



## FOREST TRANSITION IN SOUTH KOREA

# A MIRACLE MADE

**Its economic transformation through the latter half of the 20th century was the envy of every developing country on the planet. A 'miracle', South Korea became the model for development. First fuelling that miracle, then threatening it, was the unabated exploitation of forest.**

A population explosion in the first half of the 20th century had South Korea cull trees with impunity, principally to fuel households, but also to fuel wars. By the time WWII and the Korean War had closed up shop, the average volume of stocked forest area – defined as a forest area of at least one hectare and 30% tree cover – hollowed out to as low as 10m<sup>3</sup> per hectare – about 40% of pre-war estimates. South Korea's forests were standing, but effectively gone. It was about to get worse.

In the late 1960s, memories of war were fading and South Korea's economy was gaining steam, but the plight of the country's forests were still in decline. With no political or financial incentives to maintain or restore forests in rural areas, illegal logging and deforestation ran amok, contributing to fuel shortages, soil erosion and local hardship (or 'Bo-rit-go-gae'). Flooding and landslides were yearly occurrences. The answer allegedly came to the then president, Park Chung Hee, during a visit to West Germany – he was enamoured by the economic returns of their own reforestation programme. Foreign inspiration and domestic necessity (to spur growth as well as tackle rural poverty) soon had the 'First National Forest Plan' of 1973 put on

the same footing as other infrastructure priorities such as railroads, highways and electricity. It would provide fuel and prevent flooding, and it would promote patriotism. Hee's plan encouraged citizens and village cooperatives to participate not in a tree-planting programme but in a 'movement', successfully invoking national service with slogans like 'Planting is loving the Nation'.

South Korea's first goal of planting 2.8 billion trees over one million hectares of denuded forest was achieved in 1979 – four years ahead of schedule. The Second Plan from 1979-1989 upped the sophistication levels, deploying research and soil surveys to choose site-specific species to plant, and placing more emphasis on commercial-scale production forests with more diverse species mixes (but still with more non-native than native species).

Long term vision, consistent funding, public outreach and effective enforcement in South Korea had forest stocks eventually increase from just under 10m<sup>3</sup> per hectare to 146m<sup>3</sup> per hectare by 2010. The 15-fold increase was remarkable, but the fact had a rival: while stocked forest area (or density of trees) massive increased, total forest area declined. In other words, the country had achieved a miracle. Critically, South Korea showed the world that increasing tree cover and growing carbon stocks on existing degraded forest land can be enough. No new forests on land used for other purposes, like agriculture.

Over the past few decades, South Korea has restored more than six million hectares of degraded lands. The resulting erosion control and prevention of landslides have been valued at \$11.23 billion, and \$3.95 billion respectively. And a 2018 analysis helps bring home the success of the

South Korean transformation even further. As of 2013, the net present value of the gain in forest area (from carbon sequestration, disaster risk reduction, water benefits, prevented soil erosion) was valued at an astounding \$54 billion.

Today, South Korean forest covers about 64% of the territory and generates about \$US103 billion dollars worth of ecosystem services. Reforestation has even become, by some accounts, the driving force behind sustainable economic growth and the happiness of the nation. Yes, it is probably fair to say that South Korea is not just a global model for development.

## NATURE'S CLIMATE STATISTICS

South Korea's reforestation programme neatly quantifies the benefits countries can achieve if they attach nature-based solutions with sound long-term policy. The three-way combo of early and extensive investment, public outreach and enforcement allowed South Korea to reach 'break-even point' on their forestry investments within two decades. By 2000, South Korean trees were mopping up as much as 40 million tonnes per year of CO<sub>2</sub> from the atmosphere. And between the period 1954–2012, accumulated carbon in the forest biomass stood at around 1.5 billion tonnes of CO<sub>2</sub>. While the sink is likely weakening now as forests reach maturity, the success has increased South Korean biodiversity and soil health, and for people, the forests continue to help secure water resources and economic opportunities.

Other forest transitions reinforce the lessons of South Korea. In India, after the government tuned into the severe degradation impacting soil and watersheds, community-focused afforestation programmes and 'joint forest management' ended forest loss by the mid 1990s. Official data shows that up until 2010, India enjoyed aggregate net reforestation of about 6.8 million hectares, soaking up from 50 to 150 million tonnes of CO<sub>2</sub> per year. In China, forest area increased 66.5 million hectares from 1979 to 2011.

In total, efforts to plant, replant and restore forests in South Korea, China, and India have removed more than 3.3 billion tonnes of carbon from the atmosphere over the past two decades, at extremely low cost.

## KEY FIGURES

The national government invested a total of

**592 BILLION  
KOREAN WON**

(or \$3 billion in 2016 USD) during this 16-year span, more than 1% of the total national budget.

Restored approximately

**6 HECTARES**

In South Korea,  
forest ecosystem services provide

**\$103 BILLION**

Break-even point of the extensive investment  
on the forestation appeared within

**TWO DECADES**

Globally, forests provide about

**\$125-\$145  
TRILLION**

in ecosystem services.

NPV of

**\$54.3  
BILLION**

from 1960-2010

## **PROJECT BACKGROUND**

In 1973, the Korean Forest Service designed and implemented a multi-year restoration project titled “Forest Development Plans for Rehabilitation and Restoration” that targeted restoration via funding, public outreach and enforcement.

## **EXECUTING ENTITY**

The South Korean government.

## **FUNDING**

Government funded, averaging \$220 million between 1960 and 2010. After 2000, investment significantly ramped up to an average of about \$647 million per year.

## **SDGs**



## **LOCATION**



## **VIDEOS & STORIES**

[https://youtu.be/\\_3KkN8hvUCI](https://youtu.be/_3KkN8hvUCI)

<https://youtu.be/fDJAXEZ0qcl>

<https://doi.org/10.1016/j.landusepol.2011.06.007>

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