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2021 | Summary Evaluation Report

Bolivia

Evaluation of a Triangular Cooperation Programme on Alternatives to Fire Use in the Amazon Region of Bolivia (Amazonia sin fuego), phases I-II-III"

AID 9316

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The opinions expressed in this document represent the evaluators' opinions and do not necessarily reflect the client's opinions.

Tabel of content

Acronyms and Abbreviations

ABC	Brazilian Cooperation Agency (Agência Brasileira de Cooperação)
ABT	Forest and Land Social Control Authority (Autoridad de Fiscalización y Control Social de Bosques y Tierra)
AICS	Italian Agency for Development Cooperation
ANMI	Integrated Management Natural Area (Área Natural de Manejo Integral)
PA, MPA	Protected Area(s);
MPA	Municipal Protected Area(s)
APMT	Plurinational Authority of Mother Earth (Autoridad Plurinacional de la Madre Tierra)
TA,	Technical Assistance,
ITA	International Technical Assistance
AFU	Alternative(s) to Fire Use
BRIF	Forest Fire Prevention and Control Corps (Brigadas para la prevención y control de Incendios Forestales)
Bs., MBs.	Boliviano(s), Million Bolivianos; 1 € ≈ 8 Bs.
CAF	Development Bank of Latin America (former Andean Development Corporation
chap.	(sub-) chapter or section of the report
CC	Climate Change
CDM	Amazonia Sin Fuego Multilateral Steering Committee
CIDOB	Confederation of Indigenous Peoples of Eastern Bolivia (Confederación de Pueblos Indígenas del Oriente de Bolivia)
CIPCA	Centro de Investigación y Promoción del Campesino
COEM	Municipal Emergency Operations Centre (Centro de Operaciones de Emergencia Municipal)
COED	Departmental Emergency Operations Centre (Centro de Operaciones de Emergencia Departamental)
COMURADE	Municipal Committee for Risk Reduction and Disaster Response - Law 602 (Comité Municipal de reducción de Riesgos y Atención a Desastres (Ley 602))
COP	United Nations Framework Convention on Climate Change Conference of the Parties
CPE	Political Constitution of the Plurinational State of Bolivia (Constitución Política del Estado Plurinacional de Bolivia)
TC	Amazonia Sin Fuego Technical Committee
DDPMA	Municipal Directorate of Productive Development and Environment (Dirección municipal de Desarrollo productivo y Medio ambiente)
DGGDF	Directorate-General for Forest Management and Development - MMAyA (Dirección General de Gestión y Desarrollo Forestal (MMAyA))
HR	Human Rights
SD	Supreme Decree
EPMIF	Plurinational Strategy for Integrated Fire Management - MMAyA 2018 (Estrategia Plurinacional de Manejo Integral de Fuego (MMAyA 2018))
FAN	Friends of Nature Foundation (Fundación Amigos de la Naturaleza)
FAO	Food and Agriculture Organisation of the United Nations
FCBC	Chiquitano Forest Conservation Foundation (Fundación para la Conservación del Bosque Chiquitano)
FES	Economic and Social Function (Función Económico-Social)
FFAA	Bolivian Armed Forces (Fuerzas Armadas de Bolivia)
FONADIN	National Fund for Integral Development - Vice Ministry of Integral Development with Coca – MDRyT (Fondo Nacional para el Desarrollo Integral (Viceministerio de Desarrollo integral con Coca – MDRyT))
FUNSAR	Search and Rescue Foundation (Fundación de Búsqueda y Rescate)
GAD	Departmental Autonomous Government (Gobierno Autónomo Departamental)
GAM	Municipal Autonomous Government (Gobierno Autónomo Municipal)
GdB	Government of Bolivia
GEF	Global Environment Facility
GISBA	Programme to Strengthen the Community Social Economy through the Comprehensive and Sustainable Management of the Amazon Forest (implemented by FAO, financed by AISC, guardianship by MMAyA)
GP	park ranger(s)
ha, Mha	hectare(s), million hectare(s)
HRBA	Human Rights Based Approach
IBAMA	Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis

ICU	*Institute for University Cooperation (Istituto per la Cooperazione Universitaria)*
INE	National Institute of Statistics (Instituto Nacional de Estadística)
INIAF	National Institute of Agricultural and Forest Innovation - MDRyT (Instituto Nacional de Innovación Agropecuaria y Forestal (MDRyT))
INRA	National Agrarian Reform Institute (Instituto Nacional de Reforma Agraria)
LB	baseline (study conducted by PASF in 2012)
MDRyT	Ministry of Rural Development and Land
IFM	Integrated Fire Management
MMA	Ecuador's Ministry of the Environment
MMAyA	Bolivia's Ministry of the Environment and Water
ACTO	Amazon Cooperation Treaty Organisation
SO, GO	specific objective, general objective
NGDO(s)	non-governmental development organisation(s)
PAR	Rural Partnerships Programme - MDRyT with World Bank funds
PASF	Amazonia Sin Fuego Programme
PDES	2016-2020 Economic and Social Development Plan
EQ	Evaluation Question(s)
NP	National Park
PNCC	National Climate Change Programme (Programa Nacional de Cambio Climático)
UNDP	UN Development Programme
PPMF	Fire Prevention and Management Plans - Departments (Planes de Prevención y Manejo del Fuego (Departamentos)
PPARB	Food Production and Forest Restoration Programme - PPARB-MDRyT (Programa de
PREFOGO	Producción de Alimentos y Restitución de Bosques (PPARB-MDRyT)) Sistema Nacional de Prevenção e Combate aos Incêndios Florestais
AOP	Annual Operating Plan
PSDI	Sectoral Comprehensive Development Plan(s) - ministerial level (Plan(es) Sectorial(es) de Desarrollo Integral (a nivel ministerial)
PTDI	Comprehensive Territorial Development Plan(s) (GAM/GAD level) (Plan(es) Territorial(es) de Desarrollo Integral (a nivel de GAM/GAD))
MR	Ministerial Resolution
AFS	Agroforestry System(s)
SAR	Search and Rescue Volunteer Group (Grupo de Voluntarios de Búsqueda, Salvamento y Rescate)
SATIF	GAD Santa Cruz Forest Fire Early Warning System (Sistema de Alerta Temprana de Incendios Forestales del GAD Santa Cruz)
SATRIFO	FAN forest fire risk monitoring and early warning system (Sistema de monitoreo y alerta temprana de riesgos de incendios forestales de la FAN)
PS	Production System(s)
SENAMHI	National Meteorological and Hydrological Service - decentralised entity of MMAyA (Servicio Nacional de Meteorología e Hidrología (entidad descentralizada del MMAyA))
SERNAP	National Protected Areas Service - decentralised entity of MMAyA (Servicio Nacional de Áreas Protegidas (entidad descentralizada del MMAyA))
SIMB	Forest Monitoring Information System - DGGDF-MMAyA (Sistema de información para el monitoreo de bosques (DGGDF-MMAyA))
SISCO	Collection system (SERNAP)
MES	Monitoring and Evaluation System
SOB-OTCA	ACTO Bolivian Observation Room (DGDF-MMAyA, subsequently SIMB)
SUSTENTAR	MMAyA Decentralised Unit
TCO / TOIC	Origin Community Territory (Territorio Comunitario de Origen)
TIOC	/ Original Indigenous Farmers Territory (Territorio Indígena Originario Campesino)
ToR	Terms of Reference
TGN	General Treasury of the Nation
UAGRM	Universidad Autónoma Gabriel René Moreno de Santa Cruz
UAP	Universidad Amazónica de Pando
UCAB	Food Production and Forest Restoration Programme Coordination Unit - MDRyT (Unidad de Coordinación del Programa de Producción de Alimentos y Restitución de Bosques (MDRyT))
UMSS	Universidad Mayor San Simón de Cochabamba
DU	Demonstration Unit(s)
UFM	Municipal Forest Unit (Unidad Forestal Municipal)
UGP	PASF Programme Management Unit (Unidad de Gestión del Programa del PASF)
UGR	Risk Management Unit (Unidad de Gestión de Riesgos)

URF	Forest Risk Unit of the DGGDF (Unidad de Riesgos Forestales de la DGGDF)
UMAIB	Forest Information Monitoring and Analysis Unit - planned by EPMIF in the DGGDF (Unidad de Monitoreo y Análisis de Información de Bosques (prevista por EPMIF en la DGGDF))
UMATI	Coordination Unit of Mother Earth - APMT (Unidad de Coordinación de la Madre Tierra (APMT))
UMSA	Universidad Mayor San Andrés de La Paz
UMSS	Universidad Mayor San Simón de Cochabamba
USD, MUSD	United States dollar(s), million USD
VCDI	Vice Ministry of Coca and Integral Development of the MDRyT
VIDECI	Vice-Ministry of Civil Defence
VIPFE	Vice-Ministry of Public Investment and External Financing (Ministry of Development Planning)
VMABCCGDF or VMA	Vice-Ministry of the Environment, Biodiversity, Climate Change and Forest Management and Development of MMAyA

1 Intervention introduction and location

The Amazonia Sin Fuego Programme (PASF) in Bolivia was a multilateral technical cooperation initiative that aimed to reduce the incidence of forest fires in Bolivia's Amazon region through the implementation of Integrated Fire Management (IMF) and Alternatives to Fire Use (AFU) practices, contributing to environmental protection and guaranteeing rural and indigenous communities' quality of life.

The PASF initially emerged in Brazil in the period 1999-2009, thanks to the support of Italian Cooperation. This initiative proposed, for the first time, a methodology based on avoiding fire use in agricultural activities in the targeted communities. The initiative achieved positive results regarding the incidence of forest fires and achieved the Brazilian State's effective appropriation of the initiative; through its Ministry of the Environment, it converted the experiences developed into national public policies.

In this context, the Memorandum of Understanding between the Governments of the Federative Republic of Brazil and the Italian Republic on cooperation activities with third countries (trilateral South-South cooperation) was signed in March 2007, which positively evaluated the possibility of extending the bilateral PASF initiative at the regional level.

The PASF was implemented in three phases: the 36-month PASF I, between 2013 – 2015 (AID 9316), the 12-month PASF II in 2016 (AID 9316), and PASF III in 2017, with an extension that did not affect the budget ceiling until January 2018 (AID 11056). The three phases have been implemented within trilateral cooperation among the Governments of Bolivia, Italy and Brazil. For this purpose, on 6 January 2012, the Memorandum of Understanding was signed among the Governments of Bolivia, Italy and Brazil for the effective Programme activation. The PASF start in 2013 was preceded by a Previous Emergency Phase financed by the Development Bank of Latin America (CAF), in 5 Municipalities and 140 Beni Department communities. The CAF continued to cooperate in phase I, II and in the follow-up phase during 2018.

The total PASF cost in its 3 phases was €4,776,410, including €3,530,000 (74%) as a contribution from the Italian Cooperation; €612,133 (14%) from the Brazilian Cooperation Agency (ABC) to finance the technical assistance provided by the *Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis* (IBAMA) (PREVFOGO programme), and €189,230 (4%) contributed by the CAF, addressing the financing of the PASF Coordinator (phases I and II) and specialised consultants. Bolivia contributed with €385,047 (8%) allocated to the valuation of personnel, real estate, among others

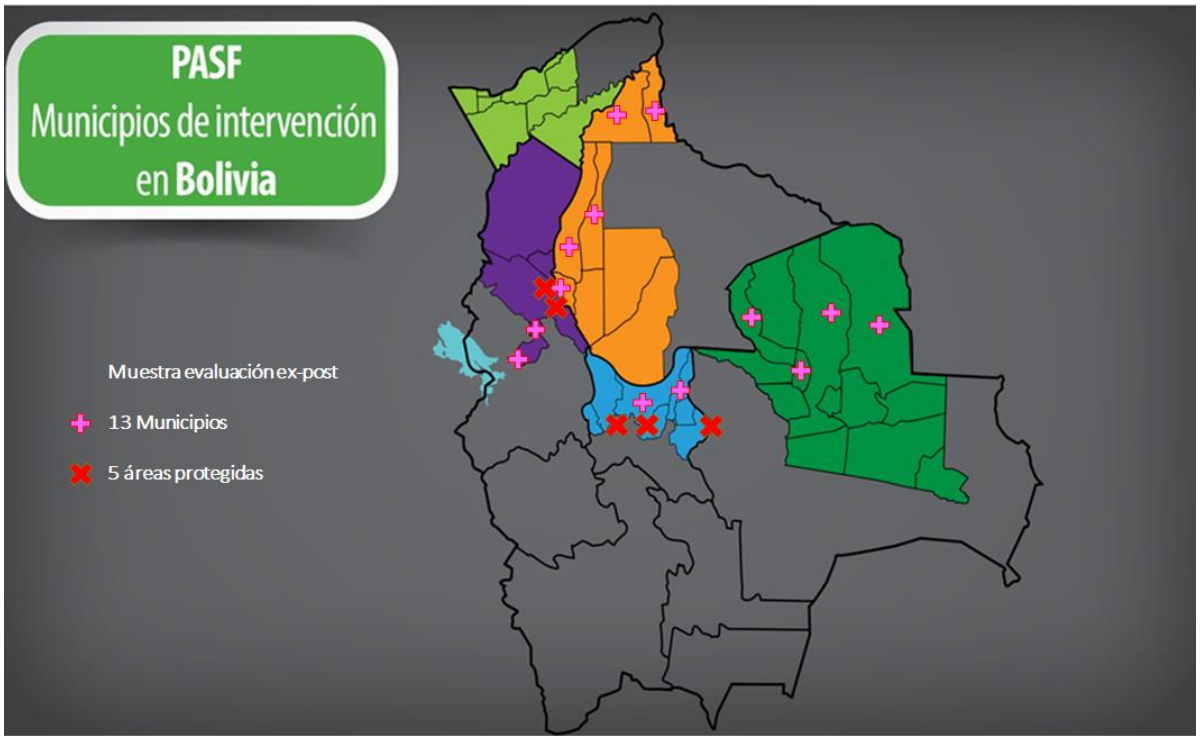
In its intervention strategy, the PASF proposed the development of training and technical coaching processes, accompanied by extensive awareness-raising and information campaigns on the consequences caused by forest fires[1]. It clearly appears that the main assumption is that the fire problem's correct management is essentially preventive in nature and involves strengthening national institutions and local governments and the relative capacity to implement and coordinate governance actions in the sector, especially in cooperation with producer organisations through the dissemination of alternatives to fire use (AFU) in production processes.

[1] MMAyA, 2018. Results Book "Programa Amazonía Sin Fuego, 2011 - 2018", PASF-MMAyA, 2018 (p. 9).

The programme has operated in five modules of the Bolivian Amazon[2] where forest fires are more intense and destructive, located in the departments of Pando, La Paz, Beni, Cochabamba and Santa Cruz. (see Figure 1)

The main direct beneficiaries were, on one hand, public entities competent in fire management such as the Ministry of the Environment and Water (MMAyA), the National Protected Areas Service (SERNAP), the Vice Ministry of Civil Defence (VIDECI), 5 Departmental Autonomous Governments (GADs), and 48 Municipal Autonomous Governments (GAMs), and, on the other, 440 indigenous farmers' communities and producer organisations.

Figure 1: PASF Area of intervention and municipalities sampled for evaluation



2 Intervention context

2.1 Socio-economic context

Bolivia had an average GDP annual growth of 4.9% between 2008 and 2017, with a recent tendency to stagnation due to price decrease of its main export goods (hydrocarbons and minerals). Between 1990 and 2017, the value of Bolivia's Human Development Index increased from 0.536 to 0.693, positioning Bolivia in 118 of 189 countries and territories, but still below the average of 0.758 of the Latin American and Caribbean countries.

In the last decade, Bolivia has made substantial social advances: extreme poverty decreased from 37.7% in 2006 to 15.2% in 2018, and moderate poverty from 59.9% to 34.6% in 2018. Despite improvements, geographic, social and economic inequalities remain high: the GINI factor fell from

[2] The PASF defines Amazonia as the lowlands that belong to the Amazon River Basin, so it includes the Santa Cruz and Cochabamba Departments. The CPE defines the Amazon as the territory covered by the Pando Department, and partially the regions north of the Beni and La Paz Departments.

0.611 in 2002 to 0.453 in 2015, although it has stagnated since 2011 (0.44 in 2018). Bolivia has a marked rural emigration to cities, from the Andes to the Amazon, and to foreign countries.

With an area of 109.8 Mha, Bolivia, with altitudes varying from 180 to 6,500 meters, presents both an Andean and Amazonian ecosystem. This peculiarity explains the country's great biological and ecosystem diversity and its classification as "mega-diverse country."

Bolivia is also a country highly vulnerable to climate change. Fires, floods, droughts, and melting glaciers are increasingly frequent and intense, and are the tangible expression of profound climatic changes, which affect the most vulnerable populations and involve emigration to new areas. This, in turn, causes conflicts for livelihoods.

2.2 In Bolivia, the deforestation rate is increasing

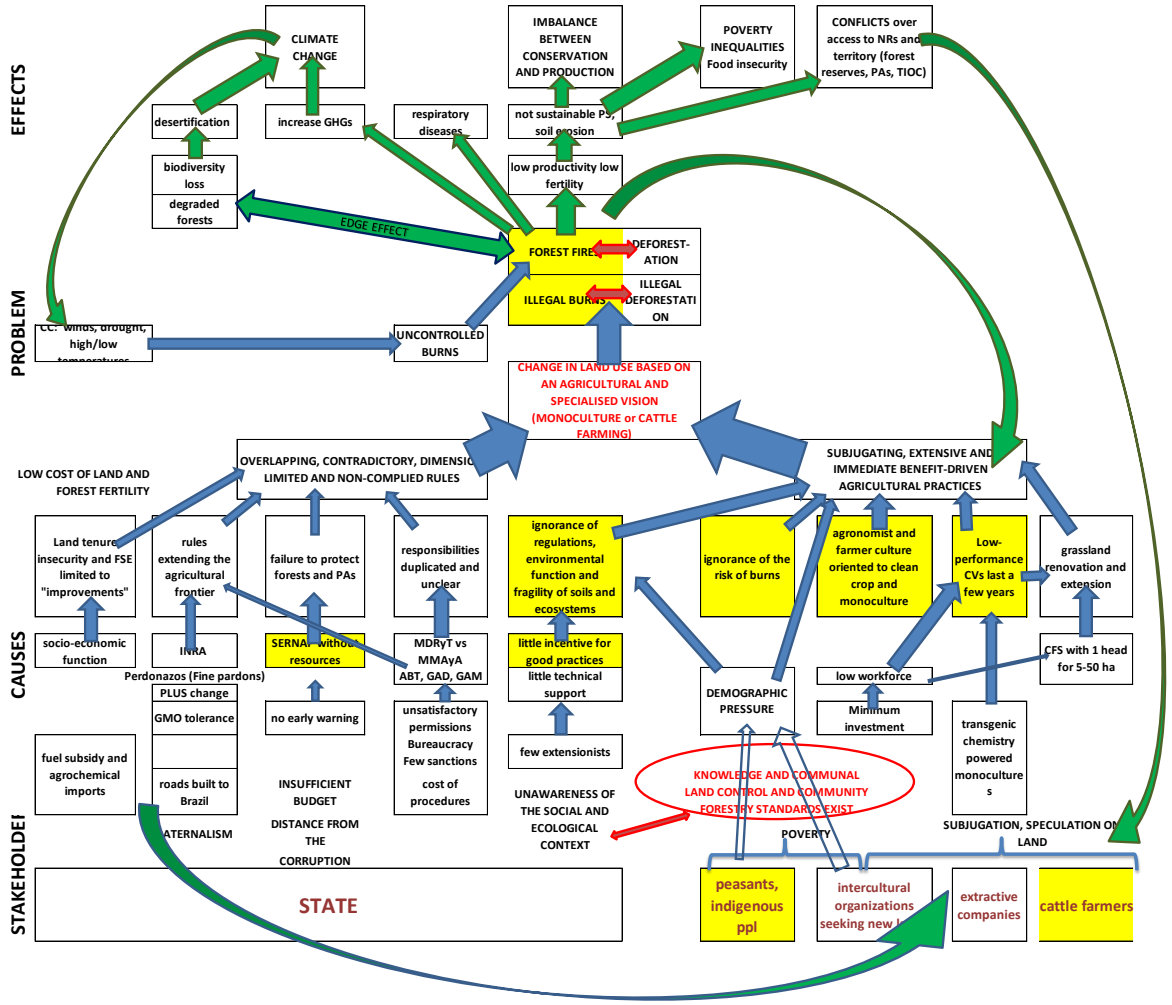
According to the FAO Global Forest Resources Assessment 2020 report, the global forest area continues to decline, but at a less accelerated rate; it went from a rate of -7.8% per year during the 1990-2000 decade, to a rate of -4.7% during the 2010-2020 decade. In South America, this annual rate rose from -5.1% to -2.6% in the same decades.

MMAyA estimated that Bolivia had 52.1 Mha of forest, or 47.3% of its territory; and mostly in the Amazon. In 1976, the forest cover reached 58 Mha, or 52.8% of the Bolivian territory. According to the PSDI-MMAyA (2016), 239,000 hectares of forest are lost each year. The relationship between deforestation and fire is complex: 1/3 of the fires are estimated to be forest fires and 2/3 are grassland burns. Deforestation is illegal in 80% of the cases. The Department of Santa Cruz counts 72% of authorised deforestation events, and 96% of illegal deforestation events that occur at the national level.

The main causes of the generation of forest fires are attributable to: a) the increase in the cultivated area (oilseeds) and pastures; b) little knowledge of the appropriate techniques for the development of "controlled" fire; c) little presence and insufficient coordination among the governing bodies and those responsible of controlling the activity of the sector, d) poor municipal government engagement and capabilities, e) limits in the application of current legislation f) little experience in alternative techniques to the use of fire, g) scarcity and cost of labour make fire the cheapest practice to obtain crop fields, control weeds and renew pastures.

The problem tree (Figure 2) shows the complexity of the existing interactions and retro-actions regarding fire. Their main message is that fire and deforestation are intimately linked and there is no linear causal relationship. Fighting fire means tackling a symptom; addressing the causes of fire means tackling deforestation.

Figure 2: PASF Problem Tree Reconstructed



3 Objectives, Methodology and Evaluation Criteria

3.1 Evaluation objectives

Providing useful recommendations for the future of Italian cooperation and DGCS activities in the field of environmental protection and development aid planning, as well as informing the design of AICS (Italian Agency for Cooperation and Development) cooperation actions. Refining the operation of the triangular (South-South) cooperation scheme of Italian cooperation.

The evaluation objectives mainly focus on the relevance of the PASF programme (the three phases), and on its consistency, effectiveness, impact and sustainability according to the OECD/DAC criteria and the principles of the results-based approach.

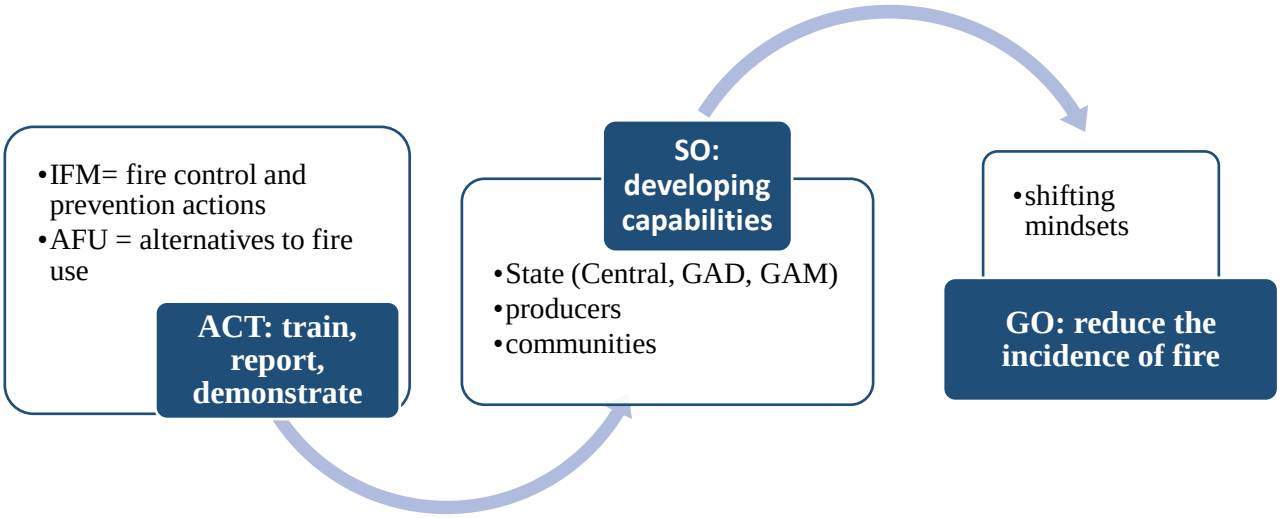
Providing elements of reflection to the MMAyA to enrich and refine its policies, strategies, plans and programmes.

3.2 Theory of change

During its 3 phases, the PASF pursued the same general objective (GO): “Reduce the incidence of fires in the Amazon region of Bolivia, through implementation of alternative practices to fire use, helping to protect the environment and improve the living conditions of indigenous and rural communities.”

The programme's main assumption is that the problem should be managed essentially with a preventive approach that depends mainly on the strengthening of national institutions and local governments and the related capacity to implement and coordinate governance actions in the sector, especially in cooperation with producer organisations, through the dissemination of production and agroforestry and pastoral systems management alternatives (see Figure 3).

Figure 3: Outline of the chain of impacts triggered by the PASF



To this end, training actions for technicians and multiplier leaders of public institutions, local governments and rural communities are particularly important in the three phases of the PASF. In this context, dissemination actions are an extremely important cross-cutting component.

Ultimately, the programme aims to improve local public policies, positioning itself, from a regional perspective, as an example of a strategy to adopt for protecting the Amazon rainforest.

The three PASF phases present different logical frameworks; however, all share the components of institutional strengthening for public organisations in the sector and local governments, training different actors and institutional levels and impact on public policies. The main components of the PASF are summarised in Table 1.

3.3 Methodology and evaluation criteria.

The evaluation has mainly adopted a qualitative methodology embracing a significant geographical cover (see paragraph 3.5) to provide a robust and consistent response to evaluation questions and their objectives and usefulness, as well as to triangulate the results achieved.

The field visit was conducted according to a Standard Municipality Visit Protocol that includes the main actors. Four information-gathering tools were developed, consisting of interview guides adapted to each category of actors interviewed: a) national public and private entities, b) sub-national entities (GADs and GAMs), c) producers, d) protected areas (PA).

The tools for gathering information in the field cover three phases: the **past**, in which an attempt is made to reconstruct the PASF work; the **present**, in which a series of observations are made on the current situation; and the **future**, for which interviewees are asked about their perception of perspectives.

Table 1. Summary table of the logical framework (main components/results - R) and geographical coverage of the three phases of the PASF programme (2011 - 2018)

Phase (duration)	Municipalities of the 5 modules	Institutional strengthening of public institutions at central level	Strengthening decentralised public institutions and municipalities	Multiplier Training/ Demonstration Units (DUs)	Policy promotion and improvement through adoption of the PASF model
Phase I (36 months)	39 Municipalities	Strengthening of the MMAyA and operational setting of the Programme. (R 1)	Improvement of municipal governance/partnership agreements with local public and private actors (R 4)	Local community technical training/ technology transfer (DU) and dissemination of the programme/ Community Brigades (R 2 & R 3)	Public policy advocacy - participation in events and exchange of experiences (R 4)
Phase II (12 months)	48 Municipalities & inclusion of 9 Protected Areas (PAs)	Strengthening of MMAyA/ APMT and new partners Monitoring forest fires (R 2)	Support and promotion of joint mechanisms (R 1 & R 2)	Technical training at all levels/DU - programme outreach (R 2 & R 3)	Policy advocacy and inclusion of the PASF model in environmental policies (R 1)
Phase III (12 months)	50 Municipalities /452 communities	Creation of the UGR (MMAyA) and strengthening of VIDECI/SERNAP (R 1 & R 2)	Strengthening institutional capacity Universities, municipalities & communities (R 3)	Support to Dept. Emergency Centres (COED) and community brigades (R 3)	Improve communication skills of DGGDF VMABCCGDF (5) and SPGIF (R 4 & R 1)

3.4 Evaluation criteria

The methodology and evaluation questions are based on the six OECD/DAC criteria:

Relevance. The evaluation measures the correspondence between PASF outcomes and objectives and the identification of problems or needs, as well as the intervention logic.

Consistency. Compatibility of the project with policies, strategies and other actions in a country, sector or institution.

Efficiency. Allows to evaluate how the activities and implementation mechanisms have allowed to transform the available resources (financial, technical, institutional and human resources) into products, in quantitative and qualitative terms.

Effectiveness. Here, the degree of achievement of specific objectives (SO) and expected results are evaluated. The efficacy analysis must confirm (or reject) the intervention approach validity identified as per its relevance.

Sustainability. It refers to actors' capacity to continue to benefit from the services promoted by the PASF after its conclusion, by examining the degree of political support and participation of national and local institutions and considering financial and economic sustainability, as well as the sustainability of technical, economic, socio-cultural and environmental factors.

Impact. The degree of achievement of the GO is assessed by measuring long-term changes in the behaviour of environmental variables and of the different categories of actors. The impact results from the consolidation of the findings in effectiveness and sustainability and external factors that can have a positive or negative influence.

3.5 Sample of municipalities, Protected Areas and Demonstration Units.

All types of beneficiaries have been visited in the PASF beneficiary municipalities with the highest incidence of fires. Below is a list of the 13 municipalities visited and 5 PAs (see map in Figure 1) and where the evaluation process has been carried out (municipalities listed from east to west):

EAST	1	San Ignacio de Velasco	Santa Cruz		
	2	Concepción	Santa Cruz		
	3	San Javier	Santa Cruz		
	4	Ascención de Guarayos	Santa Cruz	1	Amboró NP
	5	Chimoré	Cochabamba	2	Tunari NP
	6	Villa Tunari	Cochabamba	3	Carrasco NP
	7	Guayamerin	Beni		
	8	Riberalta	Beni		
	9	Santa Rosa	Beni		
	10	Reyes	Beni		
	11	Rurrenabaque	Beni	4	Pilón Lajas BR
	12	Caranavi	La Paz	5	Madidi NP
WEST	13	Coroico	La Paz		

The sample represents 24% of the municipalities and 55% of the PAs where PASF intervened. The initial selection of the sample covered the Pando department. However, when the field work was resumed in December 2020, logistical considerations led to a land route in the department of Beni and expanding the sample in the department of Santa Cruz.

Considering that the choice of municipalities was made with qualitative criteria, the geographical coverage and the sample are significant in terms of indicating the main trends. Also, we consulted the main national sources (SIMB, ABT, FCBC, scientific articles) regarding the incidence of fires.

As for the DUs registered in the 13 municipalities in the sample (50 in total), 25 were visited during the evaluation, which represents 50% of the total population.

3.6 Challenges in the evaluation process

Since the first field visit, the challenge of finding informants aware of the PASF became clear, so we had to rely on information about the present. The imposed survey rationale was to perform "case

studies" in each municipality and PA to understand the dynamics of each territory and interpret what was done and left by the PASF.

The evaluation team had to face the following challenges:

- The change of ministry personnel due to government changes in 2019 and 2020.
- New staff in PAs and GAMs not related to the PASF.
- Little or no documentation in the GAMs and beneficiary institutions on the PASF.
- Lack of knowledge in the GAMs about the DUs implemented in their municipalities and in other cases, scarcity of resources to follow them up.
- Having to ask for support from former officials or persons disconnected from public institutions and the PASF to obtain necessary information.
- Many trained staff were no longer employed in the visited institutions.
- The restrictions imposed by the Covid19 pandemic, with differentiated and changing security measures in regions and municipalities.

4 Main conclusions

4.1 A significant programme, but with insufficient diagnosis

According to the MMAyA Comprehensive Development Sector Plan - PSDI (2016), Bolivia loses 239,000 ha/year of forests. There is a close relationship between deforestation and fire: approximately 1/3 of the fires are forest fires and 2/3 are grassland burns. It is estimated that 69% of greenhouse gas emissions come from agriculture and land-use change, from forestry to agriculture. The enormous damage that fires cause in Bolivia to biodiversity, the climate, the economy, and to people's lives, fully justifies the PASF.

The PASF baseline and design did not characterise the Bolivian Amazon's great geographical and social diversity, gender differences, nor contradictions among public policies and the actors' interests. Being a programme that aimed to reduce symptoms, it did not identify the root causes of burns and fires. While the PASF is significant at the global, national, and soil and forest preservation levels, most actors' interests and needs, on the contrary, point to the continued use of burning. As a result of limited diagnoses, the PASF training and technical proposal has been uniform. It does not respond to the needs of the diversity of life systems and types of producers.

4.2 Proper consistency in terms of strategic and design framework but limited by a political environment that was not conducive to its objective.

The PASF rightly relied on the experiences of its sponsors in Brazil and Bolivia, as well as those of FAO. Clear cooperation and synergy have been established regarding the strengthening of the SIMB and other sectoral initiatives also financed by Italian Cooperation.

The PASF was conceived within the principles of the Framework Law on Mother Earth and Integral Development for Living Well (2012) (Ley Marco de la Madre Tierra y Desarrollo Integral para Vivir Bien) and the Joint Mitigation and Adaptation Mechanism for the Integral and Sustainable Management of Forests and Mother Earth. However, starting in 2015, the Ministry of Rural Development and Land (MDRyT) promoted plans and standards that facilitated deforestation and burning.

Neither the PASF nor the MMAyA, its guardian ministry, succeeded in influencing these policies. Similarly, there were not the necessary synergies and cooperation with other MDRyT programmes related to technical outreach and food production.

4.3 An efficient programme

The total cost of the three phases was €4,832,647; the sources made their contributions timely available to the PASF: €3,530,000 (73%) from the Italian contribution, €612,133 (14%) from the Brazilian Cooperation Agency (ABC), €385,047 (8%) of national contribution and €245,467 (5%) contributed by the CAF.

The PASF implementation was smooth; under the AOPs, it achieved practical implementation and high budget execution. Efficient planning, implementation and monitoring of activities included a large number of training events and demonstration units (DUs) being conducted, training more than 19,500 people in 440 communities. These outcomes were achieved through a network of some 200 partners. A key positive factor was the recruitment and training of high-level professionals and providing them with job stability.

4.4 An effective programme

The main PASF achievement was a paradigm shift in the State and in society: proving that the problem of forest fires was structural and establishing comprehensive fire management on national and local agendas. It has achieved almost all of the logical framework outcomes at the municipal and community levels. Institutional strengthening was capitalised on by 1) the Directorate-General for Forest Management and Development of MMAyA (DGGDF), which obtained regulatory and programmatic tools, and improved its Forest Information and Monitoring System (SIMB) with algorithms for interpreting satellite images; 2) most of the 48 Municipal Autonomous Governments (GAM), which have implemented and/or strengthened with budget and personnel their Risk Management Units (UGR) and their technical units for productive development, thus allowing a certain projection towards rural communities, but in general with a production-oriented approach without sufficient concern for the protection of forests and water sources.

On the other hand, with the Vice Ministry of Civil Defence (VIDECI), the Armed Forces (FFAA), the Bolivian Police (on which fire-fighters depend), the National Protected Areas Service, decentralised entity of MMAyA (SERNAP), 5 Departmental Autonomous Governments (GAD) and 3 Universities, the PASF basically contributed to the training of human talents, present in these years, and with equipment, but without evidence of transformation in the institutions responsible for fighting fires or responsible for university training.

While it is true that the PASF encouraged the participation of women, 32% of participants in training and DU being women, it did not have a gender strategy.

4.5 Poor sustainability of the actions promoted

The guardianship entity – DGGDF – generated the necessary strategy and budgetary programme to continue PASF. Then, during its management in 2018 and 2019, it carried out actions related to capacity building, DU monitoring, creation of forest brigades (CAF and UNDP consultancy) and registered TGN resources for the 2019-2020 management. However, it has not obtained sufficient resources to maintain the same scale of actions as the PASF.

On the other hand, the continuity of training in Integrated Fire Management (IFM) by the GADs of Santa Cruz and Cochabamba, VIDECI and several NGOs and projects is notable. In the case of the

GADs of Santa Cruz and some municipalities, community brigades continued to be formed and supported in the most fire-prone locations.

4.6 A limited impact

In 2019, the burnt area increased noticeably in the Amazon, and in particular in Chiquitanía (3Mha). The same happened, to a lesser extent, in 2020. This means that the PASF did not have the expected global impact of reducing the incidence of fires in the Amazon region of Bolivia, the environmental variable mentioned in the logical framework as GO. The indicator was ambitious but inaccurate. It is subject to year-on-year climate variations, but also to the policies favouring deforestation, which intensified in 2019, and to a continental upward trend due to climate change that translates into greater droughts.

Now, on a more local scale, the demonstration units that are still being maintained and their duplicates have been successful in eradicating fire. The directors of the Tunari and Carrasco National Parks mentioned a positive impact in reducing burnt areas in their Protected Areas (PA) and related it to the PASF.

Likewise, the PASF contributed directly to providing the DGGDF with important regulatory instruments, such as the Plurinational Strategy for Integrated Fire Management - MMAyA 2018 (EPMIF) approved in 2018, the creation of the UGR and the Forest Information Monitoring and Analysis Unit (UMAIB), and the improvement of the Forest Monitoring Information System (SIMB). These contributions have not been implemented between 2018 and 2019 and the DGGDF staff was reduced.

Finally, with regard to the Alternative(s) to Fire Use (AFU) techniques promoted through the 141 PASF DUs and oriented towards 10 AFU techniques, about half of DUs visited during the evaluation process (a total of 25) are still active. This confirms that producers received some benefits, although no income increase could be demonstrated. Likewise, about 12 cases of extensions or duplications on other farms or ranches have been reported in the 13 municipalities visited. Among the different AFU techniques, the management of grasslands through the use of electric fences was best-received and had a positive impact.

5 Some lessons learned from the PASF and South-South triangular cooperation in fire reduction in the Amazon region.

5.1 About the project and the planning

The strategy adopted by Italian Cooperation to achieve a regional approach to common problems has been decisive and has enabled the harmonisation of national strategies on the most relevant aspects.

In this context, Brazil’s experience has been a fundamental reference point for programme design in Ecuador and Bolivia, as well as in terms of technical content (IFM and AFU strategy).

Institutional integration within national environment ministries is a key success factor in implementing a national Integrated Fire Management strategy.

Integration and adoption of AFUs by competent services at all levels – sectoral and municipal levels – is crucial and needs to be carefully planned from the outset by defining the role of programmes as process facilitators and not merely as implementers.

The promotion and dissemination of the AFUs technology package have been achieved on a massive scale, but it failed to consider a mid-term evaluation of its validity and implementation process.

Alternatively, Ecuador's experience is interesting, as it first seeks to identify the most promising practices through producers' direct participation.

No process has been formally established for an independent evaluation of the regional experience promoted and implemented by South-South triangular cooperation, nor for the capitalisation of lessons learned, useful to improve the intervention logic and design.

5.2 About institutionalisation

1) Institutionalisation is the first step, not the last. It requires allocating economic resources to strengthen the significant MMAyA institutions as a first step towards the realisation of policy principles and objectives.

2) In Brazil, clear success factors for the programme for the prevention and control of deforestation in the Amazon were the full involvement of thirteen ministries and the identification of their objectives as a national priority for the Presidency.

3) It is difficult to reduce the incidence of fires without reducing legal uncertainty, non-compliance with existing rules, and lack of clarity or conflicts in institutional competence. For the State to have an impact and ownership, a strong social base and/or allies at the highest State level are required, as well as ensuring that fire control is part of the political agenda.

4) It requires that the Ministry of the Environment and Water, as leading body in terms of IFM at the national level, ensures: i) coordination with other ministries and stakeholders, through an institution specialising in IFM and AFU; ii) refining of the EPMIF; iii) exchange of information and guidance to GADs, which in turn coordinate with GAMs.

5.3 Climate Change, Indigenous Identity and Knowledge

5) The life of the indigenous peoples of Eastern Bolivia cannot be separated from forests. Where forests disappear, indigenous peoples disappear; where forests exist, indigenous peoples exist.

6) The cause-effect relationship between training and reducing fire incidence is not immediate. Moreover, change of consciousness does not appear as such in logical frameworks. There are a number of aspects beyond PASF control that weigh more than training and prevent the announced impact from being achieved.

7) The PASF challenge indicates that the best way to fight fire is by investing in the plot. This is what both indigenous farmers and entrepreneurs already do. This means agricultural intensification. It consists of an investment in labour and capital in the plot; it can be through tree planting (plantations, agroforestry systems), bee-keeping, irrigation, soil improvement, etc.

6 Main Recommendations

1) DGCS: Continue to promote a South-South regional approach that aims at a common strategy towards fighting fires in the Amazon within a clearly defined policy and institutional framework from cooperation programmes' design phase. Also, ensure that alternative technical proposals to fire use are adequately evaluated and, if necessary, commonly disseminated through the appropriate institutional channels (ministries of agriculture and livestock, municipal governments).

2) DGCS: Ensure that there is a consistent, inter-ministerial and long-term strategy in Bolivia that seeks to eradicate the root causes of fires and accordingly develop the required political dialogue

with the sector's authorities. Any new IFM strategy requires, as a precondition, a broad agreement between the MDRyT and the MMAyA on forest conservation, which translates into a single and common strategy to support forest, agricultural and livestock production that preserves water, soil and biodiversity.

3) DGCS: Institutionalisation of initiatives should be the first step of any IFM intervention in a context where the MMAyA – DGGDF take the lead at the national level regarding IFM. In this framework, the Cooperation Programme Management structure and functions must integrate into the institutional structure and integrate the technical assistance of Italian Cooperation and sector's governing institutions in a balanced way.

4) DGCS, MMAyA: Balancing perceptions about fire: it is not always negative, as the PASF used to approach it. Analysing risks and benefits (drawing inspiration from the FAN and Myers 2006 experience). In particular, importance should be given to "prescribed burnings" as a method to limit the expansion of fires. In this framework, diagnostics of territorial and production patterns and complementary studies are needed to specify cooperation axes: a cultural and socio-economic diagnosis of intervention communities, feasibility study of an incentive project for livestock production without deforestation, etc.

5) DGCS, MMAyA: Training is a powerful weapon; its use is recommended as long as it is based on a dialogue of knowledge and is customised according to the target groups' interests and knowledge.

6) DGCS, MMAyA: Modify the way of identifying, promoting and generating AFUs. Deepen and differentiate perceptions of the fire use according to area and type of producers and identify current fire control practices and standards.

7) MDRyT, DGGDF (MMAyA), GAD, GAM: Promote production that requires forest maintenance and enrichment. Protect chestnut, açai, wild cocoa, honey, and other non-timber forest products producing forests, and strengthen their harvesting systems. Draw inspiration from the Non-Carbon Benefits of the World's Forests (Denmark) in Chiquitanía.

8) MDRyT, DGGDF (MMAyA), GAD, GAM: Implement and institutionalise modes of financing AFUs through grants and loans; these modes cannot depend on external financing, nor on limited duration programs, but should become a long-term public policy.

9) MMAyA as guardianship agency should take the initiative to coordinate with other ministries, through an institution or programme specialising in IFM. It should also coordinate and exchange information and provide guidance to GADs, who in turn coordinate with GAMs. Sta Cruz's experience is suggested for the other GADs

10) MMAyA MDRyT: Promote a combination of the legal framework among standards of protection and conservation, control of deforestation and burning and agricultural production promotion standards, prioritising food sovereignty.