
# *Project Brief*

**Small Grants Program:**

*The role of ecosystem services in adaptation to global change for human wellbeing (SGP-HW)*

## *[SGP-HW016] MAP-FIRE: Multi-Actor Adaptation Plan to cope with Forests under Increasing Risk of Extensive fires*

## *Strengthening Adaptation for Amazon Wildfires*

SDGs: Goal 3 (Good health and well-being), Goal 13 (Climate action), Goal 15 (Life on land)

With the increase of deforestation, the Amazonia is suffering from intense droughts and fire-related socio-environmental disasters. Particularly, large-scale pervasive forest fires affect ecosystem carbon stocks and biodiversity and put the well-being of ~25 million Amazonian inhabitants at risk. These changes also hamper the progress toward the seven targets of the Sendai Framework for Disaster Risk Reduction adopted by the United Nations Office for Disaster Risk Reduction (UNISDR).

The project MAP-FIRE: Multi-Actor Adaptation Plan to cope with Forests under Increasing Risk of Extensive fires, funded by the Inter-American Institute for Global Change Research (IAI), has been conducting scientific research in the Amazonian states of Madre de Dios (Peru), Acre (Brazil) and Pando (Bolivia), known as the MAP region. Among the scientific knowledge produced, MAP-FIRE has quantified fire risk and impacts as well as formulated operational and community-based strategies of fire monitoring and prevention in the study region.

Forests in the 21st century are becoming more vulnerable to droughts, with larger areas intensively and negatively responding to water shortages in the region. Studies reveal that emissions from drought-induced fires unrelated to direct land conversion, unlike those from humid tropical countries, are not explicitly included in national-level carbon emission inventories. The estimated gross emissions from forest fires alone can account for over 50% of old-growth forest deforestation during drought years. The case of Acre shows that economic loss due to fire forest estimated from 2008 to 2012 is around US$ 307.46 ± 85.41 million, equivalent to 9.07 ± 2.46% of Acre's gross domestic product (GDP).

This project co-developed two monitoring platforms for fire occurrence and air quality, providing near-real-time information, graphics, and statistics in the MAP region. Operational since 2020, the MAP-Fire monitoring Platform has been improved to include rainfall monitoring and forecast to support planning, decision making, and aid expeditions during the 2021 rainy season that affected that region. As a spin-off of the successful implementation, all Brazilian Amazonian states have installed the air quality sensor networks, some of which are already operational. Also, the MAP-Fire project experience and rationale is contributing to a new project at Brazil's Ministry of Science and Technology, focused on the Pantanal region, where major wildfires occurred during 2020.

Through Science Communication and Capacity Building, this project has provided an open repository on fire-related publications and organized, co-organized, or participated in 34 events, collaborating with academics and school students. The team presented the MAP-Fire platforms and compiled relevant scientific and communication materials on YouTube and are in the final phase of an activities handbook organized as a toolkit for teachers to incorporate content on fire risk and impacts in the school curriculum.

Researchers published 10 Technical Reports (TR) on the interlink between fire, deforestation, and the COVID-19 pandemic at different scales in the Amazon; the assessment of burned areas and air quality in the MAP region; and the forecast of fire probability for South American protected areas. These series of reports were translated into Portuguese, Spanish, and English and helped decision-makers to produce mitigation actions for wildfires in the Amazon. Also, this project has contributed to a book chapter on adaptation to climate change in Spanish-speaking Latin America, led by the la Red Iberamericana de Oficinas de Cambio Climático (RIOCC) to inform decision-makers.

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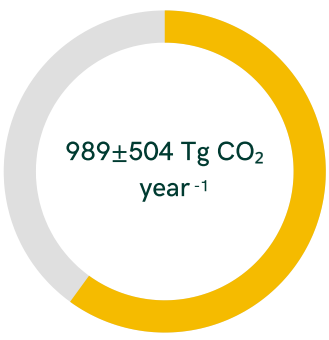
SGP-HW 016

# MAP FIRE: MULTI-ACTOR ADAPTATION PLAN TO COPE WITH FORESTS UNDER INCREASING RISK OF EXTENSIVE FIRES

## The MAP region - Madre de Dios, Acre, and Pando

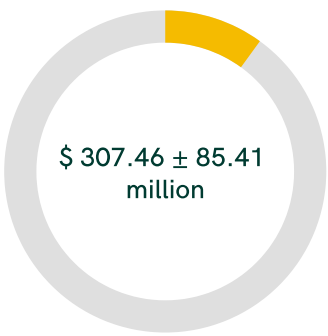
is covered in vast expanses of tropical forest (~300,000 km $^2$). The Amazonia is becoming more vulnerable to fire-related socio-environmental disasters and the MAP region is particularly affected by large-scale pervasive forest fires.

## Carbon emissions




The estimated gross emissions from forest fires alone can account **over 50% of old-growth forest deforestation** during drought years

## Economic losses




The estimated losses due to forest fires in the State of Acre alone from 2008 to 2012 are equivalent to **9.07 ± 2.46% of Acre's GDP**

## Co-developed fire and air quality monitoring platforms

The MAP-Fire Platform provides near real-time information on fire occurrence and fire alerts, including rainfall, number of dry days, and forecast feature.

During the 2021 rainy season, it was also used to **support decision-making in the trinational frontier.**

## Organized Science Communication and Capacity Building

The research team organized or participated in 34 collaborative events with academics and school students. They also shared their scientific and technical information via social media and radio programs.

Projeto MAP-FIRE

## Published 10 Technical Reports that support decision making

- Interlink between fire, deforestation, and the COVID-19 pandemic at different scales in the Amazon
- The assessment of burned areas and air quality in the MAP region
- Monthly report: The forecast of fire probability for South American protected areas