Ex-post Evaluation Report (Rev.1)

PP-A/56-340-2-Peru

Forest Fire Prevention and Response in Tropical Forests and Forest Plantations in Peru

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Acronyms and abbreviations

AGRORURAL	Programa de Desarrollo Productivo Agrario Rural Rural Agrarian Production Development Programme
ARFFS/GRFFS	Gerencia Regional Forestal y de Fauna Silvestre Regional Forest and Wildlife Administration
ATFFS	Administración Técnica Forestal y de Fauna Silvestre Technical Forest and Wildlife Administration
CENEPRED	Centro Nacional de Estimación, Prevención y Reducción del Riesgo de Desastres National Center for Estimation, Prevention and Reduction of Disaster Risks
CGBVP	Cuerpo General de Bomberos Voluntarios del Perú General Corps of Volunteer Firefighters of Peru
FDA	Foundation for Agricultural Development
FEMA	Fiscalía Especializada en Materia Ambiental Specialized Prosecutor in Environmental Matters
FF	Forest fires
GEFF-LAC	Group of Experts on Forest Fires in Latin America and the Caribbean
INDECI	Instituto Nacional de Defensa Civil National Civil Defense Institute
ITTA	International Tropical Timber Agreement
ITTC	International Tropical Timber Council
ITTO	International Tropical Timber Organization
IFM	Integrated fire management
MC	Ministerio de Cultura Ministry of Culture
MINAGRI/MIDAGRI	Ministerio de Agricultura y Riego/ Ministerio de Ministerio de Desarrollo Agrario Ministry of Agriculture and Irrigation/ Ministry of Agrarian Development and Irrigation
RIF	Individual Forest Fire Reports
RVIF	Forest Fire Surveillance Reports
SERFOR	Servicio Nacional Forestal y de Fauna Silvestre National Forest and Wildlife Service
SENAMHI	Servicio Nacional de Meteorología e Hidrología de Perú National Meteorology and Hydrology Service of Peru
SERNANP	Servicio Nacional de Áreas Naturales Protegidas National Service of Protected Natural Areas
SINAGERD	Sistema Nacional de Gestión del Riesgo de Desastres National System for Disaster Risk Management
UNALM	Universidad Nacional Agraria La Molina

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Executive Summary

The project “Forest Fires Prevention and Response in tropical Forests and Forest Plantations in Peru” was executed by SERFOR in five regions of the country: Cajamarca (33,317 km²), Junín (44,197 km²), Huánuco (37,266 km²), Pasco (25,315 km²), and Ucayali (102,410 km²). The total budget for the project was US$ 1,324,088 with contribution from ITTO amounting to US$ 1,105,263.16, and that from the Government of Peru amounting to US$ 218,825.00.

The project was implemented for 24 months. It was initially scheduled to run from August 2020 to August 2021. The schedule was extended to June 2022 to complete the execution of the activities and achieve its planned objectives. Through an addendum to the contract with the participation of the FDA, the project was extended until the end of August 2022. ITTO approved the 12-month extension at no cost.

The ex-post evaluation was carried out almost two years after the project's completion in August 2022 under the terms of reference. It included a review of project-related documents and materials and a mission to Cajamarca and Ucayali to discuss with ATFFS, ARFFS officials, other project stakeholders and the intended beneficiaries in groups or individually.

The project was the first wildfires project implemented in Peru with ITTO funding. As such, the main problem addressed by the project was to reduce the disruption of essential regulatory services provided by major forest ecosystems of Peru threatened by forest fires (FF), desertification, and climate change.

The specific objective of the project focused on reducing the occurrence of forest fires by strengthening the capacities of national, regional, and local authorities in adopting forest fire prevention and response measures, adapting the integrated forest fire management (IFM) approach.

A total 13 activities and processes, and 29 sub-activities were implemented to achieve the four planned outputs, namely, O1 Good practices in forest management, agroforestry, and management of forest and agricultural residues; O2 Public and private institutions effectively managing forest fire prevention and response protocols; O3 Efficient forest fires monitoring system; and O4 Knowledge management and outreach for forest fire prevention and response.

In the project areas of Huánuco, Junín, Pasco, Ucayali and Cajamarca, the occurrence of forest fires has not been reduced. Consequently, direct and indirect damage to tropical forest ecosystems and associated social damage to life, property and livelihoods have not been reduced in the project area.

Although the project has not achieved an immediate reduction in forest fires, it has been successful in the output O3 Efficient forest fires monitoring system. The output (O3) has significantly improved the historical record of forest fires at both regional and national levels. For the first time, the country has complete FF statistics. Official statistics are recorded from 2017 and can be accessed online upon request.

Historical records of FF scars allow managers to identify priority areas for prevention, rehabilitation, and interventions in IFM. This knowledge is essential for mitigating new fire vulnerability through the implementation of silvicultural treatments and the reduction of combustible materials, such as mono-specific plantations in high- vulnerability areas.

By analysing the territory's exposure to FF, managers can target the specific causes of fires in previously prioritized locations. Additionally, understanding the exposure, sensitivity, and resilience of different forest ecosystems to fires is crucial for planning long-term rehabilitation efforts. This insight enables managers to assess the vulnerability of forest ecosystems and local communities to FF.

Regarding reactive management, the Satellite Monitoring System issues early warnings more quickly. At this level, it is important to consider the technical report of the National Fire Department of Peru, which states that 99.28% of the national territory is more than 20 minutes away by land from the basic operational units of the CGBVP, and 97.49% is more than 60 minutes away. Therefore, it is foreseeable that although the Forest Fire Surveillance system will be faster, reactive management will have limited results in reducing FF.

Five workshops on “Sustainable agronomic and forestry management techniques” (O1) were conducted in five districts in the five regions where 135 participants were involved. This training aimed to reduce the use of fire in agricultural practices and improve overall agricultural production. Advancing progress has been made in strengthening the capacities of agricultural producers.

Five workshops for authorities on “Prevention and response to forest fires in tropical forests and forest plantations in Peru” (O2). were conducted in five districts in the five regions where 185 participants attended and 28 passed the course. The results of the workshops indicate that local authorities, including SERFOR officials, must take a more proactive role in promoting IFM and in relaxing regulations that hinder its implementation. The persistence of the exclusive strategy of fire suppression shows a lack of understanding of the complexity of the problem and the available solutions.

Five Training courses for "Forest brigades in prevention and response to forest fires in forests and forest plantations in Peru" (O2) were conducted in five districts in the five regions where 209 participants attended and 136 passed the course. These courses have enhanced the skills and knowledge of firefighters, managers, and members of rural communities, enabling them to tackle the challenges posed by forest fires more effectively.

Main Conclusions

a) The planned project was implemented in the five regions over 24 months, during the time of the pandemic caused by COVID-19. Of the four outputs, only Output O3 “Efficient forest fire monitoring system” was effective, had a satisfactory impact and considered sustainable.

   Output O3, “Efficient Forest Fire Monitoring System” has had a significant impact by generating detailed FF statistics not only at the project level, but also at the national level. This achievement allows it to prioritize IFM management at both local and national levels.
   Thanks to efficient management of its resources, Output O3 has effectively met all its objectives. Furthermore, its sustainability is guaranteed by a solid base of specialized resources and the achievement of national funding has allowed it to continue operating beyond the duration of the project.

b) Although the project did not achieve an immediate result in the reduction of FF, it made progress in the development of strategies such as compost production have been adopted

to reduce the use of fire by agricultural producers. Technologies for satellite monitoring of forest fires have been integrated for early detection, response, and post-fire assessment. Training courses have been conducted to engage authorities, firefighters, and rural brigades in forest fire prevention and management.

c) ITTO's initial financial support was crucial in establishing the output O3 satellite monitoring system, which demonstrated its effectiveness in prevention and rehabilitation management of FF, mainly. These successful results helped attract additional government resources, enabling SERFOR to enhance and solidify its capabilities in FF managing. In this sense, ITTO's investment acted as a catalyst to drive a more effective and sustainable response to forest fires in Peru.

Main Recommendations to the Executing Agency

a) Strengthening SERFOR's institutional capacity and improving satellite monitoring systems have led to significant advancements in forest fire management. However, to reduce the area affected by FF, it is essential to continue the project in the future.

   The development objective of such a future project will be as follows:
   To implement advanced integrated fire management and forest fire prevention programs as a response to the increased use of fire in land use and forest land-use change. This has led to a consequent increase in deforestation and the destruction and fragmentation of other forest ecosystems, resulting in a notable increase in FF that negatively affect ecosystem services.

   The specific objectives of such a future project will be as follows:
   - Develop and implement community fire management programs actively involving local communities, especially indigenous and rural populations. This will ensure that strategies are culturally appropriate and sustainable in integrated fire management practices, forest fire prevention, and the management of forest combustible material.
   - Develop and implement advanced national forest fire statistics based on fire scars detected by satellite sensors. This will help monitor the spatial and temporal changes in forest fires across the country, create preventive management strategies, rehabilitate forest ecosystems affected by fire, and prioritize actions for integrated fire management.

b) To ensure that the outputs outlined in the project's logical framework are linked to the specific objectives and activities, it is advisable to develop a matrix of strategic objectives, specific objectives, and strategic actions. The strategic actions matrix should include an indicator, a description, a deadline, and the responsible actor for each action. This will allow the monitoring and evaluation of the project from the beginning, measuring its progress and effectiveness.

c) It is recommended that projects focused on promoting behavioural changes, such as the adoption of Good Practices in Forest Management, Agroforestry and Waste Management (Output 1) and The Strengthening of Institutional Capacities for the Prevention and Response to Forest Fires (Output 2), have a minimum duration of three years. This time frame is essential for consolidating behavioural changes and ensuring the long-term sustainability of the results.

d) It is recommended that forest fire projects consider hiring forest engineers in all project units, due to their specialized expertise in optimizing the protection, productivity, and health of forest ecosystems. In addition, their knowledge is essential for the rehabilitation of degraded habitats and mitigation of climate change impacts.

e) It is essential to assign a line director in charge of forest fires, with knowledge or specialization in Integrated Fire Management, who leads and articulates the SERFOR directorates, as well as the different government sectors, to unite and channel efforts in managing the problem of FF.
f) IFM projects should prioritize the development of behavioral and social strategies tailored to each geographic region to address the human causes of FF. By modifying the human behaviors that trigger these events, their frequency and severity in the country can be significantly reduced. It is imperative to recognize that the prevention of forest fires requires a comprehensive intervention that combines technical measures with actions aimed at the population.
g) Forestry research provides an arsenal of innovative tools and knowledge that must be strategically integrated into the conversion of agricultural and forestry residues, as well as preventive forestry techniques. By adopting cutting-edge technologies and methods, current challenges can be addressed more effectively, promoting the adaptation and resilience of forest ecosystems to forest fires, and thus contributing to sustainable forest management.

Main recommendations ***for the revision of the ITTO Guidelines on Fire Management in Tropical Forests (1997)***

In the evaluated project, there are not many results related to integrated fire management, however, some suggestions to the ITTO Guidelines are:

a) Revise land use policies which favour clearing forest land, change forest land use, mining, and road constructions that increase the risk of FF
b) Promote sustainable land-use practices that reduce the risk of FF. This includes agroforestry, silvopastoral practices, agroecological systems, zero tillage, controlled burns, and alternatives to the use of fire, through the implementation of fiscal incentives that offer tax deductions for individuals, medium-sized enterprises, and large corporations.
c) To prioritize and stimulate a rural economy that protects ecosystem services, value forestry ecosystems and practices extensive agriculture, livestock, and transhumance.
d) To implement community-level IFM using a bottom-up approach. IFM crews should undergo training in essential fuel management activities before the wildfire season begins. Key actions include: 1. Conducting controlled burns during the transitional periods between the rainy seasons, 2. Reducing fuel density by thinning and pruning vegetation, 3. Establishing firebreaks along strategic boundaries to help contain FF, 4. Organizing community drills to practice response procedures for active fire incidents, 5. Planning immediate rehabilitation measures to prevent loss of forest soils and mitigate flood risks following the wildfire season.
e) Climate change is causing extreme FF or mega-fires, so the ITTO Guidelines could prepare tropical countries to face extreme situations. These changes in climate and fire weather conditions are becoming the new normal, making it a major concern for all of us. Some specific recommendations are as follows:
   e.1 To practice increased forest diversity, especially in plantations, by planting species preferably native and non-flammable, varying ages, and a mix of horizontal and vertical structures can significantly improve forest health. as well as lower its susceptibility to FF.
   e.2 Use Fire Weather Index, for early detection of weather danger. It can enable quicker and more effective prevention in controlled burning and active FF. Determine the state of humidity and stress of vegetation (NDVI). Be aware that extreme wind velocity, which is associated with higher slopes, can lead to extreme fires.

1. Introduction

1.1 Project background and objectives

With funding from the International Tropical Timber Organization (ITTO) and at the request of the Government of Peru, the National Forest and Wildlife Service (SERFOR) implemented the project "Forest Fires Prevention and Response in tropical Forests and Forest Plantations in Peru." This project originated from the approved project PP 853/17 Rev2 (F) in 2019 aimed to conserve forest ecosystems threatened by forest fires. It implemented 29 sub-activities, 13 activities and processes to reduce the disruption of essential regulatory services provided by major forest ecosystems of Peru. Additionally, the project sought to minimize the loss of human lives and material damage in the Cajamarca, Junín, Huánuco, Pasco and Ucayali regions, which had been increasingly affected by desertification and climate change. Through the adapted approach of integrated fire management, the project was expected to reduce the loss of natural forest cover, increase the prevention and response capacity of national, regional, and especially local authorities, reduce greenhouse gas emissions, and raise awareness about tropical forest fires.

The specific objective of the project focused on reducing the occurrence of forest fires by strengthening the capacities of national, regional, and local authorities in adopting forest fire prevention and response measures. Additionally, it facilitated the management of forest fire information and early warning systems and provided training on forest regulations to the relevant institutions.

The project objectives are aligned with achieving sustainable management of tropical forests, as they are consistent with ITTO's objectives and Strategic Action Plan 2022-2026 (Strategic Priority 3), the ITTA 2006 (Objective c, n, r and s), and the ITTO Guidelines on Fire Management in Tropical Forests 1997 (Principle 4, Recommended Action 4, item b).

1.2 Evaluation background

In 2024, the ITTO requested the Global Fire Monitoring Center (GFMC) to conduct an in-depth ex-post evaluation of the project PP-A/56-340-2 "Forest Fire Prevention and Response in Tropical Forests and Forest Plantations in Peru". For this task, GFMC requested the support of Universidad Nacional Agraria La Molina (UNALM). The evaluation aims to identify the successful and, if applicable, unsuccessful outcomes, reasons for successes and failures, the contribution of the project to sustainable forest management, lessons learned for improving future projects, and policy recommendations for promoting integrated fire management in the tropics. Additionally, the evaluation assesses the application of the ITTO Guidelines on Fire Management in Tropical Forests (1997, PS-6,) through a review of the outcomes, achievements, and lessons learned from the Peru forest fire project.

The focus of the ex-post evaluation was guided by the terms of reference of ex-post evaluation of the project PP-A/56-340-2, and evaluation framework described in the Manual for Project Monitoring, Review, Reporting and Evaluation (ITTO 2009).

1.3 Scope and approach of the evaluation

Specifically, the GFMC was asked to address:

1. The overall role and contribution of the project in light of sectoral policies, development programmes, priorities and requirements to promote the integrated fire management framework to support sustainable forest management in Peru
2. The current status of forest fires within the projects' area of influence, their implementation, and their effectiveness in promoting integrated fire management policies and practices
3. The contributions of the specific studies in various forest fire prevention and management activities prepared by the projects as regards the achievement of establishing demonstration sites and organising training courses
4. The results and impacts of activities conducted by the projects and their contribution to the overall capacity of target groups in integrated fire management
5. The effectiveness of dissemination of project results
6. The overall post-project situation in the project's area of influence
7. The unexpected effects and impacts, either harmful or beneficial, and the reasons for their occurrences
8. The cost efficiency in implementing the projects, including the technical, financial and managerial aspects
9. Follow-up actions to enhance the uptake of project results
10. The projects' relative success or failure, including a summary of the key lessons learnt; and the identification of any issues or problems that should be taken into account in designing and implementing similar projects in the future

Following a thorough desk review of the documents and materials provided by ITTO, SERFOR, and the Project Coordinator, UNALM staff held meetings with SERFOR officials and the Project Coordinator (Annex 1). Additionally, on-site visits were conducted from August 26 to 23, 2024, and September 5 to 6, 2024, in the near project execution areas of Cajamarca and Ucayali, respectively. These visits included meetings with ATFFS (Cajamarca) and ARFFS (Ucayali) officials, as well as discussions with project stakeholders and intended beneficiaries, both in groups and individually (Annex 2 and Annex 3). The digital documents reviewed for each output are provided in separate digital files P1, P2, P3 and P4.

2. Project Facts

2.1 Introduction

The International Tropical Timber Council approved the project at its fifty-sixth meeting, held in November 2020, and fully funded it during the same session, which was conducted online due to the COVID-19 pandemic. The agreement to execute the project was signed on August 26, 2020, and the first tranche of ITTO funds was disbursed in January 2021.

By following the procedures set by the Peruvian State Procurement Law, the hiring of the Project Coordinator took place on March 30. Despite the mobility and meeting restrictions imposed by the pandemic, SERFOR and the consulting team took on the challenge of executing the project. It was not until June 4, 2021, that SERFOR began the project execution.

The pandemic forced most training courses to be moved to a virtual format, resulting in reduced expenses in budget items for travel, per diems, and training. Additionally, lower prices were obtained for the purchase of goods and contracting of services, so SERFOR did not request the third disbursement from ITTO.

In December 2021, SERFOR requested an extension of the execution period for Project PP-A/56-340-2 from ITTO (Annex 4), and the ITTO Secretariat granted a six-month extension to complete the project (June 2022), without additional funding or deadlines. The mid-term evaluation of the project was conducted from June 11 to 15, 2022.

Due to the procurement procedure, which exceeded the project's closing deadlines, an addendum to the contract for Project PP-A/56-340-2 was made so that the Foundation for Agrarian Development could facilitate the purchase of capital goods and the contracting of consulting services until the end of July 2022, for an amount of $176,842.16 (Annex 5). The final project report was received on August 15, 2022. The total duration of the project was 20 months, instead of the 12 months initially planned by the implementing agency (SERFOR).

The total budget for the project was US$ 1,32408, the details of which can be seen in Table 1.

Table 1. Project budget and time frame

Budget and Funding Sources:		
Total Budget		US$ 1,324,088
ITTO Budget		US$ 1,105,263
Government of Japan (MoFA)	US$ 1,105,263.16	
SERFOR		US$ 218,825.00
Implementing and ejecuting Agency	The National Forest and Wildlife Service (SERFOR) of Ministry of Agriculture and Irrigation, Peru	
Starting Date and Duration	January 2021 / Planned: 12 months. Actual 24 months	
Extension	8 of February 2022, Second Project Steering Committee Meeting (virtual)	
Approved Revised Date of Project Completion	15 August 2022	

2.2 Project Achievements and Outputs

The specific objective was to reduce the occurrence of forest fires in tropical forest ecosystems. In this regard, a total of 29 sub-activities and 13 activities were carried out to achieve the four outputs planned under the specific objective.

The final project report, the mid-term evaluation of the project, the four final specialists in field reports, two systematization reports and other tangible products reflect the four project outcomes (for more details of outputs/activities cf. Annex 6):

Output 1: Good Practices in Forest Management, Agroforestry, and Management of Forest and Agricultural Residues.

- Five project launch meetings (virtual)

- Awareness and Dissemination Materials: Leaflets (3 types, 5000 units), Awareness videos (3), Compost making video (1)

- Training report:
  Training of forest brigades and good agroforestry and silvicultural practices. Economic and Social Research Consortium (CIES), September 15, 2022.

- Guides and reports:
  Joe Torre (2022). Guide for the Preparation of Differentiated Compost as an Alternative System to the Burning of Agroforestry Waste

  Jorge Carranza (2022). Guide to Preventive Forestry Guidance in the Face of Forest Fires in Forest Plantations in Peru

  Carlos Arébalo Coba. 2022. Final report on the systematization of the SERFOR EDUCA platform improvement process.

- To strengthen the operational capacity of the ATFFS of Cajamarca, Junín, and Pasco, as well as the ARFFS of Huánuco and Ucayali, in the preventive management of forest fires (FF), they were given shredders (5), pruners (5), chainsaw (5), motorcycles (5), laptops (10), digital cameras (5) and multimedia projectors (5) (one of each equipment to each ATTFS and ARFFS with the exception of the laptops, which were 2 for the Region.

  On January 20, 2023, GPS (4) and hand tools for fuel separation (such as wheelbarrows (19), fire swatters (20), foam retardant (19), sabre machetes (42), shovels (40), steel picks (19), rakes (39), and scales (9) to weigh the fuel) were delivered to ATFFS of Cajamarca, Sierra (Junín), and Selva Central (Pasco). Additionally, hand tools were delivered to the ATFFS of Lima, Apurimac and Puno and a GPS, respectively. Meanwhile the ATFFS and liaison offices of Lima, San Martín, Madre de Dios, Loreto were each given one GPS.

  A pickup truck with the license plate BRM-778 is parked at the SERFOR headquarters in Lima.

Output 2: Public and private institutions effectively managing forest fire prevention and response protocols

- Technical report:
  Training service for the implementation of PP-A/56-340-2 by Bianca Collazo (Third deliverable), January 24, 2022. 118 pages.

- Work Guide:

Prevention of forest fires. MIDAGRI / SERFOR / CIES / ITTO. 37 pages.

- Systematization Reports:

  Workshop for authorities: "Prevention and response to forest fires in tropical forests and forest plantations in Peru". 48 pages.

  Training course for forest brigades in prevention and response to forest fires in forests and forest plantations in Peru. Virtual phase. 86 pages.

- Training Report:

  Training of forest brigades and good agroforestry and silvicultural practices. Consortium for Economic and Social Research (CIES), September 15, 2022. 48 pages.

- Audiovisual Material:

  Video on management of authorities in the face of forest fires (Spanish, Quechua, and Shipibo)

  Video on prevention and attention to forest fires (Spanish, Quechua)

  Video on steps to follow in the event of forest fires: tutorial for the population

- Protective clothing

  Leather boots, leather gloves. protective helmets, masks and protective glasses (10 units of each) were donated to the General Corps of Volunteer Firefighters of Peru Lima headquarters for training purposes. July 18th of 2023

- Hand tools:

  Fire swatter, fire rake (Mc Leod), improved grass-cutting bolo, firefighting shovel, Pulaski, backpack pump (5 units of each), were donated to the General Corps of Volunteer Firefighters of Peru Lima headquarters for training purposes. July 18, 2023.

Output 3: Efficient forest fire monitoring system

- Reports and Protocols:
  Annual Technical Reports:
  2020, 2021, 2022, and 2023, including monthly reports on scars and the number of forest fires in the departments of Cajamarca, Huánuco, Pasco, Junín, and Ucayali.

  Forest Fire Scar Generation Protocol:
  Prepared by remote sensing specialists of the ITTO-SERFOR project, July 2021. 8 pages.

  Procedure Manuals:
  Generation of forest fire occurrences, November 2021. 7 pages.
  Generation of Individual Forest Fire Scar Reports (RIF), April 2022. 30 pages.

- Web Application Usage:
  PowerPoint presentation on working with heat sources. 10 slides.

- Training and Information Dissemination Workshops:

"Satellite Technology as an Indispensable Tool for the Prevention and Response to Forest Fires" for officials from the departments of Cajamarca, Huánuco, Pasco, Junín, and Ucayali, as well as for FOREST officials from the USDA program of the United States.

- Infographics:
  FF statistics for 2020, 2021, 2022, and 2023 for the departments of Cajamarca, Huánuco, Pasco, Junín, and Ucayali (in press 300 units by department by year 2021 and 2022)

Output 4: Knowledge management and outreach for forest fire prevention and response

- General Promotional Materials: Posters, banner roll screens (5 units), calendars (3000 units), panel (15 units).
- Specific Promotional Materials: Distributed for each product.
- Technical Reports:
  Training service for the implementation of PP-A/56-340-2 by Bianca Collazo (Third deliverable), October 7, 2021. 147 pages.

  Training service for the implementation of PP-A/56-340-2 by Flor María Estefany Paredes Díaz (Second deliverable), May 3, 2022. 26 pages.

  Training service for the implementation of PP-A/56-340-2 by Flor María Estefany Paredes Díaz (Third deliverable), June 3, 2022. 37 pages.

  Interculturality for the implementation of PP-A/56-340-2 by Cristina Faura Pérez (First deliverable), July 2022. 99 pages.

Additionally, the Completion Report, final reports from field specialists and the midterm evaluation summarize the results and impact of the project by addressing key issues that affect fire management capabilities in the country (Table 2).

3. Findings: Analysis and assessment of the ex-post project evaluation

The analysis and assessment result from in-depth discussions among GFMC and SEFOR influenced by visits and discussions with stakeholders and local communities.

The overall role and contribution of the project in light of sectoral policies, development programmes, priorities and requirements to promote the integrated fire management framework to support sustainable forest management in Peru

The project has played a crucial role in supporting sustainable forest management by aiming to protect forest resources that are essential to local economies, ecosystem services, and biodiversity. It does this by promoting alternatives to the use of fire. The project is connected to Peru's National Strategy on Forests and Climate Change, the National Strategy to Combat Desertification and Drought 2026-20230, the National Water Resources Policy and Strategy, and the Forest Fire Risk Prevention and Reduction Plan: Period 2019-2022, prepared by SERFOR.

Table 2. Summary of outputs and **impacts on key issues** affecting forest fire reduction in five regions in Peru Source: Completion Report, final reports from regional consultants (digital files P1, P2, P3 and P4), and the mid-term evaluation report.

Situation before the project	*Impact of the project*
1. The satellite forest fire monitoring system, due to its basic structure and slow operation, could not be operational. Its use in forest fire management was limited to storing hot spots since 2012. However, in 2018, it began generating FF alerts.	There is a satellite forest fire monitoring system with a defined structure and improved operation thanks to the semi-automation of some processes. Currently, this system provides information to manage forest fires before, during and after their occurrence. Therefore, users can plan and make decisions on preventive and reactive aspects and on the rehabilitation of ecosystems affected by forest fires in the regions of Cajamarca, Huánuco, Pasco, Junín and Ucayali, as well as at the national level.
2. Reporting of hot spots was done using three satellites: Terra, Aqua and Suomi-NPP. However, insufficient staff to review hot spots limited the issuance of early warnings, especially during the forest fire season.	The project allowed the use of five satellites (Terra, Aqua, Suomi-NPP, GOES 16 and GOES 17) and the semi-automation of the procedure for identifying hot spots. Thanks to this, the analysis time for issuing early warnings was reduced from two hours to a maximum of fifteen minutes. In addition, the number of people needed for the analysis of hot spots was reduced. During the FF season, early warnings can be updated every three hours and are issued nationwide. The improvement of the monitoring system has allowed SERFOR to operate under the regulations of the National Early Warning Network of INDECI, which has facilitated the selection of pilot areas for the interventions of the National Early Warning System.
3. Little support was provided for the management of forest fire suppression. The number of Forest Fire Surveillance Reports (RVIF) was very limited. In 2020, only five RVIFs were developed.	The enhanced FF satellite monitoring system supports suppression managers through the RVIF. RVIFs provide reports on the FF progress and the location of roads for starting suppression. This report is generated upon virtual request. The system improvement resulted in an 89% increase in RVIF production in 2021, with 22 RVIFs in project regions and 23 RVIFs in other regions of the country

4. Manual preparation of the Individual Forest Fire Report (RIF) since 2017. The RIF reports on the impact caused by a certain FF, including the total affected area, the affected area according to the type of ecosystem, protected natural areas and community areas.	The determination of Individual Forest Fire Reports (RIF) is carried out through a semi-automated process. In eight months, 100 RIFs were generated for the project and 215 RIFs for other regions of the country.
5. The long period required to prepare scar maps (surface affected by forests) could take up to 12 months. This delay limited the availability of statistics on the affected forest ecosystems, as well as on the districts, provinces and indigenous communities.	The Project has enabled the semi-automation of the FF scar detection procedure, reducing the preparation time to 3 or 4 months. Having maps of burned areas allows planning the immediate or subsequent rehabilitation of the areas affected by FF.
6. There is no database of rural brigades or firefighters trained in prevention and response to FF in each of the five intervention regions.	136 firefighters were trained in prevention and response to forest fires in the 5 regions. Of the total, 63 belong to the CGBVP.

It has contributed to strengthening local authorities and communities by providing training, equipment and tools to prevent the use of fire in the disposal of agricultural waste.

The project has fostered intersectoral collaboration, involving public officials and local authorities through knowledge of their legal and administrative competencies in forest fire management. This has served as input for the development of the Multisectoral Plan for Forest Fires 2025-2027. This plan will be an articulation instrument for multisectoral interventions aimed at reducing the vulnerability of the population and their livelihoods and is expected to be finalized by the end of 2024.

The current status of forest fires within the projects' area of influence, their implementation, and their effectiveness in promoting integrated fire management policies and practices

In Huánuco, Junín, Pasco, Ucayali and Cajamarca project areas, there is no reduction in wildfire occurrences The project was launched in the middle of the COVID-19 pandemic year, a period in which forest fires were drastically reduced in all five Regions. However, when the study regions are compared to a year without a pandemic, that is 2020, all regions have increased the occurrence of forest fires, a trend that continues in 2023 (Figure 1). The same thing happens in the Project's areas of influence, a trend that continues in 2024.

This result was processed from statistics information generated by satellite monitoring of forest fires Dirección General de Información y Ordenamiento Forestal y de Fauna Silvestre of SERFOR.

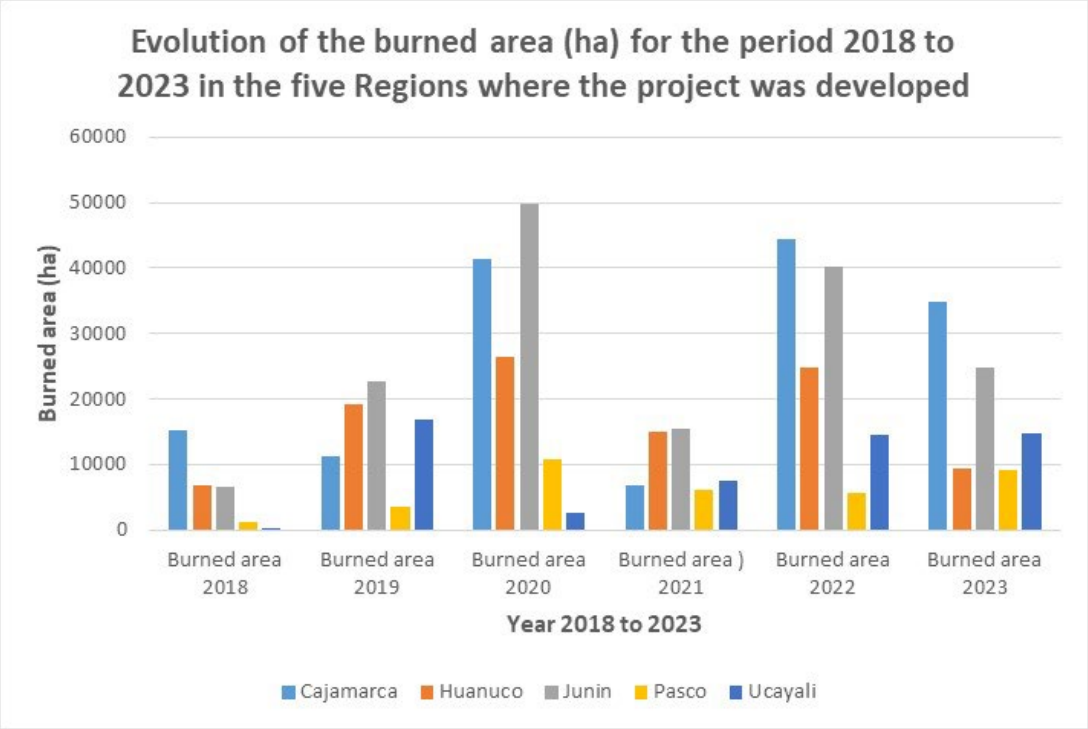

Figure 1. Evolution of the burned area (ha) for the period 2018 to 2023 in the five Regions where the project was developed. Source: Own elaboration.

Direct and indirect damage to tropical forest ecosystems and social damage associated with life, property and livelihoods have not been reduced in the project's area of influence.

The project's capacity to promote the adaptation of the legal framework to allow for integrated fire management, including the use and management of traditional fire (in areas other than Protected Natural Areas and their buffer zones), ecological management (in fire-dependent ecosystems and the maintenance of a successional state), and the reduction of the risk of large forest fires, has been minimal. As a result, in the regions where the project was implemented, policies and activities continue to emphasize forest fire suppression as the primary fire management measure. Fire prevention activities are neglected, and fear of using fire as a management tool persists.

The overall fire management capabilities of the rural communities have not improved compared to the situation before the project. However, there has been an increase in concern about the harmful effects of fire, and community members are seeking help and knowledge to deal with undesirable situations. Those involved in the project want to understand how to use fire without causing FF, as well as how to extinguish fires when they get out of control. They are also interested in learning about alternatives to fire use, aside from composting.

The contributions of the specific studies in various forest fire prevention and management activities prepared by the project as regards the achievement of establishing demonstration sites and organising training courses

The project has not conducted specific studies on creating demonstration sites or organizing FF training courses. However, it can provide information based on experience

and recommend the research and activities needed to achieve effective results tailored to the needs of the target population.

The results and impacts of activities conducted by the projects and their contribution to the overall capacity of target groups in integrated fire management

The results of the project were drastically influenced by the pandemic caused by COVID-19. However, other intrinsic and extrinsic factors explain the results obtained (see sections 4.1, 4.2 and 4.4).

The COVID-19 pandemic was declared by the WHO on March 11, 2020. Despite the challenging situation, SERFOR tackled the implementation of the project during the pandemic. They worked remotely and virtually, as well as semi-presential, for nine months. This limited the participation of the main target group (Farmer Organizations, Forest Producers, Forest Producer Associations) and the secondary target group (Volunteer Brigades to confront FF, Local Governments, NGOs, and Cooperatives, and Producer Associations). However, the tertiary target group had better participation due to good internet connectivity (INDECI, SERNANP, ATFFS, GRFFS, and the National School of Regional Volunteer Firefighters). On December 15, 2021, the government authorized in-person work (Supreme Decree 168-2021-PCM), allowing SERFOR to conduct in-person workshops and training. It wasn't until June 8 that in-person workshops and training began in the project's five regions, as the project was extended until the end of June 2022. Through an addendum to the contract with the FDA, the deadline was further extended until August 2022. Details about the results and impacts of the project are provided below.

Under output A1.1: The project was launched virtually in August 2021 and raised awareness among 593 people in the five regions. The impact of the activity was satisfactory as it sparked the interest of many participants. The project was launched one year after signing.

Under output A1.1: Between June 8 and July 1, 2022, in-person regional workshops on “Sustainable agronomic and forestry management techniques” were held in rural areas. A total of 135 people from five regions participated. The data on women's participation was not differentiated. During the workshops, the “Guide for the Production of differentiated compost as an Alternative System to the Burning of agroforestry waste” was used. The training focused on compost production and the activation of beneficial microorganisms but did not consider the type of agricultural waste from producer associations or the biological microorganisms and differentiated inputs for their use. The accessibility of the training material (USB format requiring computers) and the theoretical language used (only Spanish in written and oral form) limited the effectiveness of this activity.

During the field visit to Cajamarca and Ucayali, producers stated that the use of compost in their crops allowed for better production on their land. However, other rural residents pointed out that the practice of composting requires water and a greater amount of labour, and considered that this activity was insufficient. During the visit, no demonstration plots were found for the use of agricultural waste (compost) or forest waste. Likewise, it was perceived that women were the most interested in this work.

Despite these deficiencies, the activity had a moderately satisfactory impact, since producers would be reducing their dependence on the use of fire and chemical fertilizers. This experience would ensure the sustainability of the composting practice in some producers and localities of the project.

Under Output A1.2: The other five workshops on “Sustainable agronomic and forestry management techniques” were planned to be held from 2 to 9 September 2022, but were not held.

Under Output A1.2: The activity of creating an online educational platform was not carried out so virtual courses and workshops related to FF, which do not require field practices, were not disseminated after the Project. Instead, the capacity of the SERFOR EDUCA online platform, owned by SERFOR, was improved. This improvement consisted of training the SERFOR Capacity Building Directorate team in the roles of administrator and teacher of the Moodle learning platform, located at SERFOR EDUCA. Now, SERFOR can deliver virtual courses and workshops related to forest fires, which do not require field practices. Specifically, it could develop the “Workshop for Authorities: Prevention and Response to Forest Fires in tropical forests and forest plantations in Peru”, and the satellite monitoring courses for forest fires that are considered appropriate. Another drawback is that the registration page for the SERFOR EDUCA Platform does not respond, and the materials on FF generated by the workshops and training located on it cannot be accessed. This result, together with the absence of a specific web platform for forest fires (A2.1.2), which had been planned to be carried out in product O2, affected the dissemination of the project since the audio-visual material generated was not and is not available to the different audiences.

Under Output A1.4: The strengthening of the operational capacity of the decentralized headquarters named ATFFS (Cajamarca, Junín and Pasco) and GRFFS (Huánuco and Ucayali) regarding equipment was implemented in June 2022. For this reason, key equipment for the project's face-to-face workshops was not available. This affected both the courses on sustainable agronomic and forest management techniques, as well as the practical part of the training course for "Forest brigade members in prevention and response to forest fires in forests and forest plantations in Peru" (from July 31 to August 12, 2022).

During the visit to the Cajamarca and Ucayali regions, it was found that the equipment for the management of agricultural and forestry waste has not been used and is in the central warehouse. Meanwhile, personal protective equipment and ground firefighting tools, donated for training to the CGBVP in March 2023, are located at the headquarters in Lima.

Under Output A2.1: The workshop for authorities “Forest Fire Prevention and Response in Forests and Forest Plantations in Peru” had light satisfactory results. It lasted 20 hours of virtual teaching through the Zoom and SERFOR EDUCA platforms, and its objective was to strengthen the preventive management and response to forest fires of the target audience: local authorities. From the five regions, 365 people registered, of which 185 attended and 28 passed the course. Most of the participants were local authorities. Regarding female participation, 55 women attended and 9 of them passed the exam. Some of the material related to the course for authorities, including videos of the virtual classes, is on the SERFOR EDUCA platform; some videos are on YouTube, while others

have not been able to be located. However, the training program for authorities has been discontinued and was only offered once.

Under output A2.3: The course "Firefighters in prevention and response to forest fires in forests and forest plantations in Peru" achieved a 50% effectiveness rate. It was conducted virtually in October 2021 through the Zoom and SERFOR EDUCA platforms, consisting of 28 hours of theoretical teaching. The practical part, which took place in person, lasted for 8 teaching hours and was conducted in September 2022, coinciding with the forest fire season. During the course, an adaptation of the "Forest Firefighters Manual" ((USAID, 2014), carried out by the General Corps of Volunteer Firefighters of Peru, was utilized, as the "Forest Fire Response Protocol" planned by the project could not be prepared or validated (Output 2.2.1).

287 people from five regions registered; 209 attended and 136 passed the course. The majority of participants were volunteer firefighters (63), who already had prior knowledge of forest fires. They were followed in number by local authorities and ATFFS administrators. Participation by residents was minimal, mainly due to the lack of Internet access; only one indigenous resident from the Huánuco region was registered. Regarding female participation, 37 women attended the course and 35 passed it.

The field practice of the course took place from August 31 to September 12, 2022. It was accessible to the 136 people who had passed the virtual phase. During the field visit, some participants of the course in both Cajamarca and Ucayali requested their certificates of participation. The instructors of the practical course were not certified forest firefighters and did not have the essential hand tools or personal equipment. However, the training team took precautions and arranged for them to be loaned. Despite the efforts made, capacity building for forest fire response was limited.

Under Output A3.1: The efficient satellite monitoring system product has been 100% effective. Although it has not managed to complete all the scheduled activities, it has fulfilled the most important ones, generating a satisfactory and sustainable impact not only for the target group's project's work regions but also at a national level. The final impact will depend on the precision researching of its products, and especially on the use of not only regional managers but also managers with competencies in the FF.

The project enabled the participation of 287 people from five regions in the workshop “Satellite Technology as an Indispensable Tool for the Prevention and Response to forest fires”. Officials from the ATFFS, GRFFS and other secondary actors participated and were instructed to access the reports of the SERFOR Satellite Monitoring System for Forest Fires (through shared electronic addresses), as well as in the procedure to obtain more specialized reports through institutional email. After the workshops, the relevant participants were included in the SERFOR database on national disaster risk management actors.

The improved satellite forest fire monitoring system has allowed the generation of forest fire statistics and, with it, the history of these events not only for the regions of Cajamarca, Huánuco, Pasco, Junín and Ucayali but for the country in general. The analysis of the statistics generated by the technical specialists will allow the planning of forest fire management at the landscape level and the operationalization of the IFM program. However, in the field interview with the managers of the ATFFS of Cajamarca and the GRFFS of Ucayali, they did not know what they would use the FF statistics for.

Concerning preventive management, the history of forest fires allows for determining the exposure of forest ecosystems and human communities to these events. Having this information is the first step to determining the vulnerability of forest fires in the regions where the project has been developed. Regarding reactive management, the Satellite Monitoring System issues early warnings more quickly, although it requires ground operators for confirmation. At this level, it is important to consider the repeated technical report of the National Fire Department of Peru (INBP, 2020), which states that 99.28% of the national territory is more than 20 minutes away by land from the basic operational units of the CGBVP, and 97.49% is more than 60 minutes away. Therefore, it is foreseeable that the Early Warning System and the Forest Fire Surveillance Reports (RVIF) will have a limited response to the FF.

With rehabilitation management, the Satellite Monitoring System provides information about the date and location of forest fires. This includes the history of scars in the natural landscape affected by fire. Analyzing this history allows for prioritizing and planning the rehabilitation of forest ecosystems based on their sensitivity and resilience to fire. It also helps in determining which human communities could make use of controlled burning and in which ecosystems fire could be used ecologically and traditionally.

Under Output A3.1: The subcontract to improve the early warning system for forest fires did not materialize into a contract due to time constraints.

Under Output A3.2: The development of action protocols in the event of a forest fire alert remained at the proposal level and was not validated for implementation. According to the interpretation of their laws, the officials of the institutions that were developing the protocol maintained that they were not authorized to extinguish forest fires, leaving this task in the hands of volunteer firefighters and rural brigades. They continue to promote reactive management as the only means of managing forest fires. They are unaware of areas in the country where fire is legally used for ecological purposes (some protected natural areas) and traditional purposes (peasant communities in Apurímac and the buffer zone of protected natural areas).

Under Output A4.1: The results of the training (knowledge management) and dissemination product for the prevention and response to forest fires have not been satisfactory, due to the focus of the content of the dissemination material, the generality of the information in manuals and guides, and the limited dissemination of the project at its launch, during its execution and after it.

This product had as its main target audience indigenous communities and peasant communities (Ashaninka, Shipibo-Konibo, Yanesha, Awajún, Quechua and Spanish), as well as brigade members and authorities. Due to the pandemic, it was difficult to work with the main target audience in the field. However, at the cabinet level, the development of dissemination, awareness-raising and training media took little into account the cultural, landscape and socioeconomic reality of the target audience in each of the five Regions. Most of the project's dissemination and promotion material was written in Spanish (leaflets, calendars, banner roll screen); Although some of the audiovisual media (videos, spots) took language into account, they were scarcely disseminated. In addition, the written dissemination material was untimely, most of it reaching the Regions in January 2022 and July 2022, which meant that distribution at the project's face-to-face training sessions and other local and regional events was limited.

Regarding audiovisual media, 3 specific videos were produced (used in Outcome 2), one international video related to the launch of the project and one video of project achievements, but they were not disseminated in the regions where the project was developed. Communication on radio, television and social media about the training workshops, project progress and related activities was absent. The project's field specialists in the regions reported and recommended having financial resources for local audiovisual advertising from the beginning of the project (2021). There was a lack of administrative planning and the delay in hiring staff was repeated, in this case, the communicator. On the other hand, the request for the allocation of budgetary allocations for advertising and the performance of the regional consultant's duties in the field was not attended. However, studies were financed that did not directly contribute to the strategic actions of the project (FDA. 176,842.16 US $).

Under Output A4.1: From September 2 to 9, 2022, the workshop "Dissemination of forest regulations, current prevention actions, causes and consequences of forest fires" (A4.1.2) was held for the local population. The Work Guide for the Prevention of Forest Fires was used. The workshop was in person and was attended by 103 producers from the five regions. It lasted one day in each region (8 am to 1 pm). Certificates of participation were not awarded. Twelve workshops were planned, but five were held.

The two national dissemination and socialization events of the project were not held, nor were the three local information workshops for public institutions held, as well as the Regional Workshop to disseminate the experience of prevention and control of forest fires, aimed at governments, experts, private sectors and local actors in the countries of the Amazon region.

Under Output A4.3: The material was not prepared to disseminate the value of forest and wildlife heritage, as well as the value of plantations on private land, so it was not possible to disseminate or raise awareness on these aspects.

Under Output A4.4: The minutes or agreements of the work meetings with FEMA, PNP, ATFFS and GRFFS of the GORE that reflect the improvements to the administrative sanctioning procedures and the criminal procedures related to the FF are not presented.

The management of project documentation presented significant deficiencies. Minutes of the Project Steering Committee meetings, half-yearly progress reports, annual operations plan, technical reports on the execution of the different activities, annual financial audit reports and other technical documents were not available or organized in the SERFOR database. The final report websites did not work properly and their location was delayed, at best, up to two weeks. Some of these documents were lost and it was necessary to resort to the Project Coordinator, who did not keep the information organized. This suggests that project information will be absent from internal and inter-institutional debates and the discourse on fire management policies since when any interested party requires the information, it will be difficult to provide it. It is worth noting that this did not occur with output 3, whose manager keeps the information impeccably organized and the links they provided work even after two years.
Of the three work guides developed ("Guide for the preparation of differentiated compost as an alternative system to the burning of agroforestry waste", "Work guide for the prevention of forest fires", and "Guide for preventive silviculture in the face of forest fires in forest plantations in Peru") only the Work guide for the prevention of forest fires was officially validated and endorsed. The "Guide for preventive silviculture in the face

of forest fires in forest plantations in Peru" was not used because the training in good forest management practices was not carried out, in addition to the fact that it was one of the consulting services administered by the FDA, whose delivery deadline for products was August 2022.

After evaluating the results of the project, it is observed that most of the face-to-face training in the five regions was carried out in an accelerated manner, they were not fully completed because at the time of the training the equipment and tools had not arrived, and others were not carried out. Likewise, printed promotional and advertising material was not available, and it was not disseminated by traditional mass media. This and the other considerations described in each evaluated result have meant that most of the project results have been slightly satisfactory and have not had the desired impact on the target population, except product O3.

The effectiveness of dissemination of project results

The project results were not effectively disseminated. They were only shared through a video on SERFOR's platforms and social networks, and this was done in a short time frame. The results did not reach various key authorities and organizations such as regional and local government authorities, directors of agricultural agencies, ATFFS and ARFFS, SERNANP, regional and national fire companies, INDECI, CENEPRED, COER, SENAMHI, DEVIDA, the Specialized Prosecutor's Office for Environmental Matters, the National Police of Peru, the Armed Forces, agricultural producers, local communities, and even the line management of SERFOR's central headquarters.

Furthermore, the results were not communicated or discussed in local, national, and international meetings, nor were they utilized by other audiences. However, some intermediate results were effectively communicated in certain products and regions. That is, Output 3 and the Huánuco region. The coordinator of the Efficient Satellite Monitoring System for FF (O3) interacted with national and international actors to publicize improvements in satellite monitoring of forest fires (Presidency of the Council of Ministers, GEFF-LAC Project, respectively). Additionally, a study in the form of scientific publications was developed, addressing the performance of heat spots obtained from satellite datasets to represent burned areas, highlighting the importance of research in sustainable forest management. Although the consultant from the Huánuco region did not hold the closing workshop for the project, she participated in oral presentations in discussions and intra-institutional and inter-institutional work meetings at the regional level, showcasing the progress of the project implementation in the Huánuco Region.

One of the reasons for the limited dissemination of the final and intermediate results, workshop replicas, and technical assistance to farmers and producers was the lack of budget for local radio or television dissemination, which was essential during the forest fire period, as well as for travel to districts and communities, food expenses for workshop participants, and materials for on-site training. It is important to note that the project also did not budget for and provide project staff and participants with health items due to the COVID-19 pandemic.

The overall post-project situation in the project's area of influence

In the five regions' areas of influence, forest fires persist, their number and severity have increased. This has led to the deaths of rural people and a greater loss of forest ecosystem services, impacting the quality of life for inhabitants. Due to the limited number of forest brigade members and volunteer firefighters, as well as a lack of equipment and tools, the volunteer firefighters in Cajamarca and Ucayali are less inclined to suppress FF. Secondary and tertiary actors continue to claim that FF suppression is not within their technical and administrative competencies, relying on volunteer firefighters to handle FF. Public and private institutions have not effectively managed FF suppression and have made minimal efforts to repeal the ban on the use of fire. Local authorities and communities have yet to adopt the practice of Integrated Fire Management (IFM).

The five regions still face challenges in implementing appropriate measures for managing combustible material, using fire properly, and implementing preventive and suppression measures for FF. Although efforts have been made in satellite monitoring of FF and the production of different types of reports, local authorities do not utilize this information to plan and implement preventive measures. This situation increases the risk of new FF, especially those generated by establishing new forest plantations and the lack of silvicultural management of existing plantations.

The unexpected effects and impacts, either harmful or beneficial, and the reasons for their occurrences

An unexpected positive effect was the Training Workshop for Authorities: "Prevention and Response to FF in Tropical Forests and Forest Plantations", in which they were informed about the national budget programs for FF financing and how to access them. Thus, currently, several institutions, including the SERFOR directorates (General Directorate of Forest and Wildlife Information and Management and Directorate of Sustainable Management of Forest Heritage) are making use of these funds for FF-related activities.

An unexpected negative effect was that the IFM, central axis in the formulation of the project, and preventive management went unnoticed in most of the project products. Product O1 addressed the IFM, but with a single focus (management of agricultural crop residues) and product O3 produces information to initiate preventive management, but decision makers continue to bet on reactive management, as the central axis of the management of FF. The lack of knowledge, as well as the absence of clear and effective policies that allow the use of fire for preventive purposes, would be the causes of this negative effect. Another unexpected negative effect occurred in the content of the brochure "How much do we know about the FF? and the Heroes of the Forest" and some spots, whose messages would generate doubts and inaction in rural residents when faced with the threat of fires, as they might not put them out since the promotional material states that those in charge of putting out the fire are the firefighters and community brigades because it is very dangerous to put them out. It is known that surface and underground FF can be extinguished directly, especially on flat surfaces, and it is not necessary to call the firefighters, especially when 88.47% of the districts (1,658) nationwide do not have the Basic Operational Units of the CGBVP. The reason for the appearance of this undesirable effect is the lack of knowledge in the methods of suppressing FF, and the inadequate coordination between the communicator and the

technical specialist, as well as there being no thorough review of the information before its pressing.

The cost efficiency in implementing the projects, including the technical, financial and managerial aspects

The project's profitability was demonstrated through three key aspects.

Technically, it was in product O3, where the technical activities were effective and efficient. However, other products did not yield technical profitability. The improvement in satellite monitoring technology for FF allowed the generation of information for preventive, reactive, and rehabilitation management at both regional and national levels. This technology also enabled the identification of active FF with a certain level of error, allowing their coordinates to be communicated to local governments to improve FF response capacity. The information obtained from satellite monitoring in preventive management is related to the exposure of forest ecosystems, districts, provinces, and native communities to forests, which helps in prioritizing preventive activities based on forest exposure and history. Additionally, the map of burned areas facilitates the initiation of rehabilitation activities for forest ecosystems.

The overall financial profitability of the project, comprising four products, shows that the initial investment has not been recovered, mainly due to the lack of reduction in forest fires. Costs associated with eliminating FF, declaring a state of emergency in some districts, and rehabilitating affected areas have increased, leading to a loss of productivity of forest lands and a reduction of long-term benefits. This necessitates the need for rehabilitation at some point.

The profitability of management was unsatisfactory. Tables 3 and 4 indicate the number of service contracts for consultancy and the number of service orders per year. It was a big inversion for only one product achieved full results.

Table 3. Number of service contracts for consultancy

DESCRIPTION	TOTAL CONTACTS ISSUED	CONTRACTS COMPLETELY TERMINATED	CONTRATOS RESUELTOS PARCIALMENTE
CONTRACTS 2021	28	0	0
CONTRACTS 2022	29	2	1
CONTRACTS 2023	57	2	1

Table 4. Number of service contracts for service orders

DESCRIPTION	SERVICE ORDERS ISSUED	CONTRACTS COMPLETELY TERMINATED	CONTRACTS PARTIALLY TERMINATED
ORDERS 2021	27	6	33
ORDERS 2022	56	6	62
ORDERS 2023	83	12	95

Follow-up actions to enhance the uptake of project results

a) Encourage active participation of rural communities, indigenous peoples and secondary stakeholders in all stages of the project, from planning, implementation and evaluation. The inclusion of communities and secondary stakeholders ensures respect for local views and that strategies are culturally appropriate and sustainable.

b) Disseminate results to all stakeholders and other interested parties, such as regional and local government authorities, directors of agricultural agencies, ATFFS and ARFFS, SERNANP, regional and national fire companies, INDECI, CENEPRED, COER, SENAMHI, DEVIDA, the Specialized Prosecutor's Office for Environmental Matters, the National Police of Peru, the Armed Forces, agricultural producers, local communities, and even the line management of SERFOR's central headquarters. Organize meetings with each target group to discuss the results obtained from each output, and publish a technical report.

c) Extend ongoing training programs in the management of agricultural and forest plantation residues and capacity building for rural communities, indigenous peoples and response teams in other IFM activities, with a 3-year follow-up.

d) Establish an ongoing monitoring and evaluation system to measure the impact and effectiveness of satellite monitoring of FF. This includes verification of preliminary FF reports from SINPAD, community response to FF and ecosystem health

The projects' relative success or failure, including a summary of the key lessons learnt; and the identification of any issues or problems that should be taken into account in designing and implementing similar projects in the future

Lessons learned from the success and failure of the project will be presented after the summary of the overall evaluation of the project (section 4). For the future design and implementation of similar projects, three fundamental aspects must be considered:

a) Significant strengthening of SERFOR's institutional capacity for comprehensive integrated fire management is still necessary. It is essential to prioritize the acquisition of specialized knowledge before the formulation of new projects, thus ensuring proper strategic planning in order to guarantee their effectiveness and sustainability.
b) Community participation: Programs that promote community participation should be implemented, adopting a bottom-up approach that actively involves communities in the prevention and management of fires. These activities should include: Education

on controlled burning, reduction of fuel load through thinning and pruning, establishment of strategic firebreaks, monitoring and reporting of FF, training in fire suppression techniques, conducting community drills, and planning and executing post-fire rehabilitation measures.

c) Duration of Projects: Initiatives aimed at promoting behavioural changes, such as adopting good forestry and agroforestry practices, as well as modify fire management paradigms, require a time horizon considerably longer than one year. Only in the long term is it possible to consolidate behavioural changes and ensure the sustainability of the results.

4. Overall assessment (a synthesis)

The evaluation mission was conducted nearly two years after the completion of the project and the delivery of the final project report. Three observations were made during the mission:

4.1 Project formulation and implementation

Due to the complexity of the FF problem and its implementation across five large geographic regions with varying socioeconomic, biophysical, and road infrastructure conditions, as well as different regional and local administrative management models and target audiences, it was necessary to conduct a thorough diagnosis of the areas to be intervened. This input would have been valuable in formulating the project, which should have followed a participatory model to engage three target audiences in formulating and committing to its execution. A lesson identified is that in future, similar or follow-up projects should be validated by other national nigh-level stakeholders to ensure its viability. Given the country's political instability and high turnover of officials, commitments between and within institutions should be formalized through ordinances, meeting minutes, and institutional letters to minimize project execution risks.

The project could not result in a change of root cause of FF occurrences, which are the various human causes within different productive sectors that use fire, categorized and known throughout the country by geographic region. Strategies addressing socioeconomic and IFM aspects are essential for modifying human behavior in these sectors, which directly or indirectly contribute to FF. Without modifying human behavior, effectively reducing FF will be challenging.

The project's objective was overly ambitious opposite the reality of the “normal situation”. It underestimated execution time, the distance needed to engage the primary target audience, and the limited access to the communities. *But above all, the need for a long term approach to foster behavioural change in people.* Additionally, the project lacked a risk plan that considered the characteristics of public administration.

Regarding the project’s logical framework, the identified activities lacked a strong connection to the specific objectives and activities (Annex 7). It was necessary to develop a matrix of strategic objectives, specific objectives, and strategic actions. The strategic actions matrix should include an indicator, a description, a deadline, and the responsible actors for each action. Likewise, inadequate monitoring and evaluation of the project from the beginning made it difficult to measure the progress and effectiveness of the project.

4.2 Project administration

On March 11, 2020, the WHO declared the pandemic situation. On August 26, 2020, the Project execution agreement was signed between ITTO and three months later SERFOR sent the work plan to ITTO (November 6, 2020).

On February 19, 2021, the first disbursement of the monetary donation made by ITTO was accepted, that is, 6 months after the signing of the agreement.

On March 4, 2021, ITTO sent the no objection for the hiring of the Project Coordinator and the Project Administrative Officer for the execution of project PP-A/56-340-2. On March 30, 2021, the hiring of the Project Coordinator and Officer was carried out.

Using the minutes of the meeting of May 17, 2021, the selection committee for the hiring was formed. Using the minutes of the meeting of June 3, 2021, the selection committee was reconfigured, appointing a permanent selection committee. On June 4, 2021, SERFOR began the execution of the Project (10 months after the signing of the agreement).

Because the procedures of the Peruvian State Procurement Law are long and slow, the delay in contracting lasts at least 40 days and can last up to 3 months, as occurred with the training specialist in 2022. Likewise, in 2021, the training actions could not be started until July 12 due to the lack of a technical specialist. This would explain the results of output O4.

The project coordinator did not take the corresponding measures to have the technical specifications for the acquisition of goods and the terms of reference for the hiring of consultants prepared in sufficient time. Therefore, the equipment and the dissemination material were not ready at the time of the full execution of the project.

The terms of reference for the consultants must be written in a precise and clear manner to avoid confusion. It is of utmost importance that they are prepared and reviewed by the technicians or specialists in the area of the product and a specialist in the area of FF. This would explain the results of output O3.

The meetings between the project coordinators, the field specialists, the officials of the ATFFS, ARFFS and the line directors of the central SERFOR, to identify the economic needs in the field, the provision of adequate clothing in the face of the pandemic and analyze the budget allocation in the field, as required by the activities of the products. These needs appear in the field specialists' reports but were not identified by the coordinator.

4.3 Overall achievement of project objectives and effectiveness

The Project could not achieve to significantly reduce the surface area of areas affected by forest fires in the five intervention regions, as a result of the increased use of fire to change the use of forest land, reduce agricultural and domestic waste, as well as deforestation. This situation negatively affects the provision of ecosystem services to local forest ecosystems, the population and their livelihoods. While the project has not achieved an immediate reduction in forest fires, it successfully implemented the output

O3 Efficient forest fires monitoring system, and has made progress in outputs O1 Good practices in forest management, agroforestry, and management of forest and agricultural residues, and output O2 Public and private institutions effectively managing forest fire prevention and response protocols While in output O4 Knowledge management and outreach for forest fire prevention and response was not been successful in its implementation.

The integration of satellite technologies has significantly improved SERFOR's satellite monitoring system for FF, allowing it to be effective. This system provides high-resolution geospatial data that enables accurate assessments of wildfire vulnerability and danger both within the project area and at a national level. This information has optimized the planning and execution of prevention and restoration actions in areas where fires are recurrent. Likewise, early fire detection has strengthened the capacity of managers to try to control their spread. The courses of the O3 taught in satellite monitoring of FF (some available on YouTube) have empowered local authorities and managers, providing them with essential knowledge and tools for prevention and response to FF. This information has optimized the planning and execution of prevention and restoration actions in areas where fires are recurrent. Likewise, early detection of fires has strengthened the capacity of managers to try to control their spread. The O3 courses taught on satellite monitoring of forest fires (some available on YouTube) have empowered local authorities and managers, providing them with essential knowledge and tools for the prevention and response to forest fires. Thus, the O3 has demonstrated efficiency and has had a positive impact at the institutional level. The sustainability of O3 is demonstrated by the ongoing availability of online services, which ensure continuous monitoring that contributes to the protection of forest ecosystems. Therefore, the O3 product has been effective, efficient, and sustainable.

Output O2 faced multiple challenges in its implementation, limiting its effectiveness. The Protocol for attention to FF was not consolidated with sufficient support from local authorities, so the planned validation workshops were not carried out either. The FF web platform was not implemented as planned, opting to train SERFOR in Moodle. However, this training did not translate into a continuous offer of forest fire courses, limiting the project's efficiency, impact and sustainability.
The virtual workshop for authorities “Prevention and response to FF in tropical forests and forest plantations in Peru” showed a low level of participation by local authorities (185) and approval of the workshop by 15% (28), showing limited efficacy and efficiency. The content focused mainly on fire suppression and legal aspects, leaving aside topics such as IFM and controlled burns.
The “Training course for community brigades in prevention and attention to forest fires in forests and forest plantations” achieved a higher participation of attendees (209) and 50% (136) passed the course. Still, it was not effective because there was limited participation of community brigades and practical training was limited by the lack of time (one day in each region), suppression equipment, and instructors because of fire season. In addition, the database of the brigade members who passed the course is not available in the ATFFS and ARFFS, a situation that limits their participation in the suppression of future FF. The lack of information on the brigade members and the shortage of suppression equipment limits the sustainability of the O2 product.

Output O1 presented difficulties in its implementation that limited its effectiveness. It is worth highlighting the non-execution of key activities: awareness workshops for the rural population (10), the online platform, and the non-installation of the

demonstration plot in each region, which limited the impact of the project. The late and shared hiring of the communicator made it difficult to raise awareness and involve rural producers, as a consequence low participation of local actors was observed. The workshops on agronomic and forestry management techniques were reduced to only one (one in each region), which resulted in a limited and rapid transfer of knowledge. The workshops presented limitations in terms of duration, technical content and support. The training guide prepared almost a year later had very technical language that limited the understanding of agricultural producers. In addition, the lack of adequate tools in some regions hindered the practice of composting, which limited its adoption. The lack of human resources and logistical support for composting workshops, combined with the lack of adequate training materials, limited their efficiency. The sustainability of Product O1 is limited because there is no available staff in the ATFFS and ARFFS, financing, or associations of agricultural and forestry producers committed to continuing with the execution of this product.

The output O4 Knowledge Management and Outreach for Forest Fire Prevention and Response) was no effective. This is primarily due to the implementation of the FF communication strategy targeting Indigenous communities, followed by peasant communities, brigade members, and local authorities was not executed, Additionally, the dissemination material failed to consider the cultural, geographical, and socioeconomic characteristics of each of the five regions. As a result, the information provided was overly generic and, in some instances, contradicted the participation of community in suppression activities. The written dissemination materials were distributed late (January and July 2022), which significantly limited the project's dissemination at its launch, during its execution, and after its completion.
There was a noticeable lack of administrative planning for the product, as evidenced by repeated delays in hiring the communicator. This situation explains the no compliance with the following scheduled activities: Dissemination workshops for the implementation of the forest fire communication strategy (5), Outreach factsheets on the economic value of the forest and wildlife heritage and forest plantations on private lands, Radio spots broadcast on local radios, and project dissemination and socialization events (2).

4.4 The political situation of the country

The country's political situation directly and indirectly influences the occurrence of forest fires.

Direct factors include forest deregulation policies, such as Law No. 31973 enacted in January 2024, which favours the change of land use from forest to agricultural if the forest cover is equal to or less than 30%, thus encouraging deforestation. In both activities, the use of fire is a common and economic tool. Indirect factors include the promotion of agro-export crops, the increase in urbanization, trafficking of forest lands, illicit crops, migration policy that favours cultures with an agricultural tradition, social conflicts, corruption and climate change, all of which consolidate the occurrence of FF.

The instability of ministers, executive directors and line managers influences the development of projects. In the case of the project, during its execution up to the ex-post evaluation there have been five changes of executive directors of SERFOR, a situation that causes instability and delays in the scheduled activities.

5. Lessons learned

a) Assessment of human resources: It is essential to have trained and experienced personnel in IFM, as well as prevention, suppression and extinction equipment.
b) Initial assessment of the area to be intervened should be done, including wildfire risk analysis. First, the areas most exposed to FF must be identified. To do this, historical data generated by the Satellite Monitoring System will be used to map the areas most prone to FF.
c) Early involvement of key stakeholders in the problem identification and project development process are critical to thoroughly analyzing the formulation of a "problem tree" and a "project objective tree." This would allow a project to be implemented without major adjustments or revisions.
d) In future, similar or follow-up projects should be validated by other national nigh-level stakeholders to ensure its viability
e) The fire management consulting team and the SERFOR technical team should be qualified by at least one advanced-level course in FF and have experience in *IFM*.
f) Regular and frequent monitoring of progress in the implementation of the various activities and their evaluation in terms of time, quantity and quality are helpful to detect deviations from the operational plans, allowing timely measures to be taken to overcome them.
g) The establishment of demonstration plots in the IFM and thus improve FF's capacities and management knowledge are essential.
h) It is important to educate and train on forest fuel management practices and enhance FF prevention management capabilities and knowledge.
i) Buying the equipment in the regional capitals would be advantageous due to immediate availability, training on its use, having the guarantee certificates and saving the costs of transporting the goods. Rules of donors like ITTO should consider this option of exclusive local procurement – as in the end, costs for maintenance and repair and time required will be less compared to involve international product providers.
j) It is essential to analyze the underlying causes of anthropogenic FF and the use of fire in land management – this will be fundamental to define the strategic activities and the time needed to change the *behavior* towards the use of fire.

6. Conclusions and recommendations

6.1 Conclusions

a) The planned project was implemented in the five regions over 24 months, during the time of the pandemic caused by COVID-19. Of the four outputs, only Output O3 "Efficient forest fire monitoring system" was effective, had a satisfactory impact and considered sustainable.

Output O3, "Efficient Forest Fire Monitoring System" has had a significant impact by generating detailed FF statistics not only at the project level, but also at the national level. This achievement allows it to prioritize IFM management at both local and national levels.
Thanks to efficient management of its resources, Output O3 has effectively met all its objectives. Furthermore, its sustainability is guaranteed by a solid base of specialized resources and the achievement of national funding has allowed it to continue operating beyond the duration of the project.

b) Although the project did not achieve an immediate result in the reduction of FF, it made progress in the development of strategies such as compost production have been adopted to reduce the use of fire by agricultural producers. Technologies for satellite monitoring of forest fires have been integrated for early detection, response, and post-fire assessment. Training courses have been conducted to engage authorities, firefighters, and rural brigades in forest fire prevention and management.
c) ITTO's initial financial support was crucial in establishing the output O3 satellite monitoring system, which demonstrated its effectiveness in prevention and rehabilitation management of FF, mainly. These successful results helped attract additional government resources, enabling SERFOR to enhance and solidify its capabilities in FF managing. In this sense, ITTO's investment acted as a catalyst to drive a more effective and sustainable response to forest fires in Peru.
d) The various virtual and in-person training workshops had limited impact. There were a lot of dropouts and in the evaluations, at best, 50% of the participants passed the course and were not given a certificate of participation. The training sessions were held without the equipment for field practices and the project dissemination material.
e) The in-person training sessions did not have funding to cover travel expenses, coordination, conditioning of the demonstration area, notebooks, pens, and snacks, among others. Without visibility and funding, the results of the dissemination of the in-person training workshops were not as expected and their impact was not perceptible.
f) The publication and dissemination of the launch, progress and results of the project were scarce or invisible. The dissemination material is incomplete and dispersed since the project website was not created.
g) The final project report presented incomplete and fragmented products and activities except for output O3. The project documentation was not stored properly. Minutes of Project Steering Committee meetings, semi-annual progress reports, annual operations plan (2021), technical reports on the implementation of the various activities, annual financial audit reports and other technical documents produced were not available.

6.2 Recommendations

6.2.1 Recommendations to the Executing Agency

a) Strengthening SERFOR's institutional capacity and improving satellite monitoring systems have led to significant advancements in forest fire management. However, to reduce the area affected by FF, it is essential to continue the project in the future.

The objectives of such future project

To implement advanced integrated fire management and forest fire prevention programs as a response to the increased use of fire in land use and forest land-use change. This has led to a consequent increase in deforestation and the destruction and fragmentation of other forest ecosystems, resulting in a notable increase in FF that negatively affect ecosystem services.

Specific objectives:

- Develop and implement community fire management programs actively involving local communities, especially indigenous and rural populations. This will ensure that strategies are culturally appropriate and sustainable in integrated fire

management practices, forest fire prevention, and the management of forest combustible material.

- Develop and implement advanced national forest fire statistics based on fire scars detected by satellite sensors. This will help monitor the spatial and temporal changes in forest fires across the country, create preventive management strategies, rehabilitate forest ecosystems affected by fire, and prioritize actions for integrated fire management.

b) To ensure that the outputs outlined in the project's logical framework are linked to the specific objectives and activities, it is advisable to develop a matrix of strategic objectives, specific objectives, and strategic actions. The strategic actions matrix should include an indicator, a description, a deadline, and the responsible actor for each action. This will allow the monitoring and evaluation of the project from the beginning, measuring its progress and effectiveness.

c) It is recommended that projects focused on promoting behavioural changes, such as the adoption of Good Practices in Forest Management, Agroforestry and Waste Management (Output 1) and The Strengthening of Institutional Capacities for the Prevention and Response to Forest Fires (Output 2), have a minimum duration of three years. This time frame is essential for consolidating behavioural changes and ensuring the long-term sustainability of the results.

d) Forest fire extinguishing equipment should be donated to the decentralized commands of the General Corps of Volunteer Firefighters of Peru (CGBVP), according to the importance of the incidence of forest fires in each region.

e) It is recommended that forest fire projects consider hiring forest engineers in all project units, due to their specialized expertise in optimizing the protection, productivity, and health of forest ecosystems. In addition, their knowledge is essential for the rehabilitation of degraded habitats and mitigation of climate change impacts.

f) The role and responsibilities of the SERFOR line directors, related to the project, must be formal and clear from the beginning of the project, being recorded in the form of minutes of meetings or a letter signed by the parties involved. This avoids failures, disorganization of the material, misunderstandings and duplication of tasks.

g) Although the improvement of SERFOR Satellite Monitoring of FF allows for the preventive, reactive and rehabilitation management of the areas affected by FF, the validation of the early warning of FF and the maps of burned areas is necessary.

h) It is essential to assign a line director in charge of forest fires, with knowledge or specialization in Integrated Fire Management, who leads and articulates the SERFOR directorates, as well as the different government sectors, to unite and channel efforts in managing the problem of FF.

i) IFM projects should prioritize the development of behavioral and social strategies tailored to each geographic region to address the human causes of FF. By modifying the human behaviors that trigger these events, their frequency and severity in the country can be significantly reduced. It is imperative to recognize that the prevention of forest fires requires a comprehensive intervention that combines technical measures with actions aimed at the population.

j) Forestry research provides an arsenal of innovative tools and knowledge that must be strategically integrated into the conversion of agricultural and forestry residues, as well as preventive forestry techniques. By adopting cutting-edge technologies and methods, current challenges can be addressed more effectively, promoting the adaptation and resilience of forest ecosystems to forest fires, and thus contributing to sustainable forest management.

6.2.2 Recommendation to ITTO for the revision of the ITTO Guidelines on Fire Management in Tropical Forests (1997)

In the evaluated project, there are not many results related to integrated fire management, however, some suggestions to the ITTO Guidelines are:

a) Revise land use policies which favour clearing forest land, change forest land use, mining, and road constructions that increase the risk of FF
b) Promote sustainable land-use practices that reduce the risk of FF. This includes agroforestry, silvopastoral practices, agroecological systems, zero tillage, controlled burns, and alternatives to the use of fire, through the implementation of fiscal incentives that offer tax deductions for individuals, medium-sized enterprises, and large corporations.
c) To prioritize and stimulate a rural economy that protects ecosystem services, value forestry ecosystems and practices extensive agriculture, livestock, and transhumance.
d) To implement community-level IFM using a bottom-up approach. FIM crews should undergo training in essential fuel management activities before the wildfire season begins. Key actions include: 1. Conducting controlled burns during the transitional periods between the rainy seasons, 2. Reducing fuel density by thinning and pruning vegetation, 3. Establishing firebreaks along strategic boundaries to help contain FF, 4. Organizing community drills to practice response procedures for active fire incidents, 5. Planning immediate rehabilitation measures to prevent loss of forest soils and mitigate flood risks following the wildfire season.
e) Climate change is causing extreme FF or mega-fires, so the Guide could prepare tropical countries to face extreme situations. These changes in climate and fire weather conditions are becoming the new normal, making it a major concern for all of us. Some recommendations are:
    - e.1 To practice increased forest diversity, especially in plantations, by planting species preferably native and non-flammable, varying ages, and a mix of horizontal and vertical structures can significantly improve forest health. as well as lower its susceptibility to FF.
    - e.2 Use Fire Weather Index, for early detection of weather danger. It can enable quicker and more effective prevention in controlled burning and active FF. Determine the state of humidity and stress of vegetation (NDVI). Be aware that extreme wind velocity, which is associated with higher slopes, can lead to extreme fires
f) The ITTO Guidelines on Fire Management in Tropical Forests should be thoroughly interpreted, analyzed, discussed and validated by groups of stakeholders. Their participation is essential to ensure they are aware of the Guidelines and put them into action plans, especially in their implementation.
g) Given the leading role of the media in shaping risk perception, it is crucial to develop clear strategies to effectively engage the media as partners in the ITTO Guidelines dissemination. The Guide can be shared on platforms like Facebook, Twitter, Instagram, and TikTok to enhance the specialized knowledge on integrating fire management in politicians, administrative enforcement, judicial bodies and civil society.

h) **Annexes**

Annex 1. Meetings with SERFOR officials and the Project Coordinator

Date	Time	Name	Position	Related to ITTO project	Place
18/06/2024	08:00:00	Cecilia Macera Uruizo	Director of the General Directorate of Forest and Wildlife Information and Management (DGIOFFS)	SERFOR coordinator PP-A/56-340-3	E-mail
24/06/2024	09:00 - 9:15	Cecilia Macera Uruizo	Director DGIOFFS	SERFOR coordinator PP-A/56-340-4	SERFOR
	09:00 - 11:00	Leoncio Calderón	Director of the International Cooperation Office	Coordinación sobre el programa de trabajo presencial	SERFOR
	09:00 - 11:00	Romina Liza	Specialist in Forest Fire Monitoring and Management of DGIOFFS	GIS National Expert	SERFOR
	09:00 - 11:00	Sheila Gamarra	Specialist in Forest Fire Monitoring and Management of DGIOFFS	GIS National Expert	SERFOR
	09:15 - 11:00	Jorge Moreno Guido	Administrative Coordinator of DGIOFFS	Coordinador Administrativo de la DGIOFFS	SERFOR
	10:45 - 13:00	Ccony de la Cruz	Administrative Coordinator of DGIOFFS	Coordinadora Administrativa de la DGIOFFS	SERFOR
25/06/2024	15:00-16.45	Juan Carlos Vasquez		Project coordinator PP-A/56-340-3	Online meeting
	15:00-16.45	Ccony	Administrative Coordinator of DGIOFFS	Coordinadora Administrativa de la DGIOFFS	SERFOR
28/06/2024	15:00-16.45	Juan Carlos Vasquez		Project coordinator PP-A/56-340-3	Online meeting
2/07/2024	14:00-16:30	Sonia Gonzales	Director, Capacity Building Directorate		SERFOR
4/07/2024	11:00-13:00	Juan Carlos Vasquez		Project coordinator PP-A/56-340-3	Online meeting
8/07/2024	14:30-16:30	Enrique Angulo Pratolongo	Communications Specialist	Comunication Expert	SERFOR

Annex 2. Meetings with project stakeholders and intended beneficiaries in Cajamarca

Date	Time	Name	Position/Activity	Remarks	Place
25/08/2024	15:30: 16:30		Travel: Lima -Cajamarca		
26/08/2024	8:00-9.00	Mr. Marco Coronel	Director, Technical Forest and Wildlife Administration, SERFOR / Regional Project Coordinator	Miguel Lopez Vargas, regional proyect consultan was absent	Cajamarca
	09:00-12:00		Demonstration pilot project in the District Municipality of Huasmín, Prov Celendín	3 hours from Cajamarca by car	Cajamarca/Celindin
	12:00-13:00	Lunch time	Huasmín		Huazmin
	13:00-14:00	Mr Luduvina Acuña Chavez	Producer who attended the training on good agroforestry practices (compost production)		Huazmin
	14:00-15:00	Mr Sandra Chavez	Producer who attended the training on good agroforestry practices (compost production)		Huazmin
	15:00-18:00		Trip Huasmín -Cajamarca		
27/08/2024	09:00-11:00	Ing. Miriam Eugenio	Technical specialist . Technical Forest and Wildlife Administration, SERFOR		Cajamarca
	1100-12.:00	Cp Fernando Velázquez	Volunteer Firefighter Company, Cajamarca N°59		Cajamarca
	12:00-13:00	Lunch time			Cajamarca
	14:00 16:00	Ing. Ruth Mishahuamán	Participant in the workshop for authorities on "Prevention and response to forest fires in tropical forests and forest plantations in Peru" (INDECI Director of Cajamarca)		Cajamarca
	17:00 18:00		TRIP: Cajamarca-Lima		Lima

Annex 3. Meetings with project stakeholders and intended beneficiaries in Ucayali

Date	Time	Name	Position/Activity	Remarks	Place
4/09/2024	15:30-16:30		Travel: Lima -Pucallpa		
5/09/2024	08:00-12:00	Ing, Renán Shahuano,	Regional proyect consultant	Visit demonstration pilot project in the population centre Nueva Esperanza, Campo Verde district, Coronel Portillo province.	Pucallpa-Campo verde. (1 hour to Pucallpa)
		Mr.Victor Lupa Guillen	Producer who attended the training on good agroforestry practices (compost production)		
		Mrs.Consuelo Chavez	Producer who attended the training on good agroforestry practices (compost production)		
	12:00-13:00	Mr. Donato Flavio Fernandez Andahua	Mayor, Campo Verde district, Ucayali	Ing, Renán Shahuano,	Pucallpa
	13:00-14:00		Campo Verde Pucallpa		Pucallpa
	14:00-15:00	Lunch Time			
	16:00-17:00	Mr. Peter Pool	Commandante CGBVP, Pucallpa	Ing, Renán Shahuano,	Pucallpa
6/09/2024	08:00-10:00	Ms.Juri Ramos	Participant in the workshop for authorities on "Prevention and response to forest fires in tropical forests and forest plantations in Peru" (INDECI Director of Ucayali)	Ing, Renán Shahuano,	Pucallpa
	10:00-12:00	Mr.Manuel Pezo	Director of GRFFS-Ucayali	Ing, Renán Shahuano	Pucallpa
	12:00-13:00	Lunch Time			Pucallpa
	16:30-17:30		Travel: Pucallpa -Lima		Lima

Annex 4. Extension of the execution period for Project PP-A/56-340-2 from ITTO

Second Project Steering Committee Meeting (virtual)
ITTO-SERFOR Fire Project (PP-A/56-340-2)
"PROJECT FOR PREVENTION AND RESPONSE TO FOREST FIRES IN TROPICAL FORESTS AND FOREST PLANTATIONS IN PERU"

Minutes of the Meeting

Lima, Feb. 8, 2022 (08:00 a.m. Peru)
Japan, Feb. 8, 2022 (10:00 p.m. Japan)

The second meeting of the Project Steering Committee (PSC) was virtually held on 8 February 2022 at 8 am in Peru (10 pm Japan time). This meeting was attended by members of the PSC and representatives of SERFOR, the Government of Japan as the donor and ITTO. The meeting was moderated by Sr. JUAN CARLOS VÁSQUEZ LAZO. The list of participants and the meeting's agenda are attached to the minutes as Annex 1 and Annex 2, respectively.

Item 1: Opening of the Meeting

Mr. Edin Bustamante, General Director of information and forest and wildlife management, welcomed the participants on behalf of SERFOR and as the Director of the Project. He said that we at SERFOR valued the great contributions of ITTO to the project since it has provided to work in an articulated manner in the prevention of forest fires, which have caused serious damages to the country. He pointed out that the efforts of the Project team in 2021 were remarkable, and the expected results have been achieved despite many difficulties of the COVID-19 Pandemic. He stressed that we want to continue working to strengthen capacities in rural populations to improve their good practices, particularly in the regions of Cajamarca, Pasco, Junín, Huánuco and Ucayali.

In her welcoming remarks, Ms Sheam Satkuru, Executive Director of ITTO, expressed appreciation to the Government of Japan for making this fire project possible in Peru. She also appreciated SERFOR for working hard in implementing the project under the COVID-19 pandemic situation. She highlighted that the ITTO-SERFOR forest fire project has helped to strengthen the capacity of national and local authorities, and local communities in the prevention and response to forest fires; and increased awareness on forest fires so as to accelerate the implementation of national and regional forest fire action plans for the reduced loss of forest cover, ecosystems and natural habitats of wild flora and fauna. She hoped that ITTO and SERFOR will work closely for the conservation and sustainable use of forest resources as an integral part of COVID-19 recovery strategies in the years ahead. Ms. Satkuru's welcoming remarks is attached as Annex 3.

On behalf of the Ministry of Foreign Affairs of Japan, Mr. Taku Sakaguchi extended appreciation to ITTO and SERFOR for the organization of the second PSC meeting in a virtual format. He said that the Japanese Government has put its emergency funds to urgently prevent forest fires in Peru and Indonesia to address the global environmental challenge and looked forward to successful implementation of the project.

Item 2. Presentation of the participants (self-presentation)

Annex 5. Addendum to the contract for Project PP-A/56-340-2

INTERNATIONAL TROPICAL TIMBER ORGANIZATION (ITTO)
INTERNATIONAL ORGANIZATIONS CENTER – 5F, PACIFICO-YOKOHAMA
1-1-1, MINATO-MIRAI, NISHI-KU, YOKOHAMA 220-0012, JAPAN
Fax: (81-45) 223-1111 Tel: (81-45) 223-1110 e-mail: itto@itto.int

MEMORANDUM OF UNDERSTANDING

for the implementation of PP-A/56-340-2
"Forest fire prevention and response in tropical forests and forest plantations in Peru"

This Memorandum of Understanding (hereinafter to be referred as "MoU") is agreed between the International Tropical Timber Organization (ITTO), and the Fundacion para el Desarollo Agrario (FDA) to facilitate the purchase of capital goods and the contracting of consulting services which are necessary for the timely sucessful completion of the ITTO-SERFOR project PP-A/56-340-2 "Forest fire prevention and response in tropical forests and forest plantations in Peru" (hereinafter to be referred as "Activity").

This Memorandum of Understanding (MoU) shall support the implmentation of the MoU establihsed beween ITTO and the Servicio Nacional Forestal y de Fauna Silvestre (SERFOR) that was duly signed in June 2022.

The implementation of this Activity will be facilitated under the following conditions:

1) FDA agrees to provide its support to the purchase of capital goods and the provision of consultany services as per Annex to the MoU between ITTO and SERFOR (Annex-1) in consultation with SERFOR and ITTO for the timely purchase of all capital time befor the end of June 2022;

2) ITTO agrees to transfer the amount of US $176,842.16 (United States dollars one hundred seventy-six thousand eight hundred forty-two and sixteen cents only), which is the final installment specified in the Project Agreement for PP-A/56-340-2, to the bank account designated by FDA immediately after it receives the signed copy of this MoU;

3) FDA will be responsible for the administration of the funds in the total amount of US $176,842.16 (United States dollars one hundred seventy-six thousand eight hundred forty-two and sixteen cents only) which will be transferred from ITTO;

4) FDA follow the ITTO Guidelines for the Procurement of Goods and Services;

5) FDA will maintain strict budgetary control over the funds allocated to it by ITTO for the purposes specified in Annex-1 and shall take every precaution against any unauthorized use of the funds;

6) FDA will pay an amount of US$10,000 in the provision of Item 6 (consulting and services) of Annex-1 of the MoU between ITTO and SERFOR to cover the travel expenses of a consultant designated by ITTO to attend the 58th Session of the ITTC (7-12 November 2022, Yokohama, Japan) in order to make a presentation on the results of this MoU and the ITTO-SERFOR project PP-A/56-340-2;

7) FDA agrees to submit to ITTO and SERFOR, upon the completion of the purchasing of the capital items and after the settlement of all expenses before the end of June 2022, a statement of account showing the detailed expenses with all original receipts related to the expenditures, includign the advance payment to the consultant based on Item 6); and

8) All capital goods purcahsed from this Activity shall contain appropriate recognition of ITTO and SERFOR.

Annex 6. Products and activities of project PP-A/56-340-2-Peru

Outputs & activities		Responsible Party
Outputs 1	**Good practices in forest and agroforestry management, and forest and agricultural waste**	
A1.1	Raise awareness agricultural producers on good practices for forest and agricultural waste management.	Plant SERFOR, - ATFFS technical administrators SERFOR, ARFFS-Ucayali
A1.2	Training on sustainable forest and agroforestry management techniques	Professional specialists hired sustainable agronomic and forestry management techniques, ATFFS SERFOR Central, Technical Administrators of ATFFS-SERFOR and ARFFS
A1.3	Reactivate and form community organisations	SERFOR Central, Technical Administrators of ATFFS-SERFOR and ARFFS-Ucayali hired specialist professionals
A1.4	Strengthen the operational capacity of SERFOR headquarters	SERFOR Central, Project Manager, Technical Administrators of ATFFS-SERFOR, ARFFS Ucayali
Outputs 2	**Public and private institutions effectively manage the prevention and response of forest fires**	
A2.1	Strengthen the organization and articulation of public and private institutions	SERFOR Central, Technical Administrators of ATFFS-SERFOR, ARFFS-Ucayali hired specialist professionals
A2.2	Develop and validate protocols for prevention and response to the occurrence of forest fires	SERFOR Central, Technical Administrators of ATFFS-SERFOR - Consultants
A2.3	Train specialized human resources in forest fire prevention and response	Technical administrators of SERFOR Central, Technical administrators of ATFFS-SERFOR. Qualified Specialists
Outputs 3	**Efficient forest fire monitoring system.**	
A.3.1	Articulate with institutions that have early warning systems and information transmission	Project manager
A.3.2	Strengthen the organization in the event of forest fires	Project Manager SERFOR Central, Technical Administrators of ATFFS-SERFOR, ARFFS Ucayali
Outputs 4	**Knowledge management and outreach for forest fire prevention and response**	
A.4.1	Carry out dissemination actions related to the forestry activity of SERFOR Central, Technical Administrators of ATFFS-SERFOR and ARFFS-Ucayali	SERFOR Central, Technical Administrators of ATFFS-SERFOR and ARFFS-Ucayali
A.4.2	Develop and implement communication actions on forest fires	Communication consultant for development of communication actions on forest fires SERFOR Central, Technical Administrators of ATFFS-SERFOR and ARFFS-Ucayali
A.4.3	Know and spread the value of forest and wildlife heritage and forest plantations on privately owned land	Project Manager SERFOR Central, Technical Administrators of ATFFS-SERFOR and ARFFS-Ucayali
A.4.4	Establish and maintain project coordination and management	SERFOR Central, Project Manager

Annex 7. Achievement, indicators of outputs vs of realized activities on project PP-A/56-340-2

Intervention strategy	Measurable indicators	Achievements
Output 1 Good Practices in Forest Management, Agroforestry, and Management of Forest and Agricultural Residues	*02 manuals for the course on sustainable agricultural and silvicultural management techniques, in the 1st year.	* A "Guide for the Preparation of Differentiated Compost as an Alternative System to the Burning of Agroforestry Waste", and a "Guide to Preventive Forestry Guidance in the Face of Forest Fires in Forest Plantations in Peru" were developed. However, they were not endorsed by the authorities and was completed in the 2nd year of the project.
	***10 awareness workshops aimed at residents of rural areas.**	
	*10 courses on sustainable agronomic and forestry management techniques aimed at the inhabitants of rural areas.	*Between June 8 and July 1, 2022, 05 workshops on "Sustainable agronomic and forestry management techniques" were given. The other five workshops were not held, so the second guide was not used.
	*05 specialists (foresters. agronomists, zootechnicians or related careers) for Cajamarca, Pasco, Huánuco, Ucayali and Junín to train and provide technical assistance in nonburning alternatives and preventive forestry to rural inhabitants.	*5 professionals provided technical assistance in non-burning alternatives to rural inhabitants
	*A communicator will be hired who works exclusively to spread the subject of fire prevention using the right means of communication to reach the target audience, which is the rural population.	* A communicator was hired to work with the rural population, with several months of delay in 2021 and 2022. the person worked for outputs one to four.
	***01 online capacity building platform. 500 regional and local actors will access and benefit from this platform**.	***The platform was not implemented. Instead,** SERFOR's Capacity Building Directorate staff was trained in the roles of administrator and teacher of the Moodle learning platform. However, after the project, no curses of wildfires have been delivered in the platform

Intervention strategy	Measurable indicators	Achievements
Output 1 Good Practices in Forest Management, Agroforestry, and Management of Forest and Agricultural Residues	*Equipment to strengthen the operational capacity of Regional Forest Authorities. *Equipment to strengthen the operational capacity of Regional Forest Authorities	SERFOR-EDUCA. *Equipment to strengthen the operational capacity was delivered to ATFFS and ARFFS of five regions two months before finishing the project (**June 2022**). they were given shredders (5), pruners (5), chainsaw (5) s, motorcycles (5), laptops (10), digital cameras (5) and multimedia projectors (5) (one of each equipment to each ATTFS and ARFFS with the exception of the laptops, which were 2 for the Region. On **January 20, 2023**, GPS (4) and hand tools for fuel separation (such as wheelbarrows (19), fire swatters (20), foam retardant (19), sabre machetes (42), shovels (40), steel picks (19), rakes (39), and scales (9)) were delivered to ATFFS of Cajamarca, Sierra (Junín), and Selva Central (Pasco). Additionally, hand tools were delivered to the ATFFS of Lima, Apurimac and Puno and a GPS, respectively. Meanwhile, the ATFFS and liaison offices of Lima, San Martín, Madre de Dios, and Loreto were each given one GPS. The pickup truck is at the SERFOR headquarters in Lima.
Output 2 Public and private institutions effectively managing forest fire prevention and response protocols	*05 training workshops/courses for social stakeholders to enhance forest fire response capacity. *01 forest fire prevention protocol. *01 forest fire response protocol.	*05 Workshop for authorities: “Prevention and response to forest fires in tropical forests and forest plantations in Peru”. From the five regions, 365 people registered, of which 185 attended and 28 passed the course. The certificate of participation was not delivered. The workshop lasted 20 hours of virtual teaching through the Zoom and SERFOR EDUCA platforms. * A Guide of Prevention on forest fire. MIDAGRI / SERFOR / CIES / ITTO. 37 pages,

Intervention strategy	Measurable indicators	Achievements
Output 2 Public and private institutions effectively managing forest fire prevention and response protocols.	*04 validation workshops for the implementation of forest fire prevention and response protocols. *05 training courses in response to the forest fires. 05 training courses in response to the forest fires. *01 wildfire platform web.	*Training course for forest brigades in prevention and response to forest fires in forests and forest plantations in Peru. 287 people from five regions registered; 209 attended and 136 passed the course. The certificate of participation was not delivered. The course was conducted virtually in October 2021 through the Zoom and SERFOR EDUCA platforms, consisting of 28 hours of theoretical teaching. **The practical part**, which took place in person, **lasted for 8 teaching hours** and was conducted in September 2022. **In addition, the project provided 10 sets** of protective clothing were purchased: Leather boots, leather gloves, protective helmets, masks and protective glasses. Likewise, **5 sets of hand tools** were purchased: Fire extinguisher, fire rake (Mc Leod), improved grass cutter, fire shovel, Pulaski, backpack pump. Their acquisition **was untimely** and on July 18, 2023, they were donated to the General Corps of Volunteer Firefighters of Peru, Lima headquarters for training purposes.
Output 3 Efficient forest fire monitoring system.	*05 information workshops on early warning systems. *02 protocols for action on forest fire alerts for its articulation with local and regional institutions. *04 studies to strengthen the satellite monitoring	* 06“Satellite Technology as an Indispensable Tool for the Prevention and Response to forest fires”. *There is a proposal for a protocol for action in the event of forest fire alerts, but it was not approved. Managers are more aware of their institutional powers and limitations and the need for inter-institutional coordination. *04 studies: Forest Fire Scar Generation Protocol, Generation of forest fire occurrences, Generation of

Intervention strategy	Measurable indicators	Achievements
	system for forest fires. *01 subcontract for improvement of the wildfire early warning system. *01 subcontract for improvement the fire monitoring and evaluation system.	Individual Forest Fire Scar Reports (RIF), Annual Technical Reports. 01 subcontract for improvement the fire monitoring and evaluation system In addition, Infographics were prepared containing the FF statistics for Cajamarca, Huánuco, Pasco, Junín and Ucayali, for the years 2020, 2021, 2022 and 2023 (300 units per department for the years 2021 and 2022)
Output 4 Knowledge management and outreach for forest fire prevention and response. **Output 4** Knowledge management and outreach for forest fire prevention and response.	*05 dissemination workshops on forest and related regulations. *Outreach factsheets developed. Outreach factsheets developed	*05 Workshops on "Dissemination of forestry regulations, current prevention actions, causes and consequences of forest fires" were held from September 2 to 9, 2022 from 8 am to 1 pm. 103 producers from the 5 regions attended, but were not given their certificate of participation." *Outreach factsheets developed: O1. Awareness and Dissemination Materials: Leaflets (3 types, 5000 units), Awareness videos (3), Compost making video (1) O2. Video on management of authorities in the face of forest fires (Spanish, Quechua, and Shipibo); ideo on prevention and attention to forest fires (Spanish, Quechua); video on steps to follow in the event of forest fires: tutorial for the population. O4 General Promotional Materials: Posters, banner roll screens (5 units), calendars (3000 units), panel (15 units).

Intervention strategy	Measurable indicators	Achievements
	*5 dissemination workshops for the implementation of the forest fire communication strategy. *Outreach factsheets on the economic value of the forest and wildlife heritage and forest plantations on private lands. *Radio spots broadcast on local radios. *02 project dissemination and socialization events.	

Measurable indicators not performed in red.

Annex 8. Gallery of photos from field visits

Figure 8.1 Dramatic loss and fragmentation of natural vegetation in Cajamarca (Celendín). Plantations of *Eucalyptus sp and Pine sp* stand out in the transformed landscape.

Figure 8.2 Children concern and experiences about the forest fires that have affected their village, Huasmín, in Celendín, Cajamarca.

Figure 8.3. Women planning the transformation of waste into green wealth. An effort that reflects their commitment to the land and sustainability.

Figure 8.4 Piling up dried pea remains, reusing them as feed for their animals instead of burning them. An example of the ITTO Project's sustainability in action.

Figure 8.5 A brave octogenarian, without hesitation, fights against the flames at 5 pm, to prevent the fire from spreading

Figure 8.6 Key players in the suppression of forest fires: The Volunteer Fire Company No. 59 of Cajamarca

Figure 8.7 The director of the decentralized office of INDECI in Cajmarca illustrates the creation of the INDECI Working Group and its crucial role in forest fires.


Figure 8.8 Deforestation and fire fuel a cycle of destruction in Ucayali

Figure 8.9 Changes in forest land use, deforestation and fire have changed the landscape of the Ucayali Region

Figure 8.10 Cocoa Cultivation in Ucayali: The ITTO Project promoted preventive forestry to mitigate forest fires

Figure 8.11 Key actors of the ITTO Project in Ucayali: The Regional Forestry and Wildlife Management

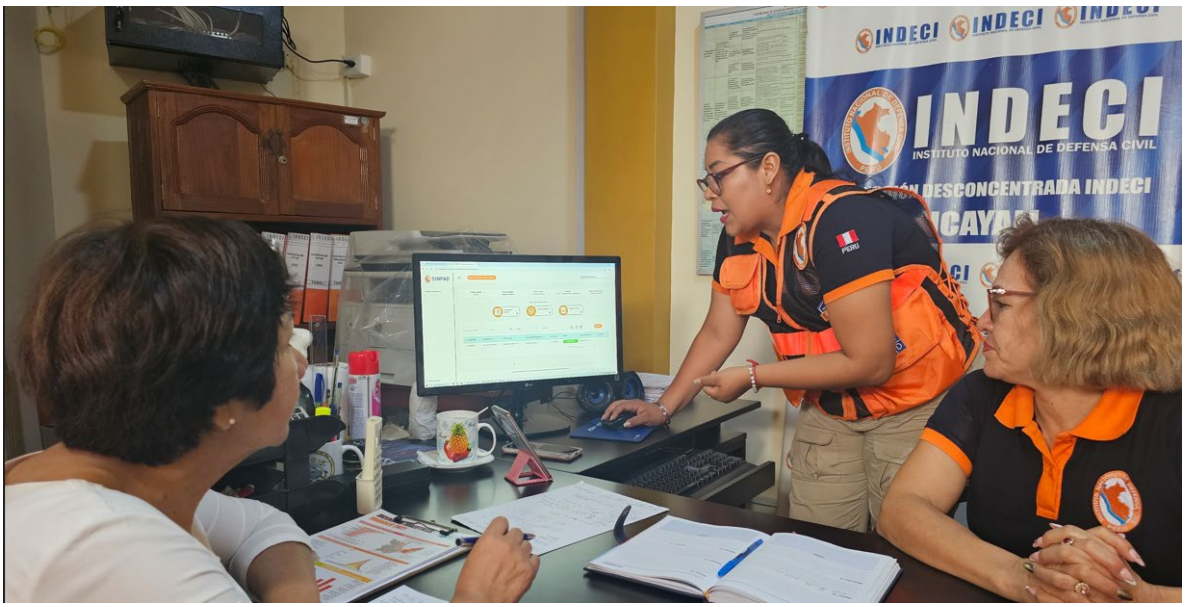

Figure 8.12. The director of the decentralized office of INDECI Ucayali explains the process of assessing damage after forest fires.

Annex 9. EEvalution EA-Resonse SERFOR

Country Management Response to ITTO Ex-Post Evaluation	
Project Title: Forest Fire Prevention and Response in Tropical Forests and Forest Plantations in Peru Project ID: PP-A/56-340-2	
A) Overall Response to the Evaluation:	
The ex-post evaluation report is a well-written document. It presents the findings in a clear, balanced and objective manner; draws meaningful conclusions consistent with the findings and makes useful and fruitful recommendations. The evaluators were good at communication and prepared the document comprehensively	
Evaluation Report Recommendations*	**B) Response to recommendations** *(e.g. 'accept', 'partially accept' or 'reject' – please provide a brief explanation)*
Recommendation 1. 6.2.1.a) It is essential to continue the project in the future with the objective of reducing the area affected by forest fires by developing and implementing integrated fire management programs, especially involving indigenous and rural communities. In addition, it is crucial to develop and implement advanced statistics on forest fires statistics based on fire scars detected by satellite sensors. This will help monitor the spatial and temporal changes in forest fires across the country, create preventive management strategies, rehabilitate forest ecosystems affected by fire, and prioritize actions for integrated fire management.	*We accept to continue with the project, incorporating the recommendations of the ex-post evaluation and best practices in project formulation. We propose to name it "Strengthening Integrated Fire Management and Prevention of Forest Fires in the Ashaninka Central of the Ene River (CARE)". Given CARE's experience in the Paamari Program (with fire and against fire in the Amazon), its Strategic Plan on forest fires, and the high vulnerability of its 45 communities this organization is the ideal partner to implement an improved integrated fire management program. CARE's experience in protecting 240,000 hectares of tropical dry forest demonstrates its commitment to sustainable forest management and has the necessary will to achieve the specific set out in the recommendation.*
Recommendation 2 6.2.1.b) To ensure that the outputs outlined in the project's logical framework are linked to the specific objectives and activities, it is advisable to develop a matrix of strategic objectives, specific	*In accordance with the recommendation. Developing a matrix to link strategic objectives with specific actions provides clarity and enables monitoring and evaluation of planned activities, ensuring that the project is operational, progresses as planned and achieves the desired results.*

1

objectives, and strategic actions. The strategic actions matrix should include an indicator, a description, a deadline, and the responsible actor for each action. This will allow the monitoring and evaluation of the project from the beginning, measuring its progress and effectiveness	.
Recommendation 3 6.2.1.c) It is recommended that projects focused on promoting behavioural changes, such as the adoption of Good Practices in Forest Management, Agroforestry and Waste Management (Output 1) and The Strengthening of Institutional Capacities for the Prevention and Response to Forest Fires (Output 2), have a minimum duration of three years. This time frame is essential for consolidating behavioural changes and ensuring the long-term sustainability of the results.	*I agree that projects aimed at promoting behavioural change require sufficient time to be effective. People need time to internalise new practices and transform them into sustainable habits. A long-term approach allows progress to be assessed continuously and timely adjustments to be made, maximising the impact of interventions. This recommendation will be taken into account in the future project* .
Recommendation 4 6.2.1.d) Forest fire extinguishing equipment should be donated to the decentralized commands of the General Corps of Volunteer Firefighters of Peru (CGBVP), based on the incidence of forest fires in each region.	*The recommendation is pertinent, however, the equipment was donated. (See Delivery minutes of July 18, 2023)*
Recommendation 5 6.2.1.e) It is recommended that integrated fire management projects consider hiring forest engineers in all project units due to their specialized expertise in optimizing the protection, productivity, and health of forest ecosystems. In addition, their knowledge is essential for the rehabilitation of degraded habitats and mitigation of climate change impacts.	*I agree. In general, the personnel in charge of leading activities, training, and projects related to forest fires should be Forestry Engineers. I would add, in any case, forestry engineers who are experts in IFM and have field experience. Additionally, it is important to recognize the field experience and work with communities of professionals who are not necessarily forestry engineers.*

Recommendation 6 6.2.1.f) The role and responsibilities of the SERFOR line directors, related to the project, must be formal and clear from the beginning of the project, being recorded in the form of minutes of meetings or a letter signed by the parties involved. This could avoid failures, disorganization of the material, misunderstandings and duplication of tasks.	*I completely agree. SERFOR professionals with direct responsibilities in the Project should have their roles and responsibilities documented in writing, signed by the professional. If this precautionary measure had been taken, much of the project material would be available at the SERFOR headquarters or at the ATFFS.*
Recommendation 7. 6.2.1.g) Although the improvement of SERFOR Satellite Monitoring of FF allows for the preventive, reactive and rehabilitation management of the areas affected by FF, the validation of the early warning of FF and the maps of burned areas is necessary.	*I concur not only with the validation of the generated data, but also with the ongoing update and formalization of the procedures associated with each intervention for the purpose of producing the burned area map and the Forest Fire Monitoring dataset. The updated data on forest fire scars can be found at the following* link:https://drive.google.com/drive/folders/1nSIZssw_bET_72vgD0lTnjQj-8IkPG1H?usp=share_link *Furthermore, it is necessary to consider that the budget provided by the project demonstrated that the SERFOR's Satellite Monitoring Functional Unit requires the resources allocated by the project at a national level and on a permanent basis. Additionally, it has the capacity to make appropriate use of the allocated resources. The results of product O3 were used in subsequent budget requests.*
Recommendation 8 6.2.1.h) It is essential to assign a line director in charge of forest fires, with knowledge or specialization in Integrated Fire Management, who leads and articulates the SERFOR directorates, as well as the different government sectors, to unite and channel efforts in managing the problem of wildfires.	*This is a sound and significant recommendation given that forest fires have emerged as one of the most perilous threats to forest ecosystems, disrupting essential ecological processes. Nonetheless, I would argue that the appointment of a General Director, who possesses a broader decision-making authority than a line director, is warranted to effectively address this issue. (See SERFOR Organizational Chart)*
Recommendation 9 6.2.1.i) IFM projects should prioritize the development of behavioral and social strategies tailored to each geographic region to address the human causes of FF. By modifying the human behaviors that trigger these events, their frequency and severity in the country can be significantly reduced. It is imperative to	*Completely agree. However, if decision-makers don't reform current policies, we will continue to suffer the negative effects of the misuse of fire.*

combines technical measures with actions aimed at the population	
Recommendation 10 6.2.1.j) Forestry research provides an arsenal of innovative tools and knowledge that must be strategically integrated into the conversion of agricultural and forestry residues, as well as preventive forestry techniques. By adopting cutting-edge technologies and methods, current challenges can be addressed more effectively, promoting the adaptation and resilience of forest ecosystems to forest fires, and thus contributing to sustainable forest management	*Absolutely, there is no sustainable management without research. However, not all decision-makers are technicians with forestry experience.*

**Please add or delete rows as needed*

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Maria Cecilia, Macera Urquizo
Directora general
Dirección General de Información y Ordenamiento Forestal y de Fauna Silvestre
Servicio Nacional Forestal y de Fauna Silvestre

PERÚ | Ministerio de Desarrollo Agrario y Riego

SERFOR Servicio Nacional Forestal y de Fauna Silvestre

"Decenio de la Igualdad de Oportunidades para Mujeres y Hombres"
"Año de la Unidad, la Paz y el Desarrollo"

ACTA DE ENTREGA

RECEPCIÓN N° 00015-2023-MIDAGRI-SERFOR-GG-OGA-OA-PAT

En las instalaciones del Comando Nacional del Cuerpo General de Bomberos Voluntarios del Perú, ubicado en la Av. Salaverry N° 2495 distrito de San Isidro, Provincia y departamento Lima, siendo las 15:00 horas del día martes **18 de julio de 2023**, se reunieron los representantes del Servicio Nacional Forestal y de Fauna Silvestre – SERFOR y de la Intendencia Nacional de Bomberos del Perú, de acuerdo al siguiente detalle:

Por parte de **SERFOR**	Por parte de la **Intendencia Nacional de Bomberos del Perú**
Cecilia del Carmen Ludeña Linares DNI: DNI: 46526589 Responsable de Control Patrimonial-SERFOR	**Yenifer Noelia Asencio Chuquiray** DNI: 40943908 Encargada de Control Patrimonial de la Unidad de Logística y Control Patrimonial de la Intendencia Nacional de Bomberos del Perú
Carmen Rosa Pardave Camacho DNI: 10678455 Directora Oficina de Abastecimientos - SERFOR	

OFICINA DE ABASTECIMIENTO V°B° Carmen Rosa Pardave Camacho Directora OGA - SERFOR

SERVICIO NACIONAL FORESTAL Y DE FAUNA SILVESTRE V°B° Control Patrimonial SERFOR

INDECI - CP - Cp V° B°

La reunión tuvo como finalidad proceder a la entrega y recepción de los bienes transferidos por el Servicio Nacional Forestal y de Fauna Silvestre - SERFOR a favor de la Intendencia Nacional de Bomberos del Perú, aprobado mediante Resolución Directoral N° D0000114-2023-MIDAGRI-SERFOR-GG-OGA de fecha 17 de mayo de 2023 y Resolución Directoral N° D0000159-2023-MIDAGRI-SERFOR-GG-OGA de fecha 19 de junio de 2023, con la finalidad de que sirvan como herramienta para la prevención, así como dar una respuesta adecuada a los incendios forestales en bosques tropicales y plantación forestales del Perú.

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ACTA DE ENTREGA

RECEPCIÓN N° 00015-2023-MIDAGRI-SERFOR-GG-OGA-OA-PAT

El detalle de los bienes que se entrega es como se indica a continuación:

Resolución Directoral N° D0000114-2023-MIDAGRI-SERFOR-GG-OGA:
Se realiza la entrega de un total de setenta (70) bienes. Los mismos que han sido distribuidos en diez (10) kits, compuestos cada uno por siete (07) ítems, conforme se detalla:

CANTIDAD	DENOMINACIÓN	DETALLE TÉCNICO		ESTADO DE CONSERVACIÓN	VALOR UNITARIO EN SOLES	VALOR TOTAL (S/.)
		MARCA	COLOR			
10	BOTAS DE BOMBERO FORESTAL	HAIX MISSOULA	NEGRO	NUEVO	2,668.00	26,680.00
10	GAFAS VFT	VFT	ROJO	NUEVO	261.00	2,610.00
10	CASCO DE BOMBERO FORESTAL	VFT	ROJO	NUEVO	761.00	7,610.00
10	GUANTES DE EXTINSION PARA INCENDIOS FORESTALES	VFT	AMARILLO	NUEVO	384.00	3,840.00
10	CHAQUETA DE BOMBERO FORESTAL	VFT	AMARILLO	NUEVO	1,134.00	11,340.00
10	PANTALON DE BOMBERO FORESTAL	VFT	VERDE	NUEVO	873.00	8,730.00
10	MASCARA FFP3	VFT	AMARILLO	NUEVO	438.00	4,380.00

S/ 65,190.00

Resolución Directoral N° D0000159-2023-MIDAGRI-SERFOR-GG-OGA:
Se realiza la entrega de un total de treinta (30) bienes. Los mismos que han sido distribuidos en cinco (05) kits, compuestos cada uno por seis (06) ítems, conforme se detalla:

CANTIDAD	DENOMINACIÓN	DETALLE TÉCNICO		ESTADO DE CONSERVACIÓN	VALOR UNITARIO EN SOLES	VALOR TOTAL (S/.)
		MARCA	COLOR			
5	MACHETE TIPO SABLE	TRUPER	ANARANJADO C/ACERO	NUEVO	128.1830	640.92
5	PALA TIPO CUCHARA	FORESTRY	MADERA C/ACERO PLOMO	NUEVO	454.0168	2,270.08
5	HACHA DE 3CM	COUNCIL TOOL	MADERA C/ACERO PLOMO	NUEVO	496.8508	2,484.25
5	RASTRILLO DE METAL 12 DIENTES 122 CM	COUNCIL TOOL	MADERA C/ACERO PLOMO	NUEVO	538.9414	2,694.71
5	MOCHILA DE CORDURA CON MANGUERA PARA INDENDIO X 20 L	VALLFIRE	ANARANJADO C/NEGRO	NUEVO	1,286.6602	6,433.30
5	BATE FUEGO DE DRIL CON MANGO DE GOMA 30 CM X 38 CM APROX	VALLFIRE	ANARANJADO C/NEGRO	NUEVO	653.2834	3,266.42

S/17,789.68

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ACTA DE ENTREGA

RECEPCIÓN N° 00015-2023-MIDAGRI-SERFOR-GG-OGA-OA-PAT

Estando de acuerdo las partes, previa verificación física y estado de los bienes entregados, firman la presente en señal de conformidad.

El que entrega:

SERVICIO NACIONAL FORESTAL Y DE FAUNA SILVESTRE V°B° Control Patrimonial SERFOR

Cecilia Del Carmen Ludeña Linares
DNI: DNI: 46526589
Responsable de Control Patrimonial
SERFOR

OFICINA DE ABASTECIMIENTO V°B° Carmen Rosa Pardave Camacho Directora OGA - SERFOR

Carmen Rosa Pardave Camacho
DNI: 10678455
Directora
Oficina de Abastecimientos
SERFOR

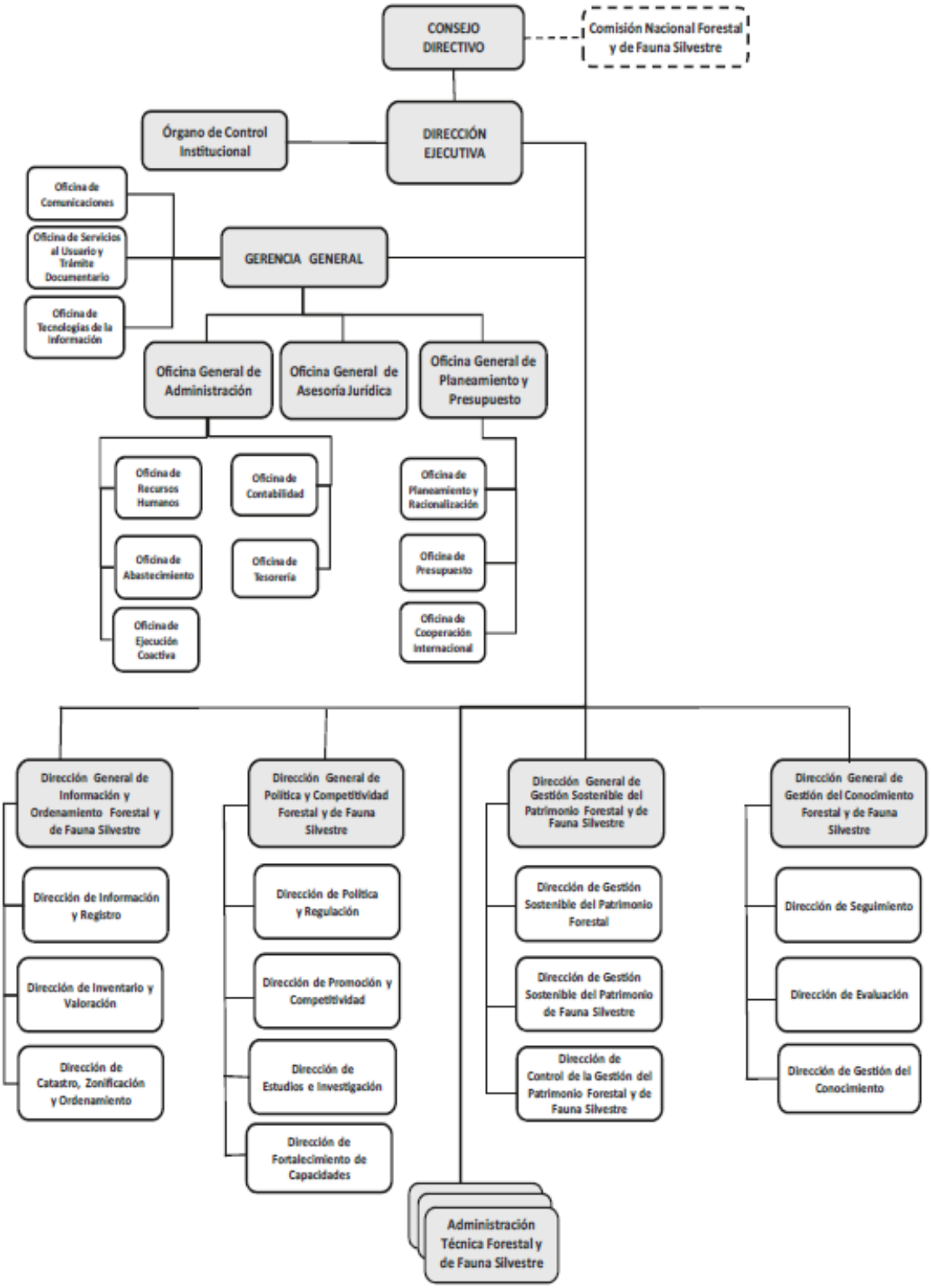
El que recibe:

YENIFER NOELIA ASENCIO CHUQUIRAY
Encargada de Control Patrimonial de la ULCP
Intendencia Nacional de Bomberos del Perú

Yenifer Noelia Asencio Chuquiray
DNI: 40943908
Encargada de Control Patrimonial de la Unidad de Logística y Control Patrimonial de la Intendencia Nacional de Bomberos del Perú

Lima, martes 18 de julio de 2023.

SERFOR Organizational Chart


CONSEJO DIRECTIVO
Comisión Nacional Forestal y de Fauna Silvestre
Órgano de Control Institucional
DIRECCIÓN EJECUTIVA
Oficina de Comunicaciones
Oficina de Servicios al Usuario y Trámite Documentario
Oficina de Tecnologías de la Información
GERENCIA GENERAL
Oficina General de Administración
Oficina General de Asesoría Jurídica
Oficina General de Planeamiento y Presupuesto
Oficina de Recursos Humanos
Oficina de Contabilidad
Oficina de Abastecimiento
Oficina de Tesorería
Oficina de Ejecución Coactiva
Oficina de Planeamiento y Racionalización
Oficina de Presupuesto
Oficina de Cooperación Internacional
Dirección General de Información y Ordenamiento Forestal y de Fauna Silvestre
Dirección de Información y Registro
Dirección de Inventario y Valoración
Dirección de Catastro, Zonificación y Ordenamiento
Dirección General de Política y Competitividad Forestal y de Fauna Silvestre
Dirección de Política y Regulación
Dirección de Promoción y Competitividad
Dirección de Estudios e Investigación
Dirección de Fortalecimiento de Capacidades
Dirección General de Gestión Sostenible del Patrimonio Forestal y de Fauna Silvestre
Dirección de Gestión Sostenible del Patrimonio Forestal
Dirección de Gestión Sostenible del Patrimonio de Fauna Silvestre
Dirección de Control de la Gestión del Patrimonio Forestal y de Fauna Silvestre
Dirección General de Gestión del Conocimiento Forestal y de Fauna Silvestre
Dirección de Seguimiento
Dirección de Evaluación
Dirección de Gestión del Conocimiento
Administración Técnica Forestal y de Fauna Silvestre