Improving Monitoring and Increasing Engagement to Facilitate Reforestation in the Republic of Korea (1973–1987)

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Introduction

The preservation and restoration of forests is an important environmental goal. Healthy forests control erosion, regulate water flows, and mitigate flooding. Forest products provide a source of income for local residents. And forest systems help sequester carbon from the atmosphere, providing a vital asset in the fight against climate change (Chowdury 2018).

The Republic of Korea presents a noteworthy case of forest restoration. Since at least the 1800s, forests in the densely-populated Korean Peninsula were under pressure as land was cleared for farmland. In the first half of the twentieth century, deforestation accelerated, first under Japanese occupation, and then with the devastation of the Korean War. This compounded risks of erosion and landslides (Alison, 2016). Photographs from this time period show denuded hills surrounding villages. One author opines that in the early 1950s, "the country's landscape was as barren and hopeless as was its economic future" (Lee 2013).

Yet since 1967, this trend has reversed, making the Republic of Korea one of relatively few countries to achieve such a reversal. Forest stocking volume in the Republic of Korea increased approximately twelve-fold between 1970 and 2010, from 69 million m^3 in 1970 to 800 million m^3 in 2010 (Korean Forestry Service, cited in Seo 2018). Forest stocking volume reached approximately 924.8 million m^3 by 2015 (Chowdury 2018).

Development Challenge

The development challenge for the Republic of Korea was to restore its depleted forests. This was particularly important for erosion control, as well as to increase the availability of firewood, commercial timber, and other forest products to increase incomes of villagers in zones that were being reforested.

The Intervention

The overarching intervention focused on the creation of reforestation programs. Within this program, it was critical to introduce a system of effective, reliable monitoring, and to create institutional configurations that could support effective action.

Under the administration of Syngman Rhee (1948-1960), as many as 2.8 billion trees were planted in a bid to restore the country's forests. The First and Second Five-Year Economic Development Plans (1962– 66 and 1967–1971) under the Park Chung-Hee administration also included a reforestation component.

Yet these early efforts at reforestation indicated significant room for improvement. Records were scant and unreliable prior to 1960. Most importantly, the survival rate of trees planted was likely low, with estimates as low as 60

PROJECT DATA

SECTOR:
Environment

DEVELOPMENT CHALLENGE:
Reforestation

DELIVERY CHALLENGES:
Bureaucratic Structure; Corruption & Patronage; Indicators

COUNTRY:
Republic of Korea

REGION:
East Asia

PROJECT DURATION:
1973–1987

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percent for some regions. This suggested the need to devise an objective and impartial system to monitor the survival rates of trees planted.

Accordingly, the First 10-Year Forest Rehabilitation Plan was launched in 1973, with a goal of planting 2.1 billion trees. This program incorporated three key innovations. First, it moved the Forestry Department from the Ministry of Agriculture to the Ministry of Home Affairs. This, in turn, allowed for reforestation plans to be integrated into the then-ongoing Saemaul Undong (New Village Movement), a massive nationwide community development project that was ongoing in the 1970s.[1] Finally, crucially, it included a new tree monitoring system, in which different teams of officials cross-checked each other's work to ensure accountability.

Addressing the Delivery Challenges

Forest restoration efforts faced interconnected delivery challenges. There was a lack of reliable data on tree survival rates. This was fueled in part by a governance or conflict of interest problem: the same sections of the forestry department that planted the trees were responsible for monitoring survival rates. Because of the prevalence of patronage relationships and the pressure to do favors for colleagues and superiors, this introduced the risk that officials would deliberately inflate the totals of trees that were planted and survived past the seedling stage. And prior to 1973, the Forest Service was under the Agriculture Ministry, which meant that sometimes the Forestry Service and its parent ministry worked as cross purposes, since at this time the Agriculture Ministry sometimes advocated the clearing of hillsides for food crops.

Shifting Bureaucratic Structures

In 1973, the Forestry Service was moved to the Ministry of Home Affairs. This had a number of advantages. First, it better aligned the mission of the Forestry Service with its parent ministry, which was already doing reforestation work, and was *de facto* responsible for the enforcement of laws related to forest management.

Home Affairs also could tap significant resources to support forest rehabilitation efforts, including both budgetary resources and the ability to align reforestation efforts with village income projects carried out under the Saemaul Undong. Villages participating in Saemaul projects played a key role in the establishment of nurseries; the government loaned money for the operation of the nurseries, and subsequently purchased seedlings from the villages at market price. Villagers also worked with the forest officers of the Forest Service to plant the trees. Villagers had strong incentives to participate. Saemaul Undong was a conditional program, meaning that villages could only continue participating in the nursery program if they achieved strong results in terms of tree survival and planting. Moreover, in some instances, households were only permitted access to forest resources (e.g., fuel wood) if they had participated in planting or maintaining the forests.[2]

Increasing Transparency and Accountability for Tree Planting: Introducing the Monitoring System

The First 10-Year Forest Rehabilitation Plan introduced a crucial component to increase the responsibility and accountability of forest officers: the Geommok[3] system, a tree-monitoring system devised by the then-Minister of Home Affairs. Central to this monitoring system was a three-step cross-inspection process. First, after spring tree-planting periods concluded, forestry officials in charge of planting would file their reports on the number of seedlings planted and the area that had been planted. Then the local city and county (*gun*) forestry departments would carry out an inspection of selected plots (given the extent of the area being planted, a complete inspection would have been infeasible, and this necessitated spot-checks instead). In the second step, county forestry officials traveled to inspect the plantings of other counties, in order to ensure that patronage relationships, a personal and professional linkages, and

1 For more on the Saemaul Undong, see Do Hyun Han and Casper Hendrik Claassen. (2017). How to Use Community Conditional Cash Transfers and Inter-Village Competition for Rural Development, South Korea (1970–1979). KDI School. http://www.globaldeliveryinitiative.org/library/case-studies/how-use-community-conditional-cash-transfers-and-inter-village-competition-0

2 Lee (2013) links this to "the old spirit of Durae," originating in collective responsibility for agricultural projects.

3 Geommok is a term of art used specifically within the Forestry Service at the time.

other ties did not influence reporting (Lee 2013; Lee 2017). In the third step, these cross-inspections were carried out at the provincial level, with provincial forestry officials traveling to inspect plantations in other provinces (Lee 2013).

The robustness of these inspections was additionally bolstered by additional measures. One was the introduction of extensive systems of documentation, with officials producing comprehensive and detailed documents, which they had to personally sign and file. This made them personally accountable for the integrity of their documents. An incentive system was also put in place, with local officials' work performance evaluated based on seedling survival. They were eligible for promotions, and even presidential citations for merit, if their tree plantings flourished. Forestry officials interviewed in Lee (2017) attested to the importance of these incentives in motivating them and in sparking "healthy competition" among forestry officers and among the regions.

By the end of the First 10-Year Reforestation Plan, 2.9 billion trees had been planted, considerably exceeding the initial target, with a survival rate of 87 percent. By 1987, at the conclusion of the Second 10-Year Reforestation Plan, survival rates had reached 94 percent.

Lessons Learned

The story of Korea's reforestation programs demonstrates the extent to which such environmental initiatives are often intertwined with issues of institutional configurations and governance.

Building capacity and shaping incentives

In a project where success would come essentially from drawing on the bureaucratic capacity of local forestry management officials, it was crucial to train forestry officials in the proper techniques of monitoring and documentation. Villagers also needed time to build skills in nursery management – initial survival rates of seedling in nurseries were initially lower than hoped, but climbed after participants had gained a couple years of experience.

Incentive structures also played a clear role, both in shaping the behavior of forestry officials and involving local communities. A complex web of individual and group incentives increased participation – villagers participated to raise incomes, and to secure access to more resources for their villages, while forestry officials interviewed in Lee (2017) noted that the prospect of raises and promotions for high survival rates was key in their enthusiastic pursuit of the project's goals.

Leaving space for creative solutions

As the project was implemented at the local level, there was also an important degree of room left for officials to pursue creative solutions. Lee (2017) notes that nurseries usually were allowed an excess supply of seedlings to hedge against some seedlings being judged inferior (e.g., not tall enough, or with insufficient root extension) and therefore not suitable for planting. Some forestry officials saved these extra seedlings, and later planted them to replace seedlings that had died in the first wave of plantings. While not envisioned in the initial design of the program, this was allowed by the program's rules, even if it was unorthodox. In turn this increased the seedling survival rate for evaluations and represented an unexpected innovation within the program. In this sense, the monitoring system increased the contribution to tree cover and effective reforestation by working through its *intended* mechanisms – but it also worked through an *unanticipated* mechanism by spurring implementers' creativity.

References

Chowdhury, Sarhat. 2018. "Sustainable forestry: Republic of Korea has lessons to offer to developing countries." https://www.undp.org/content/undp/en/home/blog/2018/Sustainable_Forestry_Republic_of_Korea_Has_Lessons_to_Offer_to_Developing_Countries.html

Hilary, Alison. 2016. The Fall and Rise of Korea's Forests: A case study on ecosystem restoration. *Quarterly Journal of Forestry* 110 (1), 37-41.

Lee, Kyung Joon. 2013. Saemaul movement and forest rehabilitation in South Korea. Proceedings of Workshop on Innovative Development Case Studies. KDI School and World Bank Institute. https://www.kdevelopedia.org/Resources/territorial-development/saemaul-movement-forest-rehabilitation-south-korea--04201311140129006.do;jsessionid=1D67E65F0F3460A846CD16FBBDF98812?fldIds=TP_TER%7CTP_TER_NA%7CTP_TER_EN#.XsKJNGhKg2w.

Lee, Kyung Joon. 2017. How Introducing a Tree Monitoring System Improved Forest Rehabilitation in Korea (1973–1987). KDI School and Global Delivery Initiative. http://www.globaldeliveryinitiative.org/library/case-studies/how-introducing-tree-monitoring-system-improved-forest-rehabilitation-korea.

Seo, Min Young. 2018. Female Leadership and Forestation For Rural Development: Three Essays in Development Economics. Seoul: Korea Development Institute School. Doctoral Thesis.

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