

Inventorying for Reforestation: FAO-UNDP Forest Survey and Development Projects in South Korea, 1964–1973*

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Introduction

In the late 1960s, airplanes equipped with aerial cameras flew repeatedly across South Korean forests, producing thousands of photographs that transformed arboreal landscapes into statistical data and governmentally defined management categories. Through these new survey technologies, mountainous areas that had previously been difficult to access became measurable, while forest stands were translated into data for reforestation plans and erosion control. The surveys formed part of broader efforts by the Food and Agriculture Organization (FAO) to modernize global forest administration through technical assistance projects during the Cold War. After the devastation of the Korean War, South Korea became a major recipient of development assistance, including projects related to forest science and resource surveys. In this context, the FAO-UNDP forest survey projects conducted between 1964 and 1973 were described as the foundation for “modern” inventory practices and essential for the success of the reforestation campaigns in South Korea during the 1970s and 1980s.¹

By examining the FAO-UNDP projects, this article explores how global forestry knowledge circulated through Cold War development networks and how it was negotiated, adapted to local conditions, and became institutionalized in South Korea.

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¹ Hyun Park, Jee Yeun Lee and Minkyung Song, “Scientific activities responsible for successful forest greening in Korea,” *Forest Science and Technology* 13:1 (2017), 1-8; other sources, published by the FAO Korea Association, follow a similar narrative: FAO, ed., *Building a Better Future Together: 75 Years of Partnership between the Food and Agriculture Organization of the United Nations and the Republic of Korea*, Report, 2024.

Initially focused on the development of industrial forestry in Gangwon Province, the survey project later expanded through its integration with the Nakdong River Basin and the Three River Basin surveys, increasingly connecting forestry to erosion control and watershed management. This shift reflected the reimagination of forests from solely economic resources towards larger ecological networks.² At the same time, practices associated with “scientific” forestry—including aerial photography, image interpretation, and statistical analysis—turned the forests from complex ecological systems into simplified, administratively legible resources and governable spaces, in ways that resonate with James C. Scott’s analysis.³ As the article shows, however, local conditions and the motivations of local foresters complicate a straightforward application of the concept of legibility, instead pointing to its negotiation in practice.

So far, most of the scholarship on South Korean reforestation has emphasized the centralized reforestation plans, bureaucratic coordination and control through top-down leadership and mass mobilization for tree planting campaigns, especially under the Park Chung Hee government.⁴ According to this narrative, reforestation appears primarily as a domestic success story of the developmental dictatorship, while the global circulation of forestry expertise and practices has largely been ignored. Research on forestry science and technology in modern Korea also remains comparatively limited. Existing studies have focused mainly on fields including tree breeding and emphasized individual researchers such as forest geneticist Hyun Shin Kyu (현신규).⁵ Other studies have explored erosion control programs and watershed management, including Kang Jung-won’s research on the Nakdong River Basin surveys and Park Seohyun’s research on the Han River Basin survey and water management more broadly. While these studies mention international organizations such as the FAO and UNDP as actors involved in the projects, they do not focus specifically on forest survey practices and the global knowledge circulation.⁶ At the

² See also: FAO, ed., *State of the World’s Forests* (Rome: FAO, 1995); Part 2: Forests, Economic Development and the Environment.

³ James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998), 11-22.

⁴ Kyung Joon Lee et al., *70 Years of Korea’s Reforestation* 한국의 산림녹화 70년 (Seongnam: AKS Press, 2016); Kyung Joon Lee, *Hidden Stories of the Reforestation* 산림녹화 숨은 이야기 (Seoul: SNU Press, 2025).

⁵ Yujeong Seon, “The Trajectory of Hyun Sin-Kyu’s Forestry Research: Social Evolution of Scientific Research 현신규의 임학연구 궤적: 과학연구의 사회적 진화,” (Ph.D. dissertation, Jeonbuk National University, 2012).

⁶ Jung-won Kang, “Flood Damage and Forest Conservation Policy of Nakdong River after Liberation 해방 후 낙동강 수해와 치산대책,” *Journal of Localitology* 로컬리티 인문학 32 (2024), 93-124; Seohyun Park, “Reassembling Colonial Infrastructure in Cold War Korea: The Han River Basin Joint Survey Project (1966-71),” *History and Technology* 37:3 (2021), 329-354; Seohyun Park, “Thirsting for Controllable Water: The Transformation of South Korea’s Water Development Plan from Groundwater to Surface Water, 1962-1972 통제할 수 있는 물에 대한

same time, scholars of modern Korean history have recently begun to reinterpret forestry from an environmental perspective, particularly in light of the planetary climate crisis and with reference to reforestation as conservation policy.⁷ Building on these studies, the article situates the FAO-UNDP forest surveys in Korea within broader global histories of development, environment, and forest science.

The article also contributes to a growing body of scholarship that reassesses the role of the FAO within postwar international development. Compared to institutions such as the World Bank or the Rockefeller Foundation, the FAO has long occupied a marginal position in historiography despite its central role in technical assistance for sectors such as agriculture, fishery and forestry.⁸ Recent studies have increasingly highlighted the FAO as an institution of global knowledge production, particularly through training programs, surveys and expert missions in the Global South.⁹ Studies of FAO forestry initiatives in countries such as Brazil have further highlighted the tensions between international development and the local ecology.¹⁰ For South Korea, the FAO's nutritional guidelines during the 1960s have received scholarly attention, while forestry topics remain largely unexplored.¹¹ Rather than

갈망: 지하수에서 지표수로 – 국가 수자원 개발 계획의 변화, 1962-1972,” *Korean Journal of Ecological and Environmental History* 생태환경과 역사 12 (2024), 35–71.

⁷ David Fedman, Eleana J. Kim, and Albert L. Park, ed., *Forces of Nature: New Perspectives on Korean Environments* (Ithaca: Cornell University Press, 2023); David Fedman, *Seeds of Control: Japan's Empire of Forestry in Colonial Korea* (Seattle: Washington University Press, 2020); Tae-woo Ko, “Issue of Forest Protection, Trapped in Pursuits of Development and Interests: Examination of Saito Otosaku, a Colonial Forestry Entrepreneur 개발과 이윤 추구에 갇힌 산림보호 – 식민지 임업가 사이토 오토사쿠(齋藤音作)를 중심으로,” *Yeoksa-wa Hyeonsil* 역사와 현실 103 (2017), 153–195; Jaeyoung Ha, “‘A Good Tree is a Fast-Growing Tree’: South Korea's Reforestation in the 1950s and the Making of Cold War Ecology,” *Environmental History* 31:2 (2026), 303–331.

⁸ On the recent trends in the history of development, see especially the eponymous yearbooks by DeGruyter: Corinna R. Unger et al., eds., *Perspectives on the History of Global Development* (Berlin: DeGruyter Oldenbourg, 2022). For an overview of the scholarship on international institutions in development politics see also: Nicholas Ferns and Angela Villani, eds., *International Organizations and Global Development* (Berlin: De Gruyter Oldenbourg, 2024).

⁹ Corinne A. Pernet and Amalia Ribí Forclaz, “Revisiting the Food and Agriculture Organization (FAO): International Histories of Agriculture, Nutrition, and Development,” *The International History Review* 41:2 (2019), 345–350; see also: Clemens Six, “Decolonising Rural Spaces: FAO in India and British-Malaya, c. 1947–1965,” *Itinerario* 49 (2025), 579–599.

¹⁰ Oliver Dinius, “Transnational Development on the Frontier: The FAO's Fishery and Forestry Missions in the Brazilian Amazon,” *The International History Review* 41:2 (2019), 407–426.

¹¹ Bong Seok Han, “Nutrition in the 1960s Transition and the Planning of the Modern Korean State: Focusing on the FAO Recommended Dietary Allowances for Koreans in 1962 and Their First Revision in 1967 1960년대 전환기 영양학과 한국 근대국가 기획: FAO 한국인 영양 권장량 제정과 제1차 개정을 중심으로,” *History and Boundaries* 역사와 경계 130 (2024), 191–243; regarding FAO's influence on global food security, see: Jacob Darwin Hamblin, “The Vulnerability of Nations: Food Security in the Aftermath of World War II,” *Global Environment* 10 (2012), 42–65.

treating the FAO-UNDP forestry survey projects as a case of linear technology transfer from international experts to a developing state, this article sees it as a process of knowledge circulation and localization. Drawing on recent scholarship in the history of science and Cold War development, it argues that forestry knowledge emerged through negotiation and adaptation between the international advisors and Korean foresters due to specific local conditions.¹²

As sources, the article draws on official documents from the FAO Archives in Rome, which – although currently closed to the public – provided selected digitized materials. It further utilizes FAO publications such as survey reports and the monthly journal *Unasylyva*, alongside Korean government documents and publications. Additional materials were consulted through the Korea Reforestation Archives at the National Archives of Korea, which were officially inscribed on the UNESCO Memory of the World Register in 2025.¹³ Newspaper articles and forestry journals provided further perspectives on public discourse and local responses to the surveys. After situating FAO forestry assistance from a global perspective, the article first examines the early FAO projects in South Korea and the circulation of technical expertise through surveys and training programs. It then analyzes the implementation of aerial forest surveys and their role in shaping modern forestry administration and especially the first national forest inventory in the early 1970s. Finally, the article investigates how the projects expanded toward watershed management and erosion control in the Nakdong River Basin, where international development models intersected with earlier colonial and US postwar environmental practices.

FAO's Technical Assistance and Forest Surveys

With its foundation shortly after the Second World War, the FAO identified forestry as a central component of agriculture and rural development. Its agenda emphasized trees as sources of timber and fuel for industrial use and was shaped by concerns over potential global wood scarcity. A core element of FAO's expertise lies in the production of data and the circulation of technical expertise across borders, particularly through large-scale surveys of forest conditions.¹⁴ Through its global forest surveys, the FAO extended this logic beyond its European and North

¹² See for instance: Gabrielle Hecht, ed., *Entangled Geographies: Empire and Technopolitics in the Global Cold War* (Cambridge: MIT Press, 2011); John Krige, ed., *Knowledge Flows in a Global Age: A Transnational Approach* (Chicago: University of Chicago Press, 2022).

¹³ National Archives of Korea, Korea Reforestation Archive 대한민국 산림녹화 기록물, <https://theme.archives.go.kr/next/forest/viewMain.do>.

¹⁴ See general histories of the FAO Forestry Division: Douglas Kneeland, "FAO Forestry at 60," *Unasylyva* 57 (2006), 3–9.

American origins to the so-called “developing countries” of the Global South. FAO experts translated their practices through advisory missions that promoted “rational” and “scientific” forest planning and management. As Peter Vandergeest and Nancy Peluso have argued for Southeast Asia, the FAO not only provided technical skills and knowledge, but also introduced a standardized language for forest governance, with terms such as “production forest” or “land-use planning”, thereby contributing to the formation of a new “empire of forestry” under the FAO framework.¹⁵ At times, these processes also generated resistance, including local “counter-mapping” initiatives that reasserted vernacular forms of environmental knowledge.¹⁶

Beginning in 1947, the FAO conducted global forest inventories approximately every five years according to standardized methods.¹⁷ Member states were required to submit annual reports based on FAO templates, which included developments and future goals in forest utilization. The Korean government participated in the World Forest Inventory for the first time in 1958, after the number of countries had increased significantly from 13 to 143 in just five years.¹⁸ These efforts formed part of FAO’s agenda to monitor and assess forest resources on a global scale and to publish global and regionally specific studies based on the results — a function it maintains until today.¹⁹ Despite its standardized framework, FAO knowledge production required adaptation to local ecological conditions. Definitions of what constituted a “forest”, for instance, varied across regions. In Asia, bamboo stands were newly included within such categories during the 1960s. At the same time, FAO surveys often framed forests in the Global South as underutilized frontiers of economic development. Criteria such as accessibility and exploitability played a central role in evaluating forest resources, reinforcing a production-oriented perspective.²⁰

As part of its technical and financial assistance programs, the FAO implemented more than 1,000 forestry projects in over 100 countries between 1950 and 1990. These initiatives contributed to the institutionalization of forestry worldwide, supporting government agencies, colleges and technical schools, research centers, nurseries, and community-level organizations.²¹ During the 1960s, FAO projects

¹⁵ Peter Vandergeest and Nancy Lee Peluso, “Empires of Forestry: Professional Forestry and State Power in Southeast Asia, Part 2,” *Environment and History* 12 (2006), 359–393.

¹⁶ Nancy Lee Peluso, “Whose Woods are These? Counter-mapping Forest Territories in Kalimantan, Indonesia,” *Antipode* 27:4 (1995), 383–406.

¹⁷ A summary of these standards can be found here: Bertram Husch, *Planning a Forest Inventory* (Rome: FAO, 1971).

¹⁸ FAO, “The World’s Forest Resources,” *Unasylva* 14:3 (1960), 131–150.

¹⁹ For Asia in the early 1960s, see: ECAFE / FAO, ed., *Timber Trends and Prospects in the Asia-Pacific Region*, (Geneva: ECAFE / FAO, 1961).

²⁰ FAO, “The World’s Forest Resources”.

²¹ Maharaj K. Muthoo, “International Development Cooperation in Forestry,” *Unasylva* 46 (1997), 54–60.

particularly focused on industrial uses of forests, including logging, sawmilling, and wood processing. In this light, the head of the FAO Forestry Division, Jack Westoby argued in 1962 that rising demand for forest products, driven by their integration into broader industrial systems, made investments in forest industries essential for developing countries. This would also generate employment opportunities for the rural population beyond the emerging urban industrial centers.²²

Within the FAO's Asia-Pacific Forestry Commission, concerns over a "wood deficit" became a central policy driver, prompting efforts to increase both the quantity and quality of timber production. In this context, so-called "unused" tropical forests were modified as key sites for development. For instance, Japan expressed a strong interest in expanding the logging and pulp production in Southeast Asian rainforests and eventually could protect its own forests through timber resourcing from Indonesia and Malaysia. Similar processes had also unfolded in South Korea since the 1960s, as will be further outlined below.²³ Parallel initiatives promoted research on fast-growing tropical species, including teak and eucalyptus, which were later incorporated in programs of the Commission for Forest Development in the Tropics.²⁴ Moreover, forestry policy in the Asian-Pacific countries increasingly addressed issues of soil erosion and shifting cultivation. In response, the FAO established a Working Party on Watershed Management with its first meeting in India in 1957. India subsequently became a regional center for forest worker training with four FAO training institutes established during the 1960s. These institutions trained forestry personnel from across Asia, including from South Korea.²⁵

However, as will be discussed more in detail for the Korean case, FAO's early phase of technical assistance programs in the forestry sector also revealed several limitations. These included constrained financial resources, reliance on short-term expert missions, and unresolved tensions between production-oriented development and emerging concerns over conservation and sustainability.²⁶ Such challenges foreshadowed the broader institutional reorientation during the 1970s, when environmental discourses and participatory development approaches began to reshape international forestry agendas. Concepts such as "forestry for people", often

²² Jack C. Westoby, "The Role of Forest Industries in the Attack on Economic Underdevelopment (1962)," reproduced in *The Purpose of Forests: Follies of Development* (Oxford: Blackwell, 1987), 3–70.

²³ Negar Mansouri, "Timber Capitalism: The Journey of Industrial Logging across Tropical Forests in the Post-World War II Era," *Journal of Law and Political Economy*, (2026). See also, Nakashima Koji, "Empire Forestry Endures: The Development and Continuity of Japanese Forestry in Southeast Asia, 1930–1970," Fujihara Tatsushi, ed., *Handbook of Environmental History in Japan* (Amsterdam: Amsterdam University Press, 2023), 252–271.

²⁴ Jörg Balsiger, *Asia-Pacific Forestry Commission: The First Fifty Years* (Bangkok: FAO Regional Office, 2000), online via FAO website.

²⁵ FAO, ed., *Soil Conservation and Management in Developing Countries* (Rome: FAO, 1976), 11–50.

²⁶ Maharaj K. Muthoo, op. cit., 54–60.

framed as “social forestry”, gained prominence, emphasizing village-level engagement while still maintaining a focus on forest productivity.²⁷ In South Korea, similar discussions would later inform reforestation policies, particularly through the mobilization of local forest associations.

FAO’s Forestry Projects in South Korea

During its Fifth General Assembly in 1949, South Korea became a member of the FAO. Accordingly, the Korea FAO Association office was established in 1957, delayed by the Korean War.²⁸ South Korea also joined the FAO’s regional structure for Asia and the Pacific, including the Forestry and Forest Products Commission with its inaugural conference in 1950 in Bangkok, where the regional FAO office was located.²⁹ As early as 1949, a six-member survey team compiled a report on the “Food and Agriculture Situation in Korea”, which included an assessment of forestry conditions. Amongst its recommendations were strengthened regulatory measures to control timber extraction and protect forest resources.³⁰ During the 1950s, most UN activities in South Korea were facilitated under the United Nations Korea Reconstruction Agency (UNKRA) and included FAO experts on tree breeding experiments, soil improvement programs, nursery development and black locust plantation trials.³¹ During the Korean War, R. H. du Pasquier published a report on the “Recovery and Development of Korean Agricultural Production”, which contained a substantial section on forestry, specifically focusing on reforestation and soil erosion control under UNKRA programs.³² Following the war, a joint UNKRA-FAO survey team with 12 members published a comprehensive report based on field

²⁷ J.E.M. Arnold and R. Persson, “Reorienting Forestry Development Strategies in the 1970s towards ‘Forests for People’,” *International Forestry Review* 11:1 (2009), 111–118; Hans Gregersen, Sydney Draper and Dieter Elz, eds., *People and Trees: The Role of Social Forestry in Sustainable Development* (Washington: World Bank, 1989).

²⁸ Korea FAO Association, ed., *Korea and FAO Activities: 10th Anniversary of the Establishment of the FAO Association of Korea* 한국과 FAO 활동: FAO 한국협회 설립 10주년 (Seoul: Korea FAO Association, 1967); see also, Website of the Korea FAO Association: <https://www.fao.or.kr/html/unfao/ourcountry.php>.

²⁹ Balsiger, op. cit.

³⁰ FAO Archives, RG 00-010V2, Annual Reports from Governments – Korea, 1948–57, “Food and Agriculture Situation in Korea,” June 1949.

³¹ On further UNKRA activities in Korea, see also: Da Eun Lim, “United Nations Korean Reconstruction Agency: Organization and Activities 유엔한국재건단(UNKRA)의 조직과 활동,” *Korean History* 한국사론 66 (2020), 201–260.

³² FAO Archives, RG 00-010V2, Annual Reports from Governments – Korea, 1948–57, R.H. Du Pasquier, “Report on Recovery and Development of Korean Agricultural Production,” 1952; see also: Lisa M. Brady, “Sowing War, Reaping Peace: United Nations Resource Development Programs in the Republic of Korea, 1950–1953,” *Journal of Asian Studies* 77:2 (2018), 351–363.

visits in 1952. The recommendations included far-reaching plans for agriculture, fishery and forestry. In both this report and a subsequent article publication, the British forestry expert Herbert Howard emphasized the importance of erosion and torrent control measures introduced during the Japanese colonial period and advocated for their expansion. He also highlighted the need to modernize Korea's forest industry through improved transportation infrastructure and sawmilling technologies.³³ These early assessments set the agenda for later FAO forestry projects, which continued to prioritize erosion control, reforestation and development of forest industries.

After the dissolution of UNKRA in 1960, individual UN agencies assumed greater responsibility for sector-specific projects. The FAO conducted projects in its area of expertise, including water management and forestry, while funding was administered through the UN Special Fund and later the UNDP.³⁴ This institutional shift coincided with the 1961 military coup and the introduction of new development plans under President Park Chung Hee. In 1961, the Korean delegate to the FAO regional meeting, Kim Myung Soo (김명수), identified hybrid poplar cultivation as a priority for FAO-supported projects, reflecting the influence of preeminent forest genetics scholar Hyun Shin Kyu on technical assistance projects. Hyun had also served as a delegate at FAO meetings and maintained connections with international funding organizations, including the Rockefeller Foundation and USAID.³⁵ With the adoption of the first five-year economic development plan and the Forest Act in 1962, the Park government's forestry policy became more closely aligned with broader industrialization strategies.³⁶ This seemingly had an impact on the coordination of international assistance projects as well. At the FAO regional meeting in Hong Kong in September 1962, the Korean delegate Shim Jong Seop (심종섭), both a forestry

³³ UNKRA / FAO, *Rehabilitation and Development of Agriculture, Forestry and Fisheries in South Korea* (New York: Columbia University Press, 1954); Herbert Howard, "Forests of South Korea," *Empire Forestry Review* 35:1 (1956), 56–63.

³⁴ The UNDP took over greater responsibility in South Korea starting from the early 1960s. It had the role of a comptroller for other UN specialized agencies and coordinated their UN funds for development projects. All organizations had to file their reports through the UNDP, so they could conduct reviews of ongoing programs. In 1972, a total of 80 technical experts affiliated with UNDP worked in Korea, of which 39 worked with FAO projects. This was by far more than other agencies such as ILO with 13 or WHO with 11 experts at the time. The nationality of these experts varied, but in the same year, 22 US nationals, 14 British nationals and 6 West German nationals worked in Korea, followed by countries such as India, the Netherlands, Sweden or Canada. See also: Jae Ho Um, "UNDP in Korea," *Peace Studies* 평화연구 3 (1978), 73–94.

³⁵ On the research by Hyun and foreign financial support see also: FAO Korea Association, ed., *Forestry of Korea* 한국의 임업 (Seoul: Ministry of Agriculture and Forestry 1960), 127–133.

³⁶ For further details on the forestry policy of the Park administration see: Jung-won Kang, "Enactment of the Forest Law and Greening Project by the Park Chung-hee Regime in the 1960s 1960년대 박정희 정권의 산림법 제정과 녹화사업," *Journal of Korean Modern and Contemporary History* 한국근현대사연구 92 (2020), 141–173.

administrator and professor at SNU specializing in wood processing, submitted a proposal for a large-scale forest survey project. The proposal received support from key domestic institutions, including the Economic Planning Board. The FAO forestry advisor, Jack Westoby, a strong advocate of industrial forestry, played a central role in revising the application and forwarding it to the FAO headquarters in Rome and the regional office for the Asia-Pacific in Bangkok.³⁷

Internal discussions within the FAO revealed early tensions in the project design. The director for forest economics and policies compared the application with similar projects established for Greece, Ecuador and Colombia and noted that the Korean proposal placed excessive emphasis on inventory and industrial utilization, while underestimating the complexity of forest management. He argued that adapting management practices to local conditions, such as ownership structures and regulatory frameworks, would require long-term interventions extending over decades and included reforestation and erosion control not fully accounted for in the original proposal.³⁸ This critique highlighted a structural limitation of technical assistance projects: while surveys could generate data relatively quickly, effective forest management depended on long-term institutional changes.

The planning process also underscores the multiple layers of development cooperation in South Korea at the time. As UN technical assistance projects were typically administered through the UNDP, the country representative, Roy Lucas, reviewed the proposal and consulted with Korean forestry officials. He also engaged with representatives of the United States Operations Mission (USOM) on-site, who possessed detailed knowledge of ongoing technical assistance programs in Korea and supported the project framework.³⁹ These interactions illustrate the close coordination of international organizations with bilateral assistance, at least for planning purposes. After its submission, the proposal underwent an external expert review. While the reviewers requested only minor adjustments, such as the staff structure or the survey timeline, they also recommended expanding the scope of activities related to reforestation and forest management. Comparisons with similar FAO projects in countries such as India clarified differences of capacity on-site: Whereas India possessed experienced forestry personnel but lacked expertise in aerial photo interpretation and mapping, Korean forestry graduates were considered as having limited experience in large-scale forest inventory work.⁴⁰ This perceived

³⁷ FAO Archives, RG 17 FO KOR-SF41-1, UN Special Fund Korea Forest Survey, Letter from Jack C. Westoby to Shim Chong-Sup, 27 December 1962.

³⁸ FAO Archives, RG 17 FO KOR-SF41-1, UN Special Fund Korea Forest Survey, Chief of the Forest Policy Branch: *Projet de 'developpment forestier' – Corée du Sud*, 29 January 1963.

³⁹ FAO Archives, RG 17 FO KOR-SF41-1, UN Special Fund Korea Forest Survey, Letter from Roy Lucas (UNDP, Korea) to Myer Cohen (UNSF), 12 April 1963.

⁴⁰ FAO Archives, RG 17 FO KOR-SF41-1, UN Special Fund Korea Forest Survey, Letter from Oris V. Wells (FAO) to Myer Cohen (UN Special Fund), 13 June 1963.

gap reinforced the emphasis on training and technical skill transfer within the Korean project.

The application materials reveal the main priorities shared by FAO and Korean experts. As with FAO forest surveys more broadly, the primary objective was the promotion of a domestic forest industry. During the 1950s, South Korea had relied heavily on timber imports, primarily from Southeast Asia, with costs amounting to approximately 30 million US dollars annually, much of which was financed through US financial assistance.⁴¹ The proposed survey project aimed to assess whether domestic forest resources could substitute for these imports and support industrial growth. It was expected that, following successful reforestation, depleted forests could be integrated into industrial production systems and cover Korea's increasing wood demands.⁴² At the same time, the proposal emphasized two additional goals: the training of a new generation of forestry professionals and the creation of reliable forest data on a national level. Since the only comprehensive forest inventory had been conducted during the Japanese colonial period between 1917 and 1924, and had focused largely on land ownership,⁴³ the post-colonial government faced significant challenges in managing forest resources, which were exacerbated by "the lack of experts experienced in modern survey techniques coupled with financial difficulties and the shortage of certain equipment and apparatus."⁴⁴ In this context, FAO involvement aligned closely with its broader mission of generating standardized data and building institutional capacity, while also showing certain continuities with colonial forestry practices.

From the perspective of science diplomacy, FAO regional meetings played a crucial role as platforms of Korean diplomatic engagement.⁴⁵ Korean delegates participated regularly in the Asia-Pacific Forestry Commission meetings throughout the 1950s and 1960s, including those held in Singapore (1952), Tokyo (1955), New

⁴¹ On the origins of this idea, see also: Jaeyoung Ha, op. cit., 311–312.

⁴² FAO Archives, RG 17 FO KOR-SF41-1, UN Special Fund Korea Forest Survey, Special Fund Project – "Forest Pre-Investment Survey of Kangwon and Seoul National Forest Station," 20 December 1962, 2–3.

⁴³ Jung-Won Kang, "A Study on the Forest Law and Survey under Japanese Imperialism: Case Study of Southern Gyeongsang Province 일제의 산림법과 임야조사 연구: 경남지역 사례," (Ph.D. dissertation, Pusan National University, 2014). David Fedman, "Triangulating Chōsen: Maps, Mapmaking, and the Land Survey in Colonial Korea," *Cross-Currents: East Asian History and Culture Review*, 2. Retrieved from: <https://escholarship.org/uc/item/60z4p2nk>; on forestry surveys in the Korean-Chinese border region near the Yalu river see also: Xiang Chi, "Chinese Resource Modernity: Environmental Government and the Resource Conflicts in Northeast China's Forests, 1860–1932," (Ph. D. dissertation, UCLA, 2019).

⁴⁴ "Forest Pre-Investment Survey of Kangwon and Seoul National Forest Station," 3–4; Originally, the project application also intended reports on pulp and paper, saw milling, timber extraction, board products and forest economics.

⁴⁵ On science diplomacy during the Cold War, see: Sönke Kunkel, "Science Diplomacy in the Twentieth Century: Introduction," *Journal of Contemporary History* 56:3 (2021), 473–484.

Delhi (1960), Hong Kong (1962), and New Zealand (1964). These meetings not only provided opportunities to lobby for technical assistance projects but also facilitated the exchange of knowledge on forestry policies and practices across the region.⁴⁶ The 1962 Hong Kong meeting, in particular, served as the starting point for the forest survey project, while subsequent meetings were used to discuss its progress and potential extension.

South Korea's growing role within the FAO structures was further reflected in its election to the organization's governing bodies. In 1966, Korea became a member of the FAO's Council for a three-year term, allowing it to participate more directly in the planning and administration of technical assistance projects.⁴⁷ This shift also underscores Korea's transition into an increasingly active participant in international development networks. A key moment in this process was the hosting of the 8th Asia-Pacific Forestry Commission meeting in Seoul in May 1969. Organized by the Ministry of Agriculture and Forestry in collaboration with the Foreign Ministry, the Korean delegation included prominent figures such as Shim Jong Seop, Kim Chang Soo and Hyun Shin Kyu. The agenda of the meeting reflected both FAO priorities and Korean national interests. Discussion focused on four main areas: first, the regional forest situation and the World Forest Survey; second, the expansion of fast-growing tree plantations in Southeast Asia; third, the role of forestry in land and water management; and fourth, the coordination of forestry projects across the Asia-Pacific region.⁴⁸ This demonstrates how international conferences and technical assistance projects were mutually reinforcing: While FAO initiatives shaped national policy agendas, Korean participation also influenced the direction of regional debates in forestry.⁴⁹

⁴⁶ For a more detailed overview up to 1969, see: Jeung Soon Bae, "8th Session of the FAO Asia-Pacific Forestry Commission FAO 아시아태평양 산림위원회와 제8차 회의 개최," *Sallim Boho* (April 1969), 41–46.

⁴⁷ See also: Min-hwan Kim, "FAO Activities in Korea," *Korea Journal* 6:9 (1966), 15–18.

⁴⁸ Korean Foreign Ministry Diplomatic Archives, File-No.: 733.419, "Instructions to the National Delegation Attending the 8th Session of the FAO Asia-Pacific Forestry Commission (Seoul, 1–10 May 1969) 식량농업기구 아시아태평양산림위원회 제8차 회의 (서울, 1969년 5월 1–10일), 참석 아국 대표단에 대한 훈령," 24 April 1969.

⁴⁹ Similarly, at the second meeting of the special commission for forestry, the delegates highlighted the need for forest surveys and management plans, which should become more standardized and contribute to the expansion of industrial forestry around the world. Seokkyun Kim, "Report on Participation in FAO's Second Special Committee on Forests FAO 제2차 산림특별위원회 참가보고," *Sallim* (April 1971), 64–71.

Project Launch, International Advisors and Counterpart Training

Following the agreement on an operational plan, the UN Korea Forest Survey Project Organization was formally established in November 1964. The project ran until 1973 and covered three major regions. Over this period, funding was distributed between the United Nations Special Fund (UNSF), the United Nations Development Program (UNDP), the Food and Agriculture Organization (FAO), and the World Food Program (through grain aid), which covered roughly one third of the total costs, while the Korean government financed the remaining two thirds. Overall expenditures amounted to approximately 2.9 billion won.⁵⁰ The surveys encompassed 1.2 million hectares of forests in Gangwon Province and parts of Gyeongsangbuk-do, 2.4 million hectares in the Nakdong River Basin, and an additional 270,000 hectares in smaller watershed areas, specifically the Anseong stream, Dongjin river and Sangju stream.⁵¹

The composition of the FAO expert team reflects the transnational character of Cold War development networks. Across all project phases, a total of 13 long-term and 8 short-term experts were deployed. While most originated from Western Europe or North America, a significant number came from Commonwealth countries such as the United Kingdom, Australia, New Zealand, and India. Others represented smaller politically neutral states such as Switzerland or neighboring Asian countries, including the Republic of China (see Table 1).⁵² This composition also underscores the extent to which FAO expertise drew on personnel with prior experience in colonial administration and international advisory work. For instance, the second project manager, M. J. Williamson, joined the FAO after his retirement from the US Forest Service, while the Danish expert, L. G. Esperson, had participated in forestry projects in multiple developing countries before his dispatch to Korea.⁵³ As previous research has shown, the FAO recruited many of its experts from former (British) colonial administration and the US played a dominant role in global development institutions during this period. Some experts also had served in regions occupied by Nazi Germany.⁵⁴ Although detailed biographical background information is not

⁵⁰ National Archives of Korea, File-No.: DA2268578, *UNDP-FAO Final Report on Forest Survey and Development Projects (1964–73)* UNDP / FAO 산림조사 및 개발사업 종결보고서 (1964–73) (Seoul: Forest Experiment Station, December 1973), 6.

⁵¹ Ibid., 7.

⁵² Ibid., 46–47.

⁵³ Um, op. cit., 88.

⁵⁴ Jennifer Gold, “The Reconfiguration of Scientific Career Networks in the Late Colonial Period: The Case of the Food and Agriculture Organization and the British Colonial Forestry Service,” in Brett M. Bennett and Joseph M. Hodge, eds., *Science and Empire: Knowledge and Networks of Science across the British Empire, 1800–1970*, (London: Palgrave Macmillan Basingstoke, 2011), 297–320; Martin Bemmann, “‘Nazi Agent’ and Development Pioneer: Johann Albrecht von Monroy, National Socialist Europe and Unknown Origins of FAO’s Forest Related Development

available for all experts in the Korean project, it is highly likely that many had overlapping experiences across different (former) colonies and developing countries. A comparative analysis of these trajectories would further illuminate how forestry expertise circulated globally during the Cold War.⁵⁵

Table 1. Forestry Projects - Long- and short-term Experts⁵⁶

Name	Nationality	Position / Topic	Appointment Period
H.C. McDonald	Australia	Project Manager	09/1964–12/1969
H.C. Yuan	Taiwan	Forest Survey Expert	04/1965–06/1967
S. Andel	Netherlands	Forest Survey Expert	09/1965–12/1969
J.G. Devitt	United Kingdom	Forest Management Expert	06/1965–05/1967
D.C. Kaith	India	Reforestation & Erosion Control Expert	12/1966–12/1968
A.C. Wolffsohn	(British) Honduras	Reforestation & Erosion Control Expert	01/1968–02/1971
W.E. Marshall	United Kingdom	Reforestation & Erosion Control Expert	12/1968–11/1972
H.R. Haufe	West Germany	Reforestation & Erosion Control Expert	12/1968–12/1973
E.C. Francis	United Kingdom	Photo Analysis & Mapping Expert	12/1968–01/1969
M.B. Bryan	United States	Photo Analysis & Mapping Expert	10/1969–10/1970
M.J. Williamson	United States	Project Manager	04/1970–12/1973
R.A. Johnson	United States	River Basin Expert	10/1971–07/1973
L.G. Esperson	Denmark	Supporting Role	02/1972–07/1973
A Huber	Switzerland	Lumber Transportation Expert	11/1966–12/1966
D. Stacey	New Zealand	Pulp & Lumbering Expert	05/1967

Activities,” *Journal of Contemporary History* 58:3 (2023), 424–448.

⁵⁵ As Mehos and Moon argued, the national diversity of UN advisors does not necessarily imply differences in their recommendations of technology, as they favored technical packages; still, the UN organizations highlighted their teams “multiple points of view” for better solutions. See also: Donna C. Mehos and Suzanne M. Moon, “The Uses of Portability: Circulating Experts in the Technopolitics of Cold War and Decolonization,” In Gabrielle Hecht, ed., op. cit., 43–74.

⁵⁶ UNDP-FAO Final Report, 46–47.

G.H.R. Becker	West Germany	Timber Preservation	10/1967-11/1967
R. Cowling	Australia	Broadleaf Tree Expert	07/1968-10/1968
F. Giordano	Italy	Poplar Special Expert	08/1968-09/1968
H.B. Peirce	United Kingdom	Gangwon-do Forest Development Expert	06/1970-08/1970
R. Fenton	New Zealand	Gangwon-do Forest Industry Expert	07/1970
W.E. Blum	West Germany	Forest Soil Expert	03/1973-04/1973

Alongside the deployment of foreign advisors, the project placed strong emphasis on training Korean counterparts. As part of these efforts, 12 Korean forestry graduates received fellowships to study overseas funded through the project (see Table 2).⁵⁷ Their training covered key areas such as erosion control, aerial photo interpretation, forest inventory, management planning, and reforestation techniques. Host countries included Australia, the Netherlands, New Zealand, Japan, and Taiwan. In addition, four short-term study tours were organized for senior Korean forestry officials. These took place in Australia and New Zealand (March 1969), Japan (August 1971 and October / November 1972), and the United Kingdom (August 1972). Participants included members of parliament, senior officials from the Office of Forestry at the level of bureau director and division chief (국장, 과장), regional administrators, and FAO-UNDP project staff.⁵⁸ The study tours served not only to circulate specific technical knowledge, such as erosion control or plantation management, but also to provide a broader comparative perspective on forestry policies and institutional frameworks in these countries. Taken together, the training initiatives highlight an important dimension of FAO technical assistance: beyond data collection and survey implementation, the project also functioned as a platform for the establishment of transnational forestry networks. These exchanges contributed to shaping a generation of Korean forestry professionals who would later play key roles in national reforestation and forest management programs.

⁵⁷ On the topics of reforestation, aerial photography and erosion control there were at least three more fellowships provided through FAO / UNDP until 1967, as listed under: Korea FAO Association, op. cit., 84-90.

⁵⁸ UNDP-FAO Final Report, 51-54.

Table 2. Forestry Projects - Korean Counterpart Fellowship Recipients⁵⁹

Name	Topic	Training Country	Training Period	After Return
우보명 Woo Bo Myung	Erosion Control	India	09/1967-08/1968	SNU Forestry Department
박재욱 Park Jae Wook	Photo Analysis / Mapping	Netherlands	12/1967-12/1968	Forest Survey Institute
김춘식 Kim Chun Sik	Photo Analysis / Mapping	Netherlands	01/1968-06/1968	Military Service / (Resigned)
한갑준 Han Kap Jun	Forest Survey	Australia	04/1968-04/1969	Forest Survey Institute
윤동훈 Yoon Dong Hoon	Forest Management	Australia Japan	04/1968-01/1969 03/1969-05/1969	(Resigned)
민경현 Min Kyung Heon	Forest Genetics	Japan	02/1969-08/1969	Forest Experiment Station
조은혁 Cho Eun Hyuk	Forest Management	Australia	05/1969-05/1970	Forest Experiment Station
한용회 Han Yong Hoe	Forest Survey	New Zealand	01/1970-12/1970	Project
고성하 Ko Sung Ha	Forest Survey	Australia	04/1970-01/1971	Forest Experiment Station
성백진 Sung Baek Jin	Reforestation	New Zealand	03/1970-10/1970	Forest Survey Institute
황규환 Hwang Kyu Hwan	Reforestation	New Zealand	03/1970-10/1970	Forest Survey Institute
이용대 Lee Yong Dae	Industrial Forestry	Taiwan	07/1970-12/1970	Forest Experiment Station

⁵⁹ Ibid., 49-50.

Generating Data through Forestry Surveys

The first forest survey covered approximately 1.2 million hectares of national forest, including parts of Gangwon and North Gyeongsang Province. Alongside the main survey, various forest mensuration studies were conducted between 1965 and 1967. These included the development of volume tables by diameter class, site index curves, growth tables for major tree species and forest type classifications, which were mostly derived from aerial photography. While aerial photographs of roughly 700,000 hectares were taken between 1966 and 1967, military security restrictions delayed access to certain regions, resulting in postponements in mapping, statistical analysis and the preparation of management plans. Consequently, many outputs were only completed during the project's extension phase in 1968–69.⁶⁰

For Korean policymakers and foresters, the introduction of forestry surveys with aerial photography and data processing represented a step toward what they described as “modern forestry”. According to Shim Jong Seop, ground-based surveys (지상 조사) were time-consuming and resource-intensive, whereas aerial surveys could cover larger areas more efficiently with improved precision. In his view, these methods would “open a new chapter of forest surveys in Korea”.⁶¹ Contemporary media coverage echoed this enthusiasm, celebrating the surveys as the first use of aerial photography in forestry and highlighting potential applications beyond the sector.⁶² Technically, the surveys relied on aerial photographs taken at a scale of 1:15,000, using cameras with a focal length of 210 mm and image sizes of 7 x 7 or 9 x 9 inches. Forest boundaries and stand characteristics were first delineated on the photographs according to visible characteristics such as image tone and crown shape; for instance, areas distinguished in coniferous and broadleaved forests were measured using a planimeter. A regular grid was established on the photographs to determine sampling points and error margins further increased the reliability of the results. Then, this data was eventually transferred onto topographic maps at a scale of 1:25,000 using radial-line triangulation (see Figure 1).⁶³ Statistical analysis was

⁶⁰ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, “Office Memorandum on UNDP / FAO Mission to Korea” by R.A. de Rosayro, July 24, 1968, Appendix, 2.

⁶¹ Jong Seop Shim, “Forestry and Aerial Photography: In Connection with the UN and the Korean Forest Inventory Project 입엽과 항공사진: UN과 한국 산림조사사업과 관련하여,” *Sallim Boho* (December 1965), 8–12.

⁶² “First Aerial Photogrammetry Project Conducted in Korea 우리나라에서 처음 실시되는 항공사진 측량사업” *Maeil Business Newspaper*, 1966. 8. 18. The public's interest in the project was also reflected in interviews not only with the foreign forest experts, but also, for instance, with the Korean-American stewardess on board of the survey airplane. “Cutie who does not know her Native Language 모국어 모르는 귀염둥이” *Kyunghyang Shinmun*, 1967. 3. 14.

⁶³ Eunsook Kim et al., *History of National Forest Inventory System in Korea (1971–2010)* 한국의 국가산림자원조사 체계 변천 (Seoul: Korea Forest Research Institute, 2015), 9–11.

conducted in part using a Fujitsu Facom 222 electronic calculator – one of the first computers available in Korea at the time.⁶⁴ Based on these maps and datasets, the experts could assess tree species composition, stand density and the overall forest conditions and provide a foundation for subsequent management plans. The data also facilitated decisions on infrastructure development, including the layout of forest roads and the delineation of management units.⁶⁵

Table 3. Overview of Forest Surveys in Korea, 1960-1975

Year	Survey Title	Institution
1960-63	National Forest Conditions Survey	Ministry of Agriculture and Forestry
1962-64	Private Forest Conditions Survey	National Forest Cooperatives Federation
1964-68	FAO Survey – Seoul, Gangwon, Gyeongbuk - 1,2 million hectares	UNDP / FAO
1969-71	FAO Survey – Nakdong River 낙동강 유역 - 2,4 million hectares	UNDP / FAO
1968-73	FAO Survey – Three Rivers 3대강유역(경기 안성천, 전북 동진강, 경북 상주천) - 0,27 million hectares	UNDP / FAO
1971-75	First National Forest Survey	Forest Resources Survey Institute

Despite the general alignment on the importance of survey data, differences emerged between FAO advisors and their Korean counterparts regarding its application. While the FAO experts viewed the surveys primarily as a basis for long-term investment in industrial forestry and standardized management, Korean foresters were often more interested in acquiring the technical skills and creating a national data infrastructure by themselves. These differences became particularly evident during discussions about extending the project. The UNDP country representative, Roy Lucas, criticized Korean project leadership, especially Shim Jong Seop and the Office of Forestry, for failing to implement FAO recommendations, such as those proposed by J. G. Devitt for highland forest management. He generally disapproved of the independent forest surveys and management plans by the Forest Experiment Station. Besides, Lucas claimed that aerial photographs from the project were not consistently utilized in subsequent field surveys conducted by Korean agencies. Lucas interpreted this as a lack of

⁶⁴ Hyeonjin Seo, *First History of Computers in Korea* 처음 쓰는 한국 컴퓨터사 (Seoul: Jeonja Sinmunsa, 1997), 15–20.

⁶⁵ Kim et al., op. cit., 10.

coordination and trust, suggesting that it undermined the success of the project.⁶⁶ Similar criticism was voiced by FAO short-term expert R. A. de Rosayro, a Sri Lankan forest ecologist known for his work on aerial survey methods.⁶⁷ He described Korean inventory practices as relying on “traditional methods involving a subjective sampling procedure, but this cannot be considered as providing a sound basis for the computation of volumes.”⁶⁸ Such an assessment reveals an implicit hierarchy of knowledge, in which FAO-endorsed methods were framed as “modern”, while the domestic practices were sidelined. In contrast to these claims, however, Korean forestry institutions did in fact incorporate FAO data and practices into their own surveys. The national forest resource survey of 1969, for example, drew extensively on data collected in earlier FAO project regions, supplementing it with new data for areas not previously covered.⁶⁹ Discussions between FAO and the Office of Forestry eventually clarified misunderstandings regarding survey practices. Korean representatives pointed to structural constraints such as fragmented forest ownership, regulatory limitations, and the administrative recruitment system, that complicated the direct implementation of FAO survey and management models.⁷⁰

The project had lasting effects on institution building and technical practices. In January 1969, the government established the Forest Resources Survey Office within the Forestry Experiment Station, integrating personnel, equipment, and responsibilities from the UN project. This office later became an independent entity in June 1972 as the Forest Resources Survey Research Institute (산림자원조사연구소).⁷¹ Staff members also expanded significantly, from around 30 personnel at the beginning of the FAO project to approximately 100 by 1969.⁷² The influence of FAO survey methods is also evident in South Korea’s first nationwide forest inventory, conducted between 1971 and 1974 and published in 1975. This survey relied mostly on aerial photography, covering approximately 8.4 million hectares and producing over 51,000 images, typically at a scale of 1:15,000

⁶⁶ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Letter by W. Roy Lucas (UNDP) to N. Osara (FAO), October 19, 1967.

⁶⁷ See for example: R. A. de Rosayro, “The Ecological Significance of Forest Types as Recognized in Aerial Photography in Ceylon,” *Photogrammetria* 19, 1962/64, 16–21.

⁶⁸ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Office Memorandum on UNDP / FAO Mission to Korea by R.A. de Rosayro, July 24, 1968, Appendix, 3.

⁶⁹ National Archives of Korea, File-No.: DA2268603, “Forest Utilization Condition Report 산지 이용 구분 조사 보고서,” December 1970.

⁷⁰ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Letter by N.A. Osara (Forestry Division, FAO) to Young Jin Kim (Director General, OoF), November 8, 1967.

⁷¹ Organization Act of the Forest Resources Survey Research Institute 산림자원조사연구소 직제 (Presidential Decree No. 6230), Official Gazette 관보 No. 6174, June 9, 1972.

⁷² Bonghwan Oh, “Pulse of the Scene: The UN Forest Survey Agency 고동의 현장: 유엔 산림조사기구” Dong-A Ilbo, 1969. 5. 20.

(see Figure 2). Data processing again involved computer-based analysis, and results were archived on microfilm.⁷³ Despite these continuities, official publications emphasized domestic achievements, reflecting the political climate of the “Green Yushin” period and the desire to present reforestation success as a national accomplishment.⁷⁴

The adoption of aerial photography also had profound social effects. One of its most significant applications was the identification and eradication of slash-and-burn agriculture (화전). Previously, state authorities had relied on incomplete self-reporting systems to monitor such practices.⁷⁵ Aerial surveys enabled the systematic detection of cultivated plots across mountainous terrain, including previously concealed or unregistered sites. By incorporating these sites in detail into forest maps, the state gained unprecedented visibility over upland regions, allowing for targeted intervention and enforcement of eradication campaigns until the late 1970s.⁷⁶

The influence of these methods also extended into academic forestry. At Seoul National University, forestry professor Kim Kap Duk (김갑덕), who had studied forest survey techniques at the University of Minnesota between 1956 and 1958, introduced new courses on aerial forest measurement (항공삼림측정학) and published a widely used textbook on forest survey methods in 1963.⁷⁷ In subsequent research, he compared ground-based and aerial survey techniques in the Korean context, finding no significant differences in overall accuracy but noting a higher efficiency for aerial surveys.⁷⁸ His later studies in the 1970s further explored the

⁷³ National Archives of Korea, File-No.: DA2268581, “Forest Inventory Report 전국 산림 실태 조사 보고서,” December 1975. See also: Kim et al., op. cit., 11–12. In the introduction of the report, the director of the survey institute, Lee Chang Woo, highlighted the support from the Office of Forestry and SNU professor Kim Kap Duk, but did not mention the FAO survey project directly.

⁷⁴ On the state-nature relation during the 1960–70s see: Jong-Heon Jin, “‘Green Mountain’ as Symbolic Landscape of Development: Critical Approach on Forest Greening Policy 발전의 상징경관으로서의 ‘푸른 산’: 산림녹화 정책에 대한 비판적 연구,” *Geographical Journal of Korea* 국토지리학회지 50:4 (2016), 539–548; Jin-Tae Hwang, “A Study of State-Nature Relations in a Developmental State: The Water Resource Policy of the Park Jung-Hee Regime, 1961–79,” *Environment and Planning A* 47:9 (2015), 1926–1943.

⁷⁵ “Local News 토막소식” *Kyunggyang Shinmun*, 1967. 2. 21.; Dongil Shin, “From Protection to Elimination: The Peripheral Image of Fire-field Farmers and the Fire-field Clearance Project during the Park Chung Hee Government 보호에서 배제로: 박정희 정부 시기 경계인으로서의 화전민 표상과 화전정리사업,” *Taegu Sahak* 대구사학 152 (2023), 101–136.

⁷⁶ Ki-Bong Lee and Jae-Soo Bae, “Factors of Success of the Clearance Policy for Slash-and-Burn Fields in the 1970s 1970년대 화전정리사업의 성공 요인,” *Journal of Korean Forest Society* 한국산림과학회지 96:3 (2007), 325–337.

⁷⁷ University of Minnesota Archive, Box 119, Folder 41, Staff From Korea to University of Minnesota: Kim, Kap Duk; Kap Duk Kim, *Forest Mensuration* 산림측정학 (Seoul: Hyangmunsa, 1963).

⁷⁸ Kap Duk Kim, “Study on Forest Inventory Work 삼림자원조사법의 연구,” *Journal of Korean Forest Society* 한국산림과학회지 5:1 (1966), 10–15.

strengths and limitations of aerial photography, particularly its reduced accuracy in detecting younger or less dense vegetation – relevant when surveying the newly reforested areas on the Korean peninsula.⁷⁹

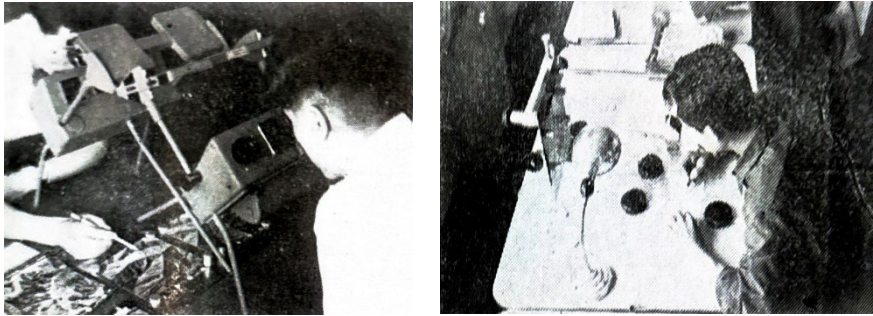


Figure 1. Aerial Photo Analysis and Mapping at the FAO-UNDP Survey Project, c. 1969.⁸¹



Figure 2. Aerial Photograph from the First National Forest Survey, 1972.⁸²

⁷⁹ Kap Duk Kim, “Study on the Application of Aerial Photography for Forest Inventory 항공사진을 이용한 산림자원조사법의 연구,” *Journal of Korean Forest Society 한국산림과학회지* 30:1 (1976), 1–7. More recent studies have also highlighted such shortcomings in photo analysis: D.M. Browning, S.R. Archer and A.T. Byrne, “Field Validation of 1930s Aerial Photography: What are we missing?” *Journal of Arid Environments* 73 (2009), 844–853.

⁸¹ Korean Office of Forestry, *Forestry in Korea* (Seoul: OoF, 1970), 85–86.

⁸² Korean Research Association for Forestry, *30 Year History of Forest Conservation and Reforestation 치산녹화 30년사* (Seoul: 한국임정연구회, 1975), 172.

He also analyzed the possibilities of aerial surveys to detect family tombs on forest land for development after the introduction of graveyards near cities.⁸³ These academic contributions demonstrate how survey technologies became embedded not only in government practice but also in research. Moreover, it underlines details specific to the forest ecology in Korea, that the FAO experts could not register.

Plans for Forest Management and Industrialization

For the FAO-UNDP project team, the objective of the forest surveys was not simply the production of data, but the development of a domestic forest industry. After the completion of forest maps and inventories, the experts compiled 22 working circle reports that examined timber consumption, logging practices and long-term management strategies. The FAO headquarters staff and short-term experts conducted desk studies based on the acquired data, followed by a report from project manager H. McDonald. In 1970, after the formal completion of the first survey project, two further teams of short-term experts were dispatched to assess possibilities for industrial forestry development in Gangwon Province. The second team was headed by Sir Henry Beresford-Peirse, a prominent British forestry administrator who continued to serve as FAO advisor after his retirement.⁸⁴ The experts argued that the Gangwon region had potential for the development of industrial forestry and therefore required further investment.⁸⁵ Alongside these broader planning proposals, they also evaluated logging techniques and recommended the use of smaller-scale manual equipment such as chain saws rather than heavily mechanized systems, which they considered less suitable for Korean terrain and forest conditions.⁸⁶

Using the data collected during the FAO-UNDP Three River Basin survey, the Korean forester Seo Wonwoo (서원우) developed extensive management plans for approximately 27,000 hectares of state forest and 7,000 hectares of private forest land called the Changcheon Working Circle. His studies assessed tree stock volumes, projected growth rates and possible forms of land use. Similar to FAO planning frameworks elsewhere, the forests were divided into management categories based

⁸³ “1.47 Graves per 3,000 Pyeong of National Land 분묘 국토 3,000평에 1.47기 꼴” Dong-A Ilbo, 1982. 12. 12.

⁸⁴ In an article, he highlighted his vision, when he served as FAO's Deputy Director of the Forestry and Forest Product Division: Henry Beresford-Peirse, “The Evolution of Forestry: Latest Trends in Thinking,” *Unasylva* 16:4 (1962).

⁸⁵ National Archives of Korea, File-No.: DA2268577, H. Beresford-Peirse and R.T. Fenton, *The Need for Complementing the Pre-Investment Study of the Kangwondo Development Area*, UNDP / FAO Report, 1970.

⁸⁶ Um, op. cit., 90.

on their perceived economic benefits. The management plan outlined three principal objectives:

- “A) To preserve and develop the forest cover in such a way that watershed protection for soil and water conservation and for flood control is fully maintained.
- B) To secure adequate supplies of fuelwood and small timber for the local population.
- C) To obtain the maximum possible sustained yield of forest produce for the general benefit of the country’s economy.”⁸⁷

Accordingly, the surveyors divided the forests into two major zones. Areas considered too steep or environmentally fragile were classified as protection forests, where exploitation was to remain limited. Other areas were designated as conifer working groups intended for plantation forestry and timber production based on forest management plans for thinning or felling. As underlined in the objectives, aside from watershed management, the supply of firewood for local consumers and the national economy was central to the forest plans as well.

Some experts connected the management plans directly to the interests of the international forest industry. FAO Forestry Division expert R. A. de Rosayro estimated that approximately 300,000 hectares within the project area could be developed for industrial hardwood and softwood production, generating an annual yield of roughly 750,000 cubic meters. He projected that continued reforestation would eventually increase annual yields to 4 million cubic meters. As in earlier project proposals, these calculations were explicitly linked to reducing South Korea’s dependence on imported timber and pulp products, whose costs were expected to rise alongside industrial growth. The reports even identified specific industrial applications for different forest products. In the Changcheon region, for example, de Rosayro estimated that harvested timber could be divided into approximately 20% saw logs, 20% coniferous pulpwood and mining timber and 60% hardwood suitable for pulp production.⁸⁸ The FAO expert also emphasized the importance of integrating forestry development with private industry. Companies such as the Daihan Paper Manufacturing Company or the Young Yang Industrial Company expressed interest in utilizing small-diameter hardwoods for charcoal, fuelwood and paper production, particularly from fast-growing poplar plantations.

⁸⁷ Wonwoo Seo, “The Effect of Forest Inventory with Aerial Photography Interpretation on National Forest Management 항공사진에 의한 산림조사가 국유림경영에 미치는 영향: 창춘사업구의 지황 및 임황조사를 중심으로,” *Collected Papers of Anseong Industrial University* 3 (1971), 225–261.

⁸⁸ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Office Memorandum on UNDP / FAO Mission to Korea by R.A. de Rosayro, July 24, 1968, Appendix, 2.

Both maintained connections with foreign companies, namely the US-based Weyerhaeuser International as a co-investor in Daihan and the Swedish companies Gadelius International and Motala-Defibrator in Young Yang.⁸⁹ Forests were not only transformed into quantifiable industrial resources and categorized according to economic value, but Korean forestry development was also increasingly integrated in transnational industry and trade.

However, the experts also recognized structural obstacles to implementing large-scale industrial forestry. Above all, fragmented land ownership complicated forest management, since privately owned forest plots were often smaller than 3 hectares, making not only reforestation but also coordinated timber production difficult. Most of these privately owned forests were located in lower and more accessible areas, better suited for industrial development, whereas state-owned forests tended to be concentrated in remote mountainous regions.⁹⁰ Although FAO reports repeatedly highlighted this issue, they provided few solutions beyond recommending further studies. In practice, these structural limitations severely constrained the implementation of industrial forestry plans. Later bilateral technical assistance projects, notably the German-Korean forest management project (1973–1993), attempted to address this problem through the establishment of forest owner cooperatives in selected regions.⁹¹

More broadly, many of the industrial forestry plans proposed by FAO experts ultimately remained unrealized. A proposed follow-up investment project for Gangwon Province failed to secure FAO funding, while broader shifts in South Korea's energy sector reduced the anticipated demand for timber products. During the 1970s, rural households increasingly transitioned to alternative fuel sources, decreasing reliance on fuelwood and undermining plans that had initially justified large-scale industrial forestry expansion.⁹² At the same time, this focus on the domestic forestry sector contrasted with the ambitions of Korean businesses to expand into the forests of Southeast Asia, which offered abundant timber resources for the pulp and paper industry and were still largely underexploited. Rather than relying on domestic forests as envisioned by FAO experts, the economy became increasingly dependent on overseas forest resources. This divergence exposed the

⁸⁹ Ibid., 3. On the Swedish companies see also: Dong So Shin, "Wood Industry in Sweden 스웨덴의 목재공업현황," *Wood Industry 목재공학* 8:1 (1980), 28–40.

⁹⁰ National Archives of Korea, File-No.: DA2268577, UNDP / FAO, Forest Survey and Development Project – Inception Report and General Plan of Work, February 20, 1969, 2.

⁹¹ Max Altenhofen, "Between Eco-governmentality and Forest Management Cooperatives: Reinterpreting South Korean Reforestation in the 1970/80s from the Local Level," *Journal of Korean Studies* 31:2, 2026.

⁹² See e.g., Jae Soo Bae and Gibong Lee, "Impacts of the Substitution of Firewood for Home Use on the Forest Greening after the 1945 Liberation of Korea 해방 이후 가정용 연료재의 대체가 산림녹화에 미친 영향," *Journal of Korean Society of Forest Science 한국산림과학회지* 95:1 (2006), 60–72.

limits of FAO planning, which underestimated both changing patterns of energy consumption and the growing integration of South Korea into global trade networks. Overall, the plans reveal the Cold War development ideology: FAO experts envisioned forests primarily as future industrial resources that would support national economic growth according to models of modernization, while paying comparatively little attention to sustainability or the displacement of environmental pressures to the Global South.

Nakdong River Basin Forest Survey and Development

Following a request by the South Korean government and a preliminary survey in 1962/63, the Nakdong River Basin survey was implemented between 1966 and 1972 as a comprehensive rural development initiative that integrated forestry, soil survey, and agricultural demonstration. Previously, Upland Development and Watershed Management had existed as a separate UNDP-FAO project in the region. Korean planners argued in their application that combining them within a single framework would “assist the government in the critical areas of organization and coordination of personnel and programs in the provinces” and thus strengthen the Nakdong region’s development. At a later point, they also expected the application of the survey results to other regions.⁹³

Before examining the Nakdong River Basin project in detail, it is necessary to situate erosion control (사방) and watershed management within its historical context. Modern approaches to erosion control in Korea emerged through the circulation of foreign expertise and Japanese sabō techniques since the colonial period. Upland degradation was increasingly understood as a technical problem of watershed stability that required centralized state intervention. During the 1920s and 1930s, the colonial Bureau of Forestry designated erosion-control districts, constructed dam and slope stabilization systems, and expanded tree planting campaigns in riparian areas. The large-scale plans developed by Moroto Kitaro focused particularly on eight major rivers vulnerable to floods, including the Nakdong River Basin. Although these projects remained incomplete due to the outbreak of the Second Sino-Japanese War, they established the connection between forestry, watershed management and state intervention.⁹⁴ After liberation, many of

⁹³ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Letter by Roy Lucas (UNDP, Korea) to P. Terver (FAO), May 11, 1966.

⁹⁴ For watershed management and erosion control in colonial Korea see: David Fedman, “Seeding Like a State: Erosion Control and Watershed Management in Colonial Korea,” In Nicholas B. Breyfogle and Philip C. Brown, ed., *Hydraulic Societies: Water, Power, and Control in East and Central Asian History* (Corvallis: Oregon State University Press, 2023), 96–113. On the environmental history of Japanese sabo, see also: Julia Mariko Jacoby, “‘Governing the mountains, governing the water’ (chisan chisui): Developing rivers in modern Japan,” In Ismay

these campaigns continued under the US military occupation and the new South Korean government. Erosion control programs focused especially on preventing floods near agricultural land and increasingly incorporated new ideas associated with the Tennessee Valley Administration (TVA), whose integrated river basin management model influenced development planning globally during the early Cold War period.⁹⁵ In this sense, the FAO-UNDP watershed and forestry projects during the 1960s and 1970s represented a continuation and internationalization of earlier colonial and Cold War environmental management practices.

Not all FAO experts supported this integrated approach. During the planning phase, some advisors warned that combining multiple sectors risked intensifying rivalries between the Office of Forestry, the Office for Farmland Improvement and the Office for Rural Development.⁹⁶ According to H. McDonald, who had managed the earlier forest survey project, the Korean government highlighted the project's contributions in erosion control, rather than the long-term forest development and management components. In particular, the erosion control stations on-site tended to prioritize soil stabilization measures rather than broader forestry planning.⁹⁷

At the same time, Korean foresters increasingly embraced integrated watershed-development models. One prominent example was Woo Bo Myung (우보명), who argued that forest management, erosion control, and water-resource development should be treated as interconnected problems rather than as separate policy domains. Drawing explicitly on international examples, including the Tennessee Valley Authority (TVA) and watershed-development projects in Israel, he advocated a multipurpose approach linking these formerly separate sectors.⁹⁸ This perspective reflected a broader trend in development discourse during the 1960s, when large-scale environmental planning increasingly emphasized integrated approaches.⁹⁹ Accordingly, the FAO surveys addressed not only forest conditions but also long-

Milford, Corinna Unger, and Iris Borowy, eds., *Environment, Technology, and Development* (Berlin: De Gruyter Oldenbourg, 2026), 21–48.

⁹⁵ On the TVA in development politics, see also: David Ekbladh, “‘Mr. TVA’: Grass-Roots Development, David Lilienthal, and the Rise and Fall of the Tennessee Valley Authority as a Symbol for U.S Overseas Development, 1933–1973,” *Diplomatic History* 26:3 (2002), 335–374.

⁹⁶ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Internal FAO-Letter from O.E. Fischnich, May 31, 1966.

⁹⁷ FAO Archives, RG 17 FO KOR SF4-1 Forest Survey and Development Korea 1966–68, Letter from Hector McDonald (UN Korean Forest Survey Project) to R.A. de Rosayro (FAO, Forestry Division), February 15, 1968.

⁹⁸ Bo Myung Woo, “On the Multipurpose Development of River Basins 유역의 다목적 개발에 대하여,” *Sallim Boho* (January / February 1970), 68–71; 56–60.

⁹⁹ On a similarly designed project in Ethiopia, see: T. Worki, 2015. “Multiple-Purpose Development of Water Resources,” *Zede Journal* 5 (1971), 35–39. For a more general outline from the early 1980s see also: H. F. Ludwig, “Environmental Aspects of Multi-Purpose Reservoir Projects in Developing Countries,” *Water Science Technology* 14:1 (1982), 269–288.

term issues of water supply, flood prevention, dam construction, and watershed conservation.

Woo Bo Myung, one of the most influential Korean proponents of watershed management, completed a master's thesis on erosion control in the Department of Forestry at Seoul National University in 1967 and subsequently joined the FAO project staff.¹⁰⁰ Through project funding, he received further training in India and Japan, experiences that significantly shaped his later research and publications. In India, Woo studied at the Central Forestry Research Centre, affiliated with the Central Soil Conservation Institute, where he learned techniques related to watershed management, contour bunding, and bench terracing. Given the prevalence of heavy monsoon rains, landslides, and floods in rural India, rapid reforestation — often through fast-growing eucalyptus species — formed a key component of conservation policy.¹⁰¹ While Woo became convinced of the importance of rapid reforestation, he also remained attentive to the environmental differences between India and Korea, particularly in terms of climate and forest cover.

After returning to Korea, Woo emerged as a prominent advocate of aerial-survey methods and data-driven watershed planning. In a series of publications, he criticized earlier Korean erosion-control programs for their lack of reliable data and long-term planning.¹⁰² He later joined the faculty of Seoul National University, completed his PhD in 1976, and became a professor in the Department of Forestry.¹⁰³ Woo's career illustrates how FAO-sponsored forestry programs facilitated the circulation of watershed-management and erosion-control knowledge across Asia. Rather than simply transferring expertise from international organizations to South Korea, these programs enabled Korean foresters to engage with, reinterpret, and selectively adapt techniques encountered abroad to local environmental conditions and developmental priorities. Through figures such as Woo, the FAO project became a key site for the localization of transnational environmental knowledge within South Korea's reforestation and watershed-development programs.

Within the broader framework of watershed management, the forest component of the Nakdong survey focused on three main objectives: first, forest rehabilitation

¹⁰⁰ Bo Myung Woo, "Study on the Developmental Courses of Forest Erosion Control Projects in Korea 산지 사방의 발전 과정에 관한 고찰: 한국 산지 사방의 계획·시공법·법령의 변천 과정" (Master's thesis, Seoul National University, 1967).

¹⁰¹ Bo Myung Woo, "Current Status of Soil Surveys in India and My Technical Training 인도의 토양조사 현황과 나의 기술훈련," *Sallim Boho* (1968), 24–29; Id., "Current Status of Soil Conservation Projects in India and My Technical Training 인도의 토양보전사업 현황과 나의 기술훈련," *Sallim Boho* (October 1968), 16–22.

¹⁰² Bo Myung Woo, "Reexamination of the Issues Directly Affecting the Success or Failure of Erosion Control Projects 사방사업 성패와 직결되는 문제점의 재검토," *Sallim Boho* (November / December 1967), 38–43; 59–64.

¹⁰³ Bo Myung Woo, "Studies on the Effects of Several Factors on Soil Erosion 토양 침식에 작용하는 몇 가지 요인의 영향에 관한 연구" (Ph.D. dissertation, Seoul National University, 1976).

for watershed protection, second, the development of village forestry and third, the expansion of industrial forestry. As in earlier projects, the survey team sought to generate detailed information on forest conditions, erosion status and land-use patterns in order to plan future reforestation and soil conservation in the region.¹⁰⁴ The survey covered an area of 2.37 million hectares of the Nakdong River Basin and relied on aerial photographs, many of which had already been taken before the project began. Because these photographs varied in scale and quality, the resulting analysis faced methodological limitations even though it generated a comprehensive dataset.¹⁰⁵ Survey findings again identified private forest ownership as the major problem for effective management. Most of the forest land consisted of small, fragmented holdings subject to strict cutting regulations, which limited the local use and coordinated industrial development. In response, FAO expert M. B. Bryan recommended expanded reforestation using fast-growing species for fuelwood production in the surroundings of villages and the introduction of stricter regulations on the removal of litter and soil cover for stabilization purposes. His advocacy for plantation forestry once again revealed the prioritization of industrial forestry within FAO policy.¹⁰⁶

Despite their main objective being data creation, the Nakdong River Basin surveys had significant ecological consequences, as attempts of rapid implementation often compromised the quality and maintenance of erosion control structures. While FAO experts were generally aware of the ecological drawbacks of monoculture reforestation, including reduced biodiversity and greater vulnerability to pests and diseases, the Korean government prioritized rapid implementation. As a result, it limited planting campaigns for the Ten-Year Reforestation Plan to just twelve tree species. Their selection was based primarily on climatic conditions, which divided the country into three ecological zones, and secondarily on-site characteristics such as soil depth, slope gradient, and moisture conditions, each classified into five categories based on the preceding forest surveys. Moreover, many projects relied heavily on compulsory labor mobilization on the local level, creating a burden for the rural communities.¹⁰⁷ These outcomes reveal the contradictions embedded within Cold War development programs. Although the FAO-UNDP surveys framed environmental management as a modern and scientific undertaking, the

¹⁰⁴ M. B. Bryan, *Pre-Investment Survey of the Nakdong River: Forest Reconnaissance Survey*, (Daegu: FAO / Korea Water Resources Development Cooperation, 1970).

¹⁰⁵ *Ibid.* Partial study with photographs in 1:15,000 scale already conducted in 1965; other areas were covered by photographs from 1967 as well as military photography from 1964 and 1969 in 1:32,000 scales and below

¹⁰⁶ *Ibid.*

¹⁰⁷ Kang, *op. cit.*, 115–118. See also more in detail: Jae-Soo Bae, “Overcoming Reforestation, Towards Forest Management 산림녹화를 넘어 산림경영으로,” In *Proceedings of Symposium on South Korean Reforestation at Seoul National University*, 5 November 2025, 5–70.

implementation relied on simplified ecological assumptions, showcasing the limitations of technocratic eco-governance.

Conclusion

The FAO-UNDP forest surveys in South Korea illustrate how postwar technical assistance programs functioned as important sites of transnational knowledge circulation. Through aerial photography, statistical sampling, forest mensuration, and mapping, the surveys introduced new ways of understanding forests as measurable and administratively legible landscapes. This knowledge enabled more ambitious forms of state intervention, ranging from long-term forest planning to the identification of slash-and-burn cultivation and the implementation of resettlement programs. In this sense, the surveys became instruments of ecological governance that reshaped the relationship between the developmental state, forest environments, and rural populations.

At the same time, the Korean case suggests a more critical engagement with James Scott's concept of legibility. While the FAO-UNDP surveys sought to render forests more manageable to the state, legibility itself did not emerge through a unilateral process of state control. Instead, it was negotiated between FAO experts and Korean forestry officials, who pursued different priorities and selectively appropriated international expertise. Whereas FAO specialists regarded systematic forest inventories as the foundation for industrial forestry and long-term forest management, Korean foresters primarily sought to acquire survey techniques and statistical methods that would provide them with the institutional capacity necessary to establish an independent national forest inventory system. Overseas training in Japan, India, Australia, and New Zealand further expanded these transnational networks of expertise and enabled Korean specialists to adapt international forestry practices. The careers of figures such as Shim Jong Seop, Kim Kap Duk or Woo Bo Myung therefore demonstrate that Korean experts were active participants in shaping the localization of global forestry knowledge in the South Korean context.

Although FAO survey data became an important foundation for the nationwide forest inventory of 1975 and thereby contributed to the success of South Korea's large-scale reforestation campaigns during the 1970s, the FAO's broader development model proved less durable. Its emphasis on industrial forestry, standardized management, and plantation-based reforestation often overlooked local ecological and social realities. While FAO experts recognized the fragmentation of forest landownership, they were unable to offer viable institutional solutions. Likewise, the rapid transition from fuelwood to alternative household energy sources fundamentally altered the economic rationale for fast-growing fuelwood plantations,

revealing the limits of development models that had been formulated during the early Cold War.

More broadly, this study contributed to debates on international organizations and development by showing that standardized development models were neither uniformly implemented nor passively received. Instead, they became subject to negotiation and adaptation by local actors with their own objectives and priorities. Future research could extend this perspective by examining the role of the FAO in other fields, such as agricultural science or rural development, thereby moving beyond narratives centered on domestic modernization or bilateral knowledge transfer between South Korea, the United States and Japan toward a more comprehensive understanding of the transnational production of developmental knowledge. At the same time, greater attention should be paid to the longer historical continuities that shaped these postwar development projects. In particular, the relationship between FAO-sponsored watershed management, reforestation, and forest survey practices and earlier colonial forestry institutions and environmental policies deserves further investigation, highlighting how international development initiatives interacted with, transformed, and sometimes reproduced existing forms of environmental governance.

Abstract

This article examines the role of forest surveys in postwar South Korea as a site of transnational knowledge production. Focusing on technical assistance programs led by the Food and Agriculture Organization (FAO) and financed by the United Nations Development Program (UNDP) from 1964 to 1973, it argues that forestry surveys based on aerial photography and statistical sampling functioned as key instruments for making forest landscapes legible, governable, and facilitating their economic exploitation. The study shows how FAO experts promoted standardized survey techniques rooted in European and North American forestry traditions, while Korean foresters selectively implemented and partially adapted these approaches. At the same time, surveys on erosion control and watershed management demonstrated the entanglement of colonial legacies with Cold War development politics. The article highlights three main findings: First, forest surveys facilitated the circulation of a global forestry practices centered on industrial production and resource management. Second, Korean actors exercised agency in shaping project priorities, often favoring data acquisition and technical training over externally proposed management models. Third, the application of aerial photography enabled large-scale state interventions, including reforestation plans and the eradication of shifting cultivation. By situating South Korea within broader Cold War development networks, the article contributes to histories of global technoscience in eco-governance.

Keywords: Forest Survey, Reforestation, Food and Agriculture Organization (FAO), United Nations Development Program (UNDP), Aerial Photography