

Traditionally, Korea has utilized forests for public health, including healing and recreation. This customary public awareness of the benefits of forests and new socioeconomic conditions has increased awareness about forest healing. With the world's highest intensity of labor and a dramatic increase in diseases related to lifestyles (Korea Ministry of Health and Welfare, 2013), Korean society has shown a growing interest in the concepts of "healing" and "health." After five-day workweek (40 hours per week) and 40 hours of course work for students was introduced, the public gained the opportunity to visit distant "healing forests" on weekends.

Forest areas have been used for human health promotion while accumulating the evidence of human health benefit from physiological and psychological aspects. A paradigm shift on forest policy is also an important factor in the success of forest healing. The overall vision of the National Forest Plan for the next 10 years was the attainment of a "sustainable forest green welfare state." However, considering the importance of forest for health, this vision has changed to "realizing a green welfare state, where the entire nation enjoys well-being." This changed objective created the "forest healing" as a means to attain human happiness. Thus, "happiness" has finally been included in the national index. This paradigm shift affects the priorities of forest policies, including increased investments in healing forests.

Forest healing policy and research developed during 10 years (2005 to 2014) in Republic of Korea. "Korea Forest Service" defined "forest healing" and "healing forest" in forest recreation laws. In addition, "Korea Forest Service" established the national qualification system as "forest healing instructor". This policy has had a job creation

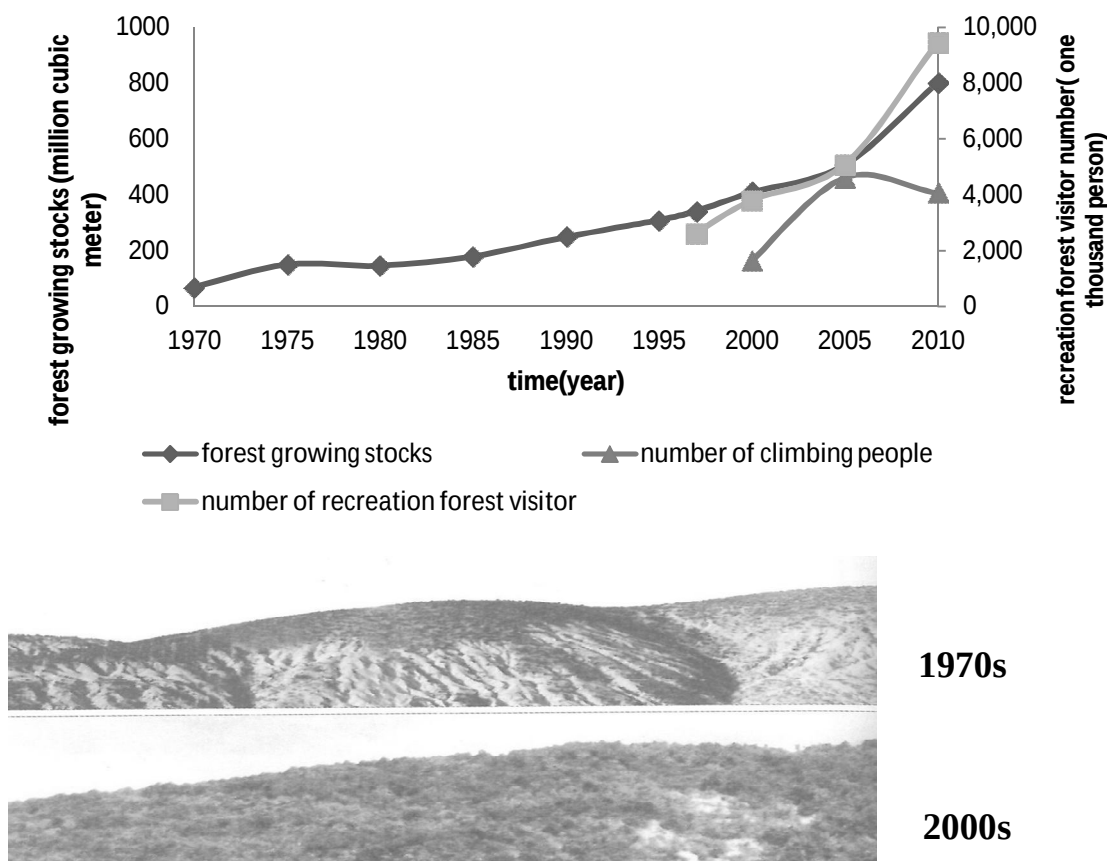


Figure 1. Changes of growing stocks in Korea between 1970-2010; growing stock in Korea during 40 years. Comparison of scenery between 1970 and 2000 in Young-il Gyeongsangnam-do, Korea.

Table 1. Visitors of recreation forests and healing forests (2010-2013); Visitors of healing forest increased 11 times than visitors of recreation forests among 4 years.

Visitors (number)	2010	2011	2012	2013	Mean increase rate (%)
Recreation Forests	9,437,000	10,684,000	11,614,000	12,780,000	10.6
Healing Forest	76,063	157,571	314,767	787,029	117.0

effect, related to “forest healing” through the adoption of a national qualification system. Healing forest also constructed for the first time in 2009.

The formulation of national plans, the revision of laws, and improvements in institutions have proceeded in tandem with the forest healing policy. First, the Korean Forest Service announced a “forest healing activation policy” in 2012. In addition, it created a professional qualification system for forest healing instructors, who will serve as guides for visitors seeking treatment. It has also designated and has strictly managed nine training institutions for forest healing instructors. Furthermore, beginning in 2014, forest healing instructors conduct programs in natural recreation forests and forest parks to promote public accessibility to their activities (Figure 2).

Several methods have been implemented to increase

the credibility of forest healing. First, greater investment in research and development (R&D) has strengthened the scientific evidence of the effectiveness of forest healing (Table 2). The public has become aware of the mental and physical healing aspects of forests—such as the lessening of stress and the enhanced growth of natural killer cells (NK cells)—through media reports of these research findings. Therefore, people who visit forests are aware of “reliable scientific beliefs” rather than “traditional beliefs”.

This successful forest policy for the promotion of health has diverse meanings for forest owners, local residents, the public, and the government. The percentage of Korean private forests, which account for about 68% of the nation’s forest area, is much more than that of national forests (24%) and public forests (8%). However,

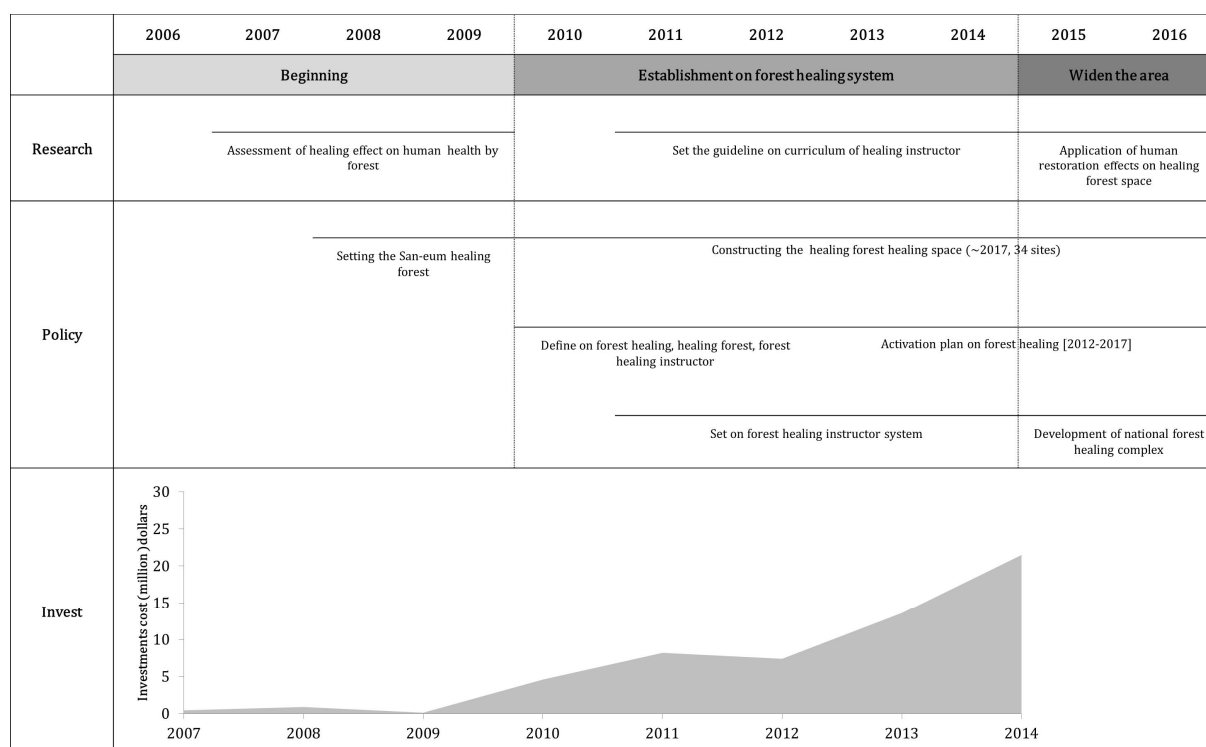


Figure 2. Relationship policy process and research progress during 10years in forest healing of Republic of Korea.

Table 2. Investment on forest healing researches and key results of forest healing.

Year	Investments	Key results	Implications of research
2007-2010	2,390 million won (2.2 million dollars)	- Confirmation of effect on psychological stability of major depressive disorder, alcoholics through forest healing program - The world's first Healing forest construction model development and Saneum Healing forest construction	- Deduction of psychological stability of forest healing program - First construction manual for forest healing space development
2011-2013	3,790 million won (3.5 million dollars)	- Extraction the essential oils from plant sources for prevention and treatment relation to skin disease and respiratory disease - Deduction of therapy effect on environmental disease, Maladjustment in Adolescence through forest healing program	- Verification of forest therapy environmental factor on human health - Development of forest healing program on different disease
2014	1,690 million won (1.6 million dollars)	- Research of visitor recognition depending on forest environment factor and research of the forest environment effects on human health to progress the interaction between human and health	- Research progressing on interaction between human and forest

these private forests produce only 0.1% of the GDP, since they lack infrastructure, such as roads and machinery (Korea Forest Service, 2014). However, forest healing is a good business model for forest management, which, if applied, will provide private forests with additional sources of income.

Moreover, forest healing will contribute to local economies. For example, four mountain villages, with approximately 150 residents, are located near the Jangseong healing forest; by providing visitors with meals, accommodation, and labor for forest treatments, the villages earn revenue of about 70 billion Korean won (62

million dollars) per year.

Overall, about 70,000 Korean won (62 dollars) of medical costs per capita was reduced by the activities of healing forests (Research Center for Forests and Human Health, 2013). Further, the economic impact of 29 healing forests anticipated to reach about 1.4 trillion Korean won (126 million dollars) and create 20,000 new jobs in related sectors (Research Center for Forests and Human Health, 2013). Thus, the forest healing policy has increased the income of local residents and private forest owners and has reduced the medical costs of the entire country.

CONCLUSION

Forest has the benefits on the human health such as psychological and physical aspects. "Korea Forest Service" processed the policy of human health promotion based on the forest, with defining the "forest healing" and "healing forest" in the forest recreation laws. The village near the Jangseong healing forest earned the 70 billion Korean won (62 million dollars). The activities of "forest healing" reduction medical costs about 70,000 Korean won (62 dollars) per capita.

In spite of the achievements of various healing forests, the forest healing policy has certain limitations. Because of the existing forest density, healing forests are mainly located in mountainous areas, far from urban centers. Thus, they are not very accessible: frequent visits are physically difficult and costly in terms of time and money. It is thus necessary that forests closer to urban areas converted into health forests through training and sustainable management.

R&D must still identify many tasks. For example, it must discover the disease-specific and age-specific effects of forest healing. The standardization of forest healing programs and cooperation with health insurance providers is also necessary to extend the health benefits of wooded areas to the largest number of people. Thus, long-term and sustained R&D investment is essential.

Finally, too many national and public healing forests can impede the construction and operation of private healing forests. Most of the former are open with no charge, but estimating usage fees (at affordable rates for the general public) and prohibiting additional national and public healing forests must take place if private forest owners are to earn sufficient revenues. If these limitations are overcome with consistent investments and sound policies, healing forests will benefit private forest owners, local residents, and the public.

REFERENCES

Bell ML, Morgenstern RD, Harrington W, 2011. Quantifying the human health benefits of air pollution policies: review of recent studies and new directions in accountability research. *Environ Sci Policy*, 14: 357-368.

- Gallup Korea, 1991.** Public perception survey of forest value in Korea. Gallup Korea, Seoul.
- Gallup Korea, 2001.** Public perception survey of forest value in Korea. Gallup Korea, Seoul.
- Gallup Korea, 2006.** Public perception survey of forest value in Korea. Gallup Korea, Seoul.
- Gallup Korea, 2009.** Public perception survey of forest value in Korea. Gallup Korea, Seoul.
- Gallup Korea, 2010.** Public perception survey of forest value in Korea. Gallup Korea, Seoul.
- Henwood K, 2002.** Issues in health development: environment and health: is there a role for environmental and countryside agencies in promoting benefits to health. Health Development Agency, London.
- IUFRO Task Force on Forests and Human Health, 2007.** Forest and human health. IUFRO, Vienna, Austria. <http://www.iufro.org/science/task-forces/former-task-forces/forests-trees-humans/>.
- Kim J, Kaplan R, 2004.** Physical and psychological factors in sense of community. *Environ Behav*, 36: 313-340.
- Korea Forest Service, 2014.** Statistical yearbook of forestry 2013. Korea Forest Service, Daejeon.
- Korea Ministry of Health and Welfare, 2013.** Korea health statistics 2012. Korea Ministry of Health and Welfare, Sejong.
- Macintyre S, Ellaway A, Cummins S, 2002.** Place effects on health: how can we conceptualise, operationalise and measure them? *Soc Sci Med*, 55: 125-139.
- Millennium Assessment, 2003.** Ecosystems and human well-being: a framework for assessment. Millennium ecosystem assessment series. Island Press, Washington, D.C.
- Phoenix C, Osborne NJ, Redshaw C, Moran R, Stahl-Timmins W, Depledge MH, Fleming LE, Wheeler BW, 2013.** Paradigmatic approaches to studying environment and human health: implications for interdisciplinary research. *Environ Sci Policy*, 25: 218-228.
- Research Center for Forests and Human Health, 2013.** 2013 Annual report. Research Center for Forests and Human Health, Seoul.
- Takano T, Nakamura K, Watanabe M, 2002.** Urban residential environments and senior citizens' longevity in mega-city areas: the importance of walkable green space. *J Epidemiol Community Health*, 56: 913-916.
- Tanaka A, Takano T, Nakamura L, Takeuchi S, 1996.** Health levels influenced by urban residential conditions in a megacity. *Urban Studies*, 33: 879-894.
- Ulrich RS, Simons RF, Losito BD, Fiorito E, Miles MA, Zelson M, 1991.** Stress recovery during exposure to natural and urban environments. *J Environ Psychol*, 11: 201-230.

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