Can North Korea recreate South Korea's reforestation success story?

Since the Japanese annexation of the Korean peninsula in 1910, the Republic of Korea (South Korea) and the Democratic Republic of Korea (North Korea) have gone through dramatic changes. From the Korean War (1950-1953) to the collapse of the Soviet Union (1991), both societies have experienced turmoil, specifically the Juche (self-reliant) authoritarian state of North Korea. In 2010, the Deforestation Index—an analysis deforestation risk determined by using outside factors such as economic growth, poverty, etc.—rated North Korea among other countries as a country at “extreme risk” of deforestation (Maplecroft 2011) [1]. The North Korean government recognizes the importance of forests and therefore created the Forest Law of 1992. Additionally, as forests are interconnected with other ecosystem services (water quality, air quality, etc), North Korea also passed the Environmental Protection Law (1998) to strengthen forest protection and reforestation measures. While forests are managed by these laws and are declared as property owned by the state (Article 2. Forest Law of 1992) [2], it is important to note that the majority of enacted environmental laws have only been written and put in place since the early 90s. It is evident that the government has changed its attitude towards reforestation and is now working actively to implement policies, enforce the laws, and find new ways to solve its environmental issues such as deforestation. However, despite these advancements by the government in recent years, deforestation is still a grim reality as the percentage of forested land in North Korea has significantly decreased from 68.11% in 1990 to 47.06% in 2010 (World Bank 2011) [3]. This steady decrease over the years is due to North Korea's past as it has greatly shaped the countries culture, ideals; and most importantly its social, economic, and political lifestyle.

In comparison, South Korea is a rare exemplary model of full-scale reforestation in the world despite sharing the past with North Korea. The Korean peninsula was once entirely forested until the Japanese annexed Korea in 1910. Almost 30% of Korea's forests were cut down to be shipped back to Japan for further military use and the booming agriculture sector along with the creation of a heavy chemical/textile industry, which caused an increase in land conversion and the use of the slash-burn farming [4]. After the liberation from Japanese colonial rule, both Koreas experienced a brief period of freedom and development before the Korean War ravaged
the two countries. Not only did the Korean War destroy the majority of the remaining infrastructure left behind by the Japanese and split the countries in two; it also completely eradicated the remaining portions of forested land that was left untouched by the Japanese.

To rebuild itself during the aftermath of the war, both Koreas were highly dependent on wood as a major fuel source and infrastructure building material; wood was harvested heavily from the remaining pockets of forests in the rural mountains. By the late 1950s, forested areas had decreased significantly to only 1/3rd of the total land [5]. Major deforestation resulted in catastrophic flooding and landslides during the rainy season and later, severe droughts that caused damage to crops during the dry season. The relationship between crop yield decline and loss of forests was significant [6]. Recognizing the severity of the deforestation and its negative consequences, the government of South Korea showed great interest in reforestation starting in the early 1950's. Legislative policies began to appear in the late 1960s, but had difficulty in being effective due to poor technological development, lack of secure laws, financial power, and opposition from citizens. However, the government decided to take a different approach in the 70s and slowly began to implement policies with executive power to allow reforestation to occur. For example, the government appointed professor Dr. Shin-Gyu Hyun—whom had significant

![The toll of the Korean War on the landscape (Early 1950s)](http://peftok.blogspot.fi/2009/12/war-in-korea.html)
achievements in breeding rapid growth trees—as the head of Rural Development Administration to begin mass reforestation across the country. Continued efforts by the government resulted in the foundation of the Korean Forest Service in the early 70s. In 1973, President Park Chung-Hee implemented the National Greening Project (1970-1980), which produced the first mass reforestation project across the country. To insure that the project would have administrative capability and be free from constraints, the project (along with the Korean Forest Service) was placed under the Ministry of Home Affairs. This meant that the government would provide financial support to the local administration and police administration for the short-term Greening Project. This was made possible due to political circumstances at that time such as the dissolution of the National Assembly, the disappearance of political parties, and the declaration of the Yushin constitution, which gave authoritarian power to President Park.

In order to promote national support for the project, the government ran campaigns such as the "Green Yushin" that encouraged every citizen to plant trees. Each planted tree would bring revenue to the town. President Park himself would take tours of inspection and encouraged local citizens to plant trees. After a few years, the National Greening Project exceeded its goal of 1 million ha in 1978; which was 4 years before the original target year of 1982. Because of the grand success of the National Greening Project, a second 10-year Greening Project with even larger goals was planned. Due to these 2 projects alone (3 more were created later but did not focus on reforestation), South Korea’s forested land is currently 6.4 million ha, or about 65% of the total land in the country.

Nationwide tree planting efforts along eroded mountain sides (1974)
This case of South Korea is known as one of the rare success stories of reforestation in a developing country. However, it would be very difficult to replicate such success these days. It is inevitable to recognize that the dictatorships throughout the 70 and 80s enabled reforestation to occur in South Korea. The government forced reforestation in private lands and landowners had to plant trees. Furthermore, the planted trees (Pinus densiflora) were not economically valuable and the quality of the timber was below average thus decreasing the productivity of the forest [7].

While North Korea could pursue the same path as South Korea did to solve its deforestation problem, it would only be a temporary solution. If North Korea wishes to ensure its survival as a country, it should recognize that deforestation is influenced by a complex, interconnected web of social, economic, and political issues that have to be considered when making forest policies in order to eradicate deforestation and other forestry related problems. One solution that North Korea could possibly consider is a modified version of the National Greening Project which would include planting genetically modified trees, establishing intensive nursery programs, and implementing intensive forest management. A project of that nature could benefit the country’s health and prevent future drought, wildfires, and floods.

With the assistance of the Laarman Gift Fund, I was able to travel to both Jirisan National Park and the DMZ (Demilitarized Zone) to witness the result of South Korea’s past reforestation management plans and North Korea’s current reforestation efforts. I had the chance to join a Forest Management class at Seoul National University on September, 2014 to conduct local research at Jirisan National Park. Seoul National University manages a few plots at the national park with the permission of the government and the national park officials. Jirisan National Park was the first officially designated national park in South Korea in 1967. Jirisan National Park has some of Korea’s most well-preserved virgin forests and in addition some of Korea’s rarest tree species. The two-day trip included updating current GIS information and resurveying the area. Each day, groups were assigned several plots around the Hamyang region. Our group was tasked with collecting data such as height, crown spectrum, diameter, etc. We compared the data gathered with data the university acquired during the 70s as part of the National Greening project. We referenced each data set at the university and found that the National Greening Project was indeed successful as we registered a higher count of trees, an increase in diameter length, and a higher count of sprout regeneration.
In 2015, I participated in another class excursion to visit the DMZ. Unfortunately due to the political atmosphere between the two countries then, I was unable to cross the border and visit any North Korea reforestation plots. However I was able to have a good glimpse at the barren landscape that was devoid of any plant life. I headed back to Seoul National University to gather additional information on the state of the reforestation efforts in North Korea. I was lucky to interview Dr. Teplyakov, a Distinguished Professor from Seoul National University whom had spent time in North Korea on multiple occasions to study the reforestation process. Dr. Teplyakov even provided me a copy of “North Korea Reforestation: International Regime and Domestic Opportunities”; this book described his multiple visits to North Korean nurseries and plantations. The book also narrates the history of North Korea’s deforestation and other insights by other professors. The records used to compare GIS data were kindly provided by Dr. Jung whom is also a professor at Seoul National University: he has helped me understand the history behind South Korea’s reforestation efforts.
I extend my gratitude to the Laarman International Gift Fund (LIGF) that provided the necessary funds to travel and explore developing sites. This provided the unique opportunity to understand and comprehend the process of reforestation in the Korean peninsula. The grant also allowed me to make invaluable connections in South Korea, and to pursue international collaborations between North Carolina State University and Seoul National University.

With my deepest gratitude,

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**Literature Citation**

[1]: Maplecroft. Highest rates of deforestation happening in emerging economies of Nigeria, Indonesia, and Brazil, while China and the USA are lowest. (2010) http://maplecroft.com/about/news/deforestation.html


[4]: Dr. Kim, Chong Min. Personal Communication. 2015.

[5]: Dr. Kim, Chong Min. Personal Communication. 2015.

[6]: Dr. Kim, Chong Min. Personal Communication. 2015.