WORLD BANK GROUP

KOREA GREEN GROWTH TRUST FUND

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ASIA PACIFIC FOREST FORUM

COMPLETION REPORT

Training and Visit of the Türkiye Government Delegation to the Republic of Korea

TECHNOLOGY PARTNERSHIP FOR INTEGRATED FOREST FIRE MANAGEMENT

3 NOV - 7 NOV, 2025

Contents

List of Abbreviations

Abbreviation	Full Name
AFoCO	Asian Forest Cooperation Organization
KFAH	Korea Forest Aviation Headquarters
KFFMSA	Korea Forest Fire Management Service Association
KFFS	Korea Forest Fire Society
KFS	Korea Forest Service
NIFoS	National Institute of Forest Science

I. Introduction

1. Background

Forest fires pose a significant threat to Türkiye's environment, and mitigating this risk is a priority for the Turkish government. In response, Türkiye has intensified efforts to enhance its fire management capabilities, aspiring to become a leader in forest fire management across the Mediterranean region. The Antalya training center plays an instrumental role in these efforts, serving as a nexus for knowledge exchange and fostering collaboration among regional experts.

In this context, the Republic of Korea's advanced integrated forest fire management system serves as a valuable reference model. Korea's comprehensive approach—which includes early detection technologies, rapid response mechanisms, and community participation—offers practical insights that can inform Türkiye's efforts to bolster its fire management capabilities.

The Asia Pacific Forest Forum (APFF) is facilitating this study tour by organizing a Study Tour program for Turkish government officials. The program will introduce participants to Korea's forest fire management strategies, with a focus on early detection, rapid response, and effective policy frameworks. The Program also aims to strengthen cooperation between Korea and Türkiye by building a network of experts committed to advancing forest fire prevention and sustainable forest management in both countries.

2. Training Overview

(1) Objectives

- To understand Korea's **practical approaches to strengthening climate resilience** and technology-based forest fire management, and to observe how advanced systems are being applied and operated in the field.
- To examine how Korea has enhanced its capabilities for wildfire prevention, preparedness, and response through an integrated approach, by analyzing the operational practices of relevant institutions, and to explore ways to adapt these lessons to improve Türkiye's fire management system.
- To facilitate technical and policy dialogue between Türkiye's General Directorate of Forestry (OGM) and Korea's key institutions (KFS, FAH, NIFoS, etc.), focusing on the applicability of real-time response systems such as the Integrated Command System (ICS) and digital communication platforms in Türkiye's context.

(2) Expected Outputs

- Identification of practical entry points within Türkiye's national fire management strategy that can benefit from the methodologies and lessons learned from Korea's wildfire response practices and ICS model.
- Enhanced understanding of data-driven and digital technologies—including communication systems, aerial monitoring, and fire-behavior prediction models—and assessment of their potential for adaptation to Türkiye's operational environment.
- Strengthened institutional partnership between Korea and Türkiye, laying the foundation for expanded cooperation in areas such as capacity building, pilot projects, and regional knowledge-sharing networks.

(3) Duration

: 03 Nov 2025 – 07 Nov 2025

(4) Participants Information

: Total number of participants: 13 in total (including delegation from the World Bank)

(5) List of Participating Institutions and Key Learning Focus

No.	Institution / Organization /Company	Key Learning Focus
1	The Korea Forest Fire Society (KFFS)	Introduction to Korea's integrated wildfire risk management framework and its national coordination mechanism
2	National Institute of Forest Science (NIFoS)	Overview of forest fire disaster management, risk assessment, and institutional response systems
3	Korea Forest Aviation Headquarters	Presentation on wildfire prevention and suppression systems, including ICT-based technologies for real-time response and aerial operations
4	Northern Regional Office of Forest Service (Wonju)	Introduction to the Regional Forest Fire Situation Room and firefighting equipment; demonstration of mechanized suppression vehicles and systems
5	Seo-gu Daejoeon District (Forest Fire Restoration Site)	Field visit to a restored forest area to observe post-fire rehabilitation processes and restoration techniques
6	Sentec Co.,Ltd.	Observation of ICT systems applied to forest recreation and monitoring, with a site visit to Jangtaesan Recreational Forest
7	Korea Forest Fire Management Service Association	Introduction to the role and functions of the Association as a non-governmental organization focusing on forest fire prevention and recovery
8	Korea Forest Service (KFS)	Discussion on Korea's forest fire policy direction driven by advanced ICT technologies; visit to the national Forest Fire Situation Room
9	Hanseo Precision Industry co., Ltd.	Visit to a leading manufacturer of multi-purpose wildfire suppression vehicles, understanding design and field applications

(6) Programme Schedule

World Bank Türkiye Visit Programme Schedule
– 1st Week of November (3rd–7th) -

Date	Venue (City)	Time	Contents	Speaker
11/3 (Mon)	**AFoCO** (Seoul)	08:30 ~ 09:10	Travel to AFoCO Participants will be picked up - at 8:30 AM: Plaza hotel (Turkiye Delegation) - at 9:00 AM: Fairmont hotel (WB)	
		09:10 ~ 09:30	**AFoCO** 1. (20') Opening Ceremony (MC from APFF) * Remarks • WB(5') - Neeta Hooda • KGGTF(5') - Inhye Bak • Delegate (5') – Kenan Akduman • APFF(2') - Chongho Park • Highlights of program(3') - Jean-Young Shin • Group Photo	MC **Jean-Young Shin** (APFF)
		09:30 ~ 09:50	Coffee Break	
		09:50 ~ 10:50	2. Lecture : An Overview of Korea's Wildfire Prevention and Response Policies	**Ki-yeon Ko** (President of the Forestfire Society)
		10:50 ~ 11:30	3. Interactive talk about the Study Visit - Expectations and Learning Objectives on the Study Visit in Connection with the Forest Fire Management; IDOP Project, led by the Delegation from Türkiye (5') - Course introduction (10'): Jean-Young Shin - with Ki-yeon Ko President of the Forestfire Society, joining as consultant	**Delegation from Türkiye** **&** **Ki-yeon Ko** **&** **APFF**
		11:30 ~ 13:15	Lunch	
		13:15 ~ 14:30	Travel to NIFoS	
	NIFoS (Seoul)	14:30 ~ 16:30	**National Institute of Forest Science (NIFoS)** - Introduction of NIFoS and Forest R&D Strategy - Introduction to wildfire disaster risk management and response systems (Forest Disaster Prediction and Analysis Center)	- **Hwajin Yang** (Program Officer) - **Heeyoung Ahn** (Director)
		16:30 ~ 17:30	Travel to Restaurant	
	Saffron Restaurant (Seoul)	17:30 ~ 19:30	**Welcome Dinner**	

		19:30 ~ 20:30	Travel to Hotel (The Plaza Hotel Seoul, Seoul)	
11/4 (Tue)		07:00 ~ 10:00	Travel to Korea Forest Aviation Headquarters ● Departure time - 7:00 Fairmont Hotel(WB) - 7:30 The Plaza Hotel(Turkiye Delegation)	
	KFAH (Wonju)	10:00 ~ 12:00	**Korea Forest Aviation Headquarters (KFAH)** - Introduction on ICT-based wildfire response systems (satellites, drones) ** Currently checking if the schedule can be adjusted*	**Sung Kim**
		12:00 ~ 14:30	Lunch & Travel to North Regional Forest Service	
	North Regional Forest Service (Wonju)	14:30 ~ 16:30	**North Regional Forest Service** - Introduction to the wildfire response situation room - Overview of wildfire suppression equipment specifications and main functions	**- Sung Sik Shin** **- Kyung Ran Kim**
		16:30 ~ 17:45	Travel to Hotel (Interburgo Hotel Wonju, Wonju)	
11/5 (Wed)		08:30~10:30	Travel to **Sejong National Arboretum**	
	Sejong National Arboretum (Sejong)	10:30 ~11:30	Sejong National Arboretum - Field visit	
		11:30-13:30	Lunch & **Travel to Travel to Forest Fire Restoration Site (Daejeon)**	
	Restoration Site (Daejeon)	13:30-14:30	**Visit forest fire restoration site** - Field visit at Sanjik-dong, Daejeon	**- Tae Joon Park** (Program Officer of Daejeon Seo-gu Office) **- Seok Gyu Jang** (Secretary General of Korea Forest Fire Management Service Association)
		14:30~15:00	**Travel to *Jangtaesan (National Recreation Forest)***	
	Jangtaesan (Daejeon)	15:00~15:40	***Jangtaesan (National Recreation Forest)*** **Show up the ICT system from Sentec Co.,Ltd.**	**Jung Won Seo** (CEO of Sentec Co.,Ltd)
		15:40~16:30	**Travel** to Korea Forest Fire Management Service Association	
	KFFMSA (Daejeon)	16:30~17:30	**Korea Forest Fire Management Service Association (KFFMSA)**	**Seung Hyun Jin** (Director of the Training Center)

		17:30~18:00	Travel to Hotel (Hotel Onoma, Daejeon)	
11/6 (Thu)	Daejeon	09:00 ~ 10:00	**Travel to Korea Forest Service**	
		10:00~11:30	**Korea Forest Service** - Policies on ICT-based advanced wildfire response - Visit to the national wildfire control center and system overview ** Currently checking if the schedule can be adjusted*	**Deok Je Cho** (Head of the Central Forest Disaster Control Center) **Young ji Lee** (Program Officer)
		11:30~14:30	Lunch & Travel to Hanseo Precision Industry co., Ltd.	
		14:30 ~ 15:30	**Hanseo Precision Industry co., Ltd.** - A South Korean private corporation specializing in firefighting vehicles and equipment.	**Kye Young Koo** (Sales Department General Manager)
		15:30 ~ 18:00	Travel to Hotel (The Plaza Hotel Seoul, Seoul)	
11/7 (Fri)	Seoul	09:20 ~ 10:00	Travel to AFoCO	
		10:00 ~ 11:40	1. Wrap-up Presentation(‘20)): Turkiye : Key Outcomes from the Study Visit Highlights key takeaways, insights, and lessons learned. - Presents what was most meaningful or different compared to their own practices. - Frames the experience in terms of potential applications back home.	Representative from the Türkiye delegation
			2. Reflections and feedback: Korean Consultants(‘60) - Delegates reflect on program content, structure, and relevance. - Feedback shared on what was impactful and what could be improved. - Open space to explore mutual areas of interest and possible future collaboration. 3.Certificate award & Group Photo(‘10)	**Ki-yeon Ko** (President of the Forestfire Society) & **Sunpil Jin** (Vice Executive Director of AFoCO)
		11:40 ~ 13:00	**Lunch**	
		13:00 ~ 13:30	**Travel to the destination for Cultural Program**	
		13:30 ~ 17:00	**Cultural Tour** (Gyeongbokgung Palace, Bukchon Hanok village, Insa-dong)	

II. Session Summaries and Discussion Highlights

(Session 1) Integrated Wildfire Risk Management in Korea

Ki-yeon Ko
(President of the Forestfire Society)

● Session Overview

Korea's evolving approach to wildfire governance was introduced through a detailed explanation by Ki-yeon Ko, President of the Forestfire Society, who outlined the country's shift from a response-oriented model to a prevention-centered, integrated risk management framework. He began by contextualizing Korea's forest landscape: with 63% of national land covered by forests and biomass having increased fifteenfold since the 1970s, the country now faces heightened vulnerabilities associated with aging stands and extensive fuel accumulation.

Building on this ecological backdrop, President Ko highlighted how recent large-scale wildfire events—such as Uljin–Samcheok (2022), Gangneung–Hongseong (2023), and Yeongnam (2025)—demonstrate the accelerating influence of strong winds, low humidity, and heavy fuel loads on fire behavior. These incidents served as case studies illustrating the interplay between climate conditions and accumulated forest fuels, reinforcing the importance of adopting a system-wide approach to wildfire risk.

A key part of his presentation elaborated on the development of Korea's multi-layered wildfire management system, anchored by the Korea Forest Service (KFS) Fire Situation Center. This structure integrates aerial firefighting assets, including a fleet of 49 helicopters, with ground suppression forces, AI-driven fire danger forecasting, satellite-based monitoring, and community-led prevention networks. Through this interconnected system, Korea aims to improve operational coordination and enhance real-time situational awareness across agencies.

President Ko then outlined the four strategic pillars guiding the KFS 2025 Policy Direction:

1. Reinforcing Prevention through expanded firebreaks, improved forest road networks, and targeted fuel-load management
2. Technological Modernization, marked by the deployment of heat-sensing drones, AI-enabled early-warning systems, and advanced satellite imagery

3. Strengthening Response Capacity via enhanced air–ground joint training and the development of night-time suppression abilities
4. Post-Fire Recovery grounded in climate-resilient species selection and adaptive restoration planning.

Another major theme in his talk was the growing importance of Wildland–Urban Interface (WUI) management. Korea is currently developing an AI-based national WUI risk map, expanding the *"Village That Does Not Burn"* initiative to 150 communities, and improving inter-ministerial evacuation planning among KFS, MOIS, and MLIT. These efforts reflect a broader recognition that wildfire resilience requires harmonized action across multiple government sectors.

In addressing climate variability, President Ko emphasized Korea's upgraded Fire Danger Forecasting System, which integrates climate parameters into risk prediction models. He underscored a fundamental paradigm shift by stating that *"climate is not an excuse, but a design input for policy,"* framing climate factors as essential components of long-term planning rather than external constraints.

President Ko concluded by identifying persistent challenges—including excessive fuel loads in certain landscapes and the need to improve local-level decision-making flexibility—and underscored the value of continued collaboration and mutual learning between Korea and Türkiye in advancing a sustainable, science-based model of wildfire management.

● Discussion and Participant Insights

Q. Do you also use airplanes for wildfire suppression, in addition to helicopters?

A. After the large wildfire in 2022, discussions began on introducing firefighting airplanes, and they are planned to be put into full operation from 2026.
So far, Korea has mainly relied on helicopters for aerial firefighting.
It is known that Türkiye operates 11 fixed-wing firefighting planes, and sharing experiences in aerial firefighting between the two countries would be helpful for future cooperation.

Q. How is Korea shifting its wildfire strategy from fire suppression to prevention, and what key policies are involved in this process?

A. Until now, Korea has mainly relied on manual, manpower-based firefighting systems, but this approach has clear limitations.
In the large wildfire of March 2025, about 100,000 hectares of forest were burned, clearly showing the need to change the system.
As a result, Korea is gradually moving from manpower-based response to automated management systems that use AI-based prediction technology and drones for monitoring and prevention.

Q. You mentioned that about 500–600 wildfires occur each year in Korea. What are the main causes?

A. Most wildfires in Korea are caused by human activities.
Many fires start when agricultural waste is burned and the flames spread uncontrollably, or when sparks from brush cutters ignite dry vegetation during grass-cutting.
Because hiking is a popular activity in Korea, fires also occur frequently due to careless actions such as discarded cigarette butts.
As a personal note, He mentioned that he once asked a tobacco company executive to promote e-cigarettes as a safer alternative to reduce fire risks.

Q. Are there any cases where wildfire management in Korea receives financial support from the private sector, beyond public funding? Are there financial assistance programs for private or local areas?

A. In Türkiye, wildfire management is operated entirely with government funding, and the same applies to Korea.
In some countries, such as the United States, there are cases where insurance or private capital is used through mechanisms like the “Green Fund.”
However, in Korea, wildfire management and response are fully financed by the national budget, without private sector involvement.

Q. In your presentation, you mentioned three potential areas of cooperation between Korea and Türkiye. In which specific fields do you see opportunities for future collaboration?

A. It is understood that Türkiye operates a wildfire training center. If possible, Korean professionals could be invited to participate in training programs there, and likewise, Turkish experts could be invited to Korea’s simulation center for joint learning and experience sharing.
Korea still faces limitations in both wildfire prevention and suppression, so it would be valuable to build a complementary partnership, drawing on Türkiye’s experience and technical expertise in these fields.
Above all, Ki yeon Ko emphasized that continuous dialogue and mutual exchange are the key foundations for sustainable cooperation between the two countries.

Q. When a fire occurs in an urban area, which agency is responsible for firefighting?

A. Urban fires are managed and handled by the National Fire Agency (NFA).
The NFA takes the lead in initial suppression efforts, and if the fire threatens to spread into forest areas, support is requested from the Korea Forest Service (KFS).
In the case of residential fires, information is shared in real time between both agencies to ensure a rapid initial response and to prevent the fire from spreading into nearby forests.
In addition, fire officials are stationed within the Korea Forest Service, where they can provide detailed explanations about inter-agency cooperation and operational procedures.

Q. How are helicopters and drones coordinated and used during wildfire suppression?

A. When a wildfire occurs, a “Golden Time” is designated, during which the first water drop must be carried out within a set timeframe after the fire report is received.
This golden time is managed by the control center of the Korea Forest Service (KFS) and is also applied to the National Fire Agency and the military.
Depending on the scale and situation of the fire, drones are mainly used at night to identify fire movement and spread paths, while helicopters are the main tool for effective daytime firefighting operations.

DAY1
3 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 2) National Institute of Forest Science (NIFoS)

Introduction of NIFoS and Forest R&D

Hwajin Yang (Program Officer)

Session Overview

A comprehensive perspective on Korea's forest science landscape was offered through an exploration of the mandate and strategic direction of the National Institute of Forest Science (NIFoS), the country's central institution for forest research. Mr. Yang provided an overview of how scientific research underpins Korea's forest policy, informs industrial innovation, and increasingly contributes to international collaboration.

He began by introducing the institutional evolution of NIFoS, which was established in 1949 to support national forest restoration efforts following periods of severe deforestation. Over the decades, NIFoS has expanded its role to address forest resource management, forest disaster response, and emerging ecological challenges. Today, the institute operates a specialized structure consisting of 4 departments, 16 divisions, 3 thematic centers, and 4 regional centers, employing 448 staff, including 258 researchers. With an annual budget of approximately USD 39.9 million, NIFoS implements about 110 research projects each year, spanning fields such as forest disaster prediction, digital forest management systems, biomass utilization, ecological restoration, and materials science.

A major component of the presentation focused on the 2023–2027 Technology Roadmap for Forest Science (TRM). Developed in alignment with Korea's national policy priorities and the broader shift toward digital and climate-responsive science, the TRM sets out six flagship research programs:

1. Integrated management of forest disasters, including wildfires, landslides, and forest pests;
2. Digital transformation of sustainable forest management systems;
3. High-value wood utilization and development of eco-friendly alternative materials;

4. Industrialization of forest bio-resources, contributing to the bioeconomy;
5. Conservation and enhancement of healthy forest ecosystems;
6. Expansion of forest welfare, policy research, and international cooperation.

Mr. Yang highlighted how these programs are designed not only to respond to Korea's domestic forestry challenges but also to position NIFoS as a regional hub for applied forest science and technology.

The discussion then shifted to NIFoS's international portfolio. Ongoing initiatives include a peatland restoration program in Indonesia, joint scientific work on mangrove ecosystems, desertification control projects, urban forestry research, and the development of sustainable wood harvesting models. Many of these endeavors have yielded tangible outcomes, such as community-based restoration approaches, strengthened cross-border governance, and improved monitoring tools for partner countries. NIFoS also collaborates with AFoCO on joint research and capacity development programs and works closely with the UNDP Seoul Policy Centre, supporting developing countries' progress toward the SDGs through science-based forestry solutions.

In closing, Mr. Yang underscored NIFoS's expanding role within global research networks. As an active member of IUFRO, the institute has long contributed to international scientific exchange. Notably, NIFoS will serve as the Chair organization of APAFRI from 2024 to 2027, further solidifying its leadership in promoting forest science cooperation across the Asia–Pacific region. This trajectory reflects NIFoS's evolution from a national research institute into a key regional actor advancing evidence-based forest governance.

Discussion and Participant Insights

Q. Could you elaborate on NIFoS's forest wildfire research?

A. NIFoS operates a dedicated center for wildfire research and response. The institute focuses on wildfire spread prediction modeling, restoration techniques for burned areas, and AI-based technologies for wildfire response. Many of these research outcomes are already applied in operational systems and facilities, and the center provides an opportunity to see how these research activities are being carried out.

Q. Since about 60% of Korea's land is forest, what impact does this have on the national economy?

A. The economic contribution of forests in Korea is relatively low. The forestry sector does not play a major role in driving the national economy. However, the government and research institutions are working to enhance the potential of the forestry sector through various policies

and development efforts.

Q. You mentioned collaboration with UNDP. What kinds of research or activities are being carried out, and are there any local field projects?

A. NIFoS works in partnership with the UNDP Seoul Policy Centre to support international forest-related initiatives. Korean experts participate by providing technical advice and policy support. However, local field projects must be approved and implemented by each country's UNDP office, so the existence of specific local projects needs to be confirmed with the respective office.

DAY1
3 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 3) National Institute of Forest Science (NIFoS)

Introduction to wildfire disaster risk management and response systems
(Forest Disaster Prediction and Analysis Center)

Heeyoung Ahn (Director)

● Session Overview

A detailed explanation of Korea's science-driven disaster management framework was provided through the work of the Forest Disaster Prediction and Analysis Center at NIFoS. Director Ahn outlined how the Center, established in 2015 and significantly modernized in 2024 through an upgrade project of approximately 1 billion KRW, has become a national platform integrating prediction, analysis, and real-time response for forest-related disasters.

Director Ahn began by noting that Korea's seasonal climate structure—spring and autumn wildfire seasons and a summer landslide season—necessitates a differentiated monitoring and alert system. The Center continuously evaluates meteorological and environmental indicators during these high-risk periods to maintain an updated understanding of national hazard levels.

A central element of the presentation was the National Wildfire Danger Forecasting System, mandated under the Forest Protection Act. This system analyzes wildfire danger on an hourly basis and produces forecasts extending up to seven days, serving as an official reference for determining Korea's national wildfire crisis alert levels. Using the 2022 Uljin–Samcheok wildfire as an example, Director Ahn illustrated how forecast outputs informed operational decisions in real time.

The presentation then introduced a suite of digital tools that support nationwide wildfire response. The Wildfire Situation Control System monitors all wildfire incidents in real time, generating Wildfire Situation Maps that visualize fire progression, suppression operations, evacuation zones, and resource deployment. These maps integrate daytime helicopter surveillance footage and nighttime thermal imagery from drones, ensuring continuous situational awareness. Data produced through this system is routinely shared with the Korea Forest Service, Fire Agency, Ministry of Defense, police authorities, and other relevant institutions to coordinate suppression and evacuation strategies.

Complementing these tools is the Wildfire Spread Prediction System, which models fire movement based on weather, topography, and vegetation characteristics. This system provides critical insights for directing suppression assets and anticipating high-risk zones ahead of time.

The second half of Director Ahn's presentation focused on landslide management. Korea employs a tiered set of tools, including the National Landslide Risk Map, Debris Flow Impact Prediction Map, and an early warning system based on the KLES Tank Model, which issues alerts at 80%, 90%, and 100% saturation thresholds. These tools form the backbone of national decision-making during typhoons and periods of heavy rainfall.

To overcome limitations in traditional weather-observation networks, the Center has also developed a nationwide Mountain Weather Observation Network in cooperation with the Korea Meteorological Administration. Currently operating 480 stations, the network is planned to expand to 620 stations by 2027, significantly improving Korea's capacity to detect local-scale hazards in mountainous terrain.

In closing, Director Ahn emphasized that these integrated systems collectively enhance Korea's predictive, analytical, and operational capabilities. By advancing technologies such as drones, AI-based analysis, and high-resolution environmental monitoring, NIFoS aims to further strengthen national resilience to wildfires and landslides.

Discussion and Participant Insights

Q. Do helicopters have tracking devices, and how is the wildfire situation map produced?

A. Yes. All firefighting helicopters are equipped with real-time tracking devices, which provide flight paths and live video during wildfire operations. During the daytime, the Center analyzes helicopter footage, smoke location, terrain, and elevation—verified directly by field experts—to produce real-time wildfire situation maps.
At night, helicopters cannot operate, so the Center uses drones equipped with thermal and optical sensors to detect fire lines and update the situation map. For safety reasons, helicopters and drones are not flown at the same time during daytime operations. Due to legal regulations, helicopters are not equipped with infrared cameras.
With this system, wildfire situation maps are updated hourly, reflecting fire lines, suppression progress, and evacuation information. These maps are shared with national authorities, including the presidential office, as well as the public and media.

Q. Have you personally managed wildfire sites, and what is your role as Center Director when around 600 wildfires occur each year?

A. The Director explained that she worked directly on wildfire sites until about five years ago. Based on that field experience, her current responsibilities include analyzing wildfire data, developing response strategies, and providing guidance to relevant agencies and field teams. Through these functions, the Center supports effective management of the many wildfire incidents that occur each year.

Q. How do you communicate with the teams working at the wildfire site?

A. Communication is carried out through an official system developed by the Korea Forest Service, not through individual contact lists or regular messaging apps. All personnel use this dedicated system to share information. It can be accessed both through devices distributed to field teams and through mobile phones, allowing everyone on-site to use the same platform for real-time updates and coordination.

Q. How do you notify local residents when a wildfire occurs?

A. Residents are informed through village broadcasting, local news channels, and emergency mobile alerts. These methods allow rapid delivery of information and evacuation instructions to the community.

Q. How are you improving the accuracy of wildfire prediction models in response to climate change, and have you evaluated the system's performance after its development?

A. The current wildfire prediction system has an accuracy of about 78%, and the wildfire spread prediction system performs in the 80% range. Because climate change increases uncertainty in prediction, NIFoS has begun applying AI technologies to further improve model accuracy. Since these systems are directly linked to resident evacuation and public safety, continuous evaluation and refinement are being carried out to enhance their reliability.

DAY2
4 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 4) Korea Forest Aviation Headquarters (KFAH)

Introduction on ICT-based wildfire response systems (satellites, drones)

Man Ju Kim (Director General)
Sung Kim (Program Officer)

Session Overview

This session provided an overview of Korea's aviation-based wildfire response system as managed by the Korea Forest Aviation Headquarters (KFAH). Officials explained that the headquarters operates 12 aviation bases, staffed by 443 personnel and equipped with 49 firefighting helicopters, enabling dispatch within approximately 30 minutes of a reported ignition. This structure plays an essential role in Korea's rapid-response capability during peak wildfire seasons.

The presentation began with an explanation of Korea's wildfire patterns. Most incidents occur between February and May, and many are caused by human activities, including accidental fires by forest visitors (30%) and agricultural burning (24%). In response, the government has expanded the official wildfire danger period, strengthened cooperation among related agencies, promoted residue-shredding programs to reduce burning, and increased the use of AI-based monitoring systems. Officials also noted that expanding the number of large firefighting helicopters and improving pilot training remain key priorities.

KFAH introduced its helicopter fleet—S-64E (8,000 L), KA-32 (3,000 L), and KUH (2,000 L)—and explained its three-tier response system. Depending on fire intensity and spread, resources can be escalated and integrated into nationwide operations. Coordination with ground crews, regional forest services, firefighters, the military, and police is an integral part of this system.

A case study from March 2025 illustrated how the aviation response system operates during a large event. The wildfire affected 103,876 hectares and required 1,226 helicopter deployments and 70,723 personnel. The session described how aviation resources were allocated under strong wind conditions and how multiple fires were managed simultaneously. Additional examples from urban-adjacent fires, such as Ulsan–Eonyang and Daegu Hamji Mountain, showed the use of large helicopters for protecting residential areas and the KUH's role in night-time firefighting.

The session concluded with a brief explanation of support equipment, including 40,000-liter

mobile water tanks used for retardant mixing and helicopter refilling in remote areas. Officials noted that such systems help maintain stable aerial operations in locations where water access is limited.

Discussion and Participant Insights

Q. The Korea Forest Service stated that it owns 49 helicopters, yet the actual operational capacity was mentioned as approximately 200. Could you clarify this difference?

A. The Korea Forest Service (KFS) owns 49 helicopters. However, Korea's wildfire response relies on a combined national fleet that integrates aircraft from multiple agencies. Local governments operate or lease an additional around 80 helicopters, and the National Fire Agency maintains about 35 helicopters. Civilian aircraft may also be contracted when needed.
Support from the military and police is mobilized depending on the severity of wildfires. In past wildfire seasons, around 40 military helicopters were typically deployed. Following a recent presidential directive, the government is preparing a system that will allow up to 120 military and police helicopters to be mobilized during peak wildfire periods starting next year. Therefore, while KFS owns 49 helicopters, the total operational fleet during the spring and autumn wildfire seasons (approximately 150 days) can reach around 200 aircraft through inter-agency cooperation and seasonal leasing.

Q. It was mentioned that when the burned area exceeds 100 hectares, command authority shifts to a higher-level agency. Is this correct?
A. In Korea, 100 hectares is the official threshold used to classify a wildfire as a large-scale event.
For fires smaller than 100 hectares, command authority depends on land ownership.
• If the fire occurs on national forest land, the Korea Forest Service (KFS) has full command.
• If it occurs on private or local government–owned land, the local government holds command authority.

However, if a wildfire spreads across two or more local government jurisdictions or if the situation requires unified national coordination, command authority is transferred to the Minister of the Korea Forest Service. In such cases, the KFS leads the overall response to ensure consistent and effective management.

Q. It was mentioned that the headquarters consists of four divisions and twelve regional bases. Which organization stands above these units in the administrative structure?

A. The higher-level authority over the Korea Forest Aviation Headquarters is the Korea Forest Service (KFS). Although the KFS is institutionally under the Ministry of Agriculture, Food and Rural Affairs, it operates with its own independent administrative structure for forest-related policies and operations.
In wildfire response, the KFS holds full command authority. The term "aerial command" refers to decision-making powers regarding helicopter deployment priorities, safety management, and allocation of aviation assets, all of which are coordinated centrally by the Korea Forest Service.

Q. Could you explain how domestic and international helicopter leasing works, including contract duration, cost structure, and whether additional charges apply?

A. In Korea, domestic helicopter leasing follows a fixed-period contract system. For example, if a contract guarantees one flight hour per day for 150 days, the agency is entitled to a total of 150 flight hours. Depending on their budget, local governments typically lease helicopters for around 150 days, and in some cases extend this to 200 days.
For a 3,000-liter helicopter, the cost is approximately KRW 7–8 million per day, resulting in a total of KRW 1.2–1.3 billion for a 150-day contract. If all allotted hours are used before the end of the contract period, additional hours are charged at the same daily or hourly rate. So far, cases requiring significant extra payments have been rare.
International leasing operates under a different model. Overseas contracts usually include a guaranteed fixed base cost, with additional charges based on actual flight hours used. The typical contract period is 90–100 days, and costs are calculated according to the number of hours flown during that time. Because transporting a helicopter to Korea can take up to a month and incurs substantial relocation expenses, the contract structure reflects these logistical realities.
It was also noted that the S-64E is owned by the Korea Forest Service, so no leasing fees are required for that aircraft.

Q. Is there a device that measures or tracks the exact amount of water dropped by helicopters during wildfire operations?

A. At present, the Korea Forest Service does not use a device that directly measures the volume of water dropped by its helicopters. However, the flight path and number of drop missions for each aircraft can be monitored in the operations control room, which allows the total estimated water volume to be calculated based on the number of sorties.
Because these are government-owned aircraft, there is no requirement for volume-based billing or cost accounting, and therefore precise measurement systems for individual drop volumes are not currently in use.

Q. How are budgets for wildfire response shared between the central and local governments, and what coordination system exists between them during wildfire events?

A. The Korea Forest Service (KFS), as the central authority, allocates a significant portion of the national budget to support wildfire prevention, suppression, and recovery activities at the local level. Major programs—such as installing ICT-based monitoring cameras, building firefighting facilities, and conducting forest management and thinning—are implemented through joint funding between the central and local governments. Because wildfire risk varies across regions, the central government assigns budget levels based on regional vulnerability and forest characteristics.

The Forest Aviation Headquarters also receives most of its operational and equipment budget through KFS, including funding for firefighting vehicles and personnel. However, local governments' requests for central support for helicopter leasing have not yet been approved, and leasing costs continue to be covered by each local government.

Regarding communication and coordination, most of Korea's roughly 500 annual wildfires are small-scale events handled primarily by local governments. However, for medium and large-scale fires, the central and local governments operate under a joint response system, with the Forest Aviation Headquarters providing aerial firefighting support upon local request.
This cooperative structure ensures unified decision-making across all stages—initial response, expanded suppression, aircraft deployment, and post-fire recovery.

Q. What measures are being taken to prevent wildfires, especially in areas where people and forests coexist or in regions vulnerable to fire?

A. In Korea, most wildfires are caused by human activities rather than natural factors. For this reason, the government focuses on prevention programs that reduce human-caused ignition. In agricultural areas, the use of fire for waste disposal is being reduced by expanding composting and shredding programs for agricultural residues. In regions with high wildfire risk, fuel reduction treatments are carried out to minimize the likelihood of fire spread.

The authorities are also strengthening inspections and patrols. Looking ahead to an aging society, Korea is investing in AI-based monitoring systems to compensate for potential shortages in field personnel. To improve response capability, access roads and forest trails are being upgraded so that high-performance firefighting vehicles can enter fire-prone areas. In addition, long-term forest management plans include transitioning to more fire-resistant tree species in vulnerable regions.

Q. During large-scale wildfires, who holds the final command authority, and how has the central government's leadership role been strengthened recently?

A. The ultimate command authority during wildfire response lies with the Minister of the Korea Forest Service (KFS). In the past, even major wildfires typically mobilized only around 40 military and police helicopters. Starting next year, however, up to 120 aircraft can be deployed, reflecting an expansion of the Minister's authority and enabling faster mobilization of national resources from the earliest stages.

Korea has traditionally recorded low numbers of wildfire-related deaths—often one or two per

incident—and local governments were responsible for initial response. However, the unusually high loss of life this year, with more than 30 fatalities, prompted the government to reassess the system and adopt a more centralized approach.

As a result, the Minister of KFS can now exercise command authority before fires escalate into large-scale events, ensuring rapid deployment of national aviation assets and firefighting resources. The President has emphasized that the government will "provide all necessary resources, but responsibilities must be clearly upheld," reinforcing a stronger national response framework.

Q. How do ground firefighting vehicles communicate with helicopters, and what is the command structure for ground crews?

A. Communication between ground firefighting vehicles is conducted through the land-based radio network. Communication between ground units and helicopters uses FM radio frequencies, which serve as the standard channel for air-to-ground coordination.

The command structure for ground crews depends on land ownership and the scale of the fire. For fires occurring on national forest land, the Korea Forest Service (KFS) holds command authority. For fires on private or local government–owned land, the local mayor or county governor assumes command.

When a wildfire becomes large enough to require an Incident Command Center, the Ground Operations Leader takes charge of all ground suppression activities. For smaller fires, no command center is established, and ground crews respond immediately under standard operating procedures.

Q. Since much of Korea's forest land is privately owned, how are firefighting costs handled when a wildfire occurs on private property?

A. In Korea, the government covers all wildfire suppression costs, regardless of whether the land is publicly or privately owned. Landowners are not charged for firefighting operations. However, in cases of intentional arson, legal penalties may apply in accordance with relevant laws.

Q. Do you use drones during wildfire response operations?

A. Yes. Drones are primarily used at night to monitor wildfire conditions. Since active suppression is generally not conducted at night for safety reasons, drones are deployed every two hours to capture imagery. These images are then used to update situation maps and assess fire spread patterns.

Q. Regarding the use of mobile water tanks, why is natural water considered insufficient in Korea despite being surrounded by the sea? And if storage tanks are available, why are mobile reservoirs still necessary?

A. Seawater is rarely used for firefighting because its salt content causes corrosion to aircraft and equipment. Therefore, Korea primarily uses freshwater from lakes and reservoirs. However, many rivers in Korea are shallow, and wildfire areas often have dense power lines, making it

difficult and unsafe for helicopters to perform direct water scooping.
For these reasons, mobile water tanks are installed near wildfire sites to provide a reliable freshwater source and reduce travel time for helicopters, improving overall suppression efficiency.

< Special Comments 1 >

Kenan Akduman, Deputy Director General

Türkiye is the world's second-leading country in the use of drones after the United States, possessing long-endurance, long-range UAV technologies capable of flying up to 12 hours and transmitting live images from more than 100 kilometers away. Given that Korea's forest area covers approximately 6.3 million hectares, deploying only two or three of Türkiye's long-range drones would be sufficient to establish a 24-hour continuous monitoring system. The large-scale wildfires that occurred in Korea this year also demonstrate the value of such technology; in fast-moving fires driven by strong winds over wide areas, the ability to update information in real time is essential, and drones are particularly effective in this regard. They are not constrained by altitude and can detect hotspots from tens of kilometers away, offering advantages that go beyond what helicopters can provide.

Türkiye has strengths in drone-based wildfire response, while Korea has extensive experience in operating domestically produced helicopters. This creates a strong basis for mutually beneficial cooperation.

Furthermore, because Korea's peak wildfire season is from February to May and Türkiye's is from June to September, the two countries could share or lease aerial firefighting assets during their respective off-seasons, maximizing efficiency and operational value. Türkiye also leases aircraft for wildfire response, and as a brother nation to Korea, we believe that developing cooperation in this field would be both meaningful and strategically beneficial.

< Special Comments 2 >

Kim Man-ju, Director General of Korea Forest Aviation Headquarters

We recognize that Türkiye is a global leader in drone technology, and sharing your operational data or equipment would be greatly beneficial for Korea. The drones currently used in Korea are small models with limited endurance and coverage capacity, which makes it difficult to conduct long-duration flights or wide-area monitoring. Although we have begun testing firefighting drones that disperse aerosol agents, their payload capacity is only about 10–20 kilograms, resulting in limited effectiveness in real wildfire conditions.

One area where Türkiye's support would be especially valuable is wildfire mapping. Technologies that can immediately distinguish burned and unburned areas, and analyze fire spread patterns using thermal imaging, would significantly enhance Korea's situational awareness. This year's severe damages were largely due to ultra-fast wildfires, and if drones could generate real-time maps during nighttime as well, enabling 24-hour monitoring, it would substantially improve our suppression strategies.

Moreover, Korea requires drone platforms that can operate safely at medium and high altitudes without posing collision risks to helicopters. Such systems would allow continuous, precise monitoring regardless of flight operations by manned aircraft.

Finally, as Türkiye has suggested, the fact that our wildfire seasons differ—February to May in Korea and June to September in Türkiye—creates a strong opportunity for cooperation. Sharing or leasing helicopters during each country's off-season would be highly efficient, and I believe this proposal is worth raising with the Korea Forest Service leadership.

DAY2
4 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 5) North Regional Forest Service

- Introduction to the wildfire response situation room
- Overview of wildfire suppression equipment specifications and main functions

Sung Sik Shin
Kyung Ran Kim

Session Overview

This session involved a visit to the Northern Regional Forest Service (NRFS), one of the five regional offices under the Korea Forest Service. The briefing aimed to provide an understanding of how national forests are managed at the regional level and how wildfire response systems operate in practice. The presentation by Ms. Kim Kyung-ran outlined the agency's organizational structure, forest characteristics, and key responsibilities. The delegation also visited the Forest Disaster Situation Room and observed an outdoor demonstration of wildfire suppression equipment.

Ms. Kim explained that the NRFS is composed of 2 divisions, 1 team, and 6 National Forest Management Offices, with a total workforce of 397 personnel. The office manages approximately 447,000 hectares of national forests across Seoul, Gyeonggi Province, and northern Gangwon Province. Forest composition includes about 50% broad-leaved forests, 31.9% coniferous forests, and 25.5% mixed forests. Stands aged 41–50 years and 31–40 years make up more than 65% of the area, reflecting a predominance of mature forest stands in the region.

The presentation emphasized that regional forest services play a broader role than routine forest maintenance. Their responsibilities include wildfire monitoring, access control during high-risk periods, initial response coordination, cooperation with related agencies, and preparation for forest-related disasters. These functions support both prevention and on-site operational readiness throughout the year.

During the visit to the Forest Disaster Situation Room, staff demonstrated several monitoring and management platforms used in wildfire and landslide response. These included the wildfire situation dashboard, wildfire risk index maps, the mountain weather observation network, and systems for access control and evacuation route information. The AI-based remote surveillance system was also introduced, showing how camera feeds, terrain data, powerline locations, potential water sources, and communication relay points are combined into an integrated map to support resource allocation during emergencies.

The outdoor component of the session featured a demonstration of key wildfire response equipment. The wildfire command vehicle was presented as a mobile platform that provides real-time visual and situational data to field commanders. The mechanized suppression system, consisting of pumps, hoses, and portable tanks, demonstrated how water delivery can be maintained across varied terrain. The U5023 high-performance wildfire engine was introduced as a vehicle designed for off-road access with an onboard water tank and enhanced mobility for rugged environments.

Through this visit, the delegation gained a practical understanding of how regional forest offices manage national forest lands, coordinate wildfire response, and operate the monitoring and suppression systems that support field activities.

● Discussion and Participant Insights

Q. Where does the budget come from?

A. The budget is provided by the Korea Forest Service and delivered to local governments. In Korea, about 70% of forests are privately owned, while the remaining 30% are managed as national forests.

Q. From which countries do local governments lease helicopters, and do they also purchase helicopters?

A. In Korea, helicopters are mainly leased from the United States and Australia. Many of the helicopters currently in operation are domestic models, and in the past Korea also purchased helicopters from Russia. At present, however, the system relies on leasing rather than purchasing.

Q. How are the criteria and plans for timber harvesting in national forests established, which institutions are responsible, and what survey methods or technologies are used in the planning process?

A. The criteria for harvesting differ by tree species. The regional forest offices plan the scale and method of harvesting, while regional forest plans are developed on a 20-year cycle, with additional detailed plans prepared by each National Forest Management Office. These plans

include not only harvesting but also forest tending, ecological management, and tourism. The planning process follows the steps of survey–planning–implementation–evaluation, and national forest management plans operate on a 10-year cycle. Satellite data are also used to support surveys and planning.

Q. Are there any government policies or support programs specifically for mountain villages in forest areas?

A. Korea has various policies and programs that support mountain villages, including projects related to forest products and other forestry-based activities. The Korea Forest Service invests approximately 2.6 trillion KRW per year in these initiatives.

Q. What qualifications or preparation are required for staff working here?

A. Most staff members have graduated from forestry-related universities and hold relevant certifications. Others join through the national administrative examination. Approximately 70% of the workforce consists of specialists, while about 30% are general administrative staff.

Q. Which institution installs and manages the weather observation stations, and how many are currently in operation?

A. The weather observation stations are installed and managed by the National Institute of Forest Science under the Korea Forest Service. More than 300 stations are currently in operation, and the system is continuously expanding. Photos of the stations will be shared later.

Q. Why does the wildfire risk map show a yellow (elevated) level even when the temperature, wind, and humidity do not feel particularly high?

A. The wildfire risk level is calculated using weather data measured in mountain areas, so it may differ from what people feel in daily conditions. The office also distributes a “daily wildfire risk forecast” sheet every morning.

Q. Is there a system to track the movement or arrival of wildfire suppression vehicles?

A. The movement of high-performance wildfire engines can be monitored. In addition, crews carry mobile devices during deployment, which allow the office to confirm whether the vehicle has arrived at the fire site.

Q. How does the system detect a wildfire through the unmanned cameras, and how are alerts delivered?

A. The unmanned cameras send video to an AI system that analyzes whether smoke is present. When the AI detects signs of smoke, it highlights the suspected footage and continues to improve through ongoing learning. This system was introduced in August and is still developing. If the AI identifies a possible fire, alerts are sent to both the staff and local residents.

Q. Can the office view camera footage from other regions as well?

A. The regional forest office can view only the camera footage installed within its own jurisdiction. The central Korea Forest Service manages and oversees all camera footage nationwide.

DAY3
5 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 6) Visit forest fire restoration site

Field visit at Sanjik-dong, Daejeon

Tae Joon Park
(Program Officer)

● Session Overview

This field component allowed the delegation to observe Korea's post-fire restoration practices at three locations in the Sanjik-dong area of Seo-gu, Daejeon. The visit focused on how restoration approaches differ across sites depending on terrain, soil conditions, and the degree of fire damage.

The 2023 wildfire burned 646.45 hectares of forest in the district, leading to its designation as a Special Disaster Zone. Restoration is being carried out through a combination of natural

regeneration (approx. 565 ha) and artificial reforestation (37 ha). These decisions are based on assessments of damage severity, landslide risk, ecological recovery potential, and stability of the surrounding slopes.

At the three sites visited, the delegation observed that restoration methods varied within the same affected landscape. In areas with steep slopes and higher landslide risk, artificial planting was used to stabilize terrain and reduce the chance of secondary hazards. In sections where soils were shallow and rocky, early intervention was prioritized despite challenging conditions, reflecting the need to prevent erosion and further degradation. In areas with better soil conditions, planting focused on economic and medicinal species, such as jujube and Aralia elata, to support ecological recovery while contributing to future income generation for forest owners.

The handling of burned trees also reflected a differentiated approach. Some standing dead trees are retained to support natural regeneration, while low-value, severely charred timber is either distributed to residents at no cost or discarded. Officials noted that recent efforts include exploring the use of burned timber for biomass energy and construction materials.

The government covers the full cost of restoration under the national disaster recovery program. After reforestation, the timing and method of any future harvesting are regulated to ensure that restored forests are managed sustainably.
Through this site visit, the delegation gained a clear view of how Korea applies multiple restoration strategies within a single burned area, how decisions are made based on local conditions, and how government-led recovery programs are combined with landowner participation to support long-term forest rehabilitation.

Discussion and Participant Insights

Q. What types of vegetation existed before the wildfire?

A. Before the wildfire, the area was mainly covered by pine forests, with some mixed broadleaf species also present. During the restoration process, certain tree species are being adjusted or replaced, depending on site conditions and the need to reduce future risks such as landslides.

Q. How are burned trees processed after the wildfire, how is the decision made on whether to remove them, and what species are planted during restoration?

A. Burned trees have very limited economic value, so most of them are disposed of, and in some cases, they are provided free of charge to local residents. The decision to remove burned trees is based on budget considerations and on whether the site has been designated for artificial reforestation, as only those areas require selective logging. For replanting, the restoration team uses 4-year-old conifer seedlings and 5–6-year-old broadleaf seedlings, since younger seedlings have a low survival rate and are not suitable for planting.

Q. Do you use direct seeding as part of the restoration process, and how long does natural regeneration usually take?

A. In the Sanjik-dong area, the soil is not fertile enough for seeds to survive, so direct seeding is rarely applied. Although some large national forest areas use seeding on a limited basis, its overall share is very small, and restoration in this region relies mainly on seedling-based reforestation. Natural regeneration in burned areas typically takes around 15 years for the forest to recover.

Q. How is private forest land managed?

A. Private forests are managed through individual forest management plans prepared by each landowner. The government provides technical and administrative support throughout the entire process, including planting, tending, and harvesting. Landowners who follow their management plan can also receive tax benefits and other incentives.

Q. Are landowners allowed to use fire to remove weeds in their private forest areas?

A. No. Using fire in forest areas is strictly prohibited by law, even for private landowners. When weed removal is necessary, landowners must use manual or mechanical methods, as any fire-related activity poses a significant wildfire risk and is not permitted.

Q. When landowners harvest trees, do they harvest selectively in small sections, or do they clear-cut an entire designated area at once?

A. In private forests, the final decision rests with the landowner. The government provides recommended harvesting zones and methods to help protect the ecosystem and maintain sustainable forest management. However, because the land is privately owned, landowners are not legally penalized if they choose not to follow these recommendations.

Q. What is the planting spacing for pine trees and broadleaf species?

A. Pine trees are usually planted at a spacing of 1.8 m × 1.8 m, which results in around 3,000 seedlings per hectare. For broadleaf species, the spacing is wider—typically between 2.1 m and 2.8 m, depending on their growth characteristics.

Q. How do you prevent wildfires around transmission towers?

A. Trees and vegetation near transmission towers are cleared in advance to remove potential fuel sources and prevent fire from spreading to the facilities. In addition, CCTV monitoring systems are installed to detect any signs of fire at an early stage and enable a quick response.

● Session Overview

This session provided an opportunity for the delegation to observe the ICT-based wildfire monitoring system installed in the Jangtaesan–Hyeongjebong area. The system, developed and operated by SENTEC, combines thermal imaging cameras, high-resolution color cameras, and a 360-degree positioning unit to monitor surrounding forests and transmit real-time information to the local control room.

The CEO of SENTEC explained that the monitoring platform processes visual and meteorological data through an AI analysis server. When the system detects abnormal heat signatures, smoke, or flame-like patterns, it automatically issues an alert to the control room. The monitoring interface displays thermal readings—such as maximum, minimum, and average temperature values—alongside color video streams, allowing operators to assess potential fire events quickly.

The presentation also addressed current challenges in forest monitoring. Due to workforce constraints and an aging field workforce, continuous human surveillance across large forest areas is increasingly difficult. In this context, the unmanned monitoring system in Jangtaesan was introduced as a practical model that integrates wireless data transmission, solar power

supply, and AI-based detection to support timely local response.

During the visit, the delegation reviewed how the system is operated in practice and how alerts are managed within the control room. The discussion highlighted that technology-based monitoring can play a significant role in strengthening municipal-level wildfire preparedness, particularly in regions where on-site personnel are limited.

Discussion and Participant Insights

Q. Can the system identify the exact location of a wildfire, and how much zoom do the cameras provide?

A. The system does not display the exact fire location on a map. However, each camera feed includes the address of its installation point, which helps operators estimate the fire's location. Because the monitoring radius is relatively narrow—about 3 to 4 kilometers—operators primarily rely on real-time video rather than map-based indications. The cameras support up to 36× optical zoom, allowing the control room to closely examine suspected fire areas with high clarity.

Q. What are the main challenges in maintaining the equipment, and how is data transmitted from the field?

A. The main maintenance challenges include unstable communication conditions, limited personnel available for monitoring, and the need to continuously improve camera performance. Although the system operates automatically, it rarely activates unintentionally, and rarely generates false alarms.

Data transmission is carried out through a dedicated wireless AP network, not through radio frequencies. This private wireless network can transmit signals over distances of up to approximately 10 kilometers.

Q. How is a wildfire initially reported and processed?

A. Wildfires are usually first reported by the person who discovers them, and the report is sent directly to the Korea Forest Service (KFS) Situation Room. When the Jangtaesan monitoring

system detects signs of wildfire, it also sends an automatic alert to KFS. The KFS Situation Room analyzes the video and smoke indicators to confirm whether the incident is an actual wildfire and then determines the appropriate response, including the mobilization of helicopters if necessary.

Q. Is there a sound-based warning system in addition to the cameras?

A. Yes. When the monitoring camera detects activities such as smoking, the system automatically plays a warning message, such as “Please do not smoke,” to alert people in the area.

Session Overview

This session provided an overview of the Korea Forest Fire Management Service Association (KFFMSA), a non-profit organization established under the Forest Protection Act and mandated to support the Korea Forest Service in core forest fire prevention and investigative functions. The presentation focused on how Korea’s prevention, inspection, risk assessment, and investigation activities are organized within a coordinated public–private structure.

KFFMSA began by outlining its nationwide training program, which provides education to approximately 20,000 individuals each year. The curriculum covers wildfire behavior, suppression techniques, equipment operation, safety procedures, and reporting protocols. Participants include forest fire crews, lookout personnel, military units, national park staff, students, and local residents. Through these programs, the Association helps maintain a consistent level of field readiness and strengthens community-based prevention capacity.

The Association also described its responsibility for managing fire suppression facilities located near cultural assets, temples, and other sensitive sites. These facilities undergo regular and detailed inspections to ensure they remain operational during high-risk seasons, contributing to risk reduction around areas where fire damage could have significant cultural or social impacts.

Another core area of work is the assessment of forest fire risk zones. Using thematic risk maps, field surveys, and data analysis, KFFMSA evaluates ignition potential, spread conditions, and potential damage factors. The resulting reports provide essential information for local governments as they develop prevention plans and allocate firefighting resources.

In addition, the session introduced the Association's activities in wildfire investigation. This includes identifying ignition points, analyzing spread patterns (including V and U patterns), and examining causes related to electrical failures, wind-borne embers, or lightning. Drone-based imagery and GIS tools support damage assessment and allow KFFMSA to contribute to the national wildfire database, which informs long-term policy planning and prevention strategies.

The presentation concluded with brief remarks on recent international cooperation activities, including exchanges with foreign agencies. Delegates from Türkiye noted structural differences between the two countries' fire management systems and expressed interest in continued technical dialogue.

Overall, the session helped illustrate how Korea's wildfire management framework connects training, facility management, risk assessment, and investigation into a cohesive system supported through public–private collaboration.

● Discussion and Participant Insights

Q. Who provides the training for wildfire cause investigation, and how are instructors selected?

A. Training on wildfire investigation and forensic analysis is delivered through official programs provided by the Korea Forest Service, as well as additional internal training offered by the Association. Instructors include specialists who have studied good practices from countries such as Canada and Australia. Each year, experts from these countries participate directly in the training, and Korean staff also receive specialized investigation training abroad.

Q. What is the scale, cost, installation standard, and maintenance system for the sprinkler towers installed in high-risk or vulnerable forest fire areas?

A. There are approximately 250 wildfire sprinkler towers installed nationwide, and the Association conducts on-site inspections and maintenance once a month for all locations. Installation costs are shared between the national government (40%) and local governments (60%). One full unit—consisting of three towers—costs about USD 200,000 (approximately KRW 250 million). Installation is not mandatory but recommended, and both levels of government provide annual budgets to support continued installation. Towers are placed within a radius of about 50 meters around the site to be protected, and each site uses three towers that spray water through their nozzles to reduce fire risk.

Q. What are the membership requirements of the Association?

A. The Association does not operate with corporate memberships. Instead, it accepts individual members. Anyone with an interest in forest fire prevention may join. There is no fixed membership fee, and payment is not required.

Q. Does the wildfire risk assessment focus only on the forest area, or does it also include nearby communities?

A. The assessment covers both the forest area and the surrounding communities. It includes an analysis of local living conditions and practices—for example, the use of firewood or how agricultural waste is handled—because these factors can increase wildfire risk. The Association also conducts post-fire investigations. Korea experiences about 500 wildfires each year, with major causes including human negligence and waste burning. After each incident, the Association examines the cause, burned area, and damage level to develop better prevention and response measures. These findings directly inform wildfire prevention plans. For instance, if fires increase during the farming season, the prevention strategy may include safer methods for managing agricultural waste.

Q. What strategies are used for community-based wildfire education?

A. The Association uses different education strategies depending on the target group. For wildfire response crews, training is intensive and focuses on practical skills such as equipment use, safety procedures, and on-site tactics. For local residents, the training emphasizes prevention—such as common causes of wildfires, safe practices, and how to report incidents. For children, the program is interactive and focuses on nature protection and basic wildfire awareness. Through this tailored approach, the Association provides education to approximately 4,000 participants each year.

Q. The nationwide wildfire response workforce is about 22,000 people. How are they

organized, and what role does the Association play?

A. Korea has approximately 22,000 personnel involved in wildfire response, and they are divided into three groups.

First, specialized crews who work in high-risk conditions, such as night-time operations, steep terrain, and complex wildfire situations.

Second, initial attack and mop-up crews, who handle early suppression and manage remaining embers and preventive ground work.

Third, patrol and monitoring teams, who may have less technical capacity but focus on detecting fires early and monitoring high-risk areas.

The Association designs different training hours and curricula tailored to each group. While the Association does not participate directly in suppression operations, it plays an essential supporting role through training, investigation, facility management, and other prevention-related responsibilities.

DAY 4
6 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 9) Korea Forest Service

1) Visit to the national wildfire control center and system overview
2) Korea's Forest Disaster Management Policy

1) Deok Je Cho (Head of the Central Forest Disaster Control Center)
2) Young ji Lee (Program Officer)

This session provided an overview of Korea's national wildfire management structure through a visit to the Korea Forest Service (KFS). The program consisted of two parts: an introduction to the national command and control system, followed by a briefing on Korea's integrated wildfire management policies.

In the first presentation, Mr. Cho explained the role of the Central Forest Disaster Management Headquarters, which functions as the national control center for wildfire response. The center consolidates information from multiple sources—including ranger

handheld devices, the Smart Forest Disaster mobile app, CCTV and AI-assisted detection systems, and emergency call reports—and analyzes these inputs through the Wildfire Situation Management System. Using weather and topographic data, the system generates wildfire spread prediction maps, which are automatically shared with local governments and relevant agencies to support early evacuation decisions and response planning. Mr. Cho also described the process for establishing an Integrated On-Site Command Headquarters, which brings together KFS, the Fire Agency, the military, and police to ensure coordinated decision-making during wildfire events. Through this explanation, delegates gained a clearer understanding of how national-level ICT platforms and inter-agency coordination operate in practice.

I n the second presentation, Ms. Lee provided an overview of Korea's wildfire trends and the policy measures adopted in response to increasing fire frequency and severity. She noted that climate-related factors have contributed to a rise in large-scale wildfires since the 2020s. Key prevention measures include seasonal wildfire precaution periods, expanded access control in high-risk mountain areas, strengthened inter-ministerial cooperation in forest-adjacent zones, and programs aimed at reducing burning through agricultural residue shredding.

Ms. Lee also introduced Korea's national monitoring and suppression capabilities. These include 1,446 wildfire CCTVs, AI-based automatic detection, thermal drones, and the planned deployment of a forestry satellite to strengthen real-time observation. Korea applies a 30-minute initial suppression principle, supported by a national network of 205 wildfire suppression helicopters and expanded ground-based resources such as specialized prevention and suppression crews, multi-purpose fire engines, and high-capacity wildfire suppression vehicles.

The session offered a comprehensive overview of how central command functions, monitoring technologies, and field operations are integrated within Korea's wildfire management model. Delegates were able to observe how national-level coordination and local response capacities are linked through a unified system designed to address increasingly complex wildfire risks.

Discussion and Participant Insights

Q. We understand that the Korea Forest Service operates around 49 helicopters. Is this correct? Who is responsible for leasing additional helicopters, and what types are most commonly used?

A. Yes, the Korea Forest Service operates approximately 49 to 50 helicopters.
Leasing of additional helicopters is handled by local governments. The central government provides budget support, and the local governments lease the necessary models based on their operational needs.

Because leasing is managed at the local government level, detailed information on the specific aircraft leased cannot be publicly disclosed.

In general, helicopters with a water-carrying capacity of approximately 5,000 to 10,000 liters are the most commonly leased.

Q. How many wildfire suppression vehicles are currently in operation nationwide?

A. There are approximately 2,000 to 3,000 wildfire suppression vehicles in operation across the country.
Most are 1-ton, four-wheel-drive vehicles, and the high-performance models include 32 Mercedes-Benz units, each costing approximately KRW 750 million.
These high-performance vehicles have not yet been deployed to local governments.

In addition, Korea is in the process of expanding its fleet of multi-purpose wildfire suppression vehicles, with a target of 78 units to be secured by the end of next year. These vehicles were originally military tactical vehicles that were modified for wildfire operations and are particularly effective in mountainous terrain.

Each vehicle carries about 2,000 liters of water. Currently, only one unit is in operation, but around 60 additional units are scheduled for deployment by the end of this year.

Q. Why does Korea prioritize multi-purpose wildfire suppression vehicles rather than the high-performance Mercedes-Benz models? Türkiye has used the Mercedes model for over 50 years and considers it unmatched in performance. Why has Korea chosen a different approach?

A. The Mercedes-Benz high-performance suppression vehicle costs approximately KRW 750 million per unit, making it a significant financial investment.
In contrast, Korea's multi-purpose wildfire suppression vehicle—based on a modified Kia platform—costs around KRW 350 million, making it more affordable.

More importantly, Korea's decision is strongly influenced by its geographical conditions.

Because much of Korea consists of steep and densely forested mountainous terrain, a lighter and more maneuverable vehicle offers greater operational efficiency.

For these reasons, the multi-purpose model is often more practical for Korean wildfire conditions than heavy high-performance vehicles.

< Special Comment 1 >

Kenan AKDUMAN, Deputy Director General

We have maintained strong interest in Korea's KUH-1 Surion helicopter, and we hoped to explore potential areas of cooperation with Korea in the field of aviation and wildfire response. To discuss these topics meaningfully, we believed it was essential to meet with the appropriate decision-makers. For this reason, during our visits to the Forest Aviation Headquarters and the Northern Regional Forest Service, we repeatedly requested opportunities for such discussions. We were informed that key decision-making authority rests with the Korea Forest Service headquarters, and therefore we arrived here with high expectations. It was somewhat disappointing that we were not able to meet the relevant decision-makers during this visit.

We regard the progress Korea has made in wildfire management and forest protection as highly impressive, and we see significant potential for further advancement. Türkiye has long considered Korea a brother nation, and it is precisely because of this closeness and trust that we are eager to share our experience and expertise, and to explore areas where both countries can benefit from deeper cooperation.

We recognize the considerable effort and resources that Korea is devoting to wildfire prevention and response. However, we believe that even greater results can be achieved through closer strategic dialogue between our two countries. Türkiye has accumulated 168 years of experience in wildfire management, and this knowledge could offer practical support as Korea continues to strengthen its own systems.

Korea's wildfire response framework is robust, particularly in its integration of central command functions with on-site operations. At the same time, we believe that long-term model development and system planning are areas where bilateral cooperation could bring further value. We hope to continue discussions on these topics.

We have applied ICT-based wildfire management technologies since 2007, and we have already addressed earlier challenges such as distinguishing smoke from fog. This experience may be useful for Korea as it advances its ICT-based monitoring systems.

Our intention is not to highlight differences between our countries, but rather to express our strong belief in the vast potential for cooperation between Korea and Türkiye. By combining

the strengths and capabilities of both nations, we believe that even greater synergy and shared benefits can be achieved.

<Special Comment 2>

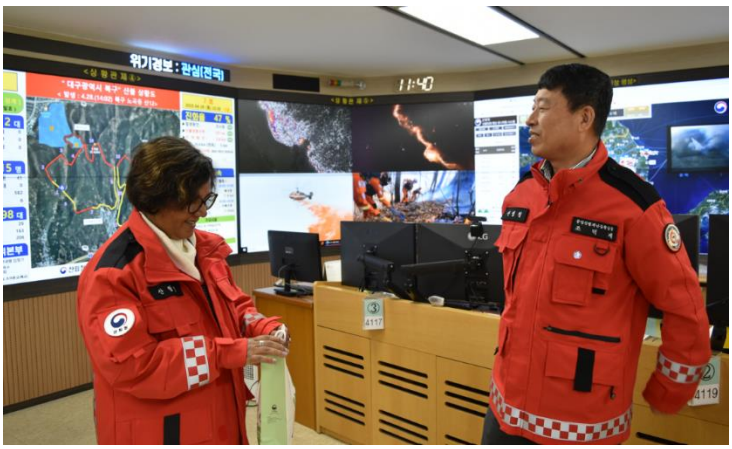
Neeta Hooda, Senior Natural Resources Management Specialist, The World Bank

I would like to express my sincere appreciation to the Korea Forest Service for the detailed explanations provided throughout this visit. The information shared on Korea's wildfire response system and operational practices has been highly valuable and greatly enhanced the impact of this program.

Despite the short duration of the study visit, it has been encouraging to see the Türkiye delegation develop strong enthusiasm for potential collaboration with Korea. Aviation resources, in particular, remain an area of ongoing interest for Türkiye, and further follow-up discussions will be essential. This program has served as an important first step, allowing both countries to better understand each other's needs and explore concrete areas for cooperation. I believe this foundation will help open wider opportunities for future collaboration.

One of the key strengths of this program has been our ability to exchange views openly and candidly. Such an atmosphere of honest dialogue is extremely valuable. At the same time, I want to emphasize that this was not a setting where one country came to evaluate or judge the system of another. Rather, it was an opportunity for both sides to learn from one another and explore how our respective systems could be strengthened through mutual insight.

Both Korea and Türkiye have systems with significant strengths, as well as areas where each can complement the other. This presents meaningful opportunities for both countries. Ultimately, any system must be assessed based on feasibility, operational effectiveness, and value for investment. Carefully examining the balance between costs and actual operational benefits is essential. I am confident that continued dialogue will allow both countries to further refine their systems and achieve more effective outcomes moving forward.



< Special Comment 3 >

Ki-yeon Ko, Former Director,
Korea Forest Aviation Headquarters

Based on my experience serving as the Director of the Forest Aviation Headquarters, I can say that meaningful cooperation is certainly possible within the international community. The collaboration proposals put forward by Deputy Director General Kenan are highly valuable and, in my view, well worth pursuing through further discussion.

Deputy Director General Kenan also referred to the relationship between Korea and Türkiye as that of ‘brother nations,’ a phrase that reflects genuine affection and trust. I sincerely hope that this spirit of friendship will lead to practical and substantial cooperation between our two countries.

DAY 4
6 Nov

Review & Analysis	Readiness	Risk Reduction	Response	Recovery

(Session 10) Hanseo Precision Industry co., Ltd

A South Korean private corporation specializing in firefighting vehicles and equipment

Kye Young Koo
(Sales Department General Manager)

Session Overview

This session provided an overview of Korea's forest fire response vehicle manufacturing sector through a visit to HANSEO Precision Industry, a company that plays a significant role in supplying specialized wildfire suppression equipment. Established in 1996, the company has expanded from agricultural machinery to firefighting and special-purpose vehicles, supported by a structured system that includes R&D facilities, production lines, and a quality management center. HANSEO holds ISO 9001, ISO 14001, and INNO-BIZ certifications, reflecting its established technical and organizational capacity.

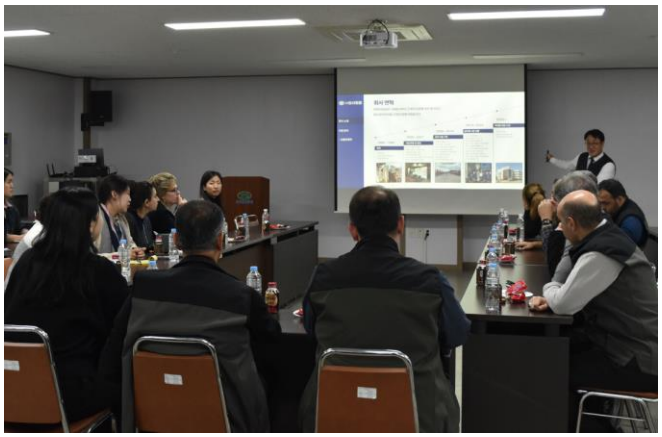
The briefing highlighted the company's recent export performance, which has grown steadily in markets such as Vietnam, the Philippines, Canada, New Zealand, and several European countries. As of the first half of 2024, HANSEO recorded approximately USD 9.48 million in export sales, indicating continued expansion of its international presence.

During the technical presentation, HANSEO introduced its product lineup, including 1-ton and 2.5-ton integrated forest fire vehicles and truck-mounted modular systems. Newly developed models were also presented, such as a 4WD pickup-based 650-liter unit and a 3.5-ton, 2,500-liter model. Key features discussed included high- and low-pressure pump systems, water drafting capability from depths of up to 8 meters, long-distance high-pressure delivery of more than 1.2 kilometers, and winter operation technologies such as anti-freeze systems and tank

heating. These specifications were noted as being optimized for Korea's terrain and seasonal conditions.

Following the indoor session, the delegation viewed several vehicles in the outdoor demonstration area. This included a review of pump mechanisms, equipment arrangements, and the structural features of new models. The demonstration allowed participants to observe how the vehicles are designed for operational efficiency and field adaptability.

Overall, the visit offered practical insight into the development, production, and field application of Korea's wildfire response equipment. The session provided useful reference points for Türkiye as it considers strengthening its own equipment procurement and operational systems for forest fire management.



Discussion and Participant Insights

Q. Does the company manufacture the entire vehicle in-house, and which vehicle manufacturers provide the base trucks?

A. The company does not produce the entire vehicle from scratch. Instead, it receives base trucks and chassis from commercial vehicle manufacturers. Kia and Hyundai are the primary suppliers, while automatic-transmission models are also sourced from Hyundai and Daewoo. For high-performance units, Mercedes-Benz chassis are utilized. For export models, the company sometimes uses Isuzu trucks from Japan as the base platform**.**

Q. What is the price of the new HS-3500-4WD model with a 2,500-liter capacity?

A. The price is approximately KRW 200 million (around USD 150,000, depending on exchange rates).

Q. What is the annual production volume for agricultural machinery and firefighting vehicles?

A. The company produces approximately 150 firefighting vehicles per year, including units for export. For agricultural machinery, the exact figure was not confirmed by the speaker, but the estimated production—based on the company's main spraying equipment—is around 400 to 500 units annually.

Q. What is the level of demand from local governments, where are the 1-ton units mainly used, and is the vehicle body suitable for rough terrain?

A. Demand from local governments is high, especially for forest-fire response vehicles. The 1-ton model is used more frequently in rural and mountainous areas than in urban settings. The vehicle body and driving performance are sufficient for most field conditions. With a 4WD system, the units can operate on steep slopes and can access most forest roads unless the path is too narrow for any vehicle to enter.

Q. Considering its larger size, is the 2.5-ton, 2WD model suitable for entering forest areas?

A. The suitability depends mainly on the width of the forest roads. In practice, about 80–90% of forest access operations are carried out using 1-ton vehicles, as they are more maneuverable. This trend is even stronger in mountainous regions such as Gangwon Province, where terrain conditions favor the use of smaller units.

Q. The newly released 4WD pickup-based 650L model and the 3.5-ton 2,500L model are equipped with high- and low-pressure pumps that can draft water. Why is this capability necessary? Is it because water supply is limited in the field?

A. Firefighting vehicles used for forest fires operate under different conditions than urban fire trucks. In forest fire situations, the main fire truck may need to move or reposition, and a continuous water supply is not always guaranteed. For this reason, the new models are designed with stronger water-drafting capability so they can independently draw water when needed and maintain operational flexibility in the field.

Q. How is the chemical tank on spraying equipment cleaned?

A. The tank is cleaned by continuously adding water during use, which rinses the inside as the machine operates. If any powder-type chemicals remain, they are also flushed out naturally as water flows through the system.

Q. There is a pedal in front of the passenger seat. What is it used for?

A. This pedal functions as an additional brake. When requested by the customer, the company installs a secondary brake pedal on the passenger side for backup or training purposes.

Q. During the hose spraying demonstration, the water appeared blue. Why was that?

A. The blue color comes from the anti-freezing agent added to the water during winter months. From November onward, the vehicles are delivered with freeze-prevention treatment, and this chemical gives the initial sprayed water a slight blue tint.

Q. Can you identify the pump models used during the hose spraying demonstration?

A. The red pump is a high-pressure pump, and it is manufactured domestically. The silver pump is the firefighting pump, which supports both discharge and suction functions, with two separate discharge outlets. This pump is also produced in Korea

III. Participants' Feedback (Lesson Learned & Reflections)

1. Overview of Participants' Feedback

All participants of the Technology Partnership for Integrated Forest Fire Management study tour completed the feedback survey, resulting in a 100% response rate (10 out of 10 participants). Respondents consisted of nine officials from Türkiye's General Directorate of Forestry (OGM) and one representative from the Ministry of Treasury and Finance, ensuring that the feedback reflects the perspectives of the full delegation.

Overall, participants reported high levels of satisfaction across key areas, including program organization, logistical support, program design, and learning outcomes. The combination of lectures, site visits, and operational observations was widely regarded as effective for understanding Korea's wildfire management system. Open-ended comments also highlighted the professionalism and support of the organizing team, as well as participants' interest in maintaining opportunities for continued exchange.

The strong response rate and consistency of feedback suggest that the survey results provide a reliable overview of participant experiences and perceptions of the program.

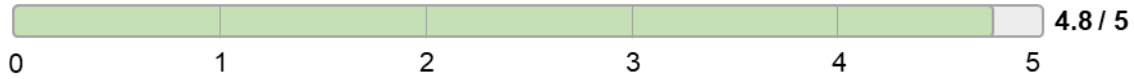
2. Quantitative Evaluation (Survey-based Results)

(1) Course Organization and Preparation

Participants rated the overall organization and preparation of the program very highly, with all indicators scoring between 4.6 and 5.0. The consistently strong results suggest that pre-course communication, preparation, and administrative arrangements were effective and met participant expectations. Feedback indicates that the program's structure and preparatory processes contributed to a smooth and well-coordinated learning experience.

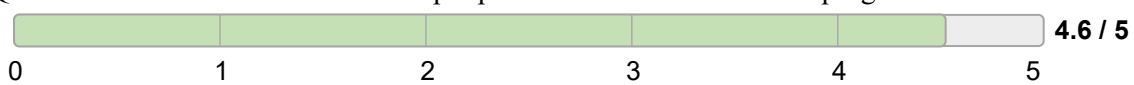
ⓐ Course Organization: 4.8 / 5.0

Question: The organization of the course was appropriate.



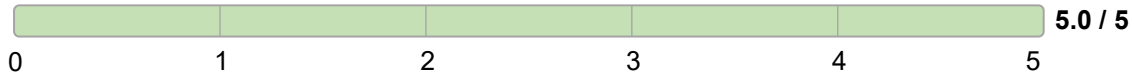
ⓑ Pre-course Communication: 4.6/ 5.0

Question: I was well-informed and kept updated before the start of the program.



ⓒ **Pre-arrangement : 5.0 / 5.0**

Question: I was satisfied with the pre-arrangement of the organization.

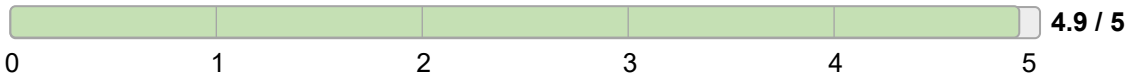


(2) Logistical Support & On-site Management

Satisfaction with logistical arrangements was equally strong, particularly regarding venues, facilities, and staff hospitality, all of which received scores close to perfect. While meals and snacks received a slightly lower—but still positive—rating, overall logistical support contributed meaningfully to participant comfort and engagement throughout the program. The high ratings for staff hospitality highlight the positive on-site experience and responsiveness of the organizing team.

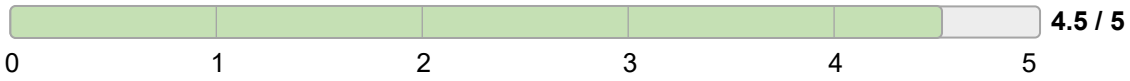
ⓐ **Program venues and facilities: 4.9 / 5.0**

Question) Venues & Facilities of the training (e.g. lecture room, laboratory, field site)



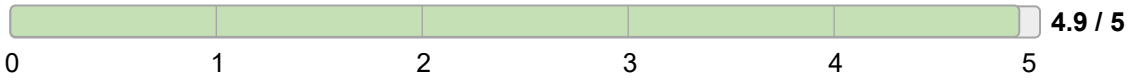
ⓑ **Meals and Snacks : 4.5 / 5.0**

Question) Meals and Snacks (e.g. cafeterias, restaurants)



ⓒ **Hospitality: 4.9 / 5.0**

Question) Hospitality of Staff



(3) Program Design

All participants indicated that the program duration and number of field visits were “just right,” demonstrating strong alignment between program design and participant expectations. The level of difficulty was also viewed as appropriate by a large majority, with only a small portion finding it slightly easy. These results suggest that the balance between lectures, field visits, and workload was well calibrated.

ⓐ Program duration: **Just Right(100%)**

Question) Was the duration of this training (Just Right / Too Short)

ⓑ Satisfaction with the Number of Field Visits: Just Right(100%)

Question) Considering the number of lectures and field visits, The number were (Too Few/**Just Right**/Too Many)

ⓒ Level of Program difficulty : Just Right(80%) Easy (20 %)

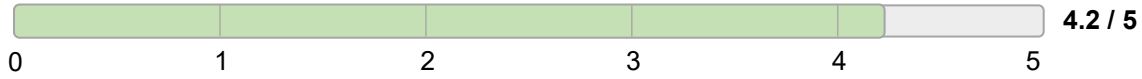
Question) The level of difficulty of this training course was: (Too Difficult / Difficult / Just Right / Easy / Too Easy)

(4) Learning Outcomes and Engagement

Participants reported strong levels of engagement, intellectual stimulation, and effort, with scores ranging from 4.2 to 4.4. They also indicated that the program contributed meaningfully to their knowledge and understanding of the subject matter. Overall program quality scored 4.3, reflecting consistent satisfaction with both content and delivery.

ⓐ Intellectual challenge : 4.2 / 5.0

Question) The level of intellectual challenge presented was:
Much Higher / Higher / Similar / Lower / Much Lower



ⓑ Participant Effort: 4.3 / 5.0

Question) The amount of effort you put into this course was:
Much Higher / Higher / Similar / Lower / Much Lower

ⓒ Involvement: 4.4 / 5.0

Question) The level of involvement/participation in this course was:
Much Higher / Higher / Similar / Lower / Much Lower

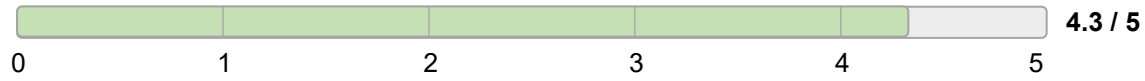
ⓓ Knowledge/information gained: 4.2 / 5.0

Question) The amount of knowledge/information gained through this course was:
Much Higher / Higher / Similar / Lower / Much Lower

ⓔ Overall Program Quality: 4.3 / 5.0

Question) The overall quality of this program was:

Much Higher / Higher / Similar / Lower / Much Lower

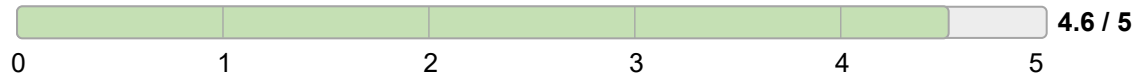


(5) Summary

Overall satisfaction with the program was high (4.6/5.0), and open-ended feedback emphasized appreciation for the organizing team's professionalism, hospitality, and support. Many comments expressed gratitude and interest in continued interaction, indicating that the program left a positive impression and strengthened goodwill between participants and the organizing institutions.

ⓐ Overall Satisfaction : 4.6 / 5.0

Question) Was the overall program good/useful?



ⓑ Feed Back

- Thanks to Jean, Soyoung and Soyoun for their performance, efforts and hospitality.
- Thanks Seoyun, Jeanyoung and Soyoung. See you in Türkiye
- Seoyun, Jean and the other AFoCO team was wonderful and so kind. Thanks all of them.
- Special thanks to Seo Yun Lee, Jean Young and So young.
- Hope to see you in Türkiye next time. Best regards,"
- Thank you very much for organization.
- Thanks to team. We would like to cooperate together between Korea and Türkiye
- Thank you for all your effort
- Thank you for all your effort
- Thank you

3. Qualitative Insights (Supplementary Feedback)

Beyond the structured survey results, participants shared rich qualitative reflections throughout the program. These insights provided deeper perspectives on cross-cultural learning, institutional cooperation, and the real-world applicability of the knowledge gained during the study tour.

(1) Cross-Cultural Learning and Exchange

- The study tour served as a meaningful platform for exchange between the General Directorate of Forestry (OGM) of Türkiye and multiple Korean institutions involved in wildfire management. Participants were able to observe Korea's organizational practices and wildfire response systems firsthand, comparing Korea's approaches and technological solutions—shaped by its own economic, social, and institutional context—to the realities and challenges faced in Türkiye.

- The program's combination of lectures, site visits, and informal discussions facilitated not only technical learning but also the development of trust and professional rapport among participants. Many participants emphasized the notion that Türkiye and Korea are "brother nations," noting that cultural affinity and a spirit of mutual goodwill can further accelerate future cooperation.

- Several participants expressed strong interest in maintaining continued engagement beyond the study tour. This indicates that the program functioned not merely as a short-term training event, but as a catalyst for building a long-term foundation for collaboration between the two countries.

(2) Collaboration Potential & Mutual Opportunities

The discussions throughout the program highlighted several areas where Türkiye and Korea possess complementary strengths, creating meaningful opportunities for future cooperation. Differences in wildfire seasons, operational approaches, and technological capacities enable both countries to explore practical forms of collaboration that can generate mutual benefits.

- **Leveraging Seasonal Differences for Equipment and Technology Exchange**
  Korea and Türkiye experience peak wildfire seasons at different times of the year—Korea in March–April, and Türkiye in July–September. This seasonal asymmetry opens the possibility for

  - Korea's firefighting helicopters, including models such as Surion, and
  - Türkiye's medium- and high-altitude wildfire surveillance drones to be exchanged or jointly utilized during each country's off-season. The concept of shared deployment, joint leasing, or reciprocal support emerged as a promising area of bilateral cooperation.

- **Complementary Strengths in Aerial and Ground Operations**
  Korea maintains strong capabilities in aerial firefighting and ICT-based integrated command systems, while Türkiye has extensive experience in ground suppression, operating over 1,800 high-capacity suppression vehicles and a rapid response framework supported by well-distributed water sources. These differences suggest opportunities for:

  - joint comparative studies on aerial–ground coordination,
  - technical workshops on ground suppression operations, and
  - knowledge exchange on the deployment and management of suppression vehicles and field crews.

  Such collaboration could support both countries in enhancing the balance between aerial and ground operations.

- **Sharing Procurement and Operational Standards**
  With Türkiye preparing for upcoming public procurement processes, Korea's experience with:
  - helicopter leasing models,
  - season-based contract structures,
  - fuel-included leasing arrangements, and
  - local government–level short-term contracting practices was identified as a valuable

reference.

Future cooperation may include technical meetings between procurement teams, sharing of standard contract templates, or the establishment of a working-level advisory channel.

- **Joint Advancement of Monitoring and Predictive Technologies**
  Türkiye's operational know-how in:
  - Smart Tower systems,
  - multispectral wildfire detection cameras, and
  - real-time tracking of drones and aircraft

  can complement Korea's strengths in ICT-based situational monitoring and centralized command centers.

  Potential areas for collaboration include:
  - joint development of predictive or early-warning models,
  - enhancement of AI-assisted detection algorithms, and
  - pilot testing of integrated monitoring platforms.

4. Lessons Learned

The study tour provided a meaningful opportunity for Türkiye and Korea to share and compare their respective experiences in wildfire management, while exploring areas for future development. Through lectures, discussions, and site visits, the following key lessons emerged:

(1) Understanding Diverse Approaches and Complementary Strengths

The two countries have developed their wildfire management systems under different ecological and institutional conditions, resulting in distinct yet complementary strengths.

Korea has advanced ICT-based monitoring and integrated command systems, as well as strong aerial firefighting capabilities. Türkiye, on the other hand, has extensive experience in rapid ground-based suppression and the operation of a wide range of suppression vehicles.

These differences do not indicate superiority of one system over another; rather, they serve as mutually beneficial reference points, offering valuable comparative insights for both sides.

(2) Recognizing the Interconnected Nature of Wildfire Management

Wildfire management is not defined by a single component but by the interplay of multiple elements—including aerial and ground suppression, early warning systems, forest management practices, and post-fire restoration.

The study tour reinforced the understanding that effective wildfire response relies on the coordinated functioning of the entire system, and enabled participants to better appreciate how these individual components are linked in practice.

(3) Identifying Opportunities Arising from Seasonal and Geographic Differences

Korea and Türkiye experience wildfires at different times of the year, and their climatic and geographic contexts also differ significantly. These variations were recognized as creating **opportunities for the exchange of equipment, technologies, and operational insights**.

For example, Korea's experience with aerial firefighting operations and Türkiye's use of medium- and high-altitude surveillance drones demonstrate complementary strengths that may offer future avenues for technical consultation or knowledge sharing.

The difference in wildfire seasons also suggests potential for **cross-utilization of each country's respective capabilities**, providing a basis for exploring various forms of cooperation.

While no specific models were proposed, participants agreed that these characteristics offer meaningful ground for identifying areas where each country's strengths could help address the weaknesses of the other.

(4) Shared Recognition of the Need for Continued Engagement

Wildfire management spans a broad range of technical, operational, and policy domains, and cannot be fully addressed through a single training program or site visit.
Participants acknowledged the importance of ongoing dialogue and information exchange and agreed on the value of continuing engagement within appropriate and mutually beneficial scopes.

Sustained communication will support both countries in further refining their understanding and identifying areas for potential collaboration over time.

IV. Conclusion and Way Forward

The *Technology Partnership for Integrated Forest Fire Management* study tour provided Korea and Türkiye with a valuable opportunity to share and compare their respective experiences in wildfire management. Beyond enhancing technical understanding, the program helped broaden mutual awareness and opened space for possible future exchanges between the two countries.

1. Significance of the Program: Expanding Mutual Understanding and Trust

Participants gained a clearer view of Korea's wildfire management practices across technical, operational, and policy dimensions. The study tour was made particularly effective by the openness and cooperation shown by the Korean institutions involved, including their willingness to share information and provide access to various facilities.

Lectures, field visits, and informal discussions enabled participants to better understand each other's contexts and priorities, contributing to an atmosphere of respect and constructive engagement throughout the program.

2. Key Insights: Learning from Different Contexts

Several important insights emerged during the program:

- Korea's ICT-based integrated command and aerial firefighting capabilities
- Türkiye's rapid ground-based suppression experience and equipment operation
- Differences in forest composition, terrain, and reforestation practices and their impact on wildfire strategies
- Institutional and procedural variations in post-fire recovery and prevention

These observations helped participants better understand the logic behind each country's approach and provided a basis for complementary perspectives that may be referenced in the future when relevant.

3. Identification of Potential Areas for Future Cooperation

Through various sessions, several areas emerged as possible topics for future discussion. These included:

- Exchange of equipment-related experiences, drawing on the different timing of wildfire seasons
- Sharing technical knowledge on aerial and ground suppression strategies
- Discussions on the advancement of monitoring and forecasting technologies

- Practical consultations on procurement and operational practices

These conversations did not aim to define specific initiatives but helped create room for deeper discussion in the future should the opportunity arise.

4. Way Forward: Keeping the Door Open for Continued Exchange

- Participants expressed that understanding each other's approaches and priorities was a meaningful aspect of the program, and many noted that it would be beneficial to have more opportunities for exchange in the future.
- Possible areas for continued engagement may include:

  - Sharing technical information and operational experiences
  - Occasional, practical discussions among working-level staff
  - Mutual consultation or visits when specific areas of interest emerge
  - Additional opportunities for follow-up learning or observation

  Such forms of cooperation can be pursued flexibly and in ways that are appropriate to both sides.

5. Conclusion

The study tour offered a constructive platform for Korea and Türkiye to learn from each other's experiences in addressing the growing challenges of wildfire management under a changing climate. While the two countries operate in different environments and possess different strengths, these differences provided useful perspectives and generated diverse ideas for possible future collaboration.
Continued exchange—at the right opportunities and in appropriate forms—has the potential to support both countries in strengthening their wildfire management capacities.